

Table of Contents

Introduction 1

1. Figured Bass & Chord Functions 3

Figured Bass 3

Chord Functions 8

Composite Chord Symbols 9

2. Voicing Chords 10

3. Voice Leading 14

4. Introduction to Part Writing 16

General Principles of Part Writing 20

5. Part Writing Seventh Chords 21

The Dominant Seventh 21

Other Seventh Chords 21

Seventh Chords in Keys 23

Special Seventh Chord Functions 23

6. Cadences & Six-four Chords 25

Cadences 25

Six-four Chords 25

7. Harmonic Progression 28

8. Modulation by Common Chord 30

9. Secondary Dominants 32

10. Chorale Harmonization 34

Answers to Self Tests 39

Index 45

Introduction

Music is built today on the human experience, knowledge, and the labors of our ancestors. It does not exist in a vacuum divorced from history. One can hardly pick up an instrument without recognizing this. Without a memory of what has been done, we are condemned to reinvent what was already known again and again. Only through a study of the past can we expect to invent the future. The musical literature of the past may be our greatest teacher, but it should not be just be a regurgitation of notes either. If music were just a matter of playing accurately and in tune, computers would be better suited to the task.

Just as astronomers study the structure of the stars in order to understand the mysteries of the universe, musicians study the structure of music to comprehend its mysteries. Generalization of the principles behind this structure constitute what is now called the "theory of music". Sometimes, however, the pedagogy of music is mistaken for music theory. The latter consists of developing convincing new hypotheses and generalizations about the nature of music by gathering evidence. The pedagogy of theory (the subject of this text) does not consist in developing new tools of theoretical research, but rather consists of the passing on of past knowledge.

A passive study of theory and analysis is insufficient to a good musician. Unless this knowledge can be applied, the student will lack as a musician. Writing is one of the basic applications, completing the cycle of analysis (understanding) and application within the bounds of study. Students should, however, extend their knowledge to their performance practice outside the classroom if full benefits are to be realized. Thus, theory does not stop when the classroom door closes.

The activity of writing is not meant here to demonstrate originality but is rather a test of one's ability to demonstrate a knowledge of traditional practices. The depth of musicians' skill and knowledge is reflected in the works that they create, whether this is in the form of a performance, a composition, or simply verbalization (criticism). Thus, the skill and measure of a musician directly depends upon musical experience, practice, knowledge of literature, etc. The craft of the composer is similarly determined.

This text deals with only a one part of a musician's experience, the technical/theoretical part. This alone cannot make a person a fine musician; neither can playing the right notes perfectly in tune and in time, which can be better done by a computer. A great performance as distinct from a mediocre one, for instance, is one that brings the music a human, emotional, and even philosophical (or religious) presence (a knowledge of the culture and philosophy surrounding the composition is essential). This presence, or a lack of it, is apparent in a performance or composition. This and the need to share the *common* human experience is what makes music spiritual and emotional, human rather than machine. Thus, it is personal only in the narrowest sense.

How to Use This Book

This book continues the study begun in *Music Fundamentals* by the same author, and the latter is recommended for review before beginning the current text. Before using this book, students are expected to have a practicing knowledge of the elements of music, such as meter, rhythm, musical notes, basic terminology, clefs, scales, key signatures, intervals, and basic triads. These and more are covered in the *Music Fundamentals* text.

This book begins with figured bass and is organized in a sequence of concisely stated information and examples followed by Self Tests. The text is deliberately concise, containing only what is essential. This makes it necessary for the student to read and reread to be sure that all the information contained is absorbed and committed to memory.

It is advisable to take notes from the text and class lectures. This helps with memory. The answers to the Self Tests are provided at the end of the book so that students may check their comprehension and make corrections or seek advice as they go. The Self Tests are essential to assure success. They are regulated so that a certain amount of retention is required, as opposed to the exclusively short term memory required in most programmed texts. High achievement on the Self Tests should guarantee success on the real tests.

Companion texts that are used in conjunction with this one are the author's *Music Fundamentals* and *Music Fundamentals Workbook* (for review), *Resources for Music Theory and Composition*, and the *Anthology of Music*. The *Anthology of Music* is extremely important and contains valuable examples for study, many of which will be studied in class. It should be brought to every class session. *Resources for Music Theory and Composition* contains various formats of manuscript paper that can be used for writing assignments, chord charts, scale and mode charts, accompaniment figures, melodies to harmonize, Italian terms, instrument charts, analysis forms, and, most importantly, a glossary of technical terms with their definitions. It is an important reference. The last two texts are used for all the *Structure* courses in the theory sequence and should be retained. It is highly recommended that all the texts be retained for review and reference for any future study of music.

1. Figured Bass & Chord Functions

Figured Bass

Rather than using R, 1, 2 to indicate chord positions for root, first and second inversion, there are standardized symbols to identify these positions, called *figured bass*. This is simply a group of numbers that indicate the intervals that occur above the bass note. These numbers are given in general interval size whenever a key signature applies since this creates less clutter. However, if a chromatic note occurs, it is necessary to reflect it in the figured bass.

Figured bass was originally used in the performance practice of the Baroque period (1600-1750) when it was called *basso continuo* or *thorough bass*. A keyboard player read a solitary bass line with these symbols and was expected to improvise voices above the bass. This is not unlike the lead sheet system used in popular music today. Figured bass is still used in harmonic analysis, which is how we will be using it.

The image shows a musical score for a keyboard instrument in 3/2 time, with a key signature of one flat (B-flat). The bass line is written in a single staff. The notes and figured bass symbols are as follows:

Measure	Notes	Figured Bass
1	G2, B-flat2, D3	6 7 #
2	A2, B-flat2, D3	6
3	G2, A2, B-flat2	b4
4	F2, G2, A2	6 7 #
5	E2, G2, B-flat2	6 5
6	D2, F2, A2	#
7	C2, E2, G2	6 #

This is an example of a keyboard part from the Baroque era where the player has only a bass line with figured bass symbols. To a modern keyboard player it looks somewhat strange. A possible realization:

The image shows a musical score for a keyboard instrument in 3/2 time, with a key signature of one flat (B-flat). The score shows a realization of the figured bass from the previous example. The bass line is written in a single staff, and the treble clef staff shows the realization of the chords above it. The notes and figured bass symbols are as follows:

Measure	Notes	Figured Bass
1	G2, B-flat2, D3	6 7 #
2	A2, B-flat2, D3	6
3	G2, A2, B-flat2	b4
4	F2, G2, A2	6 7 #
5	E2, G2, B-flat2	6 5
6	D2, F2, A2	#
7	C2, E2, G2	6 #

Any tertian trichord in root position has the figured bass $\frac{5}{3}$ which means there is a fifth and a third above the bass. This is the figured bass for any root position tertian trichord. Spacing,

voicing, doubling, figuration, order of notes, etc. have no effect on this symbol. Since there are more root position chords than any others, by far, this symbol is assumed by default. In other words, if no figured bass occurs, the chord is assumed to be in root position. Examples of this occur on the first beats in measures 1, 2, and 4 in the above example.

A tertian trichord in first inversion (third in bass) the figured bass is $\frac{6}{3}$. Once again, this is the figured bass for any first inversion tertian trichord, regardless of voicing, doubling, spacing, note order, etc. It has the abbreviation 6. Thus, a lone 6 indicates a first inversion tertian trichord.

If the fifth is in the bass, the chord is in second inversion and the figured bass is $\frac{6}{4}$. This one has no abbreviation.

Seventh chords are tetrachords, having four possible bass notes, thus there can be a third inversion. The figured bass for a root position seventh chord is simply 7 (this is the abbreviated symbol for 7-5-3). For first inversion the figured bass is $\frac{6}{5}$ (abbreviation for 6-5-3). A second inversion seventh chord has the figured bass $\frac{4}{3}$ (abbreviation for 6-4-3), and a third inversion seventh chord is $\frac{4}{2}$ (abbreviation for 6-4-2). Notice that the numbers in a figured bass symbol are always placed in order from the smallest to largest, bottom to top. These should be memorized.

full symbol	abbreviation	example chromatic symbols for chromatically altering intervals above bass
Trichord figured basses:		
root position	$\frac{5}{3}$ (blank)	= lower the third =5 lower the fifth
first inversion	$\frac{6}{3}$ 6	6 raise the sixth < raise the third
second inversion	$\frac{6}{4}$ $\frac{6}{4}$	
Seventh chords figured basses:		
root position	$\frac{7}{5/3}$ 7	
first inversion	$\frac{6}{5/3}$ 6 5	
second inversion	$\frac{6}{4/3}$ 4 3	
third inversion	$\frac{6}{4/2}$ 4 2	

Chromatic alterations must be reflected in the figured bass. A figured bass interval that is raised is indicated with a slash through the interval number, such as $\frac{6}{/}$, meaning raise the sixth above the bass; this is the most economical way to indicate a raised note since it involves a single symbol. If the note is normally flat, due to the key signature, raising it is sometimes indicated with a < or a > before the interval number; e.g. >4. However, for the sake of consistency, we will not use these symbols.

Chromatically lowered notes are indicated with a = before the interval number; e.g. =6. But if the third is lowered the figured bass is a flat sign by itself (=). Although the > is sometimes

used, we will not use it here. Therefore, when a note other than the third is raised, always use the slash, and when a note is lowered, use the flat sign. A lone sharp or flat should be used to apply to the third above the bass, as seen in the above example and chart. The abbreviated symbols should always be used in figured bass unless there are chromatic alterations, in which case only the necessary additional symbols are included to identify the chord position and content. When chromatic notes are used it may be necessary to use a complete figured bass symbol to indicate the chord.

Arpeggiated and broken chords are identified as one unit, not as a changing chord or position. Thus, proper recognition of the harmonic rhythm is important. Study the following examples and be sure that you understand the principles that apply to figured basses.

Examples of figured bass

♭ ♭5 8 # 6 4 6 6 5 6 5 6

6 ♭6 6 6 6 # 7 7 5 6 5 4 3

6 6 4 3 6 4 3 6 4 3 6 4 3

♭ 6 ♭6 4 2 ♭6 4 3 7

Self Test 1.1 [Answers for Self Tests are in the Appendix.]

Write the most economical figured bass symbol for each measure.

The first exercise consists of a grand staff with a treble clef and a bass clef. The key signature is one sharp (F#). The bass line contains the following notes and chords across ten measures: Measure 1: F#2, C3, G2; Measure 2: F#2, C3, G2; Measure 3: F#2, C3, G2, E2; Measure 4: F#2, C3, G2; Measure 5: F#2, C3, G2; Measure 6: F#2, C3, G2, E2; Measure 7: F#2, C3, G2; Measure 8: F#2, C3, G2; Measure 9: F#2, C3, G2, E2; Measure 10: F#2, C3, G2, E2.

The second exercise consists of a grand staff with a treble clef and a bass clef. The key signature is three flats (Bb, Eb, Ab). The bass line contains the following notes and chords across ten measures: Measure 1: Bb1, Fb1, Cb1; Measure 2: Bb1, Fb1, Cb1, Gb1; Measure 3: Bb1, Fb1, Cb1, Gb1; Measure 4: Bb1, Fb1, Cb1, Gb1; Measure 5: Bb1, Fb1, Cb1, Gb1; Measure 6: Bb1, Fb1, Cb1, Gb1; Measure 7: Bb1, Fb1, Cb1, Gb1; Measure 8: Bb1, Fb1, Cb1, Gb1; Measure 9: Bb1, Fb1, Cb1, Gb1; Measure 10: Bb1, Fb1, Cb1, Gb1.

Chord Functions

Chords function like parts of speech, i.e. like nouns, verbs, adverbs, etc. Tonic is similar to a noun, while dominant is like a verb. The progression I V I functions to form a simple, yet complete musical "sentence", similar to subject, verb, direct object.

There are only three basic chord functions: tonic, dominant, and subdominant: I, IV, V. Tonic (I) is home base, resolute, static. Dominant (V) is active, dissonant, and tense. Subdominant (IV) bridges the gap between the opposites of tonic and dominant; it functions to prepare the dominant. All other chords are substitutes for these, and therefore, serve the same functions. Supertonic (ii), for instance, serves the same function as a subdominant, for it leads to the dominant. The leading-tone chord (viiE) has a dominant function, leading to tonic. Submediant (vi) substitutes for the tonic, as, for example in a deceptive cadence. However, since it also has two tones in common with the subdominant, it may serve a subdominant function, too.

The mediant has two notes in common with the tonic and two notes in common with the dominant, the two most powerful, yet opposite, functions in a key and seems to indicate either function. However, pulled as it is in opposite directions, its function is often ambiguous; i.e., it may be used in several different ways, making it rather complicated for beginners.

Chart of the Strong Chord Substitutions & Functions

<i>Primary</i>	<i>Secondary</i>	<i>grammatical analogue</i>	<i>function</i>
I	vi	noun	static, resolute
V	viiE	verb	dynamic (moves to I)
IV	ii	adjective/adverb	dominant preparation (moves to V)

Self Test 1.2 [Answers for Self Tests are in the Appendix.]

1. A chord that can substitute for V is _____
2. A chord that normally substitutes for IV is _____
3. A chord that usually substitutes for I is _____
4. A static chord function is called _____
5. A chord that has an ambiguous function is the _____

Composite Chord Symbols

A *composite chord symbol* is a combination of a Roman number with a figured bass. This identifies the chord function in a key and its position with respect to the bass. To review, the common Roman numerals for chords in a major key are I ii iii IV V vi vii[♮]. In minor they are i ii[♭] III iv V VI vii[♭].

Examples of the composite symbols are given below the following example. The two parallel keys of C major and c minor are shown. Notice that in a minor key the harmonic minor is assumed, so that the raised seventh is not indicated as altered in the figured bass. However, the last chord has the *picardy third*, i.e. the raised third of the tonic chord at a cadence in a minor key, and is so reflected by the Roman number.

Study the above example to be sure that you understand the principles of composite chord symbols before going on, since we will be using these frequently from now on.

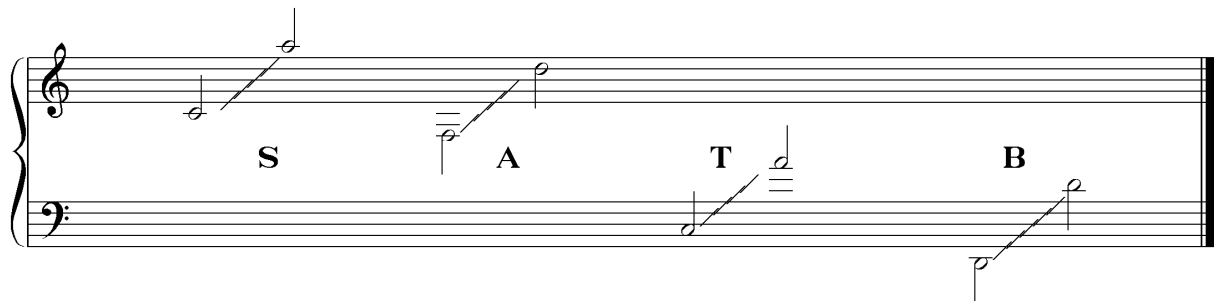
C: I V⁶₄ I⁶ ii⁶ I⁶₄ V I c: i V⁶ VI⁶ VI I⁶₄ ii⁶_♭ I⁶₄ V⁷ I

Self Test 1.3 [Answers for Self Tests are in the Appendix.]

Identify the following keys and chords with composite chord symbols.

2. Voicing Chords

To begin understanding the voicing of chords we will be using the standard four voice model: soprano, alto, tenor, bass (SATB). These are natural ranges for the human voice that are also imitated by instruments; i.e. instruments are designed to roughly correspond with these ranges which is why they have names like alto saxophone, tenor trombone, soprano clarinet, etc. We must first memorize the ranges for these voices. The following ranges are found in the Bach chorales.



These ranges can vary, of course, from person to person, and should be regarded as the maximum possible ranges for amateur voices. To write notes beyond these ranges for these voices could be a problem.

Voices are written in either *close* or *open score*. In close score, or *short score*, all voices are written on a grand staff. In open score, or *long score*, each voice is written on a separate staff. We will be using short score here. This requires that the female voices, soprano and alto, be written in the treble clef, and male voices, tenor and bass, be written in the bass clef. To distinguish them we use a different rule for stem direction. The soprano will always have stems up, and the alto will always have stems down. Never write these voices in the bass clef. The tenor will have stems up, and the bass will have stems down, both in the bass clef. Never write these voices in the treble.

We will be learning to write for these voices in a normal setting; i.e. we will not be doing anything unusual, although we should recognize that the unusual does occur in music. It is good sense to master the ordinary before venturing the extraordinary. Thus, the student will be restricted to the normal, ordinary voicings. For the time being, the unusual and abnormal is outlawed.

The voices have a normal position relative to one another. The soprano is the top voice. The bass is lowest. The alto lies just below the soprano, and the tenor lies below the alto. These positions should not be violated, but if they are, it is called *crossed voices*.

Rule: Do not cross voices

The following shows an example of normal and crossed voices.

The musical notation shows eight measures of a C major chord in four-part setting. The notes are: Soprano (S), Alto (A), Tenor (T), and Bass (B).
 Measure 1: S=C4, A=E4, T=G4, B=C3 (normal).
 Measure 2: S=C4, A=F4, T=E4, B=C3 (crossed).
 Measure 3: S=C4, A=E4, T=G4, B=C3 (normal).
 Measure 4: S=C4, A=F4, T=E4, B=C3 (crossed).
 Measure 5: S=C4, A=F4, T=G4, B=C3 (spacing).
 Measure 6: S=C5, A=F4, T=E4, B=C3 (crossed+range).
 Measure 7: S=C4, A=F4, T=G4, B=C3 (spacing+inc chord).
 Measure 8: S=C4, A=F4, T=G4, B=C3 (spacing+crossed+range).

These are all voicings of a C major chord. The first measure shows a normal voicing. The second has the soprano and alto crossed. The third measure is another normal voicing, while the fourth is crossed in the tenor and alto voices. Measures 6 and 8 also show notes beyond the range of the voices. Measure 7 shows an incorrect voicing by omitting a note of the chord (the fifth is missing). These are all errors.

Spacing regards the intervals that occur between voices. A chord can be voiced too thin in the treble. To avoid this problem observe the following:

Rule for spacing voices: There should be no more than an octave between soprano and alto voices and no more than an octave between alto and tenor voices.

The range of our voices automatically helps to prevent a chord from being too thick in the bass. However, it is best to try and keep the largest interval between the tenor and bass most of the time. This is not always possible, but keeping the tenor in the high part of its range is advisable. Tenors are used to singing high, which means ledger lines are common in tenor parts written in close score. Any distance may occur between the tenor and bass voices. Measures 5, 7 and 8 above show spacing problems in voicing. Can you identify them?

Chords may be voiced in close position or open position when there are no crossed voices. *Close position* is a spacing of less than an octave between the soprano and tenor voices. *Open position* is spacing of an octave or more between soprano and tenor. Both are valid. The first measure above is in close position, while measure 3 is open.

Since we are voicing for four parts and most of our chords are trichords with only three notes,

we must double one of these notes. *Doubling* is the recurrence of a pc (*pitch class*) in a single chord. Some doublings are normal and stable while others are abnormal and unstable. Generally, it is best to double stable tones. Usually, the root of a chord is the best note to double. Therefore, it is the first choice for doubling in most (but not all) chords. The leading tone is so unstable that it must never be doubled. Therefore, a viiE chord should never double its root. Also, since dominants contain the leading tone (it is the third of the dominant), the third should never be doubled in that chord. Otherwise, doubling is mostly a matter of preference rather than sharply drawn distinctions. Observe the following:

Doubling Rule: Never double leading tones, chromatic notes, or sevenths.

Doubling Preferences:

1. double the root whenever possible
2. second choice is to double the fifth
3. last choice is to double the third

Exceptions to preferences:

1. Diminished chords should double the third, and they should occur only in first inversion.
2. Six-four chords (second inversion) should double the fifth.

The previous example shows the doubled root in the two correctly voiced chords in measures 1 and 3.

Self Test 2.1 [Answers for Self Tests are in the Appendix.]

1. Identify the voicing error in each measure: X=crossed, D=doubling, S=spacing, R=range, C=correct. The double bars indicate that each chord is separate from the others.

example
C: X

2. Write the alto and tenor voices in **CLOSE** position with the **BEST** possible voicing and doubling. Do NOT use any unisons. (*inc=incomplete*)

f#: i V⁷_{inc} VI V⁶₅ ii^o₆ i₆ vii^o₆

3. Without using unison doublings, write the alto and tenor voices in **OPEN** position; use the **BEST** possible voicing and doubling. (*inc=incomplete*)

bb: i V⁶₅ iv₆ V⁷_{inc} vii^o₆ i₆ ii^o₆

3. Voice Leading

Voice leading is the motion of a single voice. We will list the types from the smoothest to the roughest. Motion can fall into one of four categories. First is no motion. This is when a voice either holds a single note (such as in tied note) or repeats it.

Second is step motion. *Step motion* occurs when a voice moves either up or down by a tone or semitone, usually diatonic, but possibly chromatic. Third is the *small leap*, which is an interval larger than a second but no larger than a perfect fourth. Finally, there is the *large leap*, which is any interval larger than a perfect fourth.



Because it is much easier to hear melodic connections in smooth lines, we will be striving to develop skill in writing *as smoothly as possible*. The smoothest connections may not create the most interesting melodies, but they are the easiest to hear, sing, and play. Most traditionally crafted lines are written to be smooth with occasional leaps for interest. The perfect fourth is the largest leap that is still considered smooth, but in the bass this is extended to the perfect fifth. Follow these rules:

1. Do not leap more than a perfect fourth in any voice.
Exception: the bass may leap a perfect fifth or an octave (but not sixths or sevenths)
2. No voice should move by an augmented second or tritone.

Self Test 3.1

Identify each voice leading error by placing a symbol between notes where the error occurs:
TT=tritone, a2=augmented second, L=large leap, R=range

The image shows a musical score for four voices: Soprano, Alto, Tenor, and Bass. The music is in C major and 4/4 time. The Soprano part is on a treble clef staff, and the Bass part is on a bass clef staff. The Alto and Tenor parts are on a single staff with a soprano clef for Alto and an alto clef for Tenor. The score consists of two measures, each followed by a double bar line. The Soprano line has notes: C4, D4, E4, F4, G4, A4, B4, C5. The Alto line has notes: G4, A4, B4, C5, B4, A4, G4, F4. The Tenor line has notes: E3, D3, C3, B2, A2, G2, F2, E2. The Bass line has notes: C3, D3, E3, F3, G3, A3, B3, C4. There are several voice leading errors indicated by symbols: TT (tritone) between G4 and B4 in the Soprano part, a2 (augmented second) between A4 and B4 in the Soprano part, L (large leap) between C5 and B4 in the Soprano part, and R (range) between C5 and B4 in the Soprano part.

You should now be able to take MUS125 Test 1, which covers Chapters 1-3.

4. Introduction to Part Writing

Part Writing is here defined as the motion of voices with respect to one another. Notice the difference between this and voice leading, which involves a single voice only. Even so part writing must be considered in relation to voice leading. The following apply to the four voice model, SATB.

Consider the types of part writing motion that are possible. These types are always determined by two voices at a time. First, there is no motion, i.e. when two voices do not move. This may take the form of held or repeating notes. Thus, when two voices repeat notes, there is no part writing motion between them.

Second is *contrary motion*. This happens when voices move in opposite directions. One moves up and the other moves down. Third is *oblique motion*, when one voice moves while another is stationary. Fourth is *similar motion*, where two voices move in the same direction.

Finally, there is a special type of similar motion called *parallel motion*, where two voices

1. no motion S&T 2. contrary motion S&B 3. oblique motion T&B 4. similar motion S&A 5. parallel fifths A&T

The image shows five measures of music on a grand staff (treble and bass clefs). Measure 1: Treble clef has a whole note G4, bass clef has a whole note G3. Measure 2: Treble clef has a quarter note G4, bass clef has a quarter note F3. Measure 3: Treble clef has a quarter note G4, bass clef has a quarter note G3. Measure 4: Treble clef has a quarter note G4, bass clef has a quarter note A3. Measure 5: Treble clef has a quarter note G4, bass clef has a quarter note G3.

move in the same direction by the same interval.

One of the primary goals of part writing is to achieve independent motion of voices. This results in counterpoint. When voices move in parallel motion there is little or no independence. So parallel motion is the least desirable. In fact, when two voices move in parallel octaves or unisons there is no independence whatsoever. We hear such motion as monophonic, a single solitary melody. As we have seen, virtually none of our present day music is monophonic. Polyphony is the predominant texture of music around the world today, and we must learn to deal with it.

Some parallel intervals are permitted in polyphony, because there is a small degree of independence; e.g. parallel thirds and sixths. But the line is drawn with parallel perfect fifths, octaves, and unisons. These are avoided in our traditionally structured polyphonic music in order to maintain independence. There are other reasons for avoiding them, however. When two voices are moving independently and suddenly, for no apparent reason, they begin to move in octaves, it sounds as if one voice has dropped out, i.e. one is missing. Moreover, the note-pair of these parallel intervals is emphasized because of their doubling, and this sounds like a mistake in most cases since there is no inherent reason for a pair of notes to stick out.

In spite of all the problems though, a composer may deliberately want parallel octaves or fifths for special reasons. For example, doubling a line in octaves is common in music to reinforce it. However, there is no pretext of independence in such a case. Parallel fifths are used

sometimes for color or to create an archaic sound. These uses are normally easy to spot and a high degree of consistency is nearly always involved.

Parallel fifths and octaves (which will include parallel unisons from now on), are the strongest harmonic intervals in music and must be used with sensitivity and care, for they have a profound effect. Most would agree that there is a problem when they go unnoticed, and such is the case in novice part writing.

For all the above reasons, in mastering the skill of traditional part writing, we will avoid using parallel perfect fifths and octaves. Notice, however, that unequal fifths are permitted; e.g., a perfect fifth to diminished fifth. Only parallel *perfect* fifths are forbidden. Also note that the forbidden intervals must be *moving* to be in error. Stationary, or repeating, perfect fifths and octaves are not moving, and are, therefore, okay.

However, sometimes two voices may be moving from one perfect fifth or octave to another in contrary motion. These are called *consecutive fifths and octaves* and have the same effect as parallels. So they are also outlawed.

Symbols used for parallel fifths and octaves (and unisons) are //5 and //8. Consecutive fifths and octaves are indicated C5 and C8. The following are examples of correct and incorrect

correct (no motion) error //8 error //5 error C8 error C5 correct (unequal 5ths)

P8 P8 P5 P5 P8 P8 P5 P5 P8 P8 P5 P5 P5 P5 P5 d5

movements.

A related problem is that of *direct octaves and fifths* (symbolized D8 and D5 or 88 and 85). Direct octaves and fifths occur when two voices move in similar motion to a perfect octave or fifth. However, in a four voice texture they are permissible most of the time. The only case when they are not permitted is if they occur between the soprano and bass *and* the soprano leaps. Both conditions are necessary for an error.

Examples of correct and incorrect direct octaves and fifths in a four part texture. (Only two of the four voices are shown)

correct D8 correct D8 correct D5 wrong D8 wrong D5 correct D5 correct D8
S&B T&B S&T S&B S&B S&A T&B

3 8 6 8 3 5 6 8 6 5 6 5 3 8

Another part writing problem develops only between adjacent voices, such as soprano/alto, alto/tenor, or tenor/bass. *Overlapping voices* can be ascending or descending. An ascending overlap occurs when the lower voice leaps to a note above the previous note of the upper voice. A descending overlap happens when the upper voice leaps to a note that is below the previous note in the lower voice.

A cross relation occurs when one voice moves to a note that chromatically contradicts a pc that just occurred in another voice (see the following example). Remember that sevenths of seventh chords must resolve by moving down a scale step. Finally, when the leading tone occurs in the soprano in an authentic cadence, it must move up to the tonic. Study the following example to be sure that you understand before going on.

cross relation+ unresolved correctly resolved D8 in S&B
 overlapping overlapping leading tone & leading tone & 7th
 S&A T&A 7th + overlapping A&T

C: I V₆₄ V I IV V7 I IV V7 I IV6 V6 I

General Principles of Part Writing

Smooth part writing is a goal when moving from one chord to another. This creates melodic interest within the harmony. In the beginning it is best to practice writing as smoothly as possible, or in other words, the smoothest possible way. This may be done by first repeating any notes that can be repeated, since no motion is the smoothest.

Chords whose roots are a third apart have two pcs in common, i.e. that can be repeated. Chords whose roots are a fourth apart have one pc in common, and those whose roots are a second apart have no pcs in common. In the last case, no notes can be repeated, which is the condition for the greatest possibility of error, such as parallel fifths and octaves.

To avoid problems, first repeat notes that can be repeated. Then move the other notes as little as possible, each to the note that is closest in the next chord. Finally, check for any errors of motion, voicing, voice leading, doubling, etc., and if necessary, revoice the chord.

Also, when no note repetitions are possible it is usually best to move the upper three voices in contrary motion to the bass.

SELF Test 4.2

Complete the following in four parts using CLOSE position whenever possible, smoothest voice leading, no unisons except for frame no.3. The figured bass is given. Write the composite chords symbols.

The image shows two systems of musical notation for a piano accompaniment exercise. Each system consists of a grand staff with a treble clef and a bass clef. The bass clef contains a figured bass line, and the treble clef contains a melody line. The first system is in C major and the second is in D minor. The figured bass for the first system is: C: | | 6 | | 6 | | | | . The figured bass for the second system is: d: | | # | | 6 | | 6 | | 6/4 | | 6 | | # | .

You should now be able to take Test 2, which covers only Chapter 4.

5. Part Writing Seventh Chords

The Dominant Seventh

The dominant seventh chord is the seventh chord normally found on the fifth degree of the scale, the dominant. However, the internal structure of this chord is unique, so that wherever it occurs, it is considered a dominant seventh. In the key of C major, GBDF is the dominant seventh (V7). However, if D F# A C occurred in C major, it would also be called a dominant seventh; the latter is a chromatic chord called a secondary dominant, which will be discussed later.

The important point to remember is that a dominant seventh always consists of a major triad and a minor seventh. If a chord has this structure, it is a dominant seventh.

There are two important considerations in voice-leading and part-writing the dominant seventh. Firstly, the seventh of the chord (not the leading-tone) must always resolve down by scale step. Occasionally, the resolution may be delayed by repeating the tone in the next chord, but thereafter it resolves downward by step. Secondly, if the leading tone, i.e., the third of the chord, occurs in the soprano in an authentic cadence, it must resolve up to the tonic.

Seventh chords in general may have the fifth omitted; e.g. the V7 in C major may only have GBF in it. This is called an *incomplete seventh chord*, and is used frequently in music. In four parts the incomplete seventh always doubles the root. Otherwise, the same voice leading and part-writing principles are observed as with triads. The abbreviation *inc* will refer to the incomplete chord.

To review figured bass, seventh chords are tetrads, having four possible bass notes; thus, there can be a third inversion. The figured bass for a root position seventh chord is simply 7 (this is the abbreviated symbol for 7-5-3). For first inversion the figured bass is $\frac{6}{5}$ (abbreviation for 6-5-3). A second inversion seventh chord has the figured bass $\frac{4}{3}$ (abbreviation for 6-4-3), and a third inversion seventh chord is $\frac{4}{2}$ (abbreviation for 6-4-2). Notice that the numbers in a figured bass symbol are always placed in order from the smallest to largest, bottom to top. Review the chart in chapter 1.

Other Seventh Chords

Many different types of seventh chords can be constructed with various sizes of thirds, fifths, and sevenths, but there are only five common seventh chords in our traditional music. The dominant seventh is by far the most common and important one. The other types are the minor seventh, the diminished seventh, half-diminished seventh, and major seventh.

The minor seventh consists of a minor third, perfect fifth, and minor seventh. Its complete name is minor-minor seventh chord, shortened to simply *minor seventh chord*. The D minor seventh chord contains the notes D F A C, a minor triad with a minor seventh, hence the name minor-minor seventh. The common symbol for this is Dm7.

The *half-diminished seventh chord* contains a minor third, diminished fifth, and minor seventh. The B half-diminished seventh chord is spelled B D F A. It consists of a diminished

triad and minor seventh; the triad is diminished but the seventh is not, hence the name half-diminished seventh. Its common symbol is B \flat /7.

The *diminished seventh chord* consists of a diminished triad and a diminished seventh; thus, it is fully diminished. The B diminished seventh is spelled B D F A \flat . Its common symbol is

Examples of the four most common seventh chords

1. dominant seventh			2. minor seventh			3. half-diminished seventh			4. diminished seventh		
voiced with resolution			voiced with resolution			voiced with resolution			voiced with resolution		
G7			Dm7			B \flat 7			B \flat 7		
C: V7			ii7			vii \flat			vii \flat 7		
V7			ii7			vii \flat			vii \flat 7		
I			V			I			I		

BE7.

The *major seventh chord* consists of a major triad and a major seventh, and its symbol is M7; e.g., CM7 is a C major seventh chord.

Seventh chords contain a dissonant (restricted) interval, that of the seventh. Its resolution is down by scale step to a note in the next chord. Occasionally, this resolution may be delayed by repeating the seventh before its resolution.

Rarely, the seventh may not seem to resolve at all, but may repeat or move up, or even leap away from the seventh. These occurrences indicate that the chord is not a true seventh chord, as it may appear to be. Rather, the "seventh" in these cases is a non-harmonic tone, a suspension, anticipation, retardation, etc. We will not be using the seventh this way until much later.

Therefore, upward resolving sevenths should not be used.

Seventh Chords in Keys

The other degrees of the scale besides dominant may also have seventh chords built on them. The seventh of these chords is treated the same as the seventh of the V7 -- it should resolve down by step. The non-dominant sevenths are found much less frequently in our traditional music, but they are used to create variety and a greater sense of motion towards a goal. Often the goal is the resolution to the chord whose root is a perfect fourth above (or P5 below) the root of the seventh chord. Thus, ii7 normally goes to V, vi7 normally resolves to ii, etc. Exceptions are the leading-tone seventh, which normally resolves to tonic, and the IV7, which normally goes to V.

However, these are guidelines, not rules.

Diatonic seventh chords in major keys with their symbols

	CM7	Dm7	Em7	Fm7	G7	Am7	B \flat 7
C:	I7	ii7	iii7	IV7	V7	vi7	vii \flat 7

Diatonic seventh chords in minor keys with their symbols

	Cm7	D \flat 7	E \flat m7	Fm7	G7	A \flat m7	B \circ 7
c:	i7	ii \flat 7	III7	iv7	V7	VI7	vii \circ 7

Seventh chords can move in other ways, but the beginner should try to stay with the normal resolutions before exploring the uncommon ones. With seventh chords as with others, always follow the principles of strong progressions. Seventh chords often appear as pivot chords in modulations.

Special Seventh Chord Functions

Supertonic sevenths are frequently found preceding authentic cadences. They help to build tension before the final resolution, and therefore, are very effective in cadences.

Leading-tone sevenths normally lead to tonic, but they are also often found preceding the dominant, prolonging its motion to the tonic.

Mediant sevenths commonly resolve to the subdominant as well as the submediant.

Part-writing the resolution of the common types of seventh chords

1. Dominant seventh 2. minor seventh 3. Major seventh 4. half-dim.7th 5. dim.7th

G7 C Dm7 G FM7 G7 C B^o7 C B^o7 C

C: V7 I ii7 V IV7 V7 I vii^o7 I vii^o7 I

Self Test 5.1

Write the composite chord symbols for the following chords and resolve each.

C: 7 6/5 b7 c: 6/5 4/3 e: 4/2 6

6. Cadences & Six-four Chords

Cadences

Briefly, there are four basic types of harmonic formulae used at the end of phrases and sections: authentic, half, deceptive, and plagal. Authentic and plagal cadences may occur in perfect or imperfect forms. Abbreviations include PA=perfect authentic, IA=imperfect authentic, PP=perfect plagal, IP=imperfect plagal, DEC=deceptive). If you are familiar with all of these, you may continue, but if you are "rusty", you should review them in your *Music Fundamentals* text before proceeding.

There is a special type of half cadence in the harmonic minor called a *phrygian cadence*. This consists of the harmonic formula iv V where the soprano and bass approach the doubled root of the dominant in contrary step motion.

The musical notation illustrates four types of cadences in C major and C minor. Above the staff, the cadence types are labeled: Half, Phrygian, Deceptive, and Perfect Plagal. Below the staff, the corresponding Roman numerals are provided for each cadence.

C: I I6 ii V c: i III iv V i iv V VI i VI iv i

Partwriting cadences is simply a matter of following the existing rules. Remember that cadences normally fall on strong beats rather than on weak beats, except for the half cadence, which commonly occurs on weak or strong beats.

Six-four Chords

Root position is the most stable position for most chords (except diminished), which is why most chords occur in this position. First inversion adds variety, smooths the bass line, and creates a greater sense of motion, since it is less stable. Six-four, or second inversion, is unstable and, therefore, has the greatest sense of motion of the three positions. This position requires special

treatment and restrictions on its use if it is to be effective.

There are only three common types of six-four chords: cadential, passing, and pedal, listed in order of their relative strength. The fifth is always doubled in any six-four chord.

The *cadential six-four* is normally a I_4^6 immediately preceding an authentic or other type of cadence. Ordinarily, it is preceded by a subdominant-function chord. Occasionally, it is a IV_4^6 that precedes the cadence. Except for triple time, the cadential six-four normally occurs on a strong beat.

A *passing six-four* must be approached and left by step motion in the bass. This may be passing or neighbor motion (see example). A *pedal six-four* chord has a stationary bass through the six-four position. It is always "sandwiched" between two other chords, and the bass is either repeated or held through all three chords. Notice that, to be complete, each six-four chord must be preceded and followed by the appropriate type of chord.

1. cadential $\frac{6}{4}$ 2a. passing $\frac{6}{4}$ 2b. passing $\frac{6}{4}$ 3. pedal $\frac{6}{4}$

C: IV I_4^6 V7 I I V_4^6 I6 IV I_4^6 IV I IV_4^6 I

It is also possible to combine pedal and passing motion in the "pedal-passing six-four".

Self Test 6.1. Cadences and Six-four Chords.

1. Analyze the following keys and composite chord symbols. Identify each cadence and six-four chord.

2. Partwrite the following figured basses using the smoothest voice leading, close position when possible. Identify the keys, composite chord symbols, six-four chords, and cadences.

$\frac{6}{4}$ $i\frac{7}{c}$ 6 $\frac{6}{4}$ $\frac{6}{5}$ 6 $\frac{6}{4}$ $i\frac{7}{c}$

$\frac{6}{4}$ $\frac{6}{4}$ 6 3 $\frac{6}{4}$ $\frac{6}{5}$

7. Harmonic Progression

Most of our traditional music is tonal, i.e. it is in a key. But a key is not something that occurs automatically or haphazardly. In polyphonic music, several parameters work together to create the sense of key (key = tonic plus mode). We have already discussed some of these parameters, such as rhythm, pitch-class content, and cadence.

A series of chords can either create or maintain a key or it can weaken or destroy a key. The former is called a *progression* while the latter is called a *retrogression*. Our purpose at this time is to learn to create and maintain a key, not to weaken or destroy it. Therefore, only progressions will be permitted; i.e., retrogressions are outlawed.

Progressions and retrogressions are determined by root movement, not to be confused with bass movement. Recall that roots are pitch classes. When moving from a C chord to a G chord, therefore, the roots are moving from C to G, even if the chords are inverted. But how is this motion measured? Are the roots moving up a fifth or down a fourth? Since the roots are pitch classes, the distance is determined not by interval but by *interval class* -- the distance between two pitch classes measured by the shortest route. Thus, C to G is the interval class of a fourth (a perfect fourth to be sure, but only the general size matters in harmonic progressions). Notice that the roots are moving by fourth even if the bass moves up a fifth. Therefore, we can see that root movement by fifth is actually by fourth, since the fifth inverts to a fourth and the fourth is shorter. The largest interval class is that of a fourth. There are, therefore, only three types of root motion: seconds, thirds, or fourths. However, these may occur either up or down with very different results for the key.

Root movement up by fourth is a progression, i.e. it supports or establishes a key, but down a fourth weakens a key, a retrogression. Here is a chart that shows root movements that are progressions and retrogressions. These must be memorized.

PROGRESSIONS	RETROGRESSIONS
84	94 unless it involves I (tonic)
93	83 except I to III
892 unless it involves I <i>and</i> both chords are in root position	
	V to IV when both are in root position

The mediant (iii) requires special treatment. Because of its ambiguity, we will restrict its usage to simplify it and guarantee its proper treatment by students. For the time being, iii should always be preceded by I and followed by IV or vi. Additionally, iii or vi should not be inverted unless the bass line does not leap to or from either one.

Before doing the following self test, review the rules of chord position and doubling. For instance, remember that diminished chords should occur only in first inversion with the third doubled.

Self Test 7.1. Harmonic Progression.

A. Short answer

1. Root movement up a third is normally a _____.
2. vi to ii⁶ is a _____, because the roots are moving _____.
3. In vi to iii the roots are moving _____, and is, therefore, a _____.
4. V⁶ to ii⁶₄ is a _____ since the roots are moving _____.
5. ii to I is a _____ since _____.
6. I to ii⁶ is a _____ since _____.
7. V to IV is a _____.
8. IV⁶ to V is a _____ since _____.
9. IV to iii is a _____ since _____.
10. vii^E to I is a _____ since _____.
11. IV to I is a _____ since _____.

B. Identify all the composite chord symbols and indicate the root movements between the symbols. If an error occurs in a progression, circle the faulty root movement symbol. If an error occurs in chord position or doubling, place an X just above the composite symbol where the error occurs.

example c: i ^Xii°

(2)

You can take TEST 3 when finished, which covers Chapters 5-7.

8. Modulation by Common Chord

Most of the music we hear today strives to have some variety within it. Without variety, music becomes dull for most people. One means for achieving variety is through *modulation*, or changing keys. Skill is required if a modulation is to sound natural and smooth, rather than crude and awkward. This is most often achieved by establishing a link between the old and new key, called a *pivot*. More than one type of pivot is possible, but we will be using only the usual type, called a *common chord*, which is a chord that has a function in both the old and new keys. This is called a *common chord modulation*, since the pivot chord is common to both the old and new keys.

Three steps are necessary for a common chord modulation:

1. establish the first key
2. a pivot chord (for now, a common diatonic chord in both keys)
3. establish the new key

The first and third steps are already familiar since these simply require a harmonic progression and a cadence, ordinarily an authentic cadence. (In extended musical examples a cadence may not be required. However, since student examples are generally short, an authentic cadence and at least three different chords are normally required to establish a key; it is best, but not necessary if the chords include every pc in the key.) These steps have already been drilled and should be familiar by now. So the only really new step is the pivot chord. Let us consider this in detail.

Common chord modulations are restricted to keys that have close relations, such as C major and G major. Consider the common chord functions of these two keys:

C MAJOR	G MAJOR
I	IV
iii	vi
V	I
vi	ii

This chart shows that a tonic chord in C major is subdominant in G major. Mediant in C is submediant in G, dominant in C is tonic in G, and submediant in C is supertonic in G. Any of these chords may be used to modulate.

Thus, in closely related keys there are a maximum of four common diatonic chords. *Closely related keys* are those whose key signatures differ by no more than one sharp or flat. Closely related keys of C major are a minor, G major, e minor, F major, and d minor. These keys are

easiest to modulate to since they have the most common chords.

However, it is still possible to use a common chord modulation to modulate to a key that is two sharps or flats away from the original key. Consider C major and D major:

C MAJOR	D MAJOR
iii	ii
V	IV

These two keys have only two common diatonic chords, but the common chord modulation is still possible. It is feasible, therefore, to modulate from one key to another with two more sharps or two more flats, e.g., from C major to D major, b minor, B= major, or g minor. These keys will have a maximum of two common diatonic chords, which may be used as pivots.

It is not possible to modulate directly by a common chord from a major key to another major key that is more than two sharps or flats away from the original key, for there are no common diatonic chords. Test this for yourself.

Minor keys, however, have more extended modulatory possibilities. In A minor, for instance, since the dominant is an E major chord, this chord may be used as a pivot to get into E major, a key that is four sharps away! Also, since the supertonic in A minor is B D F, it may be used to modulate into c minor, three flats away. Modulations involving parallel keys are also fairly easy.

Modulations should not change key signature; accidentals are used instead. A change in key signature is used only when large sections of music remain in a new key.

Pivot chords should be immediately followed by a distinctive note or notes of the new key so that the new key becomes identifiable. This is normally a note with an accidental that occurs in the new key but not in the old one. Often this includes the leading-tone of the new key.

Analytical symbols for a modulation include the old and new key names, each followed by a colon, and a brace showing the location of the pivot chord and its functions in the old and new keys. Study the example.

PA cadence PA cadence IA cadence PA cadence

G: I IV V7 I {iii
 f#: {iv i₄ V7 i C:I iii vi V₅ I {vii^o
 c: {vii^o i₆ V i

9. Secondary Dominants

Until now all the chords we have worked with have been diatonic, i.e. diatonic in the key. However, only rarely does our music use strictly diatonic chords. Chords that contain notes outside of a key are common and are called *chromatic chords*. There are many types of chromatic chords, but by far the most prevalent are the *secondary dominants*.

Secondary dominants are dominants (or dominant sevenths) of notes in the key other than tonic. For example, it is possible to have the dominant of the dominant, which in the key of C major would be a D major chord containing the chromatic note F \flat . The dominant seventh of the dominant in C is D F \flat A C and is symbolized V7/V. The dominant of the submediant in C major is E G \flat B, symbolized V/vi. It is possible to have a secondary dominant of any degree of the scale except tonic. However, notice that V/IV is the same as tonic, and therefore, does not exist. But it is possible to have V7/IV, which in C is C E G B \flat .

These chords serve to temporarily emphasize a sub-tonality; e.g. V7/V in C enhances the dominant, G, temporarily. This may be confused with a modulation, and indeed, the distinction between modulation and secondary dominants is sometimes blurred and may be analyzed either way. In most cases, however, the distinction is clear since a new tonic is not firmly established with secondary dominants. Rather, there is a continuity in the same key, without a true key change. A modulation always establishes a new key, usually by means of a cadential formula or

C: I V7/V V V $\frac{6}{5}$ /vi IV6 V $\frac{6}{5}$ /V V V $\frac{6}{5}$ /iii iii V $\frac{6}{5}$ /ii ii V7 I

by a continuance in the new key..

This example contains a series of secondary dominant seventh chords. The most frequent resolution of such a chord is to the chord of which it is the dominant. Thus, V7/V goes to V in measure 2. However, the secondary dominant may also resolve to a chord substitute. The V $\frac{6}{5}$ /vi in measure 2 goes to IV6 in measure 3, instead of vi. Notice that the sevenths of each of these chords resolves in the normal way, i.e. down by step. Although the accidentals make it appear that there is a modulation, no new key is established. There is only one key, C major.

Since leading-tone chords have the same function as dominants, it is also possible to have *secondary leading-tone chords*. These may be plain diminished, diminished sevenths, or half-diminished sevenths. Thus, the chord C \flat E G B \flat may occur in C major, if it functions as the leading-tone seventh of the supertonic, vii \flat E7/ii. Similarly, F \flat A C E may occur as vii \flat r7/V. D \flat F \flat A would be vii \flat E/iii and should occur in first inversion, just as other diminished chords.

10. Chorale Harmonization

The over 370 chorale harmonizations by J.S. Bach have been studied for hundreds of years as models of composition. They are still used around the world for teaching the foundations of part writing and voice leading. These will be our models as well. They are chosen not because of any religious preference but because Bach was such a consummate master of this technique, which forms the foundation of so much later composition.

The chorale melodies in the soprano were not written by Bach. They were written by Martin Luther and his contemporaries some two hundred years before. Bach then "harmonized" (arranged) these melodies in his own way by adding alto, tenor, and bass voice parts below the soprano line. This technique is the most ancient method of polyphonic composition, called *cantus firmus composition*. It goes back to the Medieval period, with the beginnings of polyphony, called *organum*, and continues with the *parody* techniques used later. It was used throughout history and is still very common today. In fact, it is probably the most common compositional technique. Any time a composer or musical group creates their own "arrangement" of a pre-existing tune, it is a *cantus firmus* composition.

The word *cantus firmus* is the Latin for "unchanged melody", or "firm song". The original *cantus firmus* was Gregorian Chant, which was believed to have been conceived by God. Since it was God's music, no one dared to change it; thus, it remained unchanged. Gregorian Chant was the official music of the Roman Catholic Church, which ruled European civilization for over a thousand years in the Middle Ages. For a long time it was the only music to be found in the Church. In the late Middle Ages this began to change somewhat. New, polyphonic music was being written, replacing the older monophonic chants. But God's melodies, the chants, were retained in this new music by simply adding voices above it.

With the Protestant Reformation, Martin Luther rejected the Catholic chants and replaced them with the "chorales", which are German Protestant hymns. These became the new *cantus firmi*, although they weren't called that. Bach and many other composers who followed him wrote many compositions that use the chorales and the *cantus firmus* technique. These occurred in the soprano rather than in the bass.

Before proceeding, the student should review the basic principles of harmonization and non-harmonic tones, as well as the concept of harmonic rhythm.

We will continue to use a four voice model, SATB. All the principles of voicing, voice leading, part writing, harmonic progression, etc. apply to chorale harmonization. There are only a few additional considerations.

First, the harmonic rhythm we will be using in the chorale is one chord per beat, except on the final chord of a cadence, where the harmonic rhythm often pauses on a longer value. (Sometimes this pause is achieved through the use of a fermata.) Therefore, if a quarter note gets a beat, chords will change on every quarter note, except on a cadential chord. This is true even if the soprano, the *cantus firmus*, has a longer note, such as a half note; i.e. the other voices change chord on the quarter note beats beneath the half note.

Second, a step by step procedure should be followed. These may be summarized:

1. Analyze the *cantus firmus*, phrase by phrase, for keys, and cadences. Label them.
2. Write the bass line and composite chord symbols, beat by beat, using smooth voice leading in the bass. Check for problems and revise if necessary.
3. Fill in the alto and tenor voices smoothly, beat by beat. Check for problems.
4. Create rhythmic independence by introducing a variety of non-harmonic tones. Circle and label them. In minor keys, use the melodic form for adding non-harmonic tones.
5. Recheck for problems and compile a final, clear and neat draft.

Some additional considerations:

Do not repeat bass notes from weak to strong beats. Leaps of a sixth, overlapping voices, and cross relations may occur *between* phrases, i.e., immediately following a fermata or cadence.

The following illustrates this procedure:

Wer weiss, wie nahe mir

The image shows a musical score for the cantus firmus 'Wer weiss, wie nahe mir'. It consists of two systems of music. Each system has a treble clef staff with a melodic line and a bass clef staff with a bass line. The first system contains phrases 1 and 2, and the second system contains phrases 3 and 4. Slurs and numbers 1-4 are placed above the melodic lines to indicate phrase boundaries. Fermatas are placed over the final notes of phrases 1 and 3. Below the bass staff, chord symbols are provided for each measure. The first system has chord symbols: g: (measures 1-2), V (measure 3), V half (measure 4). The second system has chord symbols: i Bb: PA (measures 1-2), V I g: PA (measures 3-4), V i PA (measures 5-6).

This shows the *cantus firmus* alone analyzed for phrase structure, keys, and cadences. Notice the phrase marks (slurs) and numbers. The first phrase is in g minor with a half cadence at the end. The cadence actually falls on the half note in the second measure, with the dominant repeated at the fermata.

The second phrase is also in g minor with an authentic cadence. Phrase number three is in B=

major with an authentic cadence, and the last phrase modulates back to g minor with an authentic

Wer weiss, wie nahe mir

The image shows a musical score for the piece "Wer weiss, wie nahe mir". It consists of two systems of music, each with a treble and bass staff. The first system is divided into two phrases, labeled 1 and 2. The second system is divided into two phrases, labeled 3 and 4. Below the bass staff, chord symbols are written for each measure. The first system's chord symbols are: g: i6, i, V6, i, ii6, i6, ii6, V, half, v, i6, iv, V, iv6, i, V7. The second system's chord symbols are: Bb:vi, PA, V, I, V6, I, vi, vii6, V, PA, I, vi, g:i, iv, i6, V6, i, i6, V, I. The score includes various musical notations such as clefs, time signatures, and phrasing slurs.

cadence. Note how these are marked. No new notes have been added at this stage. Second stage: Here, the bass line and composite chord symbols are written. Each note in the *cantus firmus* may be harmonized by at least three chords. The choice depends on the bass line, the rules of harmonic progression, and the voice leading. The choice may also be affected by part writing problems between the soprano and bass. Chord inversions are used to smooth out the bass line and create variety. At first, the student should note all three chords that can harmonize each *cantus firmus* note -- then choose the best solution by context.

This is the most critical and time consuming stage. It is well worth doing carefully, spending extra time checking and revising it. If it is strong the remaining stages fall easily into place, but if it is weak the later stages will be difficult to do well.

Notice the use of the minor dominant at the beginning of phrase 2. This is justified by the descending soprano line at that point, conforming to the melodic minor. Also note where the pivot chords occur.

Wer weiss, wie nahe mir

1 2

g: i6 i V6 i vii^o₆ i6 ii^o₆ V V half v i⁶₅ iv V iv6 i V7 inc

3 4

Bb: vi PA V I V6 I vi V6 V I vi PA g: i iv i⁶₄ V6 i i⁶₄ V I⁴ PA

This stage shows the addition of the alto and tenor voices, written smoothly and checked for problems. Finally:

Wer weiss, wie nahe mir

The musical score consists of two systems, each with a treble and bass staff. The first system (measures 1-4) features a vocal line with notes and ornaments, and a bass line with figured bass. Labels 'n', 's', 'cam', and 'p' are placed above the treble staff to indicate non-harmonic tones. The second system (measures 5-8) continues the piece with similar notation. Labels 'p', 'n', and 'PA' are used to mark specific tones. The figured bass notation includes symbols like 'g:', 'i6', 'V6', 'ii6', 'V7', 'half', 'i5', 'V', 'iv6', 'i', 'V7', 'p', 'in c', 'Bb:vi', 'V7', 'I', 'V6', 'I', 'vi', 'V6', 'V7', 'I', 'vi', 'p', 'PA', 'g:i', 'iv', 'i6/4', 'V6', 'i', 'i6/4', 'V7', 'I', 's', and 'PA'.

The final draft adds eighth note rhythms by using non-harmonic tones. They should be evenly distributed among the voices, but do not alter the *cantus firmus*. Too many eighth notes defeats the purpose of gaining rhythmic independence and variety and is to be avoided. Most of the time one voice takes eighth notes while the others move in quarters.

Passing tones (p) can be added between notes that leap a third, such as the bass at the beginning (compare with the previous draft). All non-harmonic tones should be circled and labelled. Those occurring in the treble should be labelled above the treble clef, and those occurring in the bass should be labelled below the bass clef as shown above. Notice that a passing tone occurred in the *cantus firmus* here, yet must be labelled as well (penultimate measure).

Neighboring tones (n) can be inserted between repeating notes in a voice, such as in the alto in the first measure. Suspensions (s) can be inserted where there is downward step motion in a voice. Study the examples above.

A cambiata occurs in the alto voice in measure 3, but there are no appoggiaturas, pedal points, or anticipations in this example.

Anticipations should only be used in the soprano, so that the student will only be concerned with labelling them should they occur. Passing tones are the most common type of non-harmonic tone, with neighbors being second in abundance. Suspensions are also common, and they can be very effective. The other types should be used only rarely.

Answers to Self Tests

1.1 answers

Two musical staves with figured bass notation. The first staff is in G major and the second is in G minor. Fingerings are indicated by numbers 1-5 below the notes.

Self Test 1.2 answers

1. viiE 2. ii 3. vi 4. tonic 5. mediant

Self Test 1.3 answers

Musical score for Self Test 1.3 with figured bass notation below the staves.

C: I V6 IV6 ii6 I₄ V I g: V6 i V₄ i6 i iv6 ii₆ V V I

2.1 answers

1. Identify the voicing error in each measure: X=crossed, D=doubling, S=spacing, R=range, C=correct. The double bars indicate that each chord is separate from the others.

example

C: X D X D C R X

2. Write the alto and tenor voices in CLOSE position with the BEST possible voicing and doubling. Do NOT use any unisons. (*inc=incomplete*)

f#: i V₇^{inc} VI V₅⁶ ii₆⁹ i₆ vii₆⁹

3. Without using unison doublings, write the alto and tenor voices in OPEN position; use the BEST possible voicing and doubling. (*inc=incomplete*)

bb: i V₅⁶ iv₆ V₇^{inc} vii₆⁹ i₆ ii₆⁹

Soprano Alto

Tenor Bass

3.1 answers

4.1 answers... 30 errors

a: D //8, D a2, D5, 7, D //8, a2, L TT //5, C5 0 L, L S, S TT //5, //8, TT(L) //5, TT(L) X, LT 7 0

4.2 answers

C: I vi I⁶ IV V IV⁶ V I ii V vi I iii IV I
 d: i VI iv V i III iv⁶ iv i⁶ i V₄⁶ i⁶ vii^o₆ i V

5.1 answers

C: V₇ I ii⁶₅ V vii^o₇ I c: V⁶₅ i VI⁴₃ iv e: ii^o₄₂ V₆

6.1 answers

1. Analyze the following keys and composite chord symbols. Identify each cadence and six-four chord.

F: I vi I₄⁶ V7 I b: i V₄⁶ i6 iv i₄⁶ V7 VI g: i iv₄⁶ i iv6 V

cadential perfect authentic cadential deceptive pedal phrygian

2. Partwrite the following figured basses using the smoothest voice leading, close position. Identify the keys, composite chord symbols, six-four chords, and cadences.

b: i V₄⁶ i V7 i e: i6 V₄⁶ i V₅⁶ i c: i6 iv i₄⁶ V7 VI

passing inc perfect authentic passing imperfect authentic cadential inc deceptive

d: i iv₄⁶ i VI V a: i III iv i₄⁶ iv6 iv I³ i iv₄⁶ i V₅⁶ i

pedal half passing plagal pedal imperfect authentic

7.1 answers

- A. 1. retrogression
 2. progression, 84
 3. 94, retrogression
 4. retrogression, 94
 5. retrogression, roots move 92 involving I and both are root position
 6. progression, roots move 82 and one is inverted
 7. retrogression
 8. progression, roots move 82
 9. retrogression, iii must be preceded by I
 10. retrogression, roots move 82 involving I, and both are root position
 11. progression, roots move 94 involving I

B.

c: i ii^o III V iv VI ii^o₆ V⁷ X iv vii^o₆ X i⁶₄ X V⁷ X i
 (↑2) (↑2) (↑3) (↓2) (↑3) ↑4 ↑4 (↓2) ↑4 ↑2 ↓4 ↑4

9.1 Answers

a: i V⁷ VI V⁶₅/iv iv vii^o₆/ III⁶ vii⁹/iv iv vii⁹/III i⁶ vii⁹ i V⁷ i

Index

- authentic, 18, 21, 23, 25, 26, 30, 35
- basso continuo, 3
- chord functions, 8, 30
- chromatic chords, 32
- close position, 11
- close score, 10, 11
- closely related keys, 30
- common chord modulation, 30, 31
- composite chord symbol, 9, 24, 29, 33, 35, 36
- consecutive fifths and octaves, 17, 19
- contrary motion, 16, 17, 20
- counterpoint, 16
- crossed voices, 11, 19

- deceptive, 8, 25
- diminished seventh chord, 21, 22
- direct octaves and fifths, 17
- dominant, 8, 12, 21, 23, 25, 30, 31, 32, 36
- dominant seventh, 21, 23, 32
- doubling, 3, 4, 12, 16, 19, 20, 28, 29

- figured bass, 2, 3, 4, 7, 9, 20, 21
- first inversion, 4, 12, 21

- half cadence, 25, 35

- imperfect authentic, 25
- imperfect plagal, 25
- incomplete seventh chord, 21
- interval class, 28

- large leap, 14, 15
- long score, 10

- major seventh chord, 22
- mediant, 8, 28, 39
- minor seventh chord, 21
- modulation, 30, 31, 32

- oblique motion, 16
- open position, 11
- open score, 10
- overlapping voices, 19, 35

- parallel fifths, 17, 20
- parallel motion, 16
- parallel octaves, 16, 19
- part writing, 16, 17, 18, 20, 34, 36
- perfect authentic, 25
- perfect plagal, 25
- phrygian cadence, 25
- picardy third, 9
- pivot chord, 23, 30
- plagal, 25
- progression, 8, 28, 29, 30, 34, 36, 44

- retrogression, 28, 44
- root movement, 28, 29
- root position, 3, 4, 21, 28, 44

- second inversion, 3, 4, 12, 21, 25
- secondary dominants, 32
- short score, 10
- similar motion, 16, 17
- small leap, 14
- smoothest, 14, 20
- spacing, 4, 11
- step motion, 14, 25, 26, 38
- supertonic, 30, 31, 32

- third inversion, 4, 21
- thorough bass, 3
- tonic, 8, 9, 18, 21, 23, 28, 30, 32, 39

- voice leading, 15, 16, 20, 21, 34, 35, 36
- voicing, 3, 4, 10, 11, 20, 34