

## An Introduction to French Figured Bass Exercises by Derek Remes

The tradition of using figured bass exercises, or *partimenti*, to teach harmony goes back to 16<sup>th</sup> century Italy. Church organists in the 16<sup>th</sup> century often accompanied polyphonic part-music by playing the lowest sounding voice at any given time. Use of the term *basso continuo* became widespread following the publication of Lodovico Viadana's *Cento concerti ecclesiastici* in 1602. This publication was unique in that the continuo parts were not extracted from other voices, as was done earlier, but instead were composed independently.

It was not until the 18<sup>th</sup> century that figured bass exercises, also known as thoroughbass exercises, became a major tool for teaching harmony. During that century, more manuals were published on the subject than any other musical topic. Most publications focused on part-writing rules, such as avoiding parallel octaves or fifths. By the late 18<sup>th</sup> century, thoroughbass was no longer the dominant compositional technique, but the use of figured bass exercises as a pedagogical tool continued.

Around the turn of the 19<sup>th</sup> century, teachers at the newly founded Paris Conservatory turned to Italian pedagogical methods for their curricula. Reproductions of many basses by famous Italian composers were used, although Luigi Cherubini, who was trained in *partimenti* in Bologna and was director of the Conservatory from 1822 to 1841, contributed many exercises of his own. Later, graduates such as Delibes, Franck and Thomas, made additional contributions to the curricula.

Paul Vidal used his collection of exercises, *Basses et Chantes Données*, in his harmony classes at the Paris Conservatory. Nadia Boulanger, one of his students, used his book to teach generations of students in the 20<sup>th</sup> century. Her student, Narcis Bonet, recently published a revised edition of these exercises, *A Collection of Given Basses and Melodies*, which is available in two volumes online.

In the French tradition, realizations are to be done at sight at the piano, often while singing one voice in solfège. Transpositions can be done in enharmonically related keys by changing the key signature, or to other keys using clef changes. There are also ten books of exercises published by Henri Challan, which are available at online. They progress to eventually become rather complex, and can therefore be written down if needed.

### Part I: Voice-Leading & Doubling Review

Realizing figured basses in four voices requires an understanding of basic voice-leading and doubling rules:

- No parallel 5<sup>ths</sup> or 8<sup>ths</sup> between any voice.
- No more than an 8va between upper three voices, or a 12<sup>th</sup> between bass & tenor.
- Melodic intervals: 2nds, 3rds, 4ths, 5ths, 6ths, 8ths
- In general, move as little as possible between chords, keeping common tones where possible, except in the soprano, which should have an interesting melodic contour.
- Avoid direct 5ths & 8ths in outer voices unless soprano moves by step and the lower voice moves by "harmonic step" (i.e. a perfect 4<sup>th</sup> or perfect 5<sup>th</sup>)

Chord Functions:

Tonic Function (T): I, vi, iii (vi and iii are weaker)

Dominant Function (D): V, vii<sup>o</sup>, iii (iii is weak, but is also v of relative minor)

Subdominant Function (SD): ii, IV (IV is weaker than ii)

Chord Syntax:

T D T / T SD T / T SD D T

These are the most common patterns appearing within phrases, but other options are possible between phrases. For instance, a subdominant chord might follow a dominant chord that is part of a half-cadence.

Basic Doubling Rules:

- Root Position Triads: Always double the root, except deceptive vi doubles the 3<sup>rd</sup>. In general, choose the root for the soprano.
- First Inversion Triads: Almost always put the root in soprano.
  - I<sub>6</sub>, V<sub>6</sub>, iii<sub>6</sub>: double the root
  - IV<sub>6</sub>: double the 5<sup>th</sup> when going to V; double the root when going to I (plagal)
  - ii<sub>6</sub> and vi<sub>6</sub>: double the 3<sup>rd</sup> because this emphasizes their subdominant and tonic functions
  - vii<sup>o</sup>: double the 3<sup>rd</sup> to avoid doubling the tritone
- Second Inversion Triads: There are 4 kinds of six-four chords.
  - 1. Passing, 2. Neighboring, 3. Cadential; double the 5<sup>th</sup>, which is always in the bass, for all three types.
  - 4. Deceptive; doubles the root, though this chord is non-standard and can be seen as part of a passing structure. This chord was labeled as "deceptive" by Nadia Boulanger, though, so it is included here.

**Example 1a: The Four Types of Second Inversion Chords**

Neighboring    Passing    Cadential    "Deceptive"

3 2 6/4    6 4    6 4    6 4

- Seventh Chords: If using a complete seventh chord, then all four voices are used and no doubling is possible. If incomplete, only the 5<sup>th</sup> can be omitted, and then root must be doubled.

- Note: A diminished 7<sup>th</sup> chord resolves to doubled 3<sup>rd</sup>, which resolves both diminished 5<sup>ths</sup> inward, towards each other.

**Example 1b: Diminished Seventh Resolves to Doubled Third:**

vii<sup>°7</sup>    I

Standard Root Motions for Root Position Triads: Notice that when the bass moves up by step, all other voices move in contrary motion. In general, successful voice-leading occurs when the outer voices move contrary to each other and/or the soprano moves by step.

**Example 2: Root Motions of Root Position Triads with Typical Harmonizations**

Up 2nd      Down 2nd      Up 3rd      Down 3rd      Up 4th      Down 4th

I    ii      I<sub>6</sub>    vii<sup>°6</sup>      I    iii      I    vi      I    IV      I    V

Up 5th      Down 5th      Up 6th      Down 6th

I    V      I    IV      I    vi      I    iii

### Part II: Sequences

Realizing French figured bass exercises requires an understanding of the French method of analyzing sequences. In the French school, there are only two types of sequences, which are distinguished by their bass motion: the cell of the 4<sup>th</sup> and the cell of the 5<sup>th</sup>. Both cells are possible with the second triad in first inversion.

#### Example 3a: The Cell of the 4<sup>th</sup> and the Cell of the 5<sup>th</sup>

Cell of the 4<sup>th</sup>(C4)    Cell of the 5<sup>th</sup>(C5)    Cell of the 4<sup>th</sup> with inversion(C4I)    Cell of the 5<sup>th</sup> with inversion: (C5I)

The musical notation for Example 3a consists of four measures, each containing a triad in the right hand and a single bass note in the left hand. The first measure shows the C4 cell (triad C-E-G, bass C). The second measure shows the C5 cell (triad C-E-G, bass E). The third measure shows the C4I cell (triad C-E-G, bass G). The fourth measure shows the C5I cell (triad C-E-G, bass B). The bass notes are marked with a '6' below them, indicating the figured bass notation.

These cells can repeat at any interval to form sequences (by step or leap, up or down). Here are some common intervals for sequential repetition.

#### Example 3b: Typical Intervals of Cell Repetition

C4 repeating down a diatonic 3<sup>rd</sup>    C5 repeating down a diatonic 2<sup>nd</sup>

The musical notation for Example 3b shows two sequences. The first sequence, labeled 'C4 repeating down a diatonic 3<sup>rd</sup>', shows four measures of the C4 cell (triad C-E-G, bass C) with the bass note moving down a diatonic third (C, G, D, A). The second sequence, labeled 'C5 repeating down a diatonic 2<sup>nd</sup>', shows four measures of the C5 cell (triad C-E-G, bass E) with the bass note moving down a diatonic second (E, D, C, B).

#### Example 3c: Typical Intervals of Cell Repetition with Inversions

C4-I repeating down a diatonic 3<sup>rd</sup>    C5-I repeating down a diatonic 2<sup>nd</sup>

The musical notation for Example 3c shows two sequences. The first sequence, labeled 'C4-I repeating down a diatonic 3<sup>rd</sup>', shows four measures of the C4I cell (triad C-E-G, bass G) with the bass note moving down a diatonic third (G, D, A, E). The second sequence, labeled 'C5-I repeating down a diatonic 2<sup>nd</sup>', shows four measures of the C5I cell (triad C-E-G, bass B) with the bass note moving down a diatonic second (B, A, G, F).

C4-I repeating down a third has a problem though – there are direct 5ths between the tenor and bass voices. Nadia Boulanger suggested this voicing instead:

**Example 3d: Mlle Boulanger's Solution for C4-I Repeating Down a 3<sup>rd</sup>**

C4 and C5 can also be reversed, making four possible variations in all.

**Example 4a: C4 and C5 with Chords Reversed**

C4 Rev. (C4-R)      C5 Rev. (C5-R)      C4I Rev. (C4-IR)      C5I Rev. (C5-IR)

The retrograde versions can be distinguished from the regular versions by identifying which chord tone is in the soprano (the soprano note in the above examples is almost always maintained throughout the following exercises).

Here are some additional sequences using retrograde cells:

**Example 4b: Typical Intervals of Reversed Cell Repetition**

C4-R repeating up a diatonic 2<sup>nd</sup>      C5-R repeating up a diatonic 2<sup>nd</sup>

### Example 4c: Typical Intervals of Inverted, Reversed Cell Repetition

C4-IR repeating up a diatonic 2<sup>nd</sup>      C5-IR repeating down a diatonic 2<sup>nd</sup>

Cells can also modulate. This common sequence modulates up a 5<sup>th</sup>.

### Example 5: A Modulatory Sequence using C4-I Repeating Up a 3rd

A Minor:    C Major:    E Minor:    G Major:    B Minor:    D Major:

Here are some examples of sequences from the literature, with analyses according to the French school. Creative use of sequences results from how the surface rhythm is activated.

### Example 6a: Mozart, Piano Concerto No. 9, K.271 - Mov. 3 (m.133-137)

The following analysis places greater importance to the first note of each measure because it is metrically accented, rather than the highest note in each measure. Notice Mozart's adjustment of accidentals in the sequence to tonicize G-minor and C-minor. (The accidental A-flat also tonicizes E-flat Major, which is not represented in the following analysis).

### Example 6b: C4 Repeating Down a Diatonic 3rd

### Example 7a: Beethoven, Violin Sonata No. 3, Op. 12 - Mov. 3 (m.341-45)

Beethoven also makes adjustments to the sequence to tonicize F-minor:

### Example 7b: C4-IR Repeating Down a Step

### Example 8a: Brahms, Violin Sonata No. 3, Op. 108 - Mov. 3 (m.43-47)

Like Mozart and Beethoven, Brahms also makes adjustments to this sequence to tonicize A-Major.

### Example 8b: C5-IR Repeating Up a Diatonic 2<sup>nd</sup>

### Part III: Root Position Exercises

The figured bass exercises published by Narcis Bonet are in two volumes and are arranged progressively, beginning with root position triads and proceeding through augmented sixth chords.

- Root Position Triads
- First Inversion Triads
- Second Inversion Triads
- Diminished Triads
- Dominant Seventh Chords
- Non-Dominant Seventh Chords
- The Dominant Ninth Chord
- The Seventh on the Leading Tone
- The Diminished Seventh Chord
- Exercises with all previous chords
- The Augmented Sixth Chord

This is the first exercise for root position triads.

### Example 9a:

In order to facilitate reading at the piano, identify the location and type of sequences employed. Remember that in sequences, the same soprano note from the above examples will be used consistently throughout the exercises. It is also helpful to label soprano pitches occasionally. In the next example some pitches are labeled for you in solfege.

Knowing the soprano note is very important because for root position triads, all three upper voices are almost always arranged in close position (i.e., without the omission of a chord tone between any voice) - except for the deceptive vi, which doubles the third. Therefore, if the soprano note is identified, the alto and tenor notes can be placed under it easily.

As mentioned in Part I, the goal of voice-leading is to move as smoothly as possible between chords while avoiding parallel 5ths and 8vas and making the soprano as melodic as possible (i.e., avoiding common tones). Since the upper three voices are usually determined by the soprano note, moving the soprano stepwise and contrary to the bass will usually facilitate smooth voice-leading.

**Example 9b:**

do

C4 down by diatonic 3rd

C4-I down by diatonic 3rd

dec.

dec.

dec.

dec.

7

14

Here is the finished realization, which usually would be done at sight at the piano. Remember that for root position triads, generally the root will be in the soprano. Notice how the soprano usually moves stepwise and contrary to the bass, while the alto and tenor are placed in close position beneath it. Some variations are possible.

**Example 9c:**

do

C4 down by diatonic 3rd

C4-I down by diatonic 3rd

dec.

dec.

dec.

dec.

7

14

This is another example using root position triads, with some soprano pitches given in solfège (using “fixed-do”)

**Example 10a:**

si

re

C4 down by diatonic 3rd

do la

do re si

re

C4 down by diatonic 3rd

C4 down by diatonic 3rd

9

Here it is realized. Some variations are of course possible.

**Example 10b:**

si re do la

C4 down by diatonic 3rd

do re si re C4 down by diatonic 3rd

9

This is one more example using root position triads. Note the deceptive use of an A-major triad in m.13! This sort of trick is typical of Vidal's exercises. Also, m.9 contains an error – a dominant function G-sharp major triad leads to a subdominant function F-sharp minor triad. Technically this is not correct, but perhaps Vidal thought it was acceptable because of the weak rhythmic placement of the subdominant chord.

**Example 11a:**

la sol dec.si do re C4 down by diatonic 3rd C4-I up by diatonic 3rd la sol dec.

si sol do dec(!) la si

7 (not dec. dbl.) #5 #5 #5 #5

14 do si la si do re do C4 down by d. 3rd fa fa mi (not dec. dbl.)

21 C4-I up by diatonic 3rd la si si sol do la (not dec. dbl.) #5 #

Here is the realization. Notice in m.15 how Vidal uses IV rather than iv, and ii rather than ii<sup>o</sup>, which prevents using an augmented second melodically in the soprano. Also, notice how the last beat of m.16 requires keeping a common tone in the soprano to parallel 8vas with the bass.

An "X" indicates a location of a V-vi progression, which for voice-leading reasons, does not use the typical deceptive vi doubling of the third.

### Example 11b:

la sol dec. C4 down by diatonic 3rd C4-I up by diatonic 3rd la sol dec.

si sol do

7 #5 #5 #5 #5

15 dec.(!) la si la do si la si do re

X X

(not dec. dbl.) # # #5 # (not dec. dbl.)

19 C4 down by d. 3rd fa fa C4-I up by diatonic 3rd la si

X

25 si sol do la (not dec. dbl.)

25 #5 # #

### Part IV: First Inversion Exercises

Realizing exercises with first inversion triads requires use of the “melodic six solution.” The goal of this solution is to harmonize a series of parallel first inversion chords while avoiding parallel 5ths and 8vas. Notice that in the upper three voices, two voices move parallel while one moves contrary. Parallel fours are acceptable.

#### Example 12: Melodic Six Solution

In Part I it was stated that first inversion triads must always have the root in the soprano. When this solution is used, melodic considerations are overruling harmonic ones, so the root need not be in the soprano. (There are also exceptions where the 5<sup>th</sup> can be used in the soprano for first inversion triads).

Here is an exercise using first inversion chords. The solfege pitches and analysis of the sequences are added in this example. Remember the doubling rules for first inversion triads, which were outlined in Part I. It can be assumed that chords without figured bass numbers are in root position. However, for sake of clarity, sometimes a “5” or “5/3” is included as a reminder.

#### Example 13a:

Here it is realized. This example uses a portion of the “melodic six solution,” as well as a doubled pedal point. Pedal points call usually be identified by consecutive first inversion triads which move by leap, as in m.17-19.

**Example 13b:**

The musical score for Example 13b is presented in four systems, each with a vocal line above and a piano accompaniment below. The piano part consists of first inversion triads (marked with a '6') moving by leaps.

- System 1:**
  - Vocal line: do si la sol sol la
  - Annotations: "C4 up by diatonic 3rd" (over the second and third notes), "C4-I down by diatonic 3rd (non-standard voicing avoids direct 5ths between T/B)" (over the last two notes).
  - Piano part: First inversion triads moving by leaps.
- System 2:**
  - Vocal line: fa mi sol la
  - Annotations: "Melodic six solution" (over the last two notes).
  - Piano part: First inversion triads moving by leaps.
- System 3:**
  - Vocal line: fa do si la
  - Annotations: "C4-I up by diatonic 3rd" (over the first two notes), "C4-I up by d. 3rd" (over the last two notes), "C4 down by diatonic 3rd" (over the last two notes).
  - Piano part: First inversion triads moving by leaps.
- System 4:**
  - Vocal line: re si
  - Annotations: "8va pedal in S/T" (over the last two notes).
  - Piano part: First inversion triads moving by leaps.

A final example of an exercise using first inversion triads my soprano notes and analysis. This example occasionally indicates the direction of the inner voices with an arrow.

### Example 14a:

si  
6

T↑  
6 6

8va B/T  
mel. six solution  
6 6 6 6 6

8va S/A  
C4-I down by diatonic 3rd  
6 6

C4-IR down by diatonic step  
6 6 6 6 6

dbl. 3rd  
sol  
mel. six sol.  
6 6 6 6

8va A/T  
dec. X  
# 5 6 5 # 6

T↓  
12 5 #

la  
C4-IR down by diatonic step  
6 6 6 6

unis. T/A  
mel. six  
6 6 6 6

la sol  
unis. T/A  
6 #

X la fa  
8va Pedal in S/T  
17 5 6 # 6 6 6 6 6 6 6 6

dbl. 3rd  
not dec. dbl.

Remember that  $ii_6$  going to V will double the third to emphasize its subdominant function. The deceptive voicing is used in m. 11 because it avoids parallel 5ths between soprano and tenor. Note that m.17 does not use the deceptive voicing in order to avoid parallel 5ths.

The "X" in Example 14 indicates that these first inversion chords are the product of voice-leading and do not require that the root be in the soprano. This example also uses the Boulanger solution for C4-I moving down by a third in m.6-7, as well as a doubled pedal point at the end (see next page for the realization).

**Example 14b:**

si

T↑

8va B/T mel. six solution 8va S/A C4-I down by d. 3rd (Boulangier solution)

6 6 6 6 6 6 6 6 6

C4-IR down by diatonic step dbl. 3rd sol mel. six solution 8va A/T

6 6 6 6 6 6 6 6 6 #

dec. X T↓ la C4-IR down by diatonic step unis. T/A mel. six sol. la sol

11 5 6 5 #6 5 # 6 6 6 6 6 6 6 6 6

unis. T/A not dec. dbl. la fa 8va Pedal in S/T

16 6 # 5 6 #6 6 6 6

dbl. 3rd

19 6 6 6 6 6 6

Part V: Second Inversion Triads

Remember that there are only four types of second inversion triads; passing, neighboring, cadential, and the non-standard “deceptive.” No other second inversion chords should be used. It is important to note that all passing 6/4 chords have the same structure: two voices move stepwise in opposite direction (also called a voice-exchange), one voice is a lower neighbor, and the other remains a pedal. These four voices can be arranged in any vertical order, so long as the bass moves stepwise.

**Example 15: Passing 6/4 Chords**

This is the first exercise of the second inversion chords. It uses all four types of 6/4 chords.

**Example 16a:**

Here is the realization. Notice that the  $ii^6$  chord in m.19 doubles the root because it doesn't precede a V chord like the  $ii^6$  in the following measure. This example also used a doubled pedal point in m.15-16.

**Example 16b:**

re la sol mi sol! mi

la sol do

fa sol la re dec.

do re

dbl. 3rd dbl. 5th dbl. root

Annotations: C5-IR up by diatonic step, unis. A/T, 8va. A/T, 8va Pedal in S/T, dec.

Measure numbers: 11, 16, 20

### Part VI: Dominant Seventh Chords

The French labeling system for seventh chord inversions is as follows. The plus refers to the leading tone. A slash through a number means that pitch is lowered a half-step.

- Root Position: 7/+
- First Inversion: 6/5
- Second Inversion: +6
- Third Inversion: +4

The basic strategy for using dominant seventh chords is to begin by realizing the chord as if it were a triad, following the standard doubling rules. Then move one of the roots down a step to create the seventh chord. In the case that the seventh is already in the bass, proceed as if it were the root. The following example illustrates this procedure:

#### Example 17: Strategy for Realizing Dominant Seventh Chords

The example shows a bass line in 3/4 time with the following notes and figures:  $\underline{6}$ , 5, 4+, 6. Below the notes are the figures 6, 5, 4+, 6, with a slash under the first 6.

Two piano accompaniment examples are shown below, both in 3/4 time:

- First realized as triads:** The first three measures show the chord as a triad. The bass line notes are 6, 5, 5, 6. The treble clef notes are G4, B4, D5, G4, B4, D5, G4, B4, D5.
- Then with 7th added:** The last three measures show the chord with the seventh added. The bass line notes are 6, 5, 4+, 6. The treble clef notes are G4, B4, D5, G4, B4, D5, G4, B4, D5.

Remember that when possible, the seventh of a dominant seventh chord must be prepared by common tone in the previous chord. Most sevenths in figured bass exercises will be complete – that is, all four chord tones will be represented. If incomplete, only the 5<sup>th</sup> can be omitted. In that case, the root must be doubled because the 3<sup>rd</sup> and the 7<sup>th</sup> are tendency tones and would cause parallel octaves if resolved correctly.

Example 18a: Seventh Chord Exercise

mi la re si melodic six solution mi re

6 5 4+ 6 5 6 6 6 6 6 6+ 5 6 5 4 3 5

11 6 5 6 6+ 5 6 5 6+ 5 6 6 7 3+

22 6 6+ 4+ 6 5 4 3 5

32 4+ 6 5 4+ 6 4+ 6 4+ 6 4+ 6 6 7 5

5 4 3

Notice the various non-standard usages of the deceptive doubling in this example: m. 17 & 18 use it to create the “deceptive” 6/4 chord; m.27 uses it as a result of resolving the tendency tone in the tenor; and m.29 & 37 use it to avoid parallel 5ths in the alto and tenor. Bass motion under a dominant seventh usually indicates a voice-exchange with an upper voice. Measures 19 through 26 create an extended voice-exchange.

### Example 18b:

mi la re si melodic six solution mi to re prepares 7th

6 5 4+ 6 5 6 6 6 6 6+ 5 6 5 6 5 5

11 6 5 6 6+ 5 6 5 6+ 5 6 6 6 4 6 4 7 3+

22 6 6+ 4+ 6 6 6 5 6 5 6 5 6 5

la re si dec. dec. dec. dec.

32 4+ 6 5 4+ 6 4+ 6 4+ 6 4+ 6 6 7 6 4 3+ 5

Detailed description: The image shows a musical score for piano accompaniment in 3/4 time, divided into four systems. The first system (measures 11-18) includes vocal line annotations: 'mi' above measure 11, 'la re si' above measures 12-13, 'melodic six solution' above measures 14-16, and 'mi to re prepares 7th' above measures 17-18. The second system (measures 19-26) has 'dec.' above measures 20, 21, 23, and 24. The third system (measures 27-31) has 'dec.' above measures 28 and 29. The fourth system (measures 32-37) has 'la re si' above measures 32-33 and 'dec.' above measures 34, 35, and 36. Figured bass notation is provided for the bass line in each system, with some notes underlined. The score concludes with a double bar line at the end of the fourth system.

### Conclusion VII:

Realizing figured basses can be wonderful tool for learning harmony and voice-leading. At the piano, it requires the active participation of the student, rather than passive observation. However, it is important to remember that these exercises are only distillations of the rules that composers tend to follow most of the time. Therefore, the integrity of each individual voice should be the final determinant in any situation.

A mastery of the principles of voice-leading and doubling does not make great music - creativity is essential. These exercises can provide a solid foundation, but they are still only a point of departure. The ultimate goal is to leave behind the rules and just make music.

### Bibliography:

Bonet, Narcis. A Collection of Given Basses and Melodies. I. Santa Anna, Barcelona: DINSIC Publicacions Musicals, S.L., 2006. Print.

Lasser, Philip. Keyboard Harmony Materials. New York, NY: European American Musical Alliance Inc., 2004. Print.

Randel, Don M. The New Harvard Dictionary of Music. Cambridge, Massachusetts: The Belknap Press of Harvard University Press, 1986. Print.