Arranging by Examples:

the practical guide to jazz big band arranging and voicing techniques

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Preface

This document was created using the public domain LaTeX computer typesetting program. Diagrams were created using the LaTeX picture environment.

Musical examples were created using the Coda Music Technology Finale 2002 music notation software. Score examples were imported into the document as Encapsulated Postscript (EPS) files, using the `graphicx` package.

The navigation links in the Adobe Acrobat Reader file (the `pdf`-file) were created using the `hyperref` package from the LaTeX distribution.

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Introduction

Why write a book about jazz arranging techniques? Well, this practical guide to arranging in the *jazz big band style* is the result of studying scores, writing arrangements and of teaching experience. Although a number of books on this subject exist (see the Reference list at the end of this manual), students still keep asking for many brief examples and exercises as part of an arranging course. These must gradually become more complex and introduce them with alternative techniques of arranging. Also, I have found that students appreciate the detailed discussion of the examples.

Therefore, this manual consists of a great number of examples, that have been categorised in a number of chapters. Within each chapter the sections will introduce new aspects and in general discuss more complicated examples.

This practical guide will concentrate on a number of *voicing techniques*, such as *sectional harmony* and *percussive voicing*. The detailed discussion of these techniques is meant to help the student master the basics of jazz arranging for big band. Following the instructions in the text will not lead to a personal style or an advanced voicing of a phrase; the material presented herein is standard practice with a guaranteed result that will sound acceptable and be playable by living musicians (as opposed to computers).

The examples are presented in a common, standardised format.

- First there is a definition of the *problem*. Why are we presenting the example? What is the problem that has to be solved?
- In many examples the *lead voice* and the *basic harmony* are given. These are shown in figures (a system of staves) that accompany each example. Usually each voice is printed on a separate staff. The basic harmony is written in shorthand on the lowest staff, labeled H, with either a basic bass line or with slash (rhythm) notation.
- The details of the *harmonisation* (this holds in particular for the chapters on sectional harmony) are shown below the lead voice. This voice also contains marked numbers (e.g., [*1]) that refer to items discussed in the text.

- Each example is discussed in detail in the text, in particular *voicing* aspects. Sometimes a number of alternative solutions to the problem is presented.

The text between the examples is the general introduction to the various techniques. Fundamental aspects and general rules (tricks) are discussed here. Important terminology is
⟹ printed *slanted*. and may be marked by an arrow in the margin. The manual also provides an *index* for easy reference that contains most of the terminology; references in the index point to either the definition or the application of the items.

Important information is also shown in *tables* and *diagrams*. At the beginning of the manual there is a list of tables and figures, also for easy reference.

This book is *not* about instrumentation or the theory of harmony. A great many excellent books on those subjects are in print and should be studied by the student arranger parallel to this manual.

For alternative discussions of voicing aspects, see [2, 3, 4, 10, 11, 13]. The bibliography provides also a list of books on jazz arranging (see [2, 4, 6, 8, 10, 12, 16]), instrumentation and orchestration in general (see [1, 7, 5]) and composition or musical style (see [18, 9, 14, 15, 17]), that I find most useful.

I hope that this practical guide provides a most useful tool for the student of jazz arranging or the interested reader in that subject.

Chapter 2

Sectional harmony in four parts

Sectional harmony in four parts is one of the basic techniques in the field of arranging (see [2], pp. 29–35, [12], Ch. 10, [13], p. 451). It may be characterised as a mixture of traditional functional harmony with (impressionist) modal harmony.

The problem is that of harmonising a given *lead voice* over a given basic harmony for a total of four voices; we have to find the three lower voices. The lead voice may consist of chordal tones, non-chordal tones and non-diatonic tones. We will study the technique (alternatively described as the bag of tricks) that enables you to harmonise the lead voice, especially for the latter two categories (non-chordal and non-diatonic tones in the lead) and make sure the end result makes sense in harmonic terms and is playable from a musician's point of view.

Sectional harmony for more than four parts and some forms of ensemble technique often only come down to a doubling of voices from a given basic four part harmonisation. This chapter will show you the technique of harmonising a given lead in four parts.

2.1 Basic rules

In writing four part sectional harmony there is a basic set of rules that we will follow:

- **Use a top-down method.** Start with the given lead voice and find the three lower voices. As an arranger you will usually compose the lead voice first and then harmonise that leading part. In our exercises the lead voice will be given. Do not modify the lead voice unless you find its harmonisation impossible.

- **Use four part harmony.** Most chord structures in jazz and popular music have four parts or more. Table 2.1 summarises the types of four part chord structures that will be used in the four part sectional technique (remember that the symbol S indicates a chord structure): Figure 2.1 gives an example of each of these types. For the moment we will

Table 2.1: Basic chord structures S in four part sectional voicing.

Structure	*Description*
S_6	the major triad with added 6th (note: the 6 does not indicate the inversion of the triad, but the 6 ajoutée)
S_m^6	the minor triad with added major 6th
S_m^{+7}	the minor triad with added major 7th
S_{m7}	the minor 7th chord
S_7	the dominant 7th chord
$S_{\emptyset 7}$	the half-diminished 7th chord
$S_{\circ 7}$	the diminished 7th chord

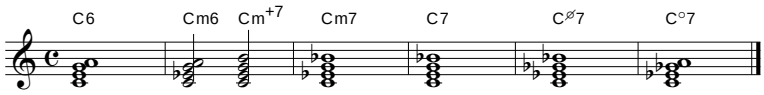

Figure 2.1: Example of the chord structures used in four part sectional harmony (Root C, root positions, close voicing).

forget about extensions (higher numbers than the 7th) of the basic chord structures. We will come back to that later.

- **Use close voicing.** The basic four part technique uses close voicing only when the range of all voices has to stay within the interval of an octave; the outer voices will in that case form the interval of either the 6th (imperfect consonant) or the 7th (mild dissonant). We will also discuss the so-called *drop 2*-technique, which, strictly speaking is not close voicing, but is easily obtained from a close voicing harmonisation.

- **All parts use parallel motion.** This means that the lower three voices exactly follow the motion of the leading voice. This is contrary to 'classical' harmony where 'good' voice leading obliges you to use preparation and resolution of dissonant tones (the 7ths, for example). Here this is of no concern.

- **Prevent repeated notes in any part.** You will find the four part sectional technique usually in medium to up-tempo pieces. Noteworthy examples are the *'Four Brothers'* (Woody Herman big band) and the *'Supersax plays Bird'* (using a 5 part saxophone section) recordings. From a musician's point of view it is better to avoid repeated notes in any part (unless they are in the lead voice); this makes playing easier. Harmonisation therefore must be such, that no repeated notes will occur.

The list of basic rules is summarised in Table 2.2. Now we will discuss a number of exercises and examples that will gradually introduce and discuss problems of increasing complexity. We will illustrate the various techniques for writing four part sectional harmony.

Table 2.2: Basic rules for four part sectional harmony.

Basic rules
Work in a top-down order
Use four part harmony
Start with close voicing
All parts move in parallel
Prevent repeated notes in any part

2.2 Harmonising a lead consisting of chordal tones only

We will start with the situation where the given lead consists of chordal tones only (see the basic harmony on the lower staff of the example and check).

2.2.1 The danger of repeated notes

Figure 2.2 shows what happens when the basic rules from the previous section are applied in a straightforward manner.

Example 2.1: Chordal tones in the lead voice, straightforward procedure.

Problem: Lead voice P1 consists of chordal tones only.

Discussion:

- The tonic triad C in m. 1 is harmonised using the added 6th chord type. Note that following the lead we pass through the various inversions of the basic chord.
- On several occasions we may see the interval of a major 2nd between the upper two voices. This is no problem unless we are in a high range, for a specific instrumentation. Try to avoid minor 2nds between the upper voices, since this dissonant is too harsh.
- The example shows two cases of repeated notes: m. 2, 3rd beat in P2 at [*1] and m. 3, 1st beat in P3 at [*2]. These have to be eliminated!

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2.2.2 Prevent repeated notes using secondary dominants

The repeated notes can be eliminated using *secondary dominant* chord structures. This is a simple procedure and is obvious from a functional harmony point of view. ⟸

The procedure is summarised as follows:

- **Work backwards from the goal.** This means that there is a 'final' chord, an *aiming chord*, that we are working towards. In the example in Figure 2.3 these are beat 3 in m. 2 and beat 1 in m. 3;

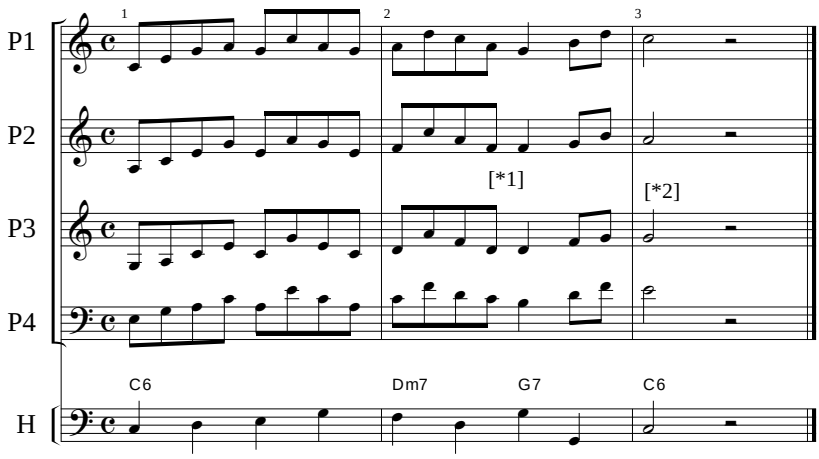

Figure 2.2: Chordal tones in lead, straightforward procedure.

- **Apply the secondary dominant chord structure to the penultimate note.** If the last note before the aiming chord in the given lead is a chordal note in the secondary dominant chord structure, then our problem is solved. What is the secondary dominant structure? It is the S_7^{-9} (the dominant 7th chord with lowered 9, or $\flat 9$) on the root a 5th above the root of the aiming chord (the V/V in classical notation), with the root omitted. This is equivalent to the $S_{\circ 7}$ a minor 2nd below the root of the aiming chord and we end up with a strong chord progression (thinking in terms of functional harmony).

Let's see how this works out in our example.

Example 2.2: Chordal tones in the lead voice, application of secondary dominant chord structure.

Problem: Lead voice P1 consists of chordal tones only.

Discussion:

- In m. 2, 3rd beat [*1] the aiming chord is G_7. therefore the secondary dominant is D_7^{-9} or its equivalent $F\sharp_{\circ 7}$. The latter is used for the harmonisation, which is possible since the note a in the lead is a chordal component in this structure.
- In m. 3, 1st beat [*2] the aiming chord is C. It secondary dominant is G_7^{-9} or its equivalent $B\sharp_{\circ 7}$. Application of the latter is allowed, since the note d in the lead is a chordal component of the diminished structure. Notice how the repeated notes in the inner parts have now been eliminated.

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Using secondary dominant chords will result in a chromatic downward stepwise motion in (in particular) the lower voices. This will become more characteristic as more intermediate dominants are chained in succession as we will see later.

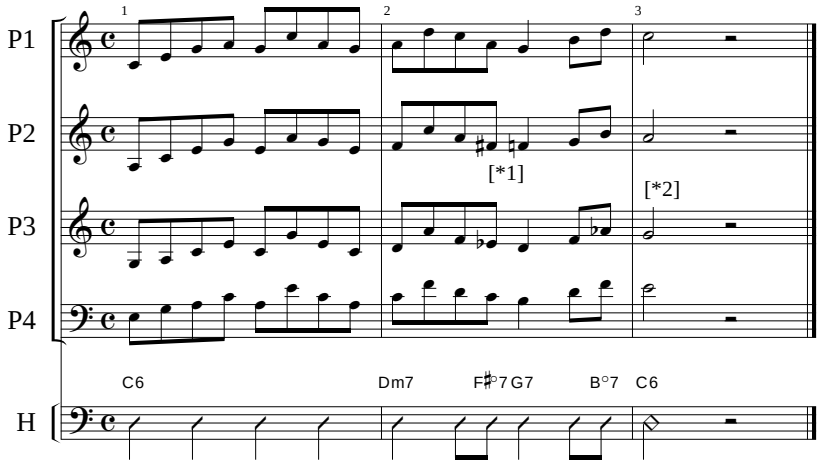

Figure 2.3: Chordal tones in lead, application of secondary dominant chord structure.

2.3 Harmonising non-chordal tones

The example from the previous section will now be modified slightly in such a way that the lead contains *non-chordal tones*. Note, however, that the lead still is completely diatonic. There are only notes from the C-major scale, which is the scale that is implied by the $I - II_{m7} - V_7 - I$ cadence in the given harmony. ⟸

The marked notes are the non-chordal tones that have to be harmonised with a different chord structure. the only solution we have seen so far is the use of secondary dominants and that is what we will apply here.

2.3.1 Use of diminished chords and secondary dominants

Example 2.3: Non-chordal tones in the lead voice, application of secondary dominant chord structure.

Problem: Lead voice P1 contains non-chordal tones (see Figure 2.4).

Discussion:

- At [*1] the non-chordal tones b and d (in fact the $\Delta 7$ and the 9th of the extended C_6 chord respectively; we will consider them now as non-chordal since they do not belong to the S_7) may be harmonised using the *diminished chord* $B_{\circ 7}$, which has a secondary dominant function relative to C. Note that we may find two non-chordal tones in sequence, where the resolution towards a chordal tone occurs after the second non-chordal tone;
- At [*2] the non-chordal tones g and e are harmonised using the $C\sharp_{\circ 7}$ chord, which as a secondary dominant function relative to the D_{m7} chord.
- At [*3] we choose an alternative solution. The a is the non-chordal tone in the G_7 (since, again, we consider four part chord structures as the starting point), that might have been harmonised using the $F\sharp_{\circ 7}$ chord. There is a difference with

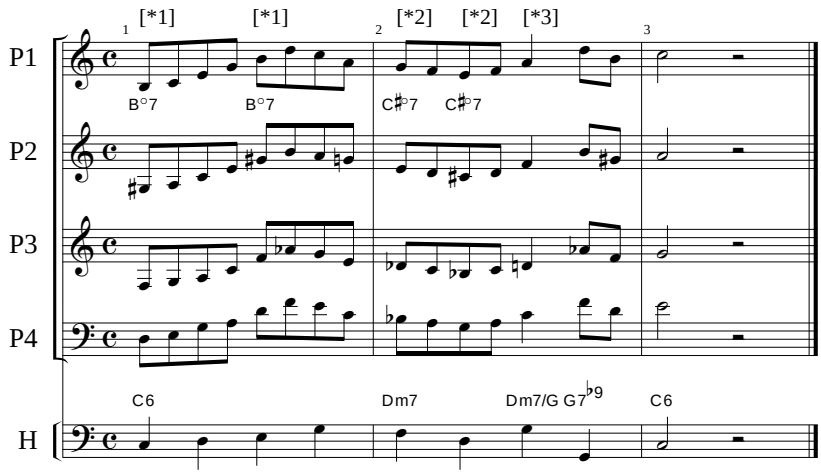

Figure 2.4: Non-chordal tones in lead, application of secondary dominant chord structure.

the previous two cases, however: whereas the other non-chordal tones move stepwise towards a chordal tone (here is the list, check for yourself: [m. 1]: $b \nearrow c, b \nearrow d \searrow c$, [m. 2] $g \searrow f, e \nearrow f$), now we find a leap (m. 2, beat 4) $a \nearrow d$. Using a diminished chord here has a much weaker effect than in the case of stepwise motion. Therefore, we now choose to extend the D_{m7} chord unto the 3rd beat of that measure. his leads to a suspended G_7^{sus4} chord, or, equivalently, a D_{m7}/G, which sounds as a richer dominant structure than the plain G_7. Note that on beat 4 the lead is harmonised using $B_{\circ 7}$, since we work towards the C chord in the next measure. This is equivalent to the G_7^{-9} structure and although we were not to consider extended chord structures beyond four parts, here we have one! This is no problem, it simply sounds better (has a stronger dominant effect, since there is an extra leading tone ab, see the next section) than the plain dominant 7th structure.

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2.3.2 Rhythmic aspects: the use of syncopations

We will apply a further modification to our simple example. Although the 8th notes in this example are to be played using *'swing'*-feeling, they make a very regular rhythmic sequence. This weakens the 'jazzy' effect of the music. We will improve the rhythm by introducing
⟹ *syncopations*, as shown in Figure 2.5.

Example 2.4: Non-chordal tones in the lead voice, syncopated rhythm.

Problem: Lead voice P1 contains non-chordal tones and syncopated rhythm.

Discussion:

- At [*1] we find syncopations. These have to be harmonised considering the chord structure on the following regular beat, e.g., the penultimate note, the

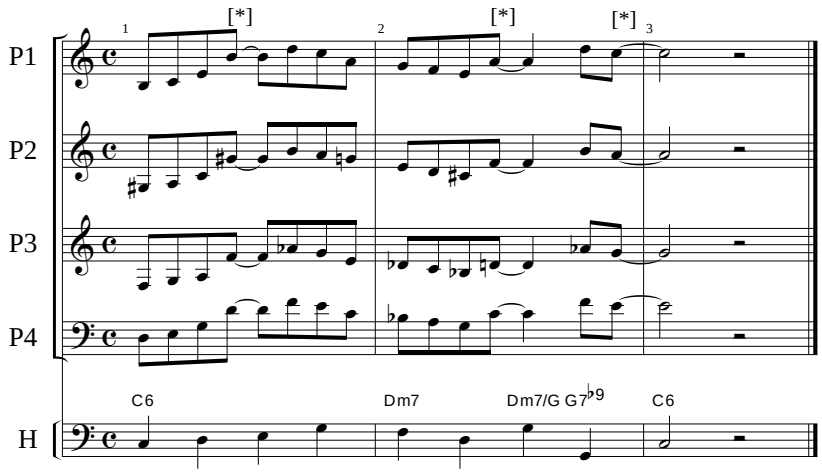

Figure 2.5: Non-chordal tones in lead, syncopated rhythm.

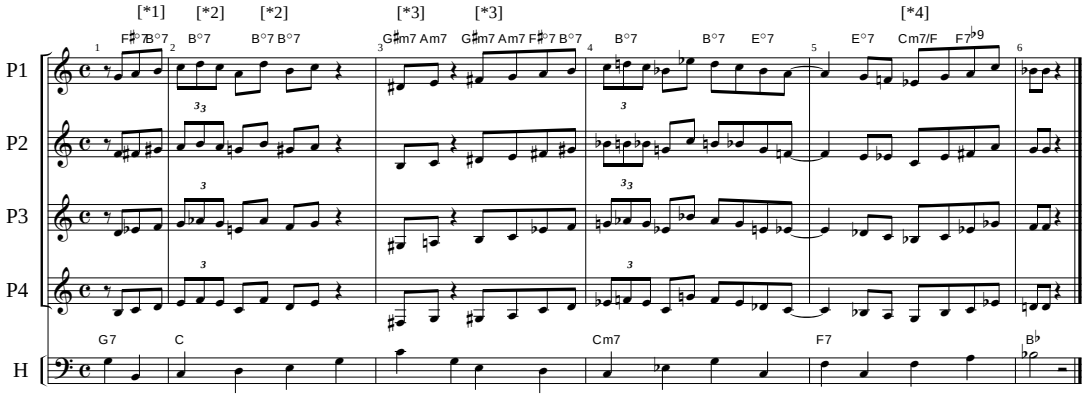

Figure 2.6: Harmonisation of non-chordal tones in the lead using leading tone chords.

tied-over c, in the lead is harmonised with the C_6 chord.

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2.3.3 Use of leading tone chords

The next example has the opening chords of the jazz standard *"How high the moon"* (or it's derivative *"Ornithology"*). It is familiar chord sequence that leads to a tonic R_{-7} cycle (from C to $B\flat$ through modification of the first tonic chord).

The lead now has both *non-chordal* and *non-diatonic tones*. Measures 1 to 3 are in the key ⟸ of C-major where $d\sharp$ and $f\sharp$ are no members of the diatonic scale. These tones cannot be harmonised using the secondary dominant structure, since neither of them is part of the $B_{\circ 7}$ chord.

Therefore we shall apply a new technique, which is called the *leading tone chord*. This ⟸ means that we apply exact parallel motion locally, i.e., between two consecutive chords. All

voices in the first chord move by the same distance towards the second chord, which, as you may remember, is our *aiming chord*.

The distance of motion is either a minor or a major 2nd up or down. This is indicated as $i \nearrow$ and $i \searrow$ or as $2i \nearrow$ and $2i \searrow$, where i is the step of chromatic minor second (the smallest unit in the chromatic 12 tone system). The effect of the leading tone chord is stronger using minor 2nds compared to the major seconds. It is used more frequently moving upward than downward.

Let us now discuss the example shown in Figure 2.6.

Example 2.5: Harmonisation of non-chordal tones in the lead using leading tone chords.

Problem: Lead voice P1 contains non-chordal and non-diatonic tones.

Discussion:

- At [*1] we harmonise the upbeat tone into the C chord of m. 2. We find in the upbeat measure the sequence $G_7 - F\sharp_{\circ 7} - B_{\circ 7} - C$. The two diminished chords form a chain of secondary dominants.
- M. 2 and m. 4 [*2] use the standard secondary dominant technique for the harmonisation of the non-chordal tones.
- In m. 3 [*3] we apply the leading tone chord technique. The aiming chord twice is th C_6 chord, which is enharmonically equivalent to the A_{m7} chord. Exact parallel motion (upward minor 2nd step) therefore yields the $G\sharp\_m7$ structure as the preceding chord.
- In m. 5 beat 3 [*4] we encounter another aspect that requires consideration. We have the sequence $e\flat - g$ in the lead (the 7th and th 9th of the F_7 chord). Now suppose we harmonise the first note with the F_7^{-9} structure (again, this would be a small diversion from our basic rules) or its equivalent $A_{\circ 7}$, as shown in Figure 2.7. If we harmonise the second note with a pure F_7^9, or its equivalent $A_{\emptyset 7}$ then we find a *cross relation* between the lower and upper part: there is a minor 9th between the $f\sharp$ and the g that will sound harsh. Try to prevent this and use a now familiar trick: use the F_7^{sus4} or its equivalent C_{m7}/F on beat 3 of that measure. Save the real dominant structure $A_{\circ 7}$ until the last beat.

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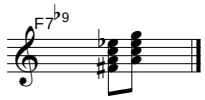

Figure 2.7: Cross relation between lower and upper voice.

2.3.4 Use of substitute chords

The problem we encountered in m. 3 of Figure 2.6 can also be solved in another way through
⟹ the use of *substitute chords*.

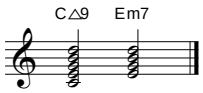

Figure 2.8: The definition of a substitute chord.

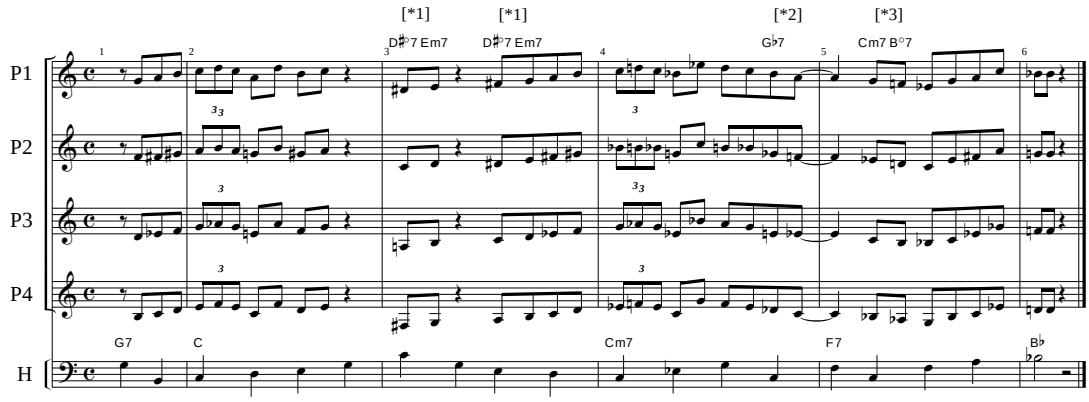

Figure 2.9: Alternative harmonisation of non-chordal tones in the lead using substitute chords.

Some chords can be substituted by a harmonically equivalent chord. Take for instance the tonic triad with added 6th C_6. We may extend this chord with the 9th (see Figure 2.8), yielding the $C^9_{\Delta 7}$. This chord is equivalent to E_{m7} if we consider the upper four functions of the original chord only. Harmonising m. 3 of Figure 2.6 using this substitute chord, we also obtain another option for the non-diatonic notes in the lead, as shown in Figure 2.9. Now we can use the secondary dominant chords relative to the substitute chord, as shown in the example.

Example 2.6: Harmonisation of non-chordal tones in the lead using substitute chords.

Problem: Lead voice P1 contains non-chordal and non-diatonic tones.

Discussion:

- At [*1] we harmonise the non-diatonic tones $d\sharp$ and $f\sharp$ with the secondary dominant structure $D\sharp_{\circ 7}$ relative to the aiming chord E_{m7}, which is a substitute for the C_6.
- At [*2] we use the dominant $G\flat_7$, which is equivalent to $C_7^{\flat 5/\flat 9}$, the upper leading tone chord towards F_7.
- At [*3] we harmonise the lead with C_{m7}, this is harmonically equivalent to the suspended chord $F^9_{7\text{sus}4} = C_{m7}/F$.

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The next problem presents another case of using substitute chords. It is the regularly used substitution of the 2nd degree in minor, the *half-diminished chord* (in this case $E_{\emptyset 7}$ in the ⟸

key of D-minor), by the lowered 7th degree dominant chord (in this case C_7 or better $C_7^{\flat 9}$).

Example 2.7: Harmonisation of non-chordal tones in the lead using substitute chords.

Problem: Lead voice P1 contains non-chordal tones on 2nd degree in minor key (see Figure 2.10).

Discussion:

- At [*1] we cannot use the secondary dominant structure $D\sharp_{\circ 7}$ to harmonise the non-chordal tone f. Use of the leading tone chord $F_{\emptyset 7}$ would lead to the lead of an augmented 2nd $d - c\flat$ in P3 which is undesirable.
- At [*2] application of the plain $E_{\emptyset 7}$ leads to repeated notes in both P2 and P3.
- The latter problem can be solved using a sequence of secondary dominants $D\sharp_{\circ 7} - B\flat_7$ at [*3], the last chord being equivalent to the altered dominant $E_7^{\flat 5/\flat 9}$.
- The problem in m. 1 is solved using the substitute chord $C_7^{\flat 9}$ at the e in the lead. The preceding tone, at [*4], is harmonised using the secondary dominant $B_{\circ 7}$. However, we still find an augmented second $d - c\flat$ in P3.
- Therefore it is better to use the $E_{\circ 7}$ substitute right from the beginning. Remember that this chord is enharmonically equivalent to $A_7^{\flat 9}$. So what we do is anticipate the dominant in m. 2. All non-chordal tones [*5] now can be harmonised using the secondary dominant $B_{\circ 7}$.
- Note at [*6] the plain C_7 substitute is used. Compared with the solution at [*2] this has the advantage of containing more diatonic tones in D-minor descending than using the $D\sharp_{\circ 7}$; this chord leads to more upwards altered notes in the lower parts.

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2.3.5 Use of exact parallel chords

The next example has a lead voice in C-minor and consists of diatonic tones only. In minor we have the half-diminished chord on the 2nd degree of the scale.

We shall demonstrate two solutions to the harmonisation problem for non-chordal tones from this 2nd degree chord. The first solution is based on the use of a substitute chord. The
⟹ 2nd solution will use *exact parallel chords*, which is the new technique here.

Example 2.8: Harmonisation of non-chordal tones in the lead using exact parallel chords.

Problem: Lead voice P1 contains non-chordal tones (see Figure 2.11).

Discussion:

- At [*1] we harmonise the non-chordal tones with the standard technique of a single secondary dominant ($B_{\circ 7} - C_{m7}$ in m. 2, $F\sharp_{\circ 7} - G_7$ in m. 3) or a sequence of two secondary dominants ($F\sharp_{\circ 7} - B_{\circ 7} - C_{m7}$ in m. 4.

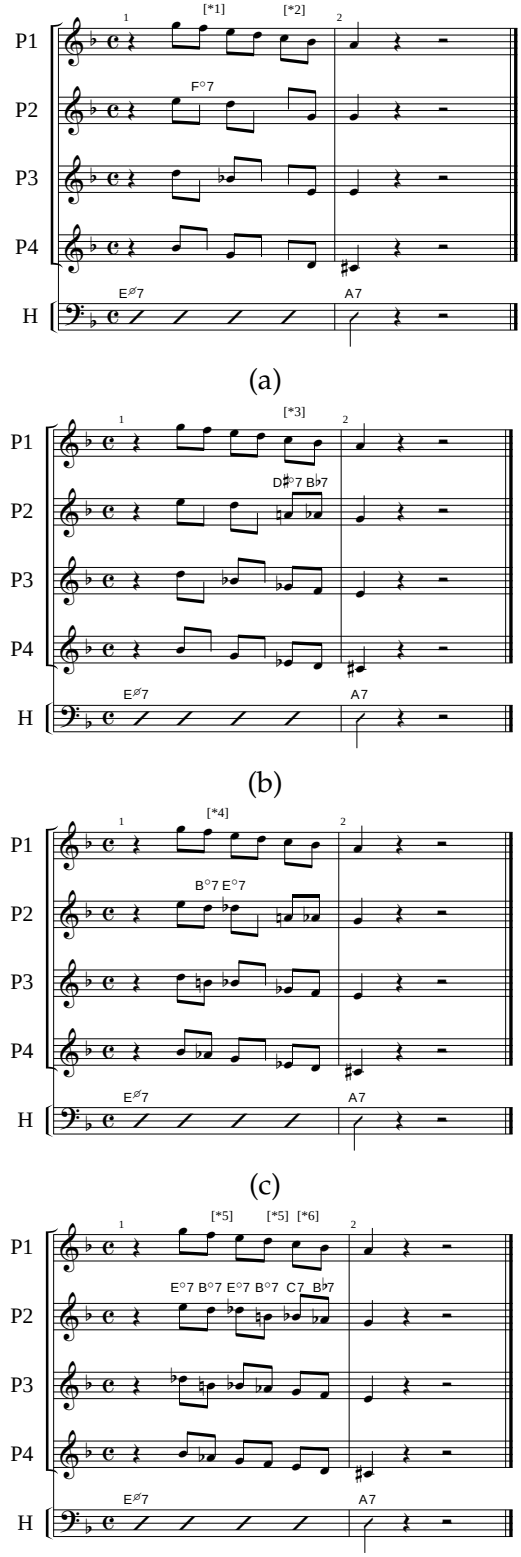

Figure 2.10: Harmonisation of non-chordal tones using substitute chords.

- At [*2] the non-chordal tone in the half-diminished chord eb is harmonised using the E_{b7}, or equivalently the $A_7^{\flat 5/\flat 9}$, although this solution does not sound ideal.
- Notice that this example contains various syncopations (m. 2, beat 4 and m. 3, beat 4). The final 8th note of these syncopated groups is harmonised using the chord on the next downbeat. This is the same practise that we have used on tied-over notes.

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Next, we will discuss two solutions for harmonising the non-chordal notes in m. 3, see Figure 2.12.

Example 2.9: Harmonisation of non-chordal tones in the lead using exact parallel chords.

Problem: Lead voice P1 contains non-chordal tones.

Discussion:

- At [*1] we harmonise the non-chordal tones d and f using the substitute chord $B\flat_7^{\flat 9}$, which is not exactly equivalent with the $D_{\circ 7}$ chord (because of its lowered 9th). It, however, is equal to the $G_7^{\flat 9}$ chord, since the four upper functions of both chords form the same diminished chord $B_{\circ 7}$. What we in fact do here is to pull ahead the dominant chord of m. 4 (this has been discussed in previous examples. This might though lead to a clash with the rhythm section in case they play the half-diminished structure (the clash between b and c) and probably it is better to correct the chord symbol for the rhythm section in that measure.
- At [*2] we apply three consecutive exact parallel chords ($B_{\emptyset 7} - C_{\emptyset 7} - D_{\emptyset 7}$) working backwards from the aiming chord on the chordal tone d. Although we now find quite a few non-diatonic tones in this sequence they are no problem, especially at higher tempos.

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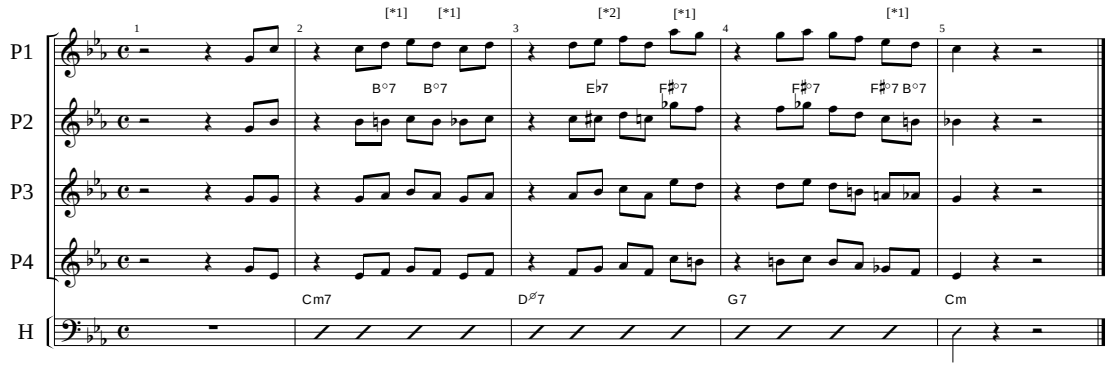


Figure 2.11: Harmonisation of non-chordal tones in the lead using exact parallel chords.

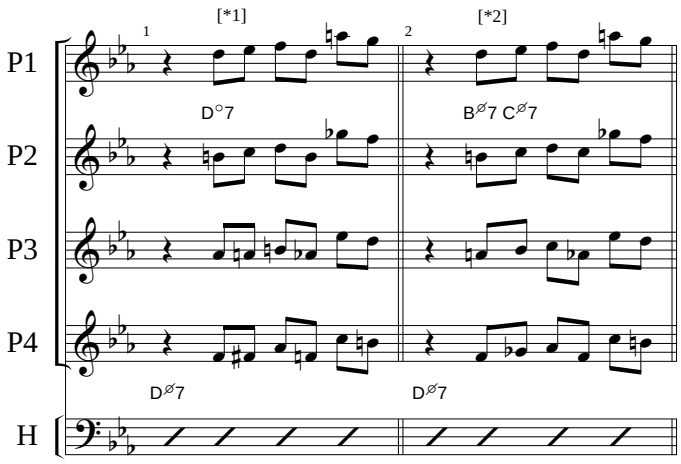


Figure 2.12: Harmonisation of non-chordal tones using exact parallel chords.

2.3.6 Connecting minor 7th chords

In this section we will deal with another problem. Suppose we have a lead voice as shown in the example in Figure 2.13. The non-chordal tones are marked and most of them can be dealt with in the standard way of applying the secondary dominant. There is, however, a problem with the step from the 6th to the 7th degree of the major scale (in this case from g to a in $B\flat$-major). The non-chordal tone a cannot be harmonised using the $_{\circ 7}$-chord. Using a leading tone chord we end up with an augmented 2nd step in P2, an undesirable result. ⟸

Example 2.10: Harmonisation a lead voice with diatonic $6-7$ stepwise motion: problems using secondary dominant or leading tone chord.

Problem: Lead voice P1 contains $6-7$ stepwise motion in major.

Discussion:

- At [*1] the application of the secondary dominant $B_{\circ 7}$ is impossible.
- At [*2] the application of the leading tone chord B_{m7} leads to augmented 2nd stepwise motion $e\flat \ - \ f\sharp$ in P2, which is undesirable.

◁

That technique that we will apply in this case is the sequence of two diatonic minor 7th chords on the 2nd and 3rd degree of the scale (in this case $C_{m7} \ - \ D_{m7}$, see Figure 2.14).

Example 2.11: Harmonisation a lead voice with diatonic $6-7$ stepwise motion: connecting minor 7th chords.

Problem: Lead voice P1 contains $6-7$ stepwise motion in major.

Discussion:

- At [*1] we use the secondary dominant $B_{\circ 7}$ chord.

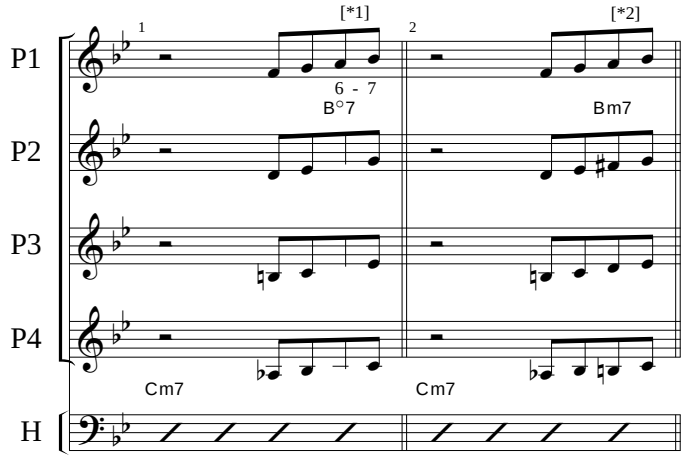


Figure 2.13: Lead voice with diatonic $6-7$ stepwise motion.

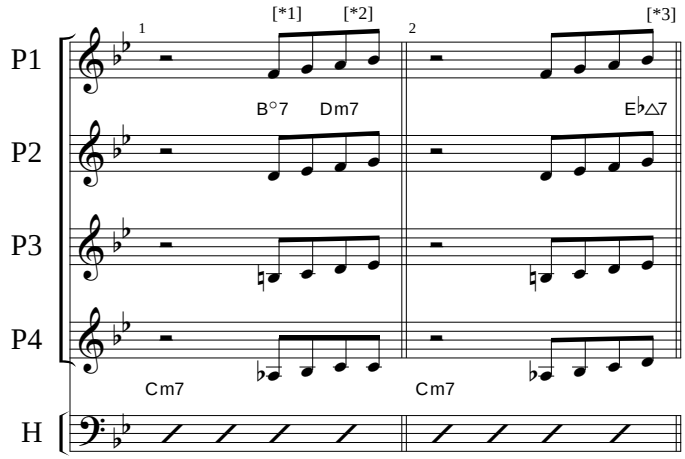


Figure 2.14: Lead voice with diatonic $6-7$ stepwise motion.

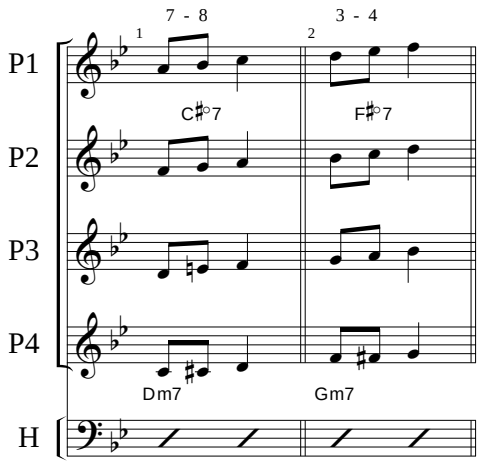


Figure 2.15: Lead voice with $6-7$ stepwise motion on 3rd degree of major scale.

- At [*2] we apply the minor 7th chord on the 3rd degree of the major scale D_{m7} to harmonise the non-chordal tone a.
- At [*3] we have to use the substitute chord $E\flat_{\Delta 7}$, which is equivalent to the C^{9}_{m7} in order to prevent a repeated note in P4 which would have occurred using the plain C_{m7} chord (as shown in m. 1).

◁

The $6-7$ diatonic step (which is equivalent to the $5-6$ motion within the 2nd degree minor 7th chord structure) is the only diatonic step in major that requires this solution. The two other cases ($5-6$ on the 3rd and 6th degree of major, as shown in Figure 2.15) yield a minor 2nd stepwise motion in the lead that can be dealt with using secondary dominant chords.

Example 2.12: Harmonisation a lead voice with diatonic $7-8$ or $3-4$ stepwise motion over minor 7th chord on 3rd degree or 6th degree respectively.

Problem: Lead voice P1 contains diatonic stepwise motion over minor 7th chord.

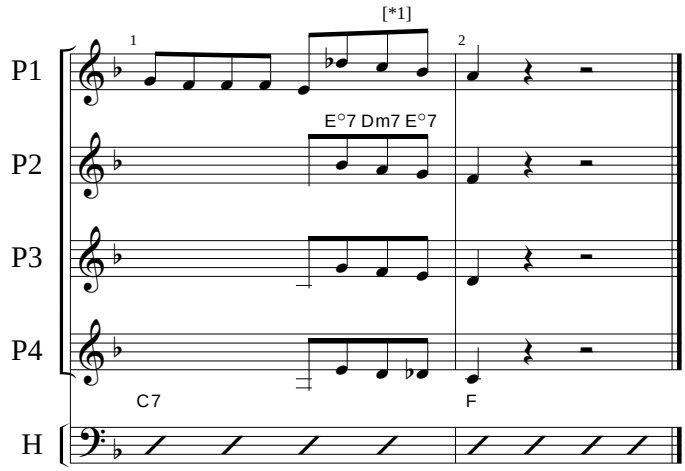
Discussion:

- At [*1] we use the secondary dominant $C\sharp_{\circ 7}$ to harmonise the non-chordal tone $b\flat$ (on 3rd degree minor 7th chord in $B\flat$-major).
- At [*2] we use the secondary dominant $F\sharp_{\circ 7}$ to harmonise the non-chordal tone $e\flat$ (on 6th degree minor 7th chord in $B\flat$-major).

◁

2.3.7 Use of subdominant chords

In some cases we may harmonise the non-chordal tone using a type of *subdominant chord*. These are the chords that are built on either the relative subdominant degree or the relative supertonic degree of our basic harmony. ⟸



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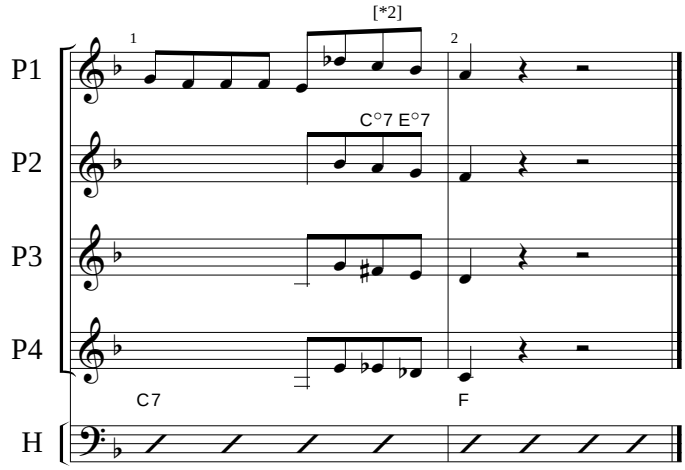


(b)

Figure 2.16: Harmonisation of non-chordal tones using subdominant chords.

The example in Figure 2.16 is in F-major and the basic harmony locally is C_7. Therefore the subdominant structures are built on either the root tones f (the subdominant relative to c) or the d (the supertonic relative to c).

Using the diatonic chords on these degrees we find the F_6 on the 4th degree and the D_{m7} on the 2nd degree of C-major; these chords are harmonically equivalent. However, there is another possibility that has been described in other books on arranging as the 'diminished chord on the root in question'(see [11], p. 31): in our example this is $C_{\circ 7}$. This chord may be designated as a subdominant structure by the following deduction process: the pitches in the $C_{\circ 7}$ chord are $c - d\sharp - f\sharp - a$, though using enharmonic changes and considering $d\sharp = e\flat$ we find the $D_7^{\flat 9}$ (altered dominant chord structure on the supertonic) or, considering $f\sharp = g\flat$ we find the $F_7^{\flat 9}$ (the altered dominant chord structure on the subdominant). Now, let's see how this applies to our example.

Example 2.13: Harmonisation of non-chordal tones using subdominant chords.

Problem: Lead voice P1 contains non-chordal and non-diatonic tones.

Discussion:

- Because the lead contains the altered non-diatonic note $d\flat$ which we will harmonise using the $C_7^{\flat 9}$ chord we have to do something to prevent repeated notes in the lower voices, when harmonising the following c. Well, at [*1] we use the diatonic subdominant structure $D_{m7} = F_6$ as an intermediary chord.
- The same situation can also be harmonised using the altered subdominant structure $C_{\circ 7} = D_7^{\flat 9} = F_7^{\flat 9}$, as is shown at [*2].

◁

Although at that time they were designated as substitute chords (see the appropriate section), we have already encountered one case where we used the diminished chord on the original root for the harmonisation process, which we here designate as a type of subdominant. That case was the substitute for the half-diminished chord on the 2nd degree in minor. There we followed a different path of reasoning. The result of the harmonisation process is the same, applying either a substitute chord or a subdominant chord.

2.4 Extensions to the technique of writing four part sectional harmony

2.4.1 Sequences of similar structures on parallel diatonic degrees

In this section we will discuss various other aspects of writing four part sectional harmony. First we will deal with the technique of using diatonic parallel structures. Then we will discuss the 'drop 2'-voicing in four part sectional harmony. Also we will discuss the occurrence op repeated notes and the use of altered dominant structures.

2.4.2 Sequences of diatonic parallel structures

We have already encountered one situation where we used *diatonic parallel structures*. There we considered the $6 - 7$ stepwise motion in major. This form of parallel motion may be ⟸

applied to a sequence of degrees. However, then we encounter a problem.

Let us start by formulating the general idea behind this technique. It is used mainly with minor 7th chord structures as the underlying basic harmony. It creates a modal atmosphere.

The rules for this techniques may be summarised as follows:

- **Start from a given voicing and continue using similar chord structures within a given diatonic scale**. This means that at the starting point the voicing (root position or inversion, close vs. open voicing) is given.
- **Construct the sequence of chords, using diatonic structures, in parallel motion with the lead**. If the lead moves upward, the diatonic root of the chord moves upward by the same interval.
- **Eliminate resulting tritones**. The process, described in the previous step, may yield a tritone interval (augmented 4th or diminished 5th) between any two voices. The result therefore has the character of a dominant chord; this implies a tendency for resolution (in functional harmony), disturbing the parallel motion and the modal atmosphere. The problem is solved by introducing extra leading tones in such a way that we get a sequence of minor or major 7th chords (S_{m7} or $S_{\Delta 7}$).

In order to eliminate the tritone we may either raise or lower one of the lower voices. The direction of the change is dependent on the interval structure of the previous chord; this may contain a 4th or 5th. Do not change the lead voice when this forms part of the tritone interval. There is a preference for raising the lower voice when there is upward parallel motion and lowering the voice when the lead is in downward motion. Let us illustrate this with an example, as shown in Figure 2.17.

Example 2.14: Similar chord structures on diatonic parallel degrees.

Problem: Lead voice P1 contains chordal tones only.

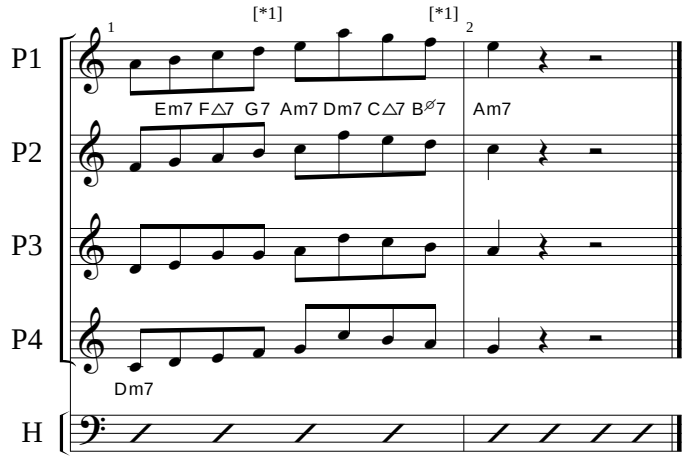
Discussion:

- The figure on the left shows the strictly diatonic parallel four part harmonisation. The initial voicing is the 3rd inversion of the D_{m7}-chord. This inversion is copied to the full sequence of chords. Note that this process yields two tritones at [*1].
- The figure on the right shows the modification of these undesirable intervals. The first G_7 is modified into $G_{\Delta 7}$ by raising the lowest voice P4 [*2]. The second tritone at [*3] is part of a $B_{\emptyset 7}$ chord and is changed into a $B\flat_{\Delta 7}$ chord by lowering P3. What we end up with is a sequence of major and minor 7th chords.

◁

2.4.3 The 'drop 2' voicing

So far we have strictly adhered to the rule of close voicing. However, there is another standard form of four part sectional harmony, that can easily be derived form the close voicing. It is called the *drop 2 voicing* and it is obtained by transposing the 2nd voice from the top, ⟹ i.e., P2 to the octave below. This is shown in diagram in Figure 2.18. The next example will illustrate the process (see Figure 2.19).



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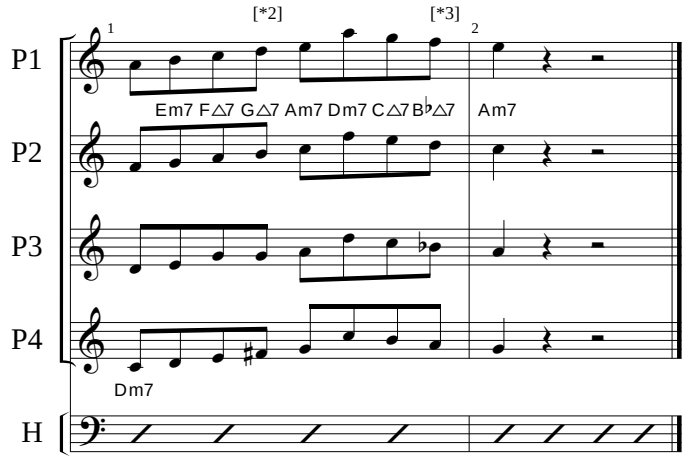

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Figure 2.17: Similar chord structures on diatonic parallel degrees.

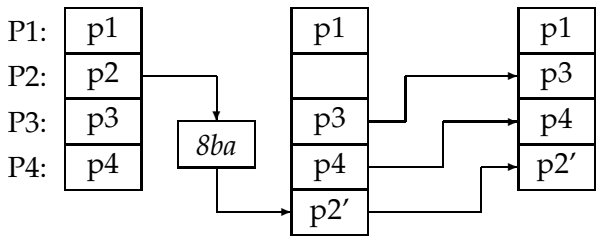
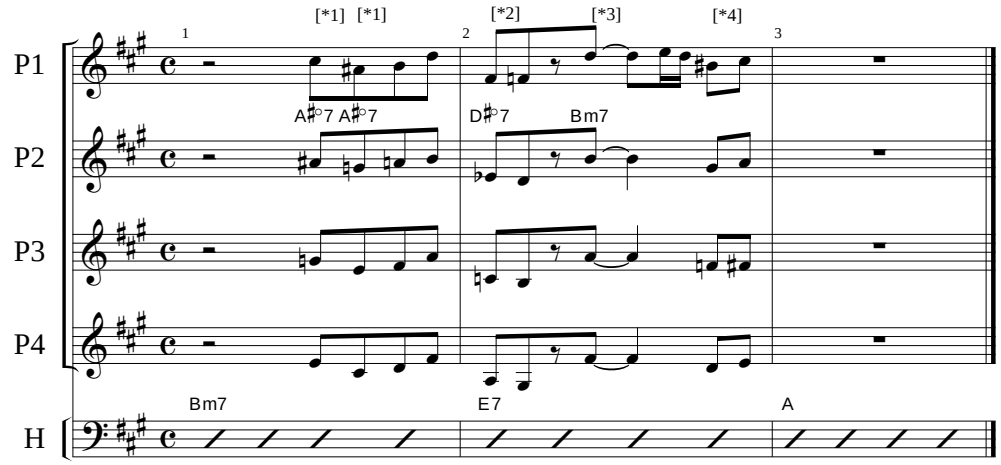


Figure 2.18: Diagram of the 'drop 2' procedure in four part sectional harmony.



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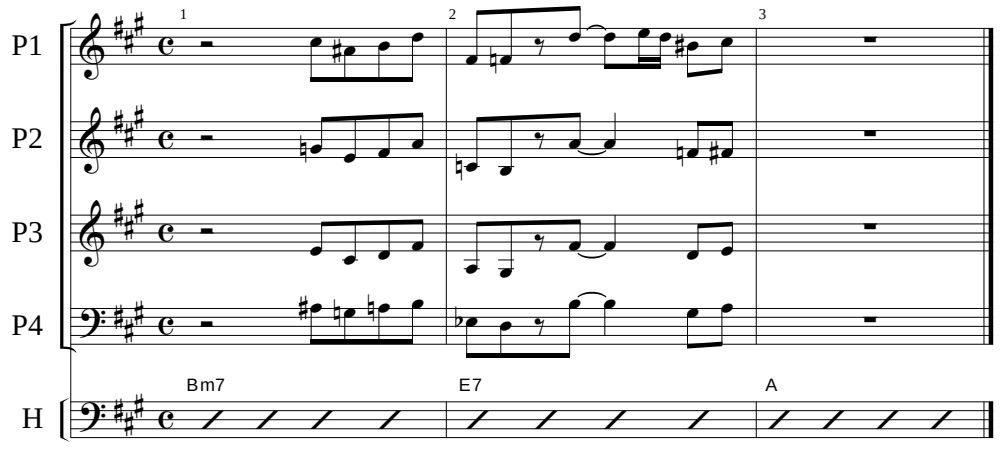

(b)

Figure 2.19: Close voicing and 'drop 2' voicing.

Example 2.15: Close voicing and 'drop 2' voicing.

Problem: Assign the parts for given 4-part sectional harmony: use close voicing and 'drop 2' voicing.

Discussion:

- Figure 2.19.a shows the solution with close voicing. The non-chordal tones in m. 1 [*1] are harmonised using the secondary dominant $A\sharp_{\circ 7}$, the appoggiatura $f\sharp$ in m. 2 [*2] is harmonised using the same principle (in this case with a $D\sharp_{\circ 7}$ chord). Beat 3 of m. 2 [*3] uses the B_{m7}/E structure that we have discussed before and the penultimate note $b\sharp$ [*4], a non-diatonic note, is harmonised using an altered dominant chord structure $E_7^{\sharp 5/\flat 9}$. This note might also have been harmonised using a leading tone chord structure $E\sharp_{m7}$.
- Notice the rhythmic aspects of the example: syncopated and tied-over notes are harmonised using the chord structure on the next regular beat. Also note the 16th notes in the lead in m. 2; little embellishments like these do not necessarily have to be harmonised, especially at higher tempos.
- Figure 2.19.b demonstrates the 'drop 2'-voicing. We have transposed P2 one octave down. The total range is now more than one octave and the result is a mixed, more open voicing. Still the intervals between the outer voices are consonant 3rds most of the time, interspersed with occasional 2nds (9ths, to be correct).

◁

Now, for the first time, we have to consider instrumental aspects. Since the range of the section gets wider as we use the drop 2 technique we might encounter instrumentation problems. The bottom voice may get into a too low region, either for the instrument to play comfortably, or from an acoustic point of view. In the latter case the fundamental of the applied chord structure is too low. In those cases we might have to change the voicing along the melodic line. The preferred location for a change of the voicing is at a diminished chord, since, due to its internal symmetry (the diminished chord being constructed from minor 3rds) it suffers least from such a change and is least noticeable. We illustrate this with the example in Figure 2.20.

Example 2.16: Changing from close voicing to 'drop 2' voicing.

Problem: Assign the parts for given 4-part sectional harmony: use a mixed voicing and determine the appropriate point for transition.

Discussion:

- Let us first harmonise the non-chordal tones. At [*1] we use a secondary dominant $E\sharp_{\circ 7}$ to harmonise the b. At [*2] we use an extended secondary dominant $F\sharp_7^9 = A\sharp_{\emptyset 7}$ to harmonise the $g\sharp$. At [*3] we use an altered secondary dominant $D\sharp_7^{\flat 5/\flat 9} = A_7$ to harmonise the $c\sharp$. At [*4] we use a secondary subdominant $A_6 = F\sharp_{m7}$ to harmonise the a. An alternative solution is either the altered secondary dominant $D\sharp_7^{\flat 5/\flat 9}$ or the leading tone chord A_{m7}. Comparing the three alternatives we may say that the currently used A_6 is the most diatonic solution, the A_{m7} would have been the least diatonic alternative. At [*5] we use a

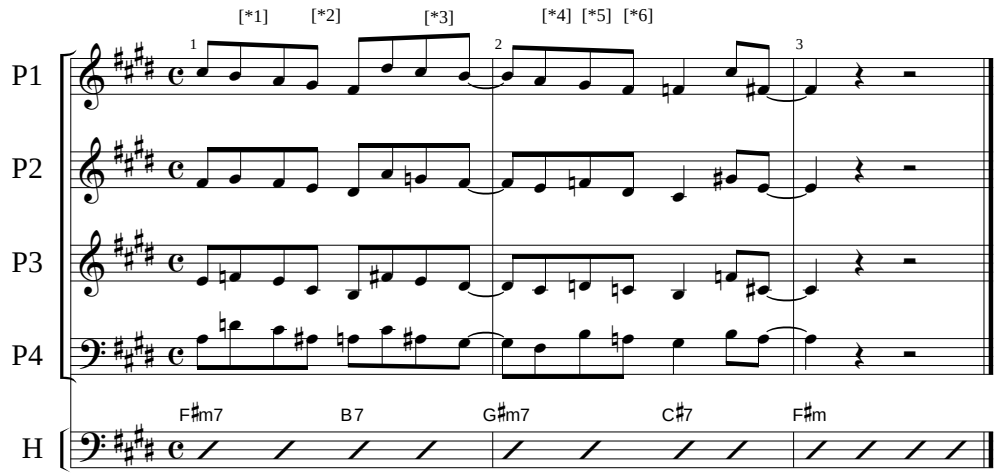

Figure 2.20: Changing from close voicing to 'drop 2' voicing.

secondary subdominant $G\sharp_{\circ 7} = C\sharp_7^{\flat 9} = A\sharp_7^{\flat 9/\flat 13}$ to harmonise the $g\sharp$. Using a plain $G\sharp_{m7}$ would have lead to an augmented 2nd step in P3. At [*6] we use an extended secondary dominant $B\sharp_{\circ 7} = G\sharp_7^{\flat 9}$ to harmonise the $f\sharp$.

- The example starts with 'drop 2' voicing. This changes to close voicing at the second 8th note of beat 1 in m. 1 (at the $E\sharp_{\circ 7}$). Then, at the upward leap, we change back to 'drop 2' and again to close voicing on beat 2 in m. 2 at the $G\sharp_{\circ 7}$. The example ends with another change on the last two notes; the reason for doing this is to prevent the lower voices from having a 5th leap, since this might lead to instrumentation problems. Changing the voicing at these diminished chords does not lead to repeated notes in any of the parts.

◁

Theoretically, there is an even wider voicing possible for four parts. By also transposing the original fourth part P4 from the close position voicing to the lower octave and rearranging the parts we obtain an open voicing. The result for the example in this section is shown in Figure 2.21.

Example 2.17: Open voicing.

Problem: Assign the parts for given 4-part sectional harmony: use wide open voicing.

Discussion:

- The harmonisation of the example has been left unchanged from the original close voicing.
- Both P2 and P4 from the close voicing have been transposed to the lower octave. We now obtain a range of almost two octaves. Note how the intervals between the outer voices still are not too dissonant (mainly 6ths and mild dissonances of the minor 7th).

◁

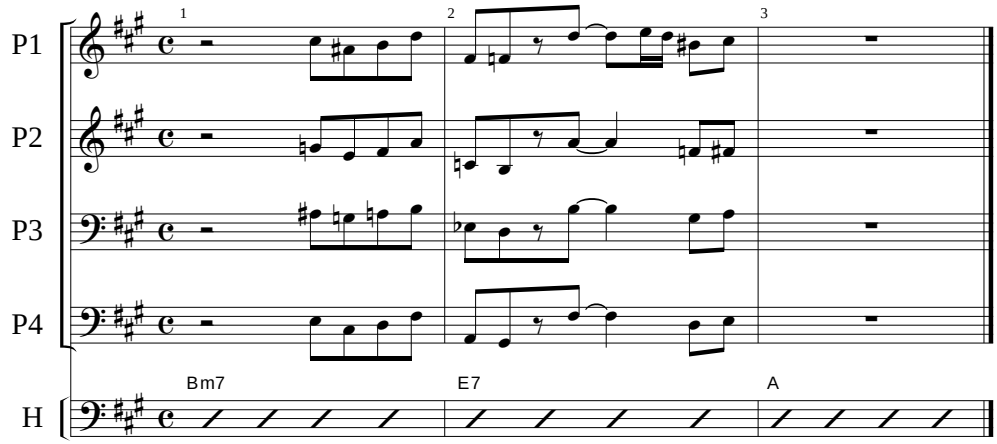

Figure 2.21: Open voicing.

This voicing is almost never used. The open voicing is not suited for a homogeneous brass section; trumpets usually stay within the range of an octave, and although this voicing is within the compass of the trombone section, the open voicing is reserved for cases of smooth stepwise motion (classical harmony), not for sectional harmony. For the saxophone section the open voicing often reaches the limits of compass. Besides, the open voicing limits the fluency of the phrase. This voicing may be used in moderate to medium tempo, for high or middle strings or with a mixed instrumentation.

2.4.4 The inevitable repeated notes

Sometimes we encounter a situation where we have to deal with repeated notes. Suppose the given lead contains a number of repeated notes. This problem can be dealt with easily for a homogeneous instrumentation (e.g., four saxophones). Figure 2.22 shows us the solution to the problem.

Example 2.18: Repeated notes in the lead voice.

Problem: Lead voice P1 contains repeated notes.

Discussion:

- Figure 2.22.a shows repeated notes in all voices. Let us briefly discuss the harmonisation of the non-chordal tones. The appoggiatura $g\flat$ at [*1] is harmonised with a secondary dominant $F\sharp_{\circ 7}$, the c at [*2] is harmonised with a secondary subdominant D_{m7}. Notice also the change of voicing from close to 'drop 2' at the leap in the lead voice and on the $E_{\circ 7}$ chord.
- Figure 2.22.b shows how to eliminate the repetitions by exchanging the consecutive pitches between neighbouring voices. Also, at [*3] the $B_{\circ 7}$ chord is introduced to prevent repeats in P3 and P4.

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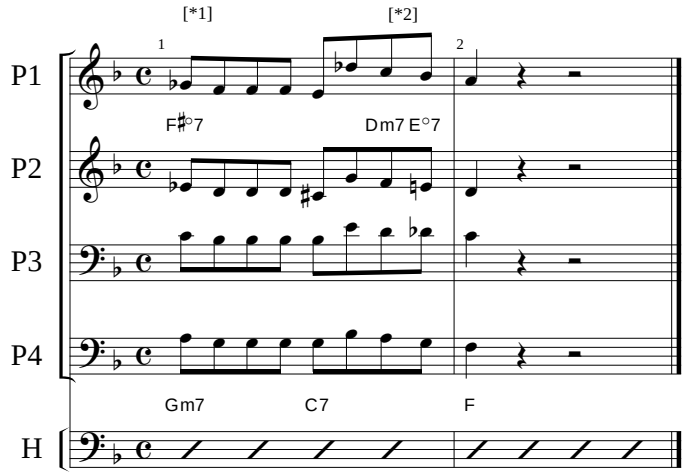

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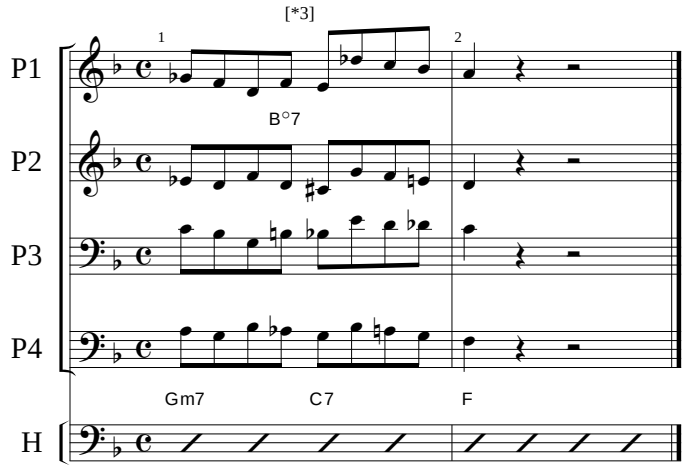

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Figure 2.22: Repeated notes in the lead voice.

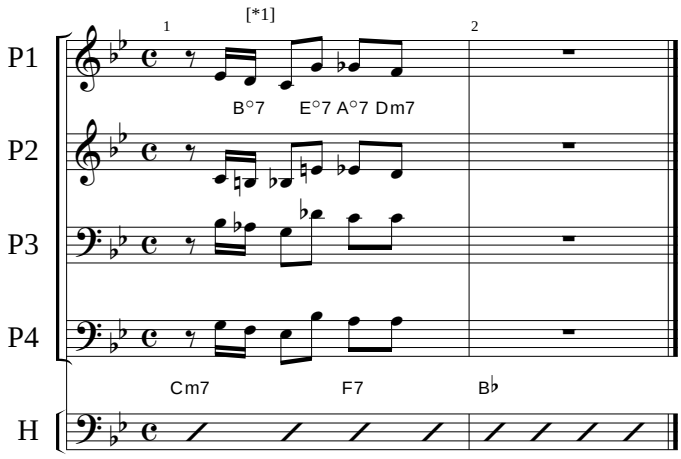

Figure 2.23: Repeated notes at the end of a phrase.

A situation where repeated notes may be tolerated is at the end of a phrase. Here they do not cause great technical problems for the players. The musicians may even create a different articulation or tone colour by using alternative fingerings for the repeated notes. This, however, must be coordinated by the section, if an audible result is desired. An example of repeated notes at the end of a phrase is shown in Figure 2.23.

Example 2.19: Repeated notes at the end of a phrase.

Problem: Lead voice P1 contains repeated notes at the end of a melodic phrase.

Discussion:

- Let us first discuss the harmonisation of the non-chordal tones. At [*1] we use a secondary dominant $B_{\circ 7}$ to harmonise the d. At [*2] we use a sequence of secondary dominants before the aiming chord $E_{\circ 7} - A_{\circ 7} - Dm7$, this last chord being harmonically equivalent to $B\flat^{9}_{\Delta 7}$.
- Repeated notes will occur in the lower voices P3 and P4. Since they are at the end of the phrase, they are acceptable. It is in the middle of a (fast) phrase where they may cause danger.

◁

2.4.5 Use of extended and altered dominant chords

Next we will discuss two examples showing a variety of techniques for the harmonisation of non-chordal tones. The main aspects here will be the use of *extended* and *altered dominant chord structures*. We already have encountered an altered dominant chord in the section on subdominant structures and 'drop 2'voicing: the use of the $S_7^{\flat 9}$, the dominant chord with lowered 9th where the upper four functions are combined to create the diminished chord. ⟸

From now on we will allow all regular extensions and alterations of the dominant chord structures as shown in Table 2.3. From this set we may pick any combination of four pitches, that however must include the 3rd and the 7th, the essential pitches in the dominant chord

Table 2.3: Extensions and alterations of the dominant chord.

Structure	*Description*
$-9 = \flat 9$	lowered 9th
9	natural 9th
$+9 = \sharp 9 = -10 = \flat 10$	raised 9th or lowered 10th
$-5 = \flat 5 = +11 = \sharp 11$	lowered 5th or raised 11th
$+5 = \sharp 5 = -13 = \flat 13$	raised 5th or lowered 13th
13	natural 13th

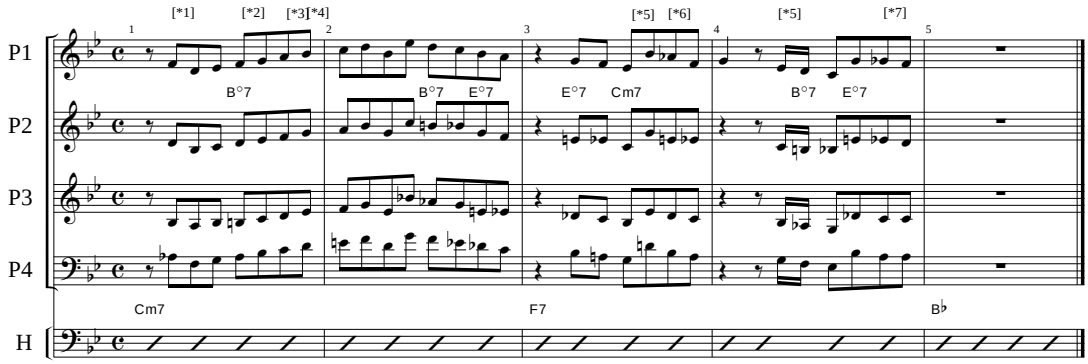

Figure 2.24: Harmonisation of non-chordal tones using altered dominant chords.

structure. We will need to apply altered or extended dominant chords mainly in cases where a non-diatonic, non-chordal tone has to be harmonised. This is shown in an example in Figure 2.24.

Example 2.20: Harmonisation of non-chordal tones using altered dominant chords.

Problem: Lead voice P1 contains non-chordal and non-diatonic tones.

Discussion:

- From the beginning to beat 3 in m. 2 the harmonisation is with diatonic parallel structures, unless this is impossible. The first chordal tone is the $e\flat$ in m. 1 at [*1]; this determines the voicing of the previous chords. Strictly speaking this should lead to the following three chords at the start of the phrase: $D_{m7} - B\flat_{\Delta 7} - C_{m7}$, all in 2nd inversion. However, the first 8th note has been harmonised using another inversion of the $B\flat_{\Delta 7}$ chord (just a matter of taste). At [*2] we have to use a secondary dominant $B_{\circ 7}$ since there is no diatonic way to connect the two inversions of the C_{m7} chord. At [*3] we recognize the $7 - 8$ diatonic stepwise motion with a 2nd degree chord as basic harmony. We therefore have to use $C_{m7} - D_{m7}$ (see the appropriate section on connecting minor 7th chords). From the g in m. 1 we onwards we recognise the diatonic parallel succession of chords until beat 2 in m. 2 [*4]: we have $C_{m7} - D_{m7} - E\flat_{\Delta 7} - F_{\Delta 7} - G_{m7} - E\flat_{\Delta 7}$, all in 3rd inversion. The major 7th chord $F_{\Delta 7}$ is the result of the elimination of the

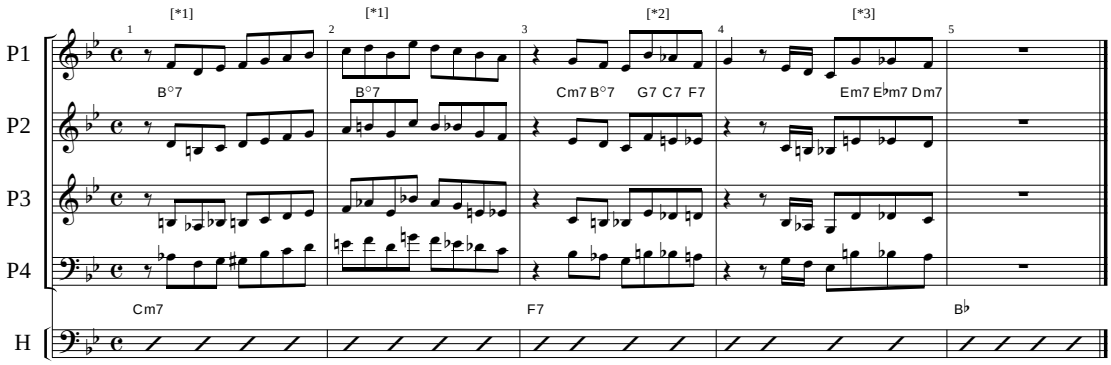

Figure 2.25: Harmonisation of non-chordal tones using altered dominant chords.

tritone interval that would have occurred with a purely diatonic solution (see the section on similar structures in diatonic parallel degrees). The final chord $E\flat_{\Delta 7}$ can also be considered a substitute chord for the C^9_{m7} (using the four upper pitches).

- The rest of m. 2 s treated in a regular way using secondary dominants $B_{\circ 7} - C_{m7}$ and $E_{\circ 7} - F_7$ at [*4].
- In m. 3 and m. 4, beat 3, [*5] we use the suspended chord C_{m7}/F. The second 8th note in m. 3 $b\flat$ uses the substitute chord $E\flat_{\Delta 7}$.
- In m. 3, beat 4, [*6] the lead voice has the altered, non-diatonic note $a\flat$ which we harmonise using the $C_7^{\flat 9/\flat 13}$ chord (an altered dominant chord).
- We end the example with a sequence of secondary dominant chords $E_{\circ 7} - A_{\circ 7} - B\flat$; the second chord is used to harmonise a non-diatonic, non-chordal tone $g\flat$ and the $B\flat$ is replaced by the substitute chord $D_{m7} = B\flat^9_{\Delta 7}$.

◁

The same example will now be shown with an alternative harmonisation, see Figure 2.25.

Example 2.21: Harmonisation of non-chordal tones using altered dominant chords.

Problem: Lead voice P1 contains non-chordal and non-diatonic tones.

Discussion:

- M. 1 and m. 2 have now been harmonised using the secondary dominant $B_{\circ 7}$, when appropriate [*1].
- The suspended chord in m. 3 has been anticipated in m. 2, beat 2 [*2].
- The last three 8th notes in m. 3 [*3] are harmonised with a sequence of altered and extended dominant chords $G_7^{\flat 10/\flat 13} - C_7^{\flat 9/\flat 13} - F_7^{13}$.
- The last three notes in m. 4 show chromatic downward stepwise motion [*4] and can therefore be harmonised using exact parallel chords (or, equivalently, leading tone chords in sequence): $E_{m7} - E\flat_{m7} - D_{m7}$. In this case it does not sound great, but may be useful in other situations, preferably in rising stepwise motion.

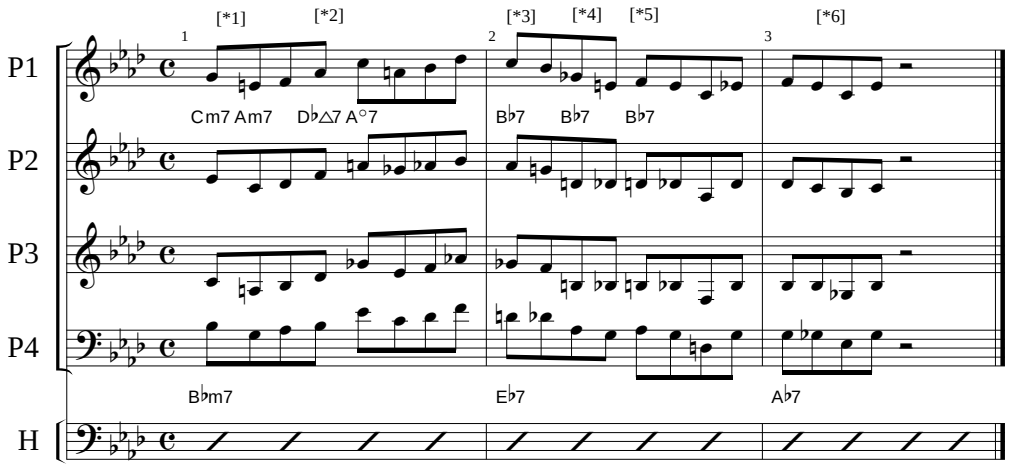

Figure 2.26: Harmonisation of non-chordal tones.

◁

Next we will look at an example that uses a combination of techniques. The example, shown in Figure 2.26, has non-diatonic tones in the lead.

Example 2.22: Harmonisation of non-chordal tones.

Problem: Lead voice P1 contains non-chordal and non-diatonic tones.

Discussion:

- M. 1 starts with two non-chordal tones g and e (also non-diatonic) [*1]. Notes 1 and 3 (g and f) yield a $7 - 6$ diatonic stepwise motion on the 2nd degree in major; the standard solution is the connection of two minor 7th chords on 3rd and 2nd degree (see the appropriate section). The e can be harmonised using a leading tone chord. The combined result is $C_{m7} - A_{m7} - B\flat_{m7}$.
- The following note $a\flat$ [*2] is chordal, but is harmonised with the substitute chord $D\flat_{\Delta 7} = B\flat^{9}_{m7}$.
- The non-chordal notes on beat 3 in m. 1 are harmonised with a secondary dominant $A_{\circ 7}$.
- The non-chordal tone c in m. 2 [*3] is harmonised with an extended, altered secondary dominant $B^{\flat 9/\flat 13}_{7}$; on the chordal tone $b\flat$ we use an extended dominant chord $E\flat^{9}_{7}$, equivalent to the substitute chord $G_{\emptyset 7}$.
- The next non-chordal tone $g\flat$ [*4] is non-diatonic. It is harmonised with an altered secondary dominant $B\flat^{\flat 9/\flat 13}_{7}$. The same dominant, although in different forms, is also used on beat 3 and 4 of the same measure.
- Now we reach a flaw in the exercise. Harmonising the non-chordal f in m. 3 [*5] with the secondary dominant $B\flat^{9}_{7}$ leads to repeated notes in the lower voices. We will later correct that error.

- The three chordal notes in the last measures [*6] have been harmonised with an extended dominant $A\flat_7^9$.

◁

We will look at a number of alternative solutions to this problem, that will also correct the repeated notes.

Example 2.23: Harmonisation of non-chordal tones.

Problem: Lead voice P1 contains non-chordal and non-diatonic tones (see Figure 2.27).

Discussion:

- The alternative in Figure 2.27.a uses a 'drop 2' voicing in the last two measures. The harmonisation has not changed, except for the last four beats of the example. We will discuss these in detail.
- The repeated notes on beat 4, m. 2, have been eliminated using the progression $F_{m7} - E\flat_7 - A\flat_7$ [*1]. Notice that the penultimate note c [*2] has been harmonised using the secondary dominant $E\flat_7^9$.
- This example still has some flaws. First, by using the wider 'drop 2' voicing, the 7ths $a\flat$ and $d\flat$ of the $B\flat_7$ and $E\flat_7$ respectively [*3] lie in an extremely low range. This yields unacceptably low acoustic roots for these chords.
- The progression $B\flat_7 - F_{m7}$ on m. 2, beat 4 [*4] is poor: it lacks functional harmonic sense and therefore is weak.
- The alternative in Figure 2.27.b changes to 'drop 2' voicing just before the last measure. This eliminates the low $a\flat$ of the $B\flat_7$ chord, although the $d\flat$ is still in the low octave. The change of voicing does not take place on a diminished chord.
- The final measure has been harmonised using the extended form of the basic harmony $A\flat_7^{9/13}$. Although somewhat improved, this solution still does not sound great.
- The alternative in Figure 2.27.c has beat 4, m. 2 harmonised using the secondary subdominant structure F_{m7}, the 2nd degree relative to the basic harmony $E\flat_7$ (see the appropriate section).
- The final measure uses a secondary dominant structure $E\flat_7^{9/\flat 13}$ on the non-chordal tone f. So we end up with a $VI_{m7} - V_7 - I$ cadence in $A\flat$-major.
- The example uses close voicing; there is no range problem for the lower voices.
- The final alternative in Figure 2.27.d has beat 4, m. 2 harmonised with a different form of secondary dominant structure $E\flat_{\circ 7} = F_7^{\flat 9} = A\flat_7^{\flat 9}$.

◁

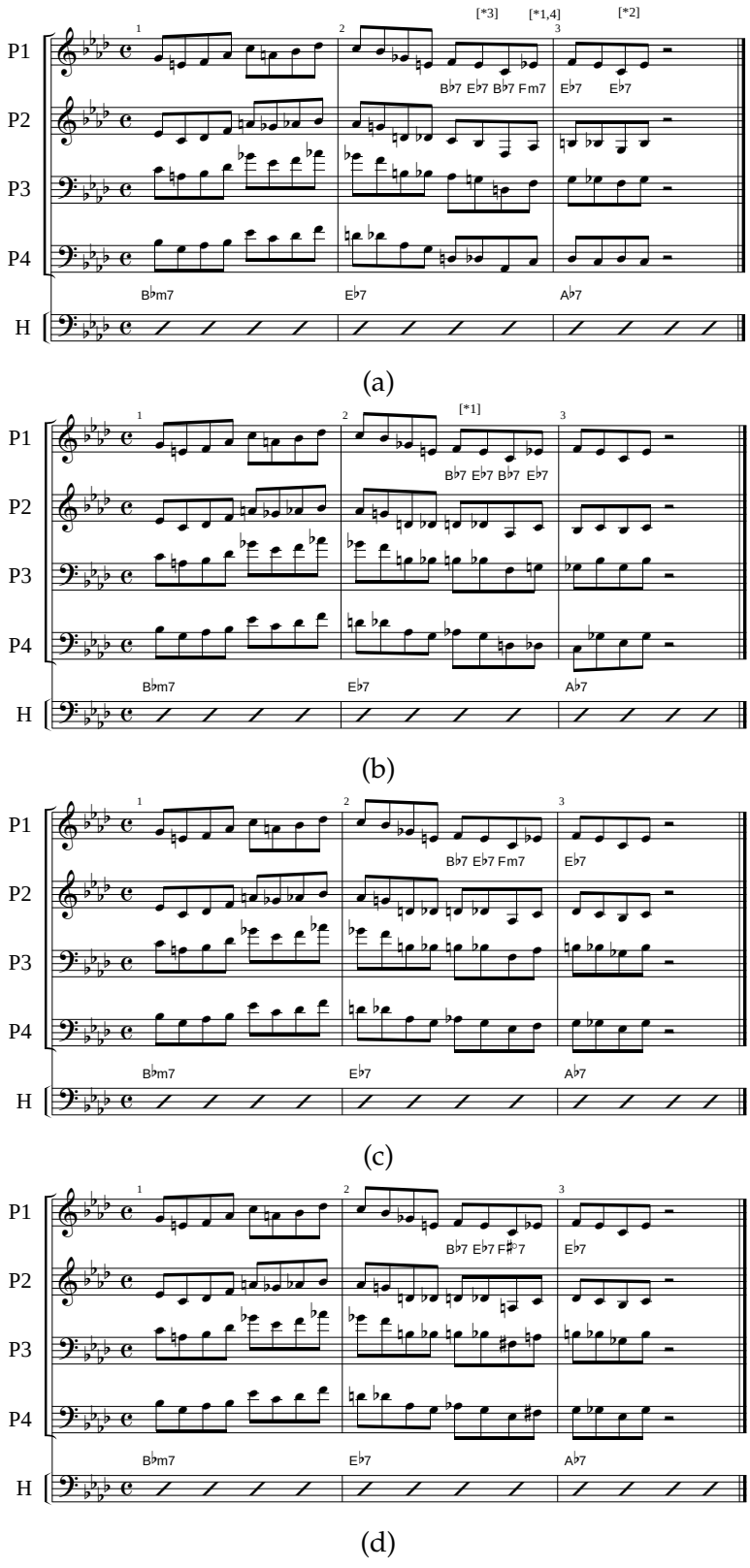

Figure 2.27: Harmonisation of non-chordal tones.

Chapter 3

Sectional harmony in five parts

Writing sectional harmony in five parts is a skill that is often required in contemporary big band arranging, where the saxophone section consists of five players. Since this section is the most frequently used in the big band and capable of incomparable fluency we find a lot of excellent writing for five saxophones and numerous 'saxophone special choruses' have been written for the five working horses in the band.

There is less treatment of this technique in the arranging textbooks (see [2], Ch. 8, [6], p. 25, [11], p. 35). basically, there are two categories of five part sectional writing, where one is little more than a doubling of the lead voice of the basic four part sectional harmony. However, the second technique is considerably different and makes great use of *clusters* that are generated by writing the chords in 4th voicings. We will discuss both techniques in this chapter and look at examples.

3.1 The extended four part sectional harmony

Writing *extended four part sectional harmony* takes no more effort than writing for the four part ⟸
section. We use exactly the same techniques for the harmonisation of chordal, non-chordal and non-diatonic tones in het leading voice, that we have already mastered in that chapter.

There is only one voice to be doubled and this is the lead voice. The result is that the melody is heard exactly one octave below the original and this gives it extra support. It is a standard technique of which you will encounter numerous examples in big band scores. It is used in the already mentioned 'Supersax plays Bird' recordings.

Let us now discuss an example using this technique (see Figure 3.1).

Example 3.1: Sectional harmony in five parts, lead doubled an octave below.

Problem: Lead voice P1 contains non-chordal and non-diatonic tones.

Discussion:

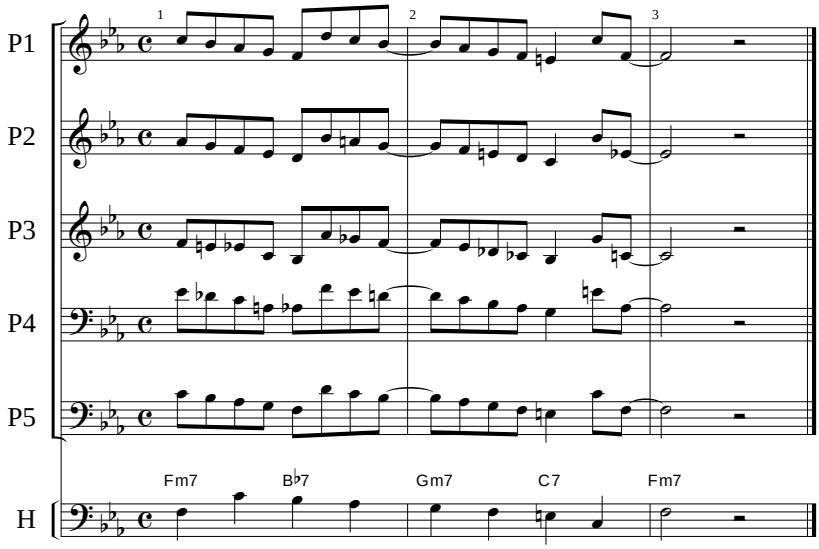

Figure 3.1: Sectional harmony in five parts, lead doubled an octave below.

- This example has been discussed extensively in the chapter on four part sectional harmony (there it was written a minor 2nd higher). So see that chapter for the reasoning behind the harmonisation.
- The lead part P1 has been doubled one octave below as P5. There is close voicing throughout the phrase.

◁

Obviously, the use of five voices enables us to develop several alternative voicings. Now, we will show a number of these options. We start with the example in Figure 3.2.

Example 3.2: Sectional harmony in five parts, mixed voicing, 'drop 2'.

Problem: Lead voice P1 contains non-chordal and non-diatonic tones; assign the parts using mixed voicing.

Discussion:

- Here is the 'drop 2' voicing as applied to a five part section. The lead is now supported by an inner voice P4.
- The bottom voice has the same intervallic relationship with the lead as in the four part section.
- It is fairly regularly used, unless the bottom voice gets into a too low range (see below for the solution of that problem).

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We will now discuss two alternative voicings for the same problem.

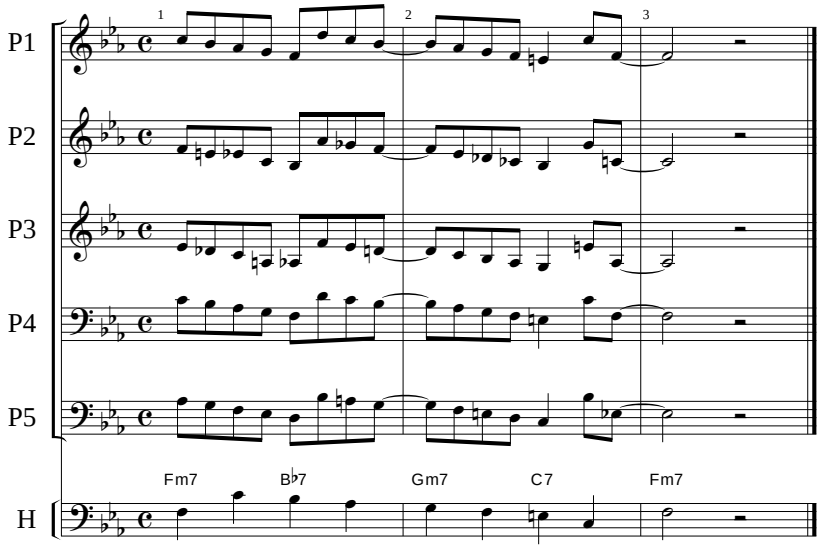


Figure 3.2: Sectional harmony in five parts, mixed voicing, 'drop 2'.

Example 3.3: Sectional harmony in five parts, open voicing, 'drop 2 and 4'.

Problem: Lead voice P1 contains non-chordal and non-diatonic tones; assign the parts using open voicing (see Figure 3.3).

Discussion:

- An even wider voicing is obtained using the 'drop 2 and 4' technique. Strictly speaking (in classical sense) this is not a fully open voicing. The part that now doubles the lead is P3.
- The bottom voice P5 has the same intervallic relationship to the lead as in the case of four part sectional harmony, although it now is now at one octave below the four part version.
- This technique is not commonly used. There is a risk of loss of fluency at higher tempos.

◁

Example 3.4: Sectional harmony in five parts, alternating voicing.

Problem: Lead voice P1 contains non-chordal and non-diatonic tones; assign the parts using mixed voicing and determine the appropriate points for transition (see Figure 3.4).

Discussion:

- Here is an example of mixed or alternating voicing. Close voicing has been used at the low points of the lead melody at [*]. The rest of the example uses 'drop 2' voicing. Pay attention to the points where the voicing is changed; This happens at either diminished chords or at wide leaps.

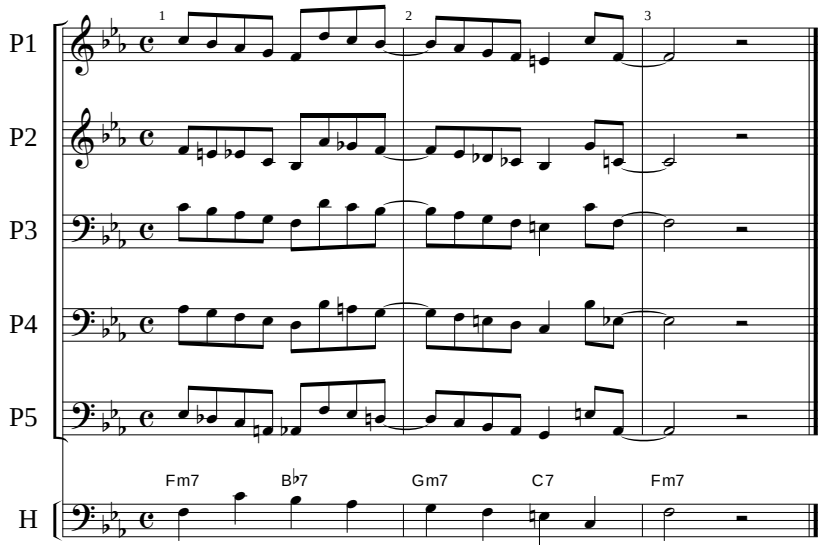


Figure 3.3: Sectional harmony in five parts, open voicing, 'drop 2 and 4'.

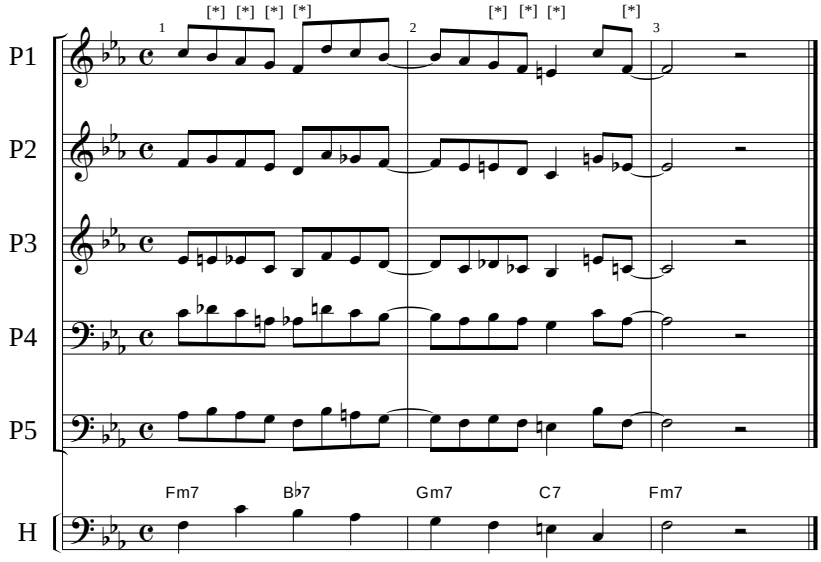
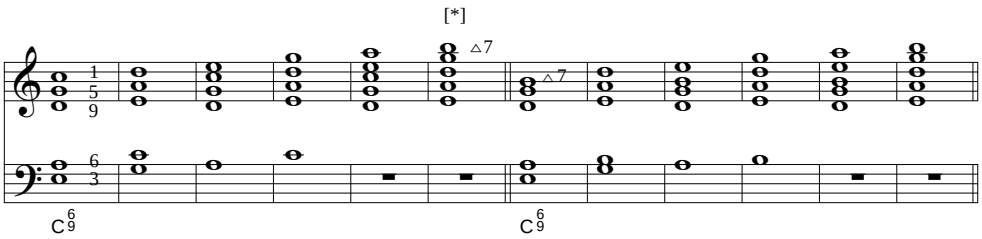


Figure 3.4: Sectional harmony in five parts, alternating voicing.



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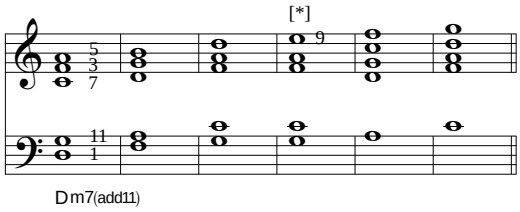


(b)

Figure 3.5: Sectional harmony in five parts, chords in 4ths. (a): left: the major chord with added 6th and 9th, top right: the alternative voicing with $\Delta 7$ replacing the root. (b): the minor 9th chord with added 11th.

- The change from open to close voicing from the first to the second note is not very effective.

◁

3.2 Sectional harmony in fourths

Another technique for writing five part sectional harmony uses *harmonic structures in fourths*. It is most frequently used when writing for a five member saxophone section in big band music or for the *woodwind section* in a studio orchestra or symphonic orchestra.

Two types of harmonic structures can be voiced as a chord in perfect fourths:

- The *major chord* with *added 6th and 9th*: S_9^6;
- The *minor ninth chord* with *added 11th* (or, equivalently, *added 4th*): $S_{m7}^{9/add11}$.

These chord structures, based on the interval of the perfect 4th, can be found on the 3rd and 6th step of the diatonic major scale; the chord structure on the 3rd step corresponds to the S_9^6 (major chord with added 6th and 9th), the chord structure on the 6th step corresponds to the $S_{m7}^{9/add11}$ (minor 9th chord with added 11th). The four consecutive perfect 4ths are the maximum number in the diatonic major scale (check this by trying to add another perfect 4th to either side of the two structures).

The voicing for both chord structures for all inversions is shown in Figure 3.5. The C_9^6 chord with the root in the lead (leftmost structure: numbers indicate the various members in the structure) yields four intervals of the perfect 4th. The other inversions will contain one interval of the major 3rd. The minor 9th chords yields a perfect chord in 4ths when the 3rd is in the lead (see the fifth voicing on the bottom system in the figure).

This basic voicing in 4ths can be slightly modified, yielding an alternative voicing, as is indicated by the $[*]$ in the figure:

- In the *major chord* with *added 6th and 9th*, the S_9^6, the root may be replaced by the major 7th, the $\Delta 7$. This yields another perfect chord in 4ths (see the fourth voicing in the top right system) an is particularly useful for when the root is in the higher register (the $\Delta 7$ in the lower voice may lead to a too low acoustic root of the chord). In short, for the major chord we have the replacement rule: $\Delta 7 = 1$;

- In the *minor ninth chord* with *added 11th*, $S_{m7}^{9/add11}$, the 9 may replace the root of the structure, as demonstrated in the fourth voicing in the bottom system. In short, for the minor chord we have the replacement rule: $9 = 1$;

Let us now turn to a number of examples of five part sectional harmony in fourths.

Example 3.5: Sectional harmony in five parts, chords in 4ths.

Problem: Write five part sectional harmony using chords in 4ths for a given diatonic the lead voice P1 (see Figure 3.6).

Discussion:

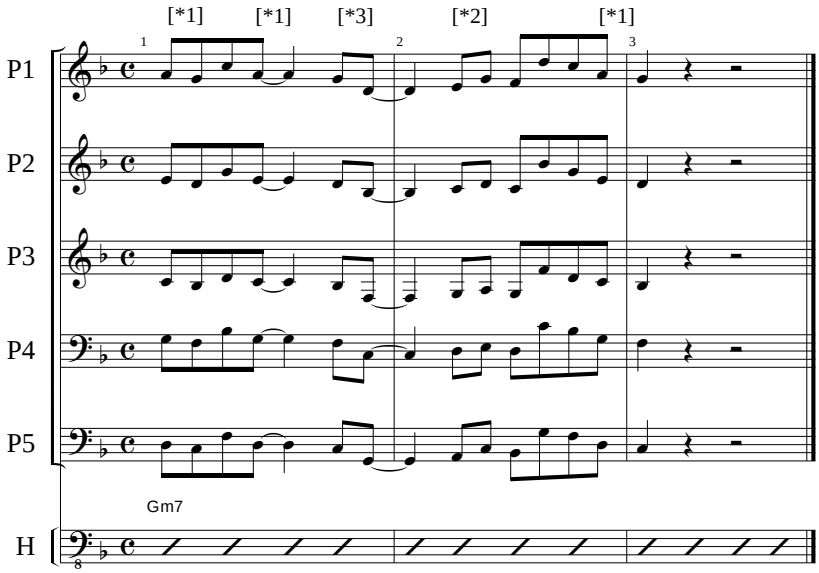
- The lead voice contains a number of stepwise $9 \searrow 1$ motions, see [*1] in Fig. 3.6.a. The basic harmony is G_{m7}: this implies the replacement rule $9 = 1$ and therefore will yield repeated notes in the lower parts if both lead pitches are harmonised using the same chord. In order to prevent these, the diatonic parallel minor chord A_{m7} (on the 3rd step of the F major scale) is used at these instances, yielding also a modal flavour to the phrase.
- At [*2] the lead voice has the 6 or 13 of the basic harmony (a non-chordal tone in the voicing in 4ths): in that case also the diatonic parallel A_{m7} chord is used to harmonise the lead. The following lead pitch can be harmonised with either G_{m7} or A_{m7}.
- At [*3] the wide voicing using structures in 4ths may get into a too low register for the lower parts. In that case a narrower voicing may be used, as shown in Fig. 3.6.b. This however leads to repeated notes in part P3. Note that the g in the lead in m. 2 now is harmonised with the basic chord G_{m7}.
- The repeated notes can be prevented by choosing the appropriate point for switching from open to more closed voicing. In this example the entire phrase will have to be rewritten in closed voicing, as shown in Fig. 3.7, leading to a dense *cluster voicing*.

◁

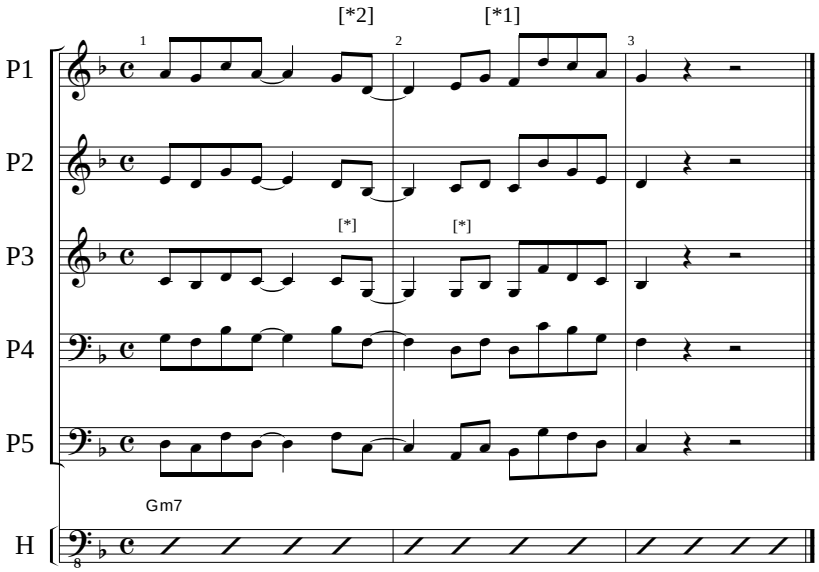
Example 3.6: Sectional harmony in five parts, chords in 4ths, leading tone in lead voice.

Problem: See Figure 3.8.

Discussion:



(a)



(b)

Figure 3.6: Sectional harmony in five parts, chords in 4ths. (a): harmonization of the $9 \searrow 1$ stepwise motion in the lead using the diatonic parallel A_{m7} chord. (b): More closed voicing is used to prevent too low lower parts, leading to repeated notes in middle voices.

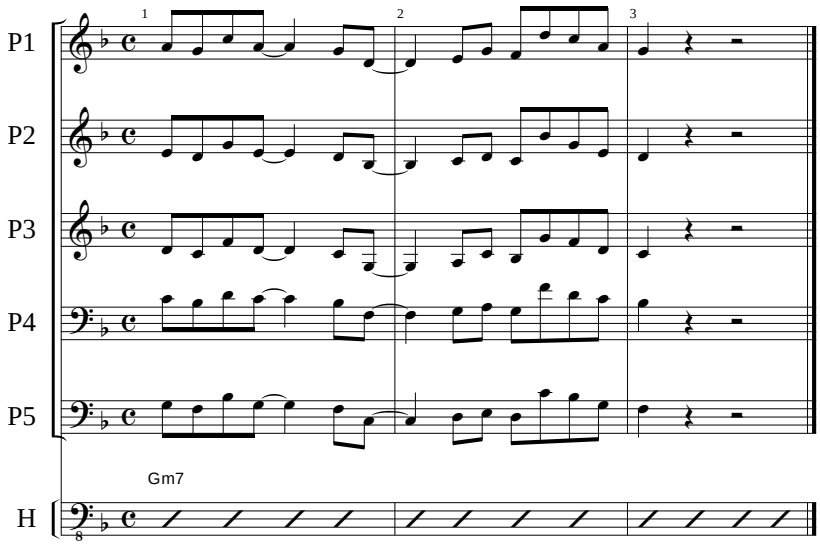


Figure 3.7: Sectional harmony in five parts, chords in 4ths, close (cluster) voicing.

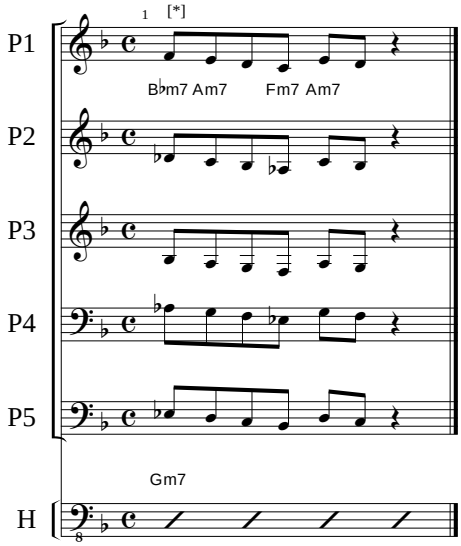


Figure 3.8: Sectional harmony in five parts, chords in 4ths, leading tone in lead voice.

- At [*1] the lead voice has a stepwise motion $f \searrow e$ (7 to 6) of the basic chord G_{m7}. As was shown in the previous example the 6 in the lead is harmonised with the diatonic parallel chord A_{m7}. The leading tone motion is harmonised by using the exact parallel chord structures, in this case with $B\flat_{m7} - A_{m7}$.
- In this brief example the lead is entirely harmonised with exact parallel $S_{m7}^{9/add11}$ structures, yielding an F_{m7} chord on the c in the lead (which could have been harmonised using the basic chord G_{m7}).

◁

Example 3.7: Sectional harmony in five parts, basic harmony contains mixed chord structures.

Problem: See Figure 3.9.

Discussion:

- The first solution is based on a harmonisation in 4ths: the upward leading tone $b \nearrow c$ at [*1] in Fig. 3.9.a is harmonised using the exact parallel chord B_9^6.
- Upon arrival at the dominant chord $B\flat_7$ the harmonisation in 4ths obviously cannot be continued: this is caused by the essential, characteristic interval of augmented 4th (or diminished 5th) between the 3 and 7 of the dominant chord. So, in case the basic harmony contains other chord structures than the S_9^6 or S_{m7}, we will also have to use a hybrid harmonisation, leaving and returning to the harmonisation in 4ths.
- In order to remind us of the older techniques, in Fig. 3.9.b the same phrase is harmonised using the secondary dominant $B_{\circ 7}$ at the non-chordal lead tones, marked with [*]. However, note at [*2] the upper our voices in the $B\flat_7$ chord: these form three superimposed perfect 4th intervals. So the basic flavour of the perfect 4ths can be maintained somewhat also in the harmonisation of dominant 7th chords.
- Maximisation of the use of perfect 4ths in the voicing of dominant 7th chords is shown in Fig. 3.10, starting at [*2]. The lead voice now is different. As an illustration of the $\Delta 7 = 1$ replacement rule for the major chord, see the voicing at [*1].

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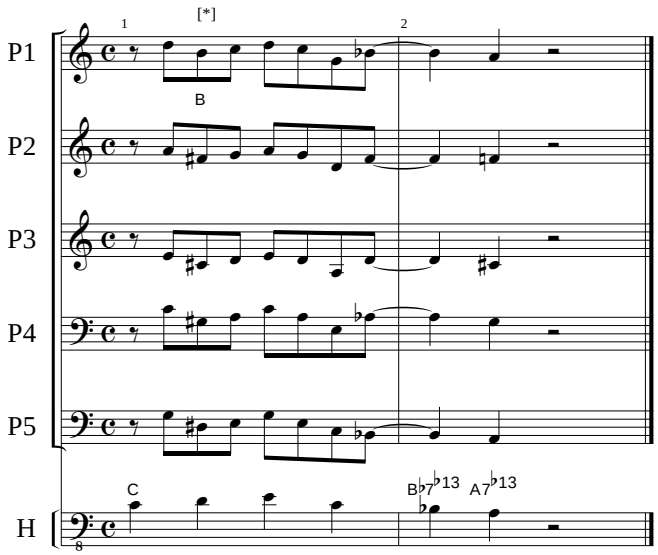

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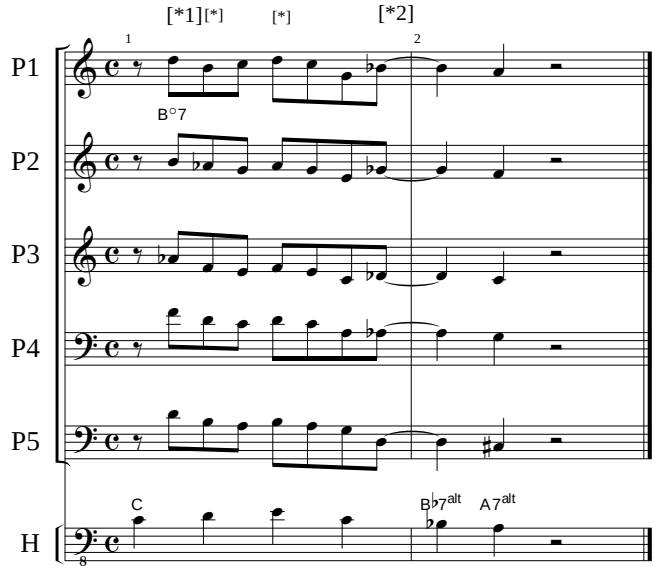

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Figure 3.9: Sectional harmony in five parts, mixed chord structures. (a): harmonization using chords in 4ths. (b): conventional sectional harmony, using the secondary dominant

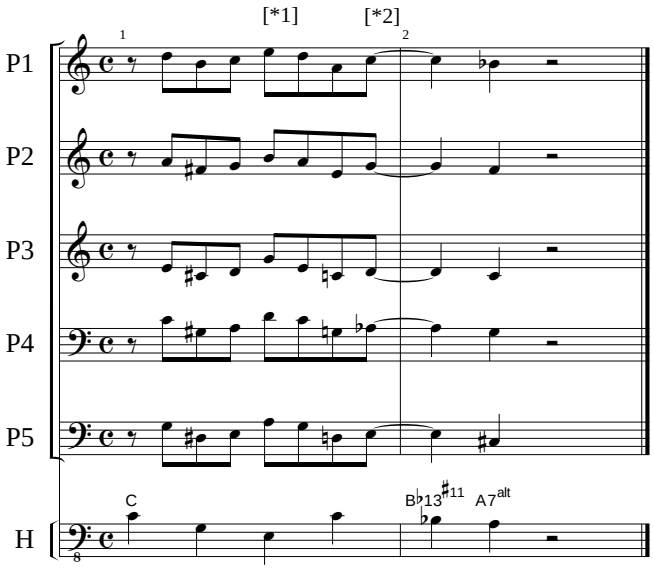

Figure 3.10: Sectional harmony in five parts, maximising the harmonisation in 4ths.

Chapter 4

Ensemble techniques

In this chapter we will discuss several techniques of *ensemble writing*, i.e., for a group of mixed instrumentation and variable size. Obviously we will work with the standard big band instrumentation of five saxophones, four trumpets, four trombones plus rhythm section, but we will also have a look at smaller ensembles. We will assume here that the lead voice is the highest part in the ensemble.

There is considerable treatment of these techniques in the textbooks (see [2], Part 5, [6], p. 131 ff., [11], Ch. 14-16). First the main aspects of ensemble writing will be discussed. Then the various techniques will be illustrated using examples.

4.1 Fundamental aspects

This section will discuss a number of fundamental aspects of ensemble writing. These have to be considered irrespective of the specific technique we will apply to the ensemble.

As we did before, our examples will start from a given basic harmony and, sometimes, a given lead voice. When writing for the ensemble take into account the following aspects:

- **Choose what will be your primary effect: the melody or the harmony.** Before you start writing the ensemble phrase think about the desired effect. In the standard big band instrumentation there will be thirteen people playing and they can achieve a very impressive effect, particularly at loud volume. Nevertheless, from a composer's point of view you still have the freedom to decide whether you will use that majestic effect employing the combined sound only or add extra value by creating melodic sense of your lead voice. This obviously does not apply in situations with a pre-determined lead voice.

- **Determine the range of the ensemble phrase.** Before writing any actual parts generate a clear idea of the range of the lead voice in your phrase. The phrase may have a length of between, say, 2 and 32 measures (a 'tutti special chorus'). This range is affected by

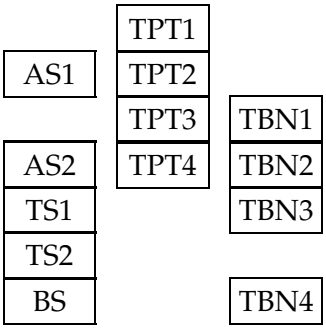

Figure 4.1: Example of ensemble voicing diagram.

Table 4.1: Checklist outer voices in big band.

Outer voices full big band
TPT1 vs. TBN1
TPT1 vs. AS1
TPT1 vs. TBN4
TPT1 vs. BS

the instrumentation, in particular the compass of your lead voice. But it also affects the voicing in the upper range section. this will be the trumpets in case of a big band, but it might also involve a string or woodwind section.

- **Determine the voicing of the leading section.** This will usually follow from the range of the lead voice. In general, this is the moment when you decide to use cluster, close or open voicing (see the chapter on strata techniques) for the leading section;
- **Determine the relative range of the lower sections.** The next step is to decide about the range and the voicing of the other sections in the ensemble. We will indicate these ranges by the *voicing diagram* as illustrated in Figure 4.1. In this example we see the ⟸ three sections of the big band; each column represents the voicing of a section from low to high. The trombones (abbreviated as TBN) use a wider voicing than the trumpets (abbreviated as TPT) that are in close voicing. We see an overlap between the three sections.
- **Write the voices for the most dominant section first.** In the big band the brass will usually dominate over the saxophones. Therefore we start with the brass voicing and then continue with the saxophone voicing.
- **Check the outer voices.** Finally, we have to inspect the intervallic relations of the outer voices of each section. Table 4.1 contains a checklist for the big band. Obviously, this depends on the actual instrumentation. You will never find TBN1 above TPT1 (unisono is possible though) and usually the top saxophone voice AS1 is one ore more voices below TPT1.

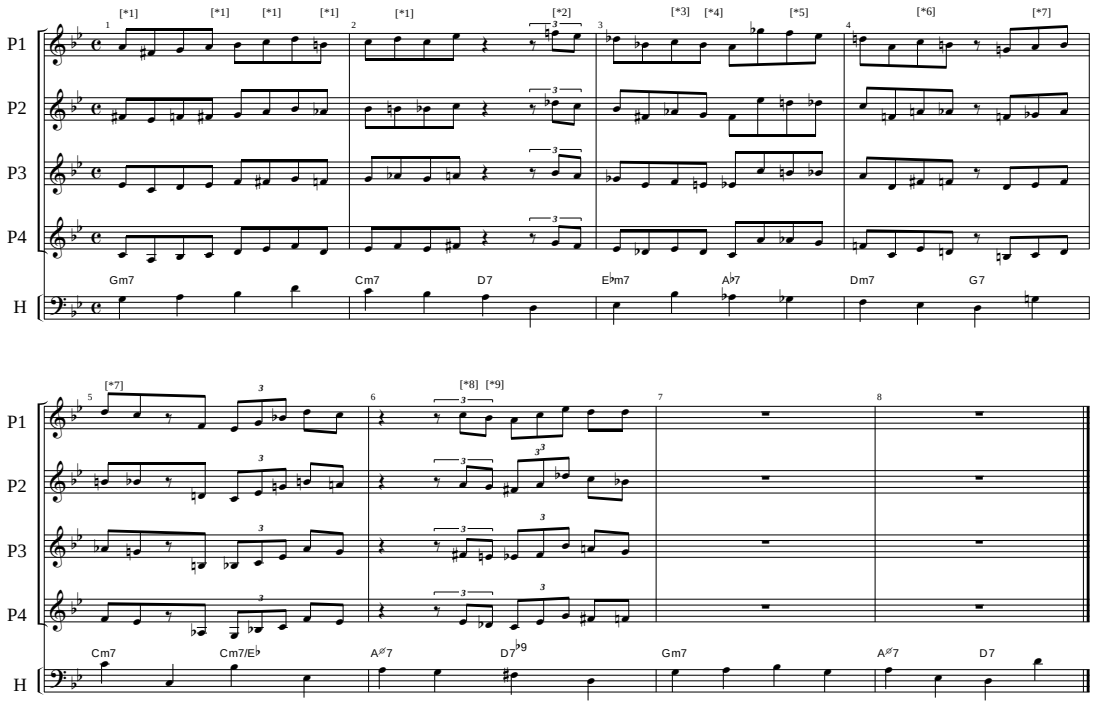

Figure 4.2: Starting the ensemble voicing: sectional harmony in four parts.

Now, we will discuss the various techniques and show examples.

4.2 Ensemble technique derived from four part sectional harmony

This technique of ensemble writing is derived from the four part sectional harmony that we have studied in that chapter. The problem we now have to solve is the proper distribution of the four basic voices over a larger group of instruments. You will have to decide on the correct doublings, create an clear lead voice and choose the type of voicing for each section.

In cases where a section consists of less than four voices you will have to combine it with another section and make sure that the combination of both has the full four part chords at all times. The first step, however, is to compose the four part sectional harmony for a given lead voice. Figure 4.2 gives an example.

Example 4.1: Sectional harmony in four parts.

Problem: Lead voice P1 contains non-chordal and non-diatonic tones.

Discussion:

- The non-chordal tones in m. 1 and m. 2 [*1] have been harmonised using a secondary dominant $F\sharp_{\circ 7}$ and $B_{\circ 7}$ respectively.
- The non-chordal tone f in m. 2 [*2] has been harmonised with an extended secondary dominant chord $E\flat^{9}_{7}$.

- In m. 3 [*3] we find the 6-7 stepwise motion on the 2nd degree (in $D\flat$-major) The c therefore is harmonised with the 3rd degree F_{m7} chord.
- The $b\flat$ in m. 3 [*4] is harmonised with the secondary dominant $G_{\circ 7}$ to prevent repeated notes towards the aiming chord $A\flat_7$.
- Beat 4 of m. 3 [*5] shows a chain of secondary dominants towards the aiming chord $A\flat_{\circ 7} - E\flat_7 - D_{m7}$.
- In m. 4 [*6] the c is harmonised with a secondary dominant $F\sharp_{\circ 7}$. The aiming chord is G_7.
- The rest of that measure plus the following uses secondary dominants to harmonise the non-chordal tones a, d, f and d [*7].
- In the final measure the chordal tone c [*8] is harmonised with the subdominant structure $A_{\circ 7} = E\flat_{\circ 7}$. This is equivalent to a forward extension of the D_7, a technique that we have seen before.
- The non-chordal tone $b\flat$ in m. 6 [*9] is harmonised with the secondary dominant $C\sharp_{\circ 7}$.
- The last three notes use a sequence of dominant chords towards the aiming chord $E\flat_7 - D_7 - G_{m7}$.

◁

After completing the four part sectional setting we will demonstrate the instrumentation procedure for three groups of instruments, from a full big band to a smaller ensemble.

4.2.1 Instrumentation for full big band

Figure 4.3 shows the instrumentation of the previous example for full big band (5SAX + 4TPT + 4TBN). We will now discuss the details of that instrumentation.

Example 4.2: Sectional harmony in four parts; full big band.

Problem: Assign the parts to the 8 brass and 5 saxophones for given 4 part sectional harmony.

Discussion:

- The trumpets play full chords in close voicing. TPT1 is in its middle range. This example is a good range for this sectional technique.
- There is an overlap between the trumpet and the trombone section; we have TBN1=TPT3, TBN2=TPT4. They will support the lower trumpet voices, especially when these are in the lower range. the intervallic relationship between the brass outer voices is good (mainly consonant 3rds, interchanged with mild dissonant 2nds). Copying the trombones one octave below the trumpets would have lead to a too low range for TBN4 and would have lead to performance problems.
- The trombones also are in close voicing. Full brass are kept within not too wide a range for maximum fluency. TBN1 is in high range in m. 2 and m. 3; this may require professional playing skills.

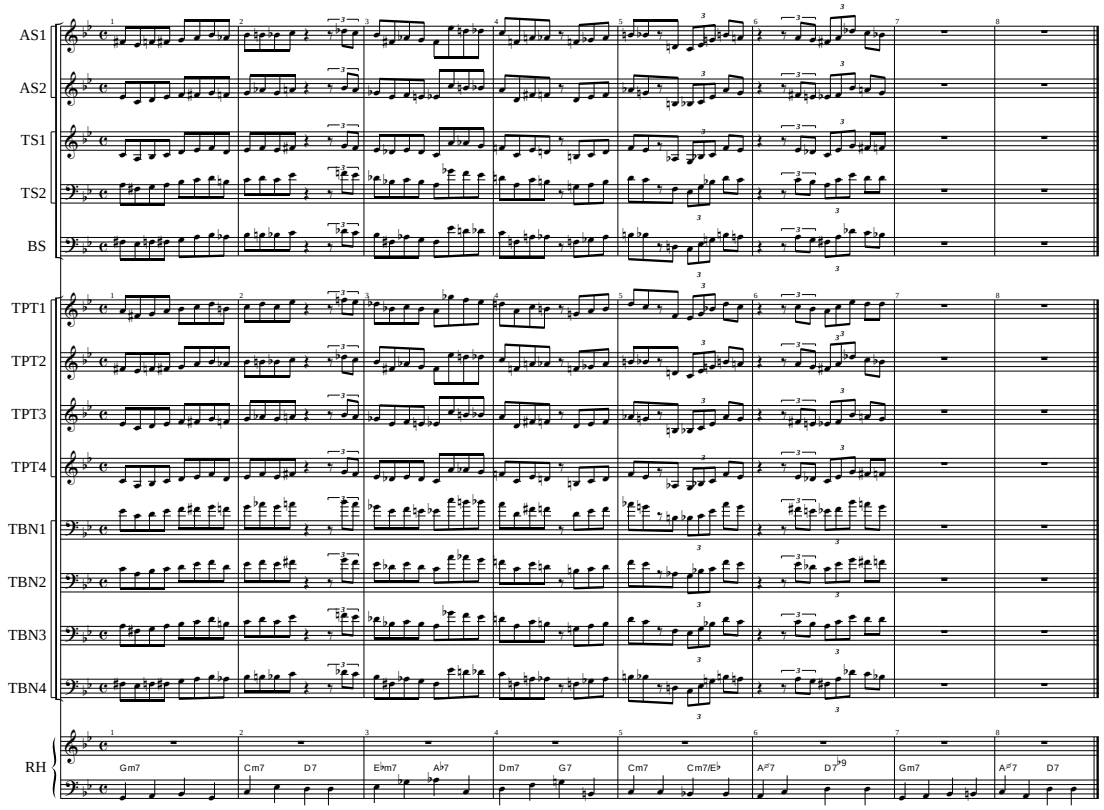

Figure 4.3: Sectional harmony applied to full big band.

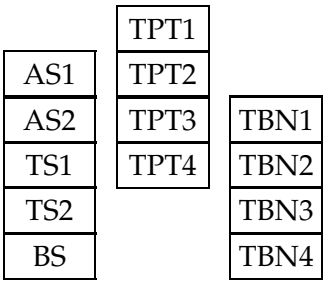

Figure 4.4: Voicing diagram full big band.

- Saxophones play in close voicing. There is overlap with the brass: we have AS1=TPT2 and BS=TBN4. Again we see good intervallic relationships between TPT1 and the outer saxophone voices; there are occasional 2nds between TPT1 and AS1. These are no problem, especially not in medium to up tempos.
- Figure 4.4 shows the voicing diagram.

◁

4.2.2 Instrumentation for reduced big band

Figure 4.5 shows the instrumentation for a big band of somewhat reduced size (4SAX + 3TPT + 3TBN).

Example 4.3: Sectional harmony in four parts; reduced big band.

Problem: Assign the parts to the 6 brass and 4 saxophones for given 4 part sectional harmony.

Discussion:

- The brass play in close voicing. Neither trumpets nor trombones play full chords; it is the combination of both that contains the full four part sectional harmony.
- The intervallic relation between TPT1 and TBN1 is good and consists mainly of imperfect consonances. The same holds for the relationship between TPT1 and TBN3.
- The range of TBN1 is now within safe limits for an amateur player: the highest note is ab^1.
- The saxophones play in 'drop 2' voicing, except at points where the lower range limits of TS would be reached (m. 1 beat 1, m. 5 beat 2 and 3). As for the overlap between saxes and brass: AS1=TPT3, the intervallic relationship has many perfect consonances (4ths and 5ths). This is no problem for this mixed instrumentation.

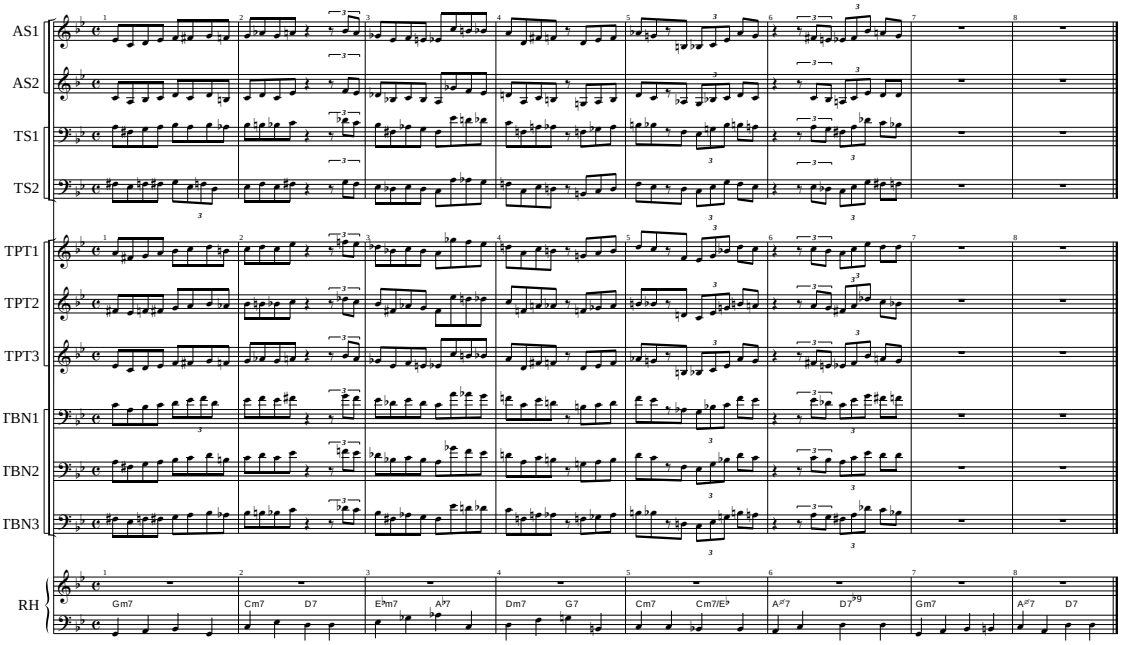

Figure 4.5: Sectional harmony applied to reduced big band.

- The saxophone parts would have been better if played by a section that consists of AS-AS-TS-BS, where the lower voice in the saxophones gains extra power below the trombones.
- Figure 4.6 shows the voicing diagram.

◁

4.2.3 Instrumentation for intermediate size band

Figure 4.7 shows the instrumentation for an intermediate size band (4SAX + 2TPT + 2TBN).

Example 4.4: Sectional harmony in four parts; intermediate size big band.

Problem: Assign the parts to the 4 brass and 4 saxophones for given 4 part sectional harmony.

Discussion:

- The brass play ‘drop 2’ voicing. Both sections together have the full four part sectional harmony. Within the sections there are many 4ths and 5ths between parts; this carries the risk of sounding harsh if the tone colour for both sections differs greatly. The risk would have been reduced and the fluency increased by simply playing in close voicing.
- The saxophone section plays a mixed voicing, open at the top and close for the lower voices. It was designed to fill the gaps that were left by the brass section (see the voicing diagram in Figure 4.8) with TS2 and BS below the trombones.

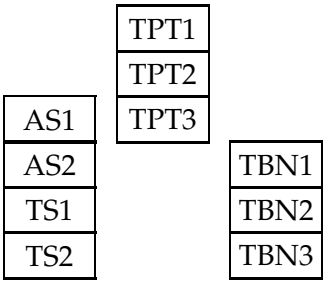

Figure 4.6: Voicing diagram reduced big band.

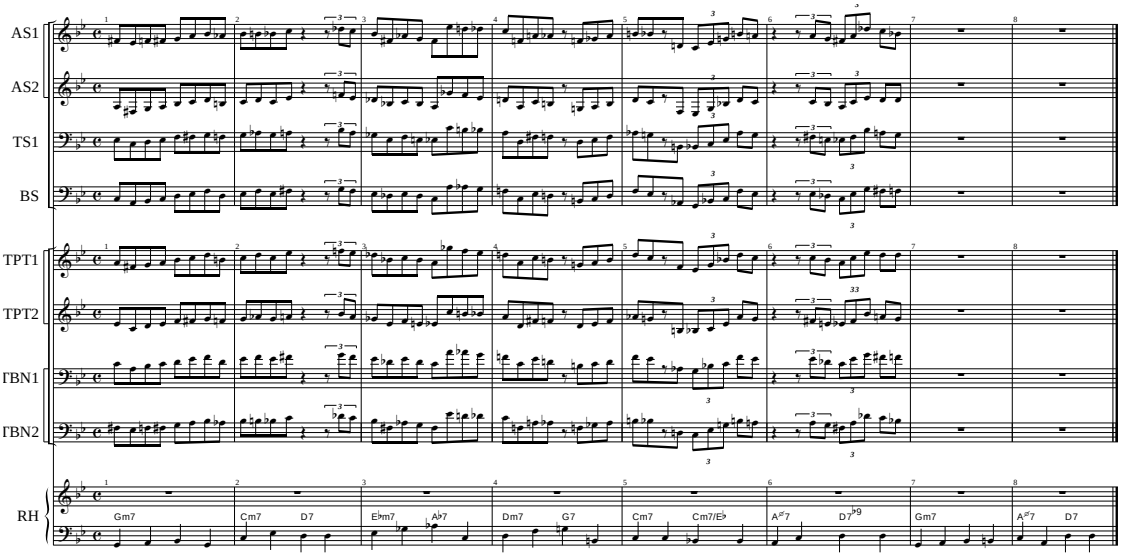

Figure 4.7: Sectional harmony applied to intermediate size band.

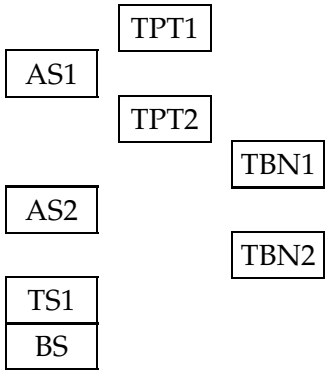

Figure 4.8: Voicing diagram reduced big band.

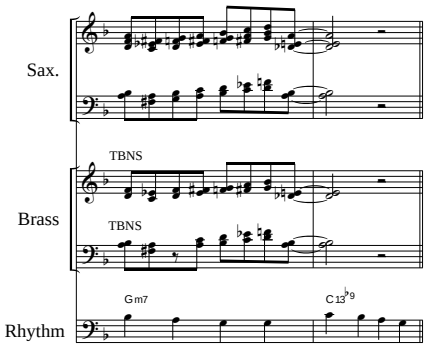

Figure 4.9: Sectional harmony applied to trombones and saxophones.

This leads to an internally unbalanced voicing and gets the TS into a pretty low region. Applying 'drop 2' voicing here while keeping the AS at its current position would still cover the gaps in the brass voicing and improve the voicing within the section.

◁

4.2.4 Combining trombones and saxophones

Figure 4.9 shows a brief two-measure phrase with sectional harmony in both trombones and saxophones.

Example 4.5: Sectional harmony in four parts; trombones and saxophones.

Problem: Assign parts to 4 trombones and 5 saxophones for given 4-part sectional harmony.

Discussion:

- Both sections play 4 part sectional harmony in closed voicing.

AS1	
AS2	TBN1
TS1	TBN2
TS2	TBN3
BS	TBN4

Figure 4.10: Voicing diagram trombones and saxophones.

- The voicing diagram is shown in Figure 4.10. AS1 plays the lead voice, doubles by BS at the lower octave. This lead voice is too high for TBN1, and therefore TBN4 plays the lead at the lower octave, an effect used by Duke Ellington. Both sections mix very well and will yield a full sound.

◁

4.3 Brass voicing for extended chords

The previous section discussed a number of examples, that were based on a four part sectional harmony voicing. From here on we will extend the number of voices, but before doing so, we will briefly touch on the aspects of *brass voicing* , i.e., the vertical distribution of chordal functions over the trumpet and trombone section in a big band, using extended chords (i.e., with higher chord functions such as $\flat 9, \sharp 11, 13$, etc.).

Example 4.6: Voicings for brass section

Problem: Assign parts to 4 trumpets and 4 trombones using extended chords. Figure 4.11 has a number of voicing examples that we will now discuss.

Discussion:

- Figure 4.11.a demonstrates the voicing of the dominant 7th chords, $S7$, here $F7$ and $D_7^{\flat 9}$. Although the voicing in the first measures has an octave doubling between TPT1 and TBN1 (good), the balance within each section is poor: the trumpets are widely spread and (most important) the trombone section does not provide a good harmonic basis, since the essential 7th function and root are missing. The voicing in measure 2 is a clear improvement. The TBNs now play the following chordal functions: 1, 3, 7 and 9, the TPTs play a Dm chord, adding the 13 to the $F7$ chord. Also note the doubling of the TPT1 part in the lower octave: from concert f" upward this is an essential support for the lead trumpet voice.
- Measures 3 and 4 from the same example demonstrate another aspect. The overall orchestral balance benefits from an internal balance in each section. In this

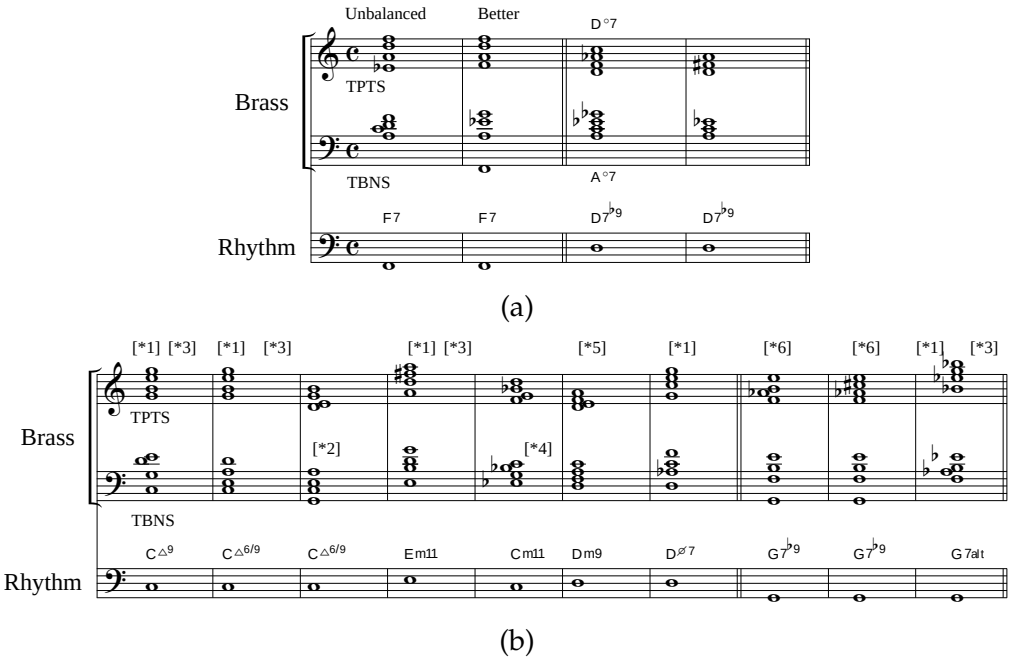

Figure 4.11: Brass section voicings. (a): internal balance, (b): various chord types

example that is demonstrated by assigning a full seventh chord (3rd measure, $_{\circ 7}$ to both TPTs and TBNs; the combined effect is an *octotonic scale*) or full triad (4th measure, D in TPTs and $A_{\circ}$ to TBNS) to each individual section.

- Figure 4.11.b shows various extended chord types (i.e., with more upper chord functions). A common element to all these voicings is, that the TBNS provide the essential chord functions, i.e., the 3rd for the major/minor chords and 3rd plus 7th for all other chord types. At [*1] we notice the lower octave doubling of the high lead trumpet. At [*2] the voicing of TBN3 and TBN4 will yield a *difference tone*, the root C below the staff. At [*3] we find full triads in the trumpets. The trombones may play an inverted chord, as is shown at [*4]. A *cluster voicing* is demonstrated at [*5].
- When voicing a $S7$, try to prevent assigning the perfect chordal function 5 to the trombones. Instead, use a lowered ($\sharp 11 = \flat 5$) or raised 5th ($\sharp 5 = \flat 13$) in the upper voices, as is demonstrated at [*6].

◁

4.3.1 Dominant seventh bitonal voicings

When voicing an *extended dominant 7th chord* the balance of the voicing is increased by assigning a full major or minor triad to the trumpets.

In total there are 12 possibilities, of which 8 are based on the *octotonic scale* and 4 are derived from an extended series of 3rds: these are shown in Figure 4.12. The basic chord is $C7$ and the characteristic, essential chordal functions 1,3 and $\flat 7$ are assigned to three trombones.

$\Longrightarrow$ The trumpet section creates a *bitonal voicing* by using:

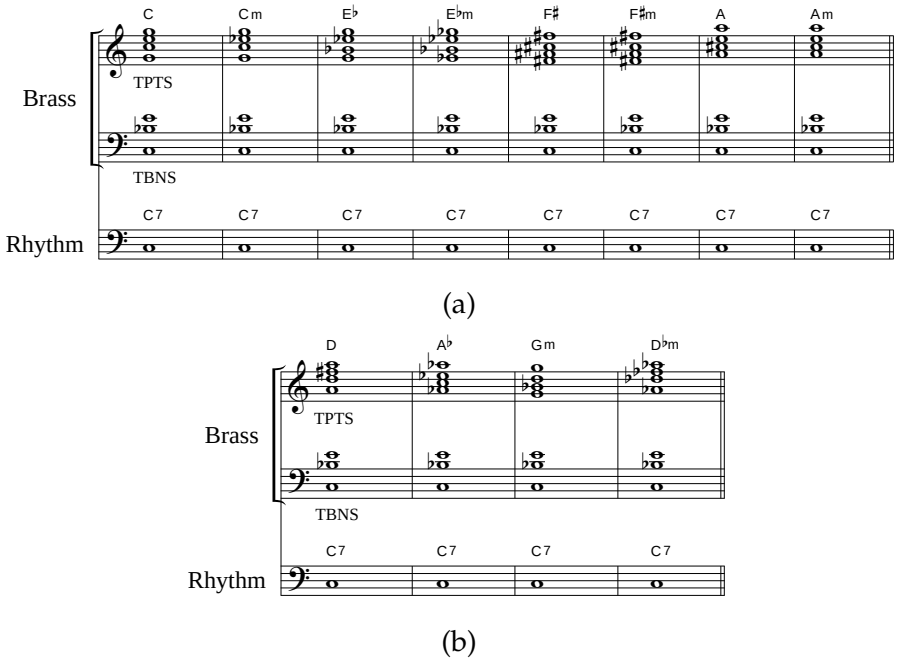

Figure 4.12: Dominant 7th chord $S7$ bitonal voicings. (a): structures based on the octotonic scale, (b): structures based on extended chords in 3rds.

- either the *octotonic scale*, leading to major or minor triads on the roots $C - E\flat - F\sharp - A$ (the symmetric $C_{\circ 7}$-chord);
- or *extended chords* in 3rds, leading to the major triad D (or its equivalent $A\flat$) or the minor triad Gm (and its equivalent $D\flat m$).

Use the transposed versions of this diagram to find bitonal brass voicing possibilities for given lead (see the examples below).

4.4 Percussive voicing

The *percussive voicing* is frequently used to create a massive tutti big band sound at louder dynamics (fortissimo). Its characteristics are:

- Extended voicings (5 and 6-part chord structures are frequent), assigned to brass (trumpets and trombones) or the full ensemble (brass plus saxophones);
- Short phrases with irregular rhythms, many syncopations and interspersed with rests. Perfectly synchronised playing of articulations (such as $>$ or $\wedge$) and respecting the dynamics (e.g., a sudden juxtaposition of mp and fff) is essential and yields an impressive effect (listen to and study the Count Basie and Thad Jones tutti choruses!).
- Functional support by the rhythm section: the *guitar* and *bass player* will frequently follow the rhythmic patterns in the horns (giving up the strumming guitar and *walking*

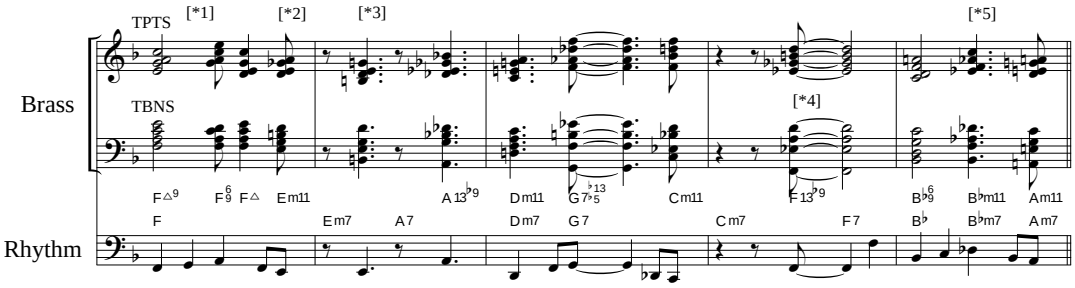

Figure 4.13: Percussive voicing for brass.

bass patterns almost completely), the *drummer* will prepare and support the articulations (loud cymbal crashes and toms), while the *piano* player will either support the horns (copying the voicings in both hands) or plug in a few high notes during the rests in the horns.

- Careful voice leading in the horns is now released: repeated notes are now permissible, and augmented/diminished steps or leaps may occur in the middle voices.

4.4.1 Examples of brass voicings

Now we will present a number of examples of percussive voicings for brass section, i.e., 4 trumpets and 4 trombones. In the examples the lead voice is given, as is the basic harmony indicated in the rhythm part.

Example 4.7: Percussive voicing for brass: blues scheme

Problem: Determine the 8 part brass voicing for given lead voice and basic harmony.

Discussion:

- The chord progression is based on an extended blues scheme, such as used in the standard *'Blues for Alice'*, see Figure 4.13. The overall dynamics are mf.
- At [*1] the opening chord F (tonic chord) is voiced using the various extended functions 6,Δ7 and 9.
- At [*2] there is an extended $S_{m7}^{9/add11}$ chord with the 11 in the lead. This chord type is used three times in the example.
- The lead at [*3] is fairly low, leading to an impractical concert $\sharp b$. Therefore it is better to leave out the 4th part in the trumpets and double the lead trumpet.
- At[*4] we see an illustration of the avoidance of the perfect 5th function in the trombone section, and replacing it with the $d = 6 = 13$.
- At [*5] there is a leading tone exact parallel chord, as is obvious from the voice leading $\searrow$ in all but the lead voice.

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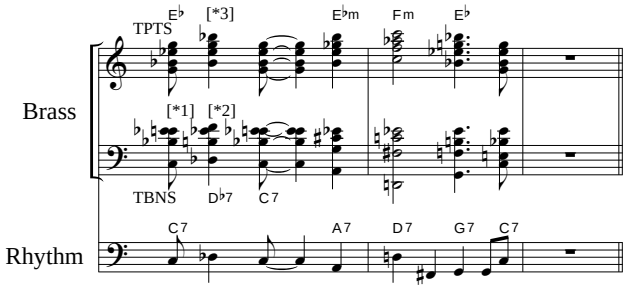

Figure 4.14: Percussive voicing for brass using bitonal triads in the trumpets.

Table 4.2: Alternatives for bitonal voicing.

Lead tone	g	$b\flat$	$b\flat$	c	$b\flat$	g
Harmony	$C7$	$D\flat 7$	$A7$	$D7$	$G7$	$C7$
Triad in TPTs	$C(m)$	Gm	$E\flat(m)$	$F(m)$	$B\flat(m)$	$E\flat$
(alternative	$E\flat$	$B\flat(m)$	$F\sharp$	$A\flat$	$E\flat$	Gm
solutions)	Gm	$E\flat$	$B\flat m$	Am	Gm	$C(m)$

Example 4.8: Percussive voicing for brass: bitonal triads in the trumpets

Problem: Determine the 8 part brass voicing for given lead voice and basic harmony.

Discussion:

- At [*1] in Figure 4.14 the voicing of the $S7$ structure yields a minor second between TBN1, playing the major 3, and TBN2, playing the altered $\sharp 9 = \flat 10$. This voicing is frequently used by Thad Jones.
- The $D\flat 7$ chord at [*2] is an intermediary, alternating step chord. The trombone voicing stresses the exact parallel movement.
- The trumpet section voicing uses full triads only, and uses chords in the key of $E\flat$ only (one exception).
- The example is one realisation form a set of possibilities. The full set is given in Table 4.2.

◁

Example 4.9: Percussive voicing for brass: use extended chords only

Problem: Determine the 8 part brass voicing for given lead voice and basic harmony.

Discussion:

- Figure 4.15 demonstrates a consistent block chord harmonisation of the $S7$ structure: the triads in the trumpets are based on extended chords. At [*1] we recognise the voicing demonstrated in m. 1 from Fig. 4.12.b, i.e., $S[D/C7]$, at [*2] we use the voicing $S[Ab/C7]$ as shown in m. 2 from the same figure.

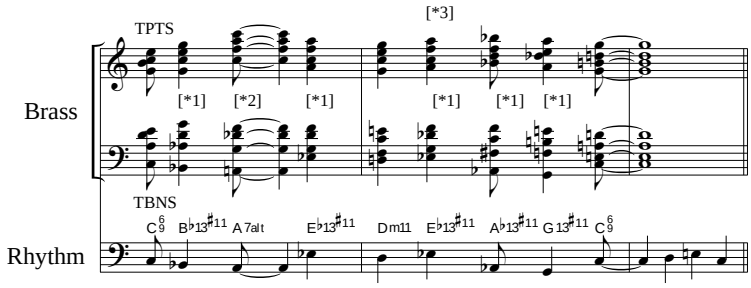

Figure 4.15: Percussive voicing for brass using bitonal triads in the trumpets.

- Like in the previous example the bass trombone TBN4 plays chord roots throughout. This gives a solid base to the percussive voicing and is frequently used.
- Although voice leading aspects can be somewhat released in this technique, a detail should be mentioned at regarding the lead voice. At [*3] we could have used the following chord sequence for the harmonisation: $A\flat 7 - D7 - G7 - C$. However, the tone a in the lead over the $A\flat 7$ chord has the function $\flat 9$, whose normal resolution would have been a stepwise downward motion. In this example the lead instead has an upward stepwise motion $a \nearrow b\flat$ and forces us to look for a more appropriate harmonisation.

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The previous example can be used to illustrate a procedure for the technique of percussive voicing, consisting of the following steps:

1. Assign the chord root tones to TBN4;
2. For dominant $S7$ chord structures assign the essential functions 3 and $\flat 7$ to two other trombones;
3. Assign the trumpet parts for all chord types (you may use consistent triad usage for the dominant $S7$ structures);
4. Complete percussive voicing for the 4th trombone part for dominant $S7$ chords, then assign TBN1 to TBN3 parts for the other chord types.

The following example deal with a *rhythmic background*: the rhythmic accents and the basic harmony are pre-defined and a voicing for a 6 part brass section is to be determined. We will discuss four alternatives, using different approaches.

Example 4.10: Rhythmic background for brass

Problem: Determine the 6 part brass voicing for given rhythmic accents and basic harmony.

Discussion:

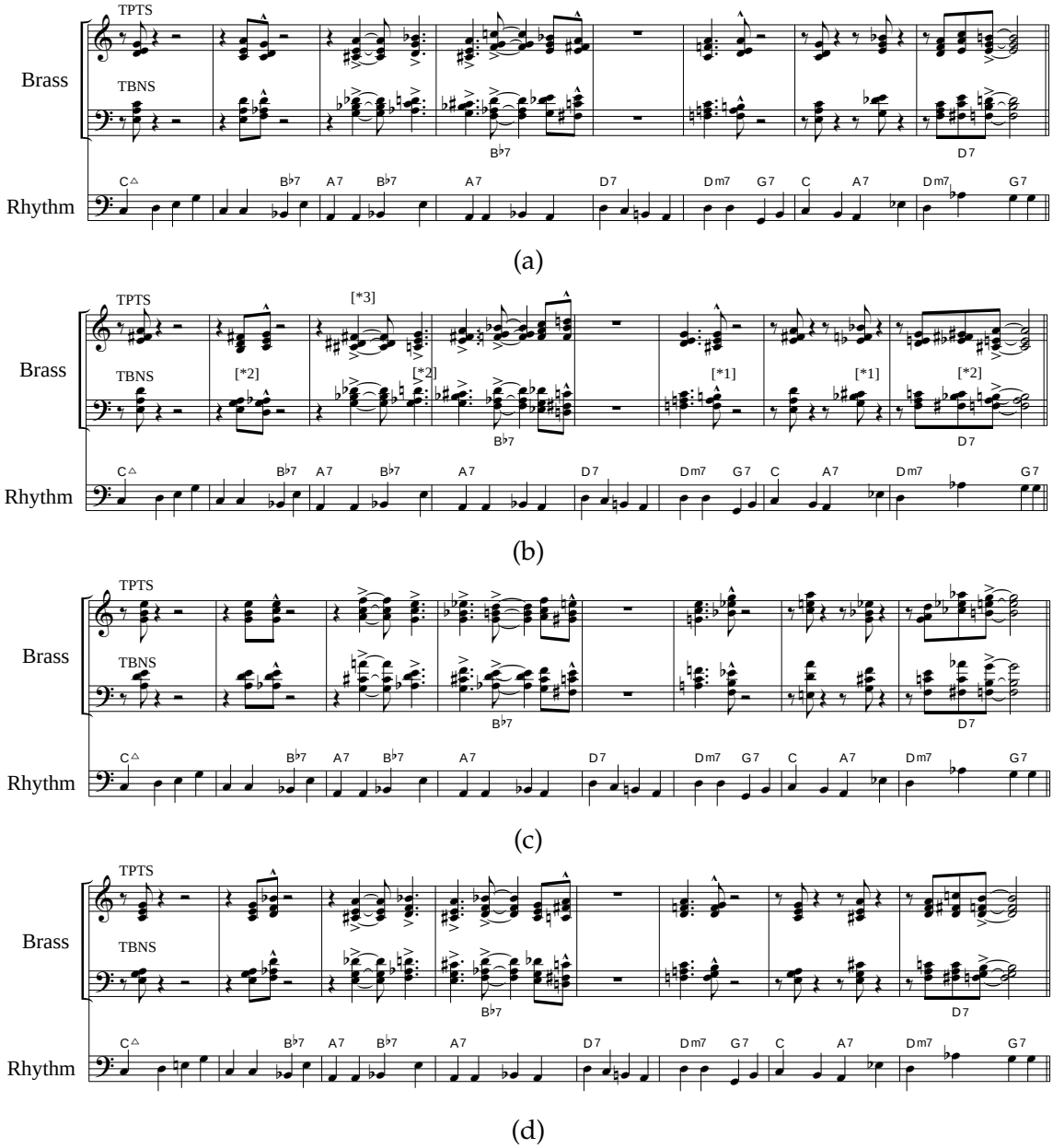

Figure 4.16: Rhythmic background for brass. (a): mid-low range, diatonic extensions, (b): mid-low range, all extensions, (c): mid-high range, triads in trumpets, (d): low range, basic $S7$ chords only.

- **Solution 1** in Figure 4.16.a demonstrates a voicing in the mid-low range using the following approach:
  1. strive towards a diatonic voicing in the key of C-major; this will determine the selection of the chord extensions;
  2. if this fails for the dominant $S7$, then use the $S_7^{\flat 9}$ structure.
- Note in the example that the voicing in the trumpet section stays within the interval of a 6th (a 5th is typical), yielding a cluster or triad voicing.
- The interval between TPT1 and TPT2 is a 3rd or 4th, the dissonant interval of a 2nd is avoided. This interval does occur between TPT2 and TPT3.
- As usual, the TBNs carry the essential functions (3 and 7) of the chord structure. Dissonant intervals of the 2nd are avoided between either pair of TBNs.
- Two secondary dominant chords have been used, i.e., $B\flat 7$ in m. 4 and $D7$ in m. 8.
- **Solution 2** in Figure 4.16.b demonstrates a voicing in the mid-low range using the following approach:
  1. all chord extensions are allowed (release diatonic flavour requirement);
  2. trumpets use cluster type voicing.
- We have again respected the interval rules for the TPTs and assigned essential chord functions to the TBNs.
- Now at [*1] there is the interval of the 2nd between two TBNs, at [*2] there is a sequence of two consecutive 2nds.
- Check the interval relation between TPT1 and TBN1.
- In m. 3 and m. 4, starting at [*3], there is contrary motion between (ascending) TPTs and (descending) TBNs. This calls for a crescendo and has the effect of leading up to climax.
- **Solution 3** in Figure 4.16.c demonstrates a voicing in the mid-high range using the following approach:
  1. all chord extensions are allowed;
  2. the trumpets are voiced in triads;
  3. TBN1 supports TPT in the high range by doubling the lead at the lower octave;
- note that again we find the interval of the 2nd between pairs of TBNs (see m. 2, 3, 6 and 8);
- solutions 2 and 3 sound more contemporary than solution 1; this is the effect of the non-diatonic and more dissonant chord extensions.
- **Solution 4** in Figure 4.16.d demonstrates a voicing in the low range using the following approach:
  1. Use the basic seventh chord $S7$ only.
- This example will sound most conventional and traditional. It is in deliberate contrast with the previous solutions.

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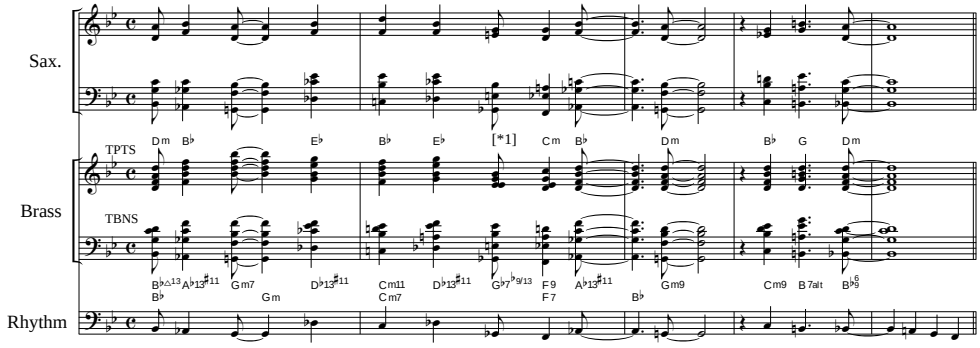

Figure 4.17: Percussive voicing for big band tutti.

4.4.2 Examples of ensemble voicings

Now we will proceed with a number of examples for the full big band, including saxophones.

Example 4.11: Percussive voicing for full big band

Problem: Determine the 8 part brass voicing plus 5 part saxophone section for given lead voice and basic harmony.

Discussion:

- Figure 4.17 shows the solution to the problem, the intermediate harmonies are shown above the basic harmony.
- In m. 1 there are two secondary dominant chords in the sequence $B\flat - A\flat 7 - Gm - D\flat 7 - Cm$. As an alternative one could have used the ascending chromatic sequence of dominant 7th chords $B\flat - B7 - C7 - D\flat 7 - Cm$.
- M. 2 has a sequence of intermediate secondary dominants $Cm - D\flat 7 - G\flat 7 - F7$ (alternative options are the equivalent $Cm - G7 - C7 - F7$ or the neighbouring intermediate dominant chord in the sequence $Cm - D\flat 7 - Cm - F7$).
- M. 3 and 4 contain a *turnaround*, a brief chord sequence that leads from and back to the tonic chord. A classic formula for the turnaround is $I - VIm - IIm - V(7) - I$, in this case $B\flat - Gm - Cm - F7$, or the more interesting $Dm7 - G7 - G\flat 7 - F7$, using the diatonic substitute $IIIm$ to replace the tonic chord, followed by a sequence of secondary dominant chords. ⟸
- The trumpet section used triad voicing, as indicated by the chords above the staff. Most of the triads are diatonic in the key of $B\flat$. However, at [*1] in the middle of m. 2, where the lead is in the middle range, we deviate from that principle: the $e\flat$ is doubled by TPT3 and TPT4, while the next chord is in 4-part voicing.
- The TBNs play the essential functions of the chord, while TBN4 has the chord roots.
- The saxes play a 5-part voicing with occasional doublings. Higher chord functions are pre-dominantly assigned to the alto saxophones (upper parts).

- Note the intervals between the leads of the saxophone and trumpet section. If the trumpet lead voice were in the middle range, there could have been unisono doubling with AS1. In that case, if these two parts have to diverge (e.g., when TPT1 goes into higher range), then create a consonant interval between TPT1 and AS1, in order to cover the change in voicing.
- In this example BS doubles TBN4: this will create a solid, massive effect. However, a smoother voicing is created by assigning the saxophone parts working upwards from TBN3.

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Example 4.12: Percussive voicing for full big band

Problem: Determine the 8 part brass voicing plus 5 part saxophone section for given lead voice and basic harmony.

Discussion:

- Figure 4.18 shows the solution. In m. 1 we find the tonic chord C as basic harmony (the $VIm = Am$ is the diatonic substitute). Now, there is a number of alternatives for harmonizing this measure and create a diatonic flavour: the example uses the fully diatonic sequence $C - Dm - Em - Am$. As alternatives we might have considered using one intermediate secondary dominant $C - F7 - Em - Am$ or $C - B7 - Em - Am$.
- At [*1] TBN1 plays the function 9 from the $Em7$ chord; this is a serious flaw, since it creates a very shrill dissonant minor 9th with the lead TPT1 in the first instance and a somewhat milder minor 7th dissonant in m. 3.
- At [*2] where the lead TPT1 is in the high range, we use triad voicing, TPT4 doubling the lead at the lower octave.
- The voicing of the saxophones is in 5-part, starting (with one exception) from TBN3 upward. For a more massive sound BS could have doubled TBN4 (playing root chords). Occasional doublings in the saxophone section, such as at [*3], where the $\flat 13$ is in both AS1 and TS1, are no problem and may help in achieving a better voice leading.

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Example 4.13: Saxophone voicing in big band tutti.

Problem: Determine the 5 part saxophone section voicing for given lead voice and brass voicing.

Discussion:

- Figure 4.19 shows three alternative saxophone voicings in this brief example, with the brass mainly in close block voicing.
- In general the saxophone voicing should stay within the compass of the brass voicing, i.e., AS1 stays below TPT1 and BS above TBN4. Therefore, the lead doubling can only be in the middle parts of the saxophone section.

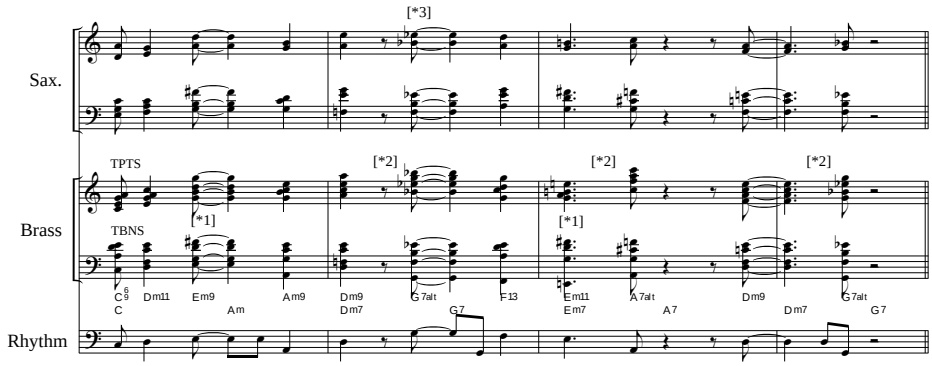

Figure 4.18: Percussive voicing for big band tutti.

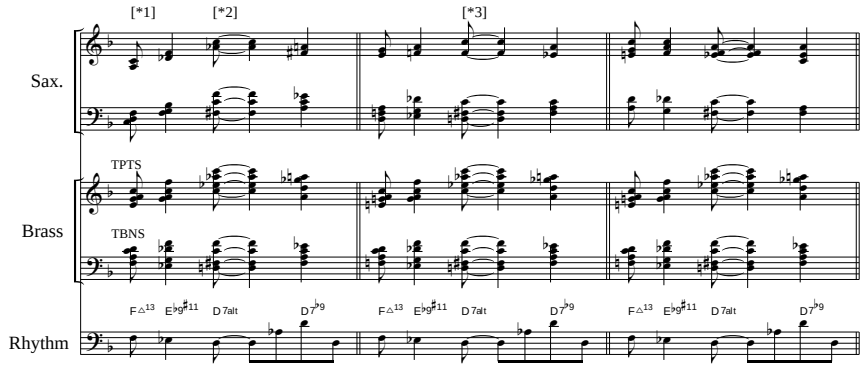

Figure 4.19: Saxophone voicing in big band tutti.

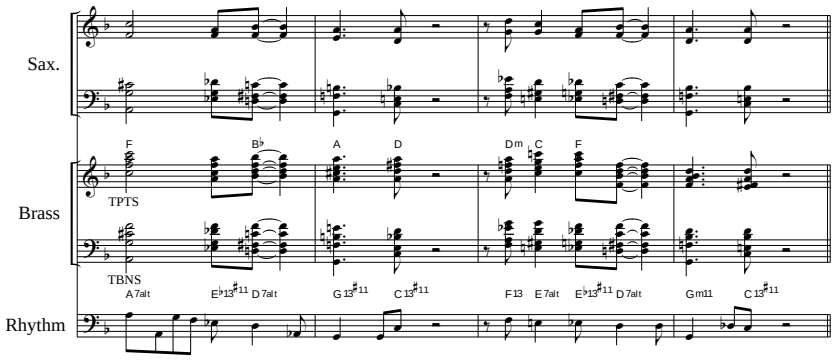

Figure 4.20: Percussive voicing for big band tutti.

- **Solution 1** demonstrates what happens when TPT1 is doubled at the lower octave by AS1 lead, and two octaves below by BS. We see a problem at [*1] where the saxophones go below TBNs. This creates a muddled sound. At [*2] the BS does not double the lead: instead it takes care of the chordal function 3 (the $f\sharp$) in the lower octave; this is a sudden change in the voicing.
- **Solution 2** has BS doubling TBN4, playing chord roots. In order to achieve a good voice leading in AS1, that will still stick out audibly in the ensemble voicing, we created the acceptable doubling of the 7 at [*3]. This is a better alternative to the first solution and will yield an internal sound balance in the saxophone section.
- **Solution 3** is based on neither lead doubling by AS1, nor root doubling by BS. From the brass voicing we select 5 functions from the chords and assign them to the saxophone parts, still trying to maintain an acceptable AS1 lead voice.

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Example 4.14: Percussive voicing for full big band

Problem: Determine the 8 part brass voicing plus 5 part saxophone section for given lead voice and basic harmony: maximize diatonic flavour by using appropriate voicing for the trumpets.

Discussion:

- Figure 4.20 shows the solution to the problem. The high lead trumpet requires many triad voicings. Most of these triads are diatonic or altered (see m. 2) chords in the key of F; this will contribute to the unity of sound.
- TBN voicing is straightforward, using the principles illustrated in previous examples.
- In the saxophone voicing the BS is doubling chord roots and AS1 supports the lead at the lower octave.

◁

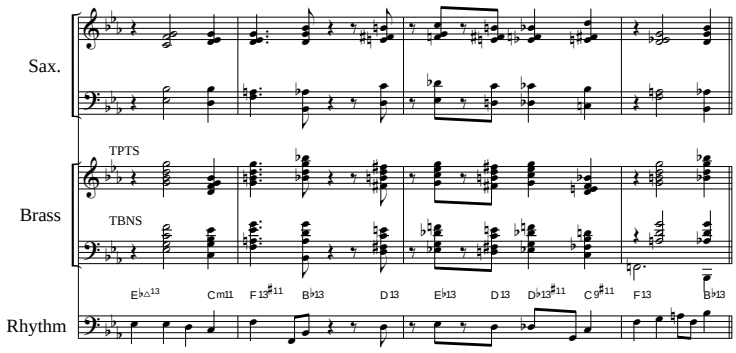


Figure 4.21: Percussive voicing for big band tutti.

Example 4.15: Percussive voicing for full big band

Problem: Determine the 8 part brass voicing plus 5 part saxophone section for given lead voice and basic harmony.

Discussion:

- Figure 4.21 is fairly straightforward and another illustration of the voicing aspects discussed before.
- The harmonisation uses a number of intermediate secondary dominant chords (m. 2 and 4) and exact parallel chromatic leading chords (m. 3).
- High trumpet lead requires support at the lower octave as provided by triad voicing; at middle range a 4-part voicing is applied.
- TBN4 plays chord roots. Note the *rhythmic anticipation* in the last measure, creating a slight touch of counterpoint and sense of independency in this overall homophonic setting. Note the sequence of major 2nd intervals between TBN1 and TBN2 in m. 2 and 3.
- In the saxophone voicing once again we see the BS doubling TBN4 and the frequent support for the lead trumpet by AS1. At two instances (the $B\flat 7$ chord in m. 2 and m. 4) there is a 4-part voicing, AS1 and BS doubling the root at the double octave (very wide voicing).
- The overall sound will be massive at loud fff dynamics.

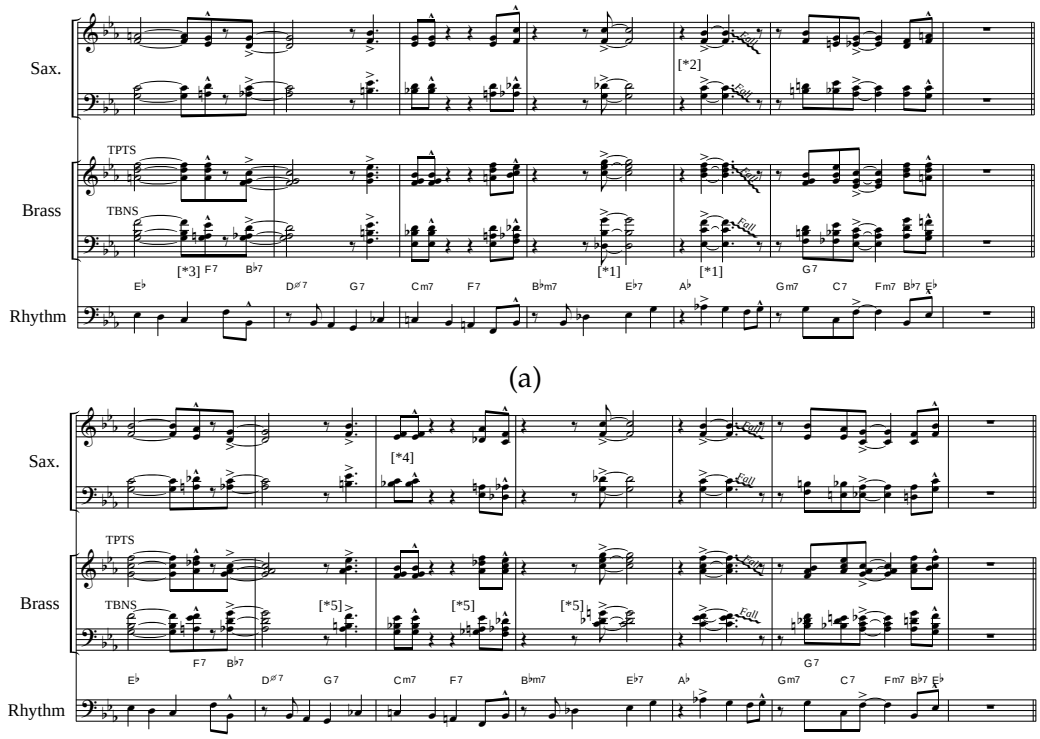
◁

Example 4.16: Ensemble voicing for intermediate size big band.

Problem: Determine the 6 part brass and 4 part saxophone voicing for given lead voice and basic harmony; create a bitonal flavour.

Discussion:

- The phrase is in the key of $E\flat$ and we will consider two alternative bitonal solutions, creating a different diatonic flavour.



(a)

(b)

Figure 4.22: Bitonal ensemble voicing for intermediate size big band. (a): trumpets in $B\flat$, (b): trumpets in $A\flat$

- In both solutions the basic chord $D_{\emptyset 7}$ is replaced by the substitute chord $B\flat 7$, which has more options for adding chord extensions. Also there are two secondary dominant chords, $F7$ in m. 1 and $G7$ in m. 6.
- This example also shows *articulation* marks and an expression sign, the *fall* (downward, glissando or portamento) in m. 5.
- The TPTs play triad voicing when the lead is high and cluster voicing for mid- or low-range lead; in that case the dissonant 2nd interval is between TPT2 and TPT3, while between TPT1 and TPT2 there is a consonant 3rd.
- **Solution 1** in Figure 4.22.a demonstrates a trumpet diatonic voicing in $B\flat$, with a *Lydian mode* (increasing the number of sharps) flavour.
  1. At [*1] there is a very open TBN voicing. The gap is filled by the saxophones.
  2. At [*2] we encounter another example of the frequently used voicing of the saxophones in 4ths.
  3. We see dissonant intervals of the 2nd between TBN2 and TBN3 in m. 1, with the functions 9 below 3 in $F7$ and 13 below $\flat 7$ in $B\flat 7$.
  4. Check the intervals between TPT1 and TBN1 (in octaves when the lead is high) and between TPT1 and AS1 (consonances preferred, no interval of the 2nd).
  5. The saxophones are interleaved with the brass, i.e., never below TBN3 or above TPT1.
- **Solution 2** in Figure 4.22.b demonstrates a trumpet diatonic voicing in $A\flat$, with a *Mixo-Lydian mode* (increased number of flattened notes) flavour.
  1. At [*4] the saxophones use an acceptable cluster voicing.
  2. Again there is a number of 2nds in the TBNs at [*5], with the functions $\flat 9$ below 3 in $G7$ and $F7$ and 13 below $\flat 7$ in $E\flat 7$.
  3. In m. 4-5 the TBNs are in close voicing in the middle range; in order to increase support for the trumpets the lowest saxophone (in this case preferably BS) plays below TBN3, doubling TBN1 at the lower octave.
- In neither solution we find chord roots in the horns; combined with the *walking bass* pattern this will yield the impression of a rhythmic background instead of a massive tutti *special chorus*.

◁

Bibliography

[1] Alfred Blatter. *Instrumentation and Orchestration*. Wadsworth/Thomson Learning, Schirmer, Belmont, CA, second edition, 1997. ISBN 0-00-02-82-864570-70-7. xix + 508 pp.

[2] Gordon Delamont. *Modern Arranging Technique*. Modern Arranging and Composing. Kendor Music Inc., Delevan, NY, 1965. iv + 239 pp.

[3] Frans Elsen. Jazz arranging course. Technical report, Royal Netherlands Conservatory, The Hague, 1983. (in Dutch, unpublished lecture notes).

[4] Russell Garcia. *The Professional Arranger Composer (Book II)*, volume 2. Criterion Music Corporation, Hollywood, CA, 1979. iv + 91 pp.

[5] Kent Kennan and Donald Grantham. *The Technique of Orchestration*. Prentice-Hall Inc, Upper Saddle River, NJ, fifth edition, 1997. ISBN 0-13-466327-6. xiv + 411 pp.

[6] Henri Mancini. *Sounds & Scores: a Practical Guide to Professional Orchestration*. Northridge Music Inc., USA, 1986. ISBN 0-89898-667-2. x + 243 pp.

[7] Norman Del Mar. *Anatomy of the Orchestra*. Faber & Faber, London, 1983. ISBN 0-571-13185-9. 528 pp.

[8] Sammy Nestico. *The Complete Arranger*. Kendor Music, Inc., Delevan, NY, 1993. x +340 pp.

[9] Ken Rattenbury. *Duke Ellington: Jazz Composer*. Yale University Press, New Haven and London, 1990. ISBN 0-300-05507-2. xii + 327 pp.

[10] Nelson Riddle. *Arranged by Nelson Riddle*. Warner Bros. Publications Inc., Miami, FL, 1985. ISBN 486-21266. 200 pp.

[11] William Russo. *Composing for the Jazz Orchestra*. The University of Chicago Press, Chicago & London, 1961. ISBN 0-226-73209-6. vi + 90 pp.

[12] William Russo. *Jazz Composition and Orchestration*. The University of Chicago Press, Chicago & London, 1968. ISBN 0-226-73213-4. xvii + 825 pp.

[13] Joseph Schillinger. *The Schillinger System of Musical Composition*, volume I and II of *Da Capo Press Music Reprint Series*. Da Capo Press, New York, fourth edition, 1946. ISBN 0-306-77521-2 and 0-306-77522-0. xxiii + 1640 pp.

[14] Gunther Schuller. *Early Jazz: Its Roots and Musical Development*, volume 1 of *The History of Jazz*. Oxford University Press, New York, Oxford, 1968. ISBN 0-19-504043-0. xii + 401 pp.

[15] Gunther Schuller. *The Swing Era: The Development of Jazz 1930-1945*, volume 2 of *The History of Jazz*. Oxford University Press, New York, Oxford, 1989. ISBN 0-19-507140-9. xviii + 919 pp.

[16] Don Sebesky. *The Contemporary Arranger*. Alfred Publishing Co., Inc., Van Nuys, CA, definite edition, 1994. ISBN 0-88284-485-7. xv + 237 pp.

[17] Fred Sturm. *Changes Over Time: The Evolution of Jazz Arranging*. Advance Music, USA, 1995. ISBN 0-89898-667-2. 222 pp. (Order # 11350).

[18] Walter van der Leur. *Something to Live For: The Music of Billy Strayhorn*. Oxford University Press, New York, Oxford, 2002. ISBN 0-19-512448-0. xxiii + 328 pp.

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