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Announcement: 2009 Bruce Benward Student Analysis Competition Winners

From the editor of the *Journal of Music Theory Pedagogy* on behalf of the members of the Editorial Review Board and the Governing Board and staff of the Gail Boyd de Stwolinski Center for Music Theory Pedagogy, a hearty congratulations to the 2009 winners of the Bruce Benward Student Analysis Competition. Many thanks as well to each contestant for his or her outstanding contribution to a successful competition.

The winners of this year's competitions are Clare Sher Ling Eng, Stefan Love, and Richard Porterfield, with Ms. Eng and Mr. Love having tied for first place and Mr. Porterfield having received the third prize. In addition to the publication of the first-place entries in this issue of the journal, each contestant has also received a cash award. Biographical information on the tied first-place authors can be found in the Contributors section of this issue. Richard Porterfield is a PhD candidate in music theory at the City College of New York.

The Bruce Benward Student Analysis Competition was established in the memory and honor of an outstanding pedagogue, one of the founding members of the *Journal of Music Theory Pedagogy*, and the posthumous recipient (2008) of the Gail Boyd de Stwolinski Prize for Lifetime Achievement in Music Theory Teaching and Scholarship. In 1986, Dr. Benward organized a similar competition in conjunction with the founding of the *Journal of Music Theory Pedagogy*.

On behalf of the contestants and the Gail Boyd de Stwolinski Center for Music Theory Pedagogy, the editor extends a special note of appreciation to the distinguished panel of jurists as follows: Mary Arlin of Ithaca College (chair of the jury), Sarah Reichardt of the University of Oklahoma, Anne Marie de Zeeuw of the University of Louisville, Eric McKee of Penn State University, and Matthew Bribitzer-Stull of the University of Minnesota. The members of the jury are especially to be commended for their constructive engagement in the form of editorial comments provided in response to each submission.



Mapping Voice Leading from Four through Forty Voices: A Tool for Pedagogy

MATTHEW S. ROYAL

INTRODUCTION

This article describes a tool for exploring voice-leading options in pre-tonal and tonal harmonic contexts: the “voice-leading map.” Like many tools, voice-leading maps may be adapted for a number of different uses and applied to a variety of materials. In order to convey something of this multivalence, the description that follows will be divided into three sections: (1) an introduction to maps using 4-voice examples, such as any student might encounter in first- and second-year theory; (2) an application of maps to 8-voice compositional exercises in a late 16th-century style; and (3) a brief exposition of the kind of *analytical* insights that maps afford, using a 12-voice example by Palestrina and a 40-voice example by Tallis.

VOICE-LEADING PATHS AND MAPS IN 4 VOICES

The Aims of Voice-Leading Pedagogy

One might identify two overarching goals of good voice leading: (a) to create truly independent parts within a homophonic or polyphonic texture, and (b) to control dissonance in a stylistically appropriate way. While these two may not be the only objectives of voice leading, between them they surely account for many of the issues encountered in the core-theory or counterpoint classroom. Point (a) provides justification for the strong prohibition of parallel perfect consonances as well as the less strict avoidance of “hidden” perfect consonances and the mild preference for contrary or oblique motion.¹ Point (b) speaks to the approach, the preparation and the

¹ A perceptual rationale for the avoidance of parallels is provided in David Huron, “Tone and Voice: A Derivation of the Rules of Voice-Leading from Perceptual Principles,” *Music Perception* 19 (September 2001): 1-64.

resolution of all tones that are not consonant with a particular triadic harmony, including the treatment of chordal sevenths.

Traditionally, the pedagogy of voice leading has taken two lines of attack, namely composition and analysis. These two activities, broadly construed, are seen as complementary: each offers a perspective on music, a way of “getting to know the notes,” that the other does not. Exercises in part writing or counterpoint provide students with the challenge of writing something that sounds good while working towards these two goals. Such a task can be both intellectually interesting and musically informative, if the exercises are well constructed. Analytical exercises can show how composers of the past routinely negotiated these demands in creating aesthetically satisfying (or even great) pieces of music. As will be shown, voice-leading maps can aid both composition and analysis.

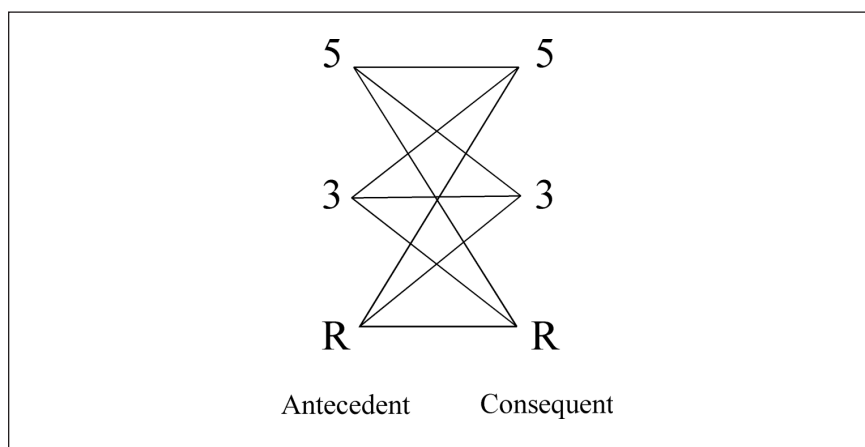


Figure 1: Schematic map of all possible paths between two triads.

Maps and Paths in Four Voices

The approach adopted here is to assume *a priori* that a particular harmonic progression is to be realized in x number of independent voices. To see how this might work, imagine that we have two chords, as schematized in Figure 1. Between the antecedent and the consequent chords there exist a limited number of voice-leading possibilities, or “paths,” from the members of one chord to the other. All the paths in combination produce a voice-leading “map.” Figure 1 gives the total number of potential paths between two triads where R stands for “root,” 3 for “third” and 5 for “fifth.” Note that there are nine possible paths in total: root-root, root-third, root-fifth, third-root, third-third, third-fifth, fifth-root, fifth-third and fifth-fifth. However, when it comes to particular chord progressions, not all maps are created equal; depending on the specific context, some maps may have more paths than others. It should perhaps be emphasized that maps can play two roles. First, they can show all the possible paths for a given progression, several of which may not be used in any given setting; this we shall call a “potential map.” Second, they can be used to keep a tally of the paths actually used in a given setting: this we shall call an “actual map.” In either case, the main purpose of a map is to make sure that no paths are duplicated, which would render parallel octaves or unisons (there are some exceptions to this rule noted later on).

More concrete examples of maps are given over the next few pages in Examples 1 through 5. The map displayed at the top of each example is a *potential* map, while those given under the staves are *actual* maps. The potential map at the top of Example 1 shows the possible voice-leading paths in the simple V-I cadence in C major, the bass-line G-C path being bolded for clarity’s sake. Several other features of this map should be noted. First, the D-G (fifth-fifth) path is not available as it would give consecutive fifths with the bass, so that path is excluded from the map right off the bat. Second, in a typical four-voice setting, only one B will sound in the first chord, in accordance with the usual prohibition of leading-tone doubling. Consequently, either the B-C or the B-G paths will be used, and the B-G path (“falling leading tone”) can only be employed in one of the inner voices. Third, it is preferable to have only one E in the second chord, so the D-E and G-E paths may be seen as alternatives, too. The alternative paths identified in the second and third points above have been annotated with the word “or”. Two of the many

possible realizations of this cadence, with accompanying actual maps, are given at the bottom of Example 1.

Potential map

a. b.

D G D G
B E B E
G C G C

Example 1: Voice leading for the progression V-I in C major.

Example 2 shows a slightly different situation, the progression V^6 -I in C major. This time, in the potential map shown at the top of the example, the B-C path is bolded as the bass line (being the only path from the leading tone B) and D-E and G-E are again labeled as alternatives. Note also that the fifth-fifth, D-G, path is now theoretically possible: either the G-C path with which the D-G path forms parallels does not have to occur (Example 2a), or the D-G path sounds *below* the G-C path, forming parallel 4ths, not parallel 5ths (Example 2b).

Potential map

a.

b.

D — G

B — E

G — C

D — G

B — E

G — C

4ths

Example 2: Voice leading for the progression V^6-I in C major.

Example 3 shows another modification of Example 1, the V^7 -I cadence in C major. Many of the features of the potential map given here are identical to the map shown in Example 1. However, the seventh of the dominant 7^{th} , F, is added to the path between G and E and labeled as the 7^{th} of the chord (realized in Example 3a). This method of labeling shows the voice-leading origin of the 7^{th} and also precludes the possibility of erroneously duplicating the descending approach to the E (i.e. writing F-E and G-E at the same time, a common error in first-year theory assignments [committed in Example 3b]).

Potential map

a.

b.

Example 3: Voice leading for the progression V^7 -I in C major.

A more refractory voice-leading situation is given in Example 4, which shows the potential map for a Phrygian cadence in A minor,

with the bass-line bolded as before. In this case, a couple of problematic pitch classes limit the number of possible paths. First, F cannot proceed to B as this gives a melodic tritone. Second, the G# in the consequent chord can only be approached from A (D-G# and F-G# both being melodically undesirable). Third the A-B path is only possible if it occurs *below* the D-E path, giving parallel 4ths rather than parallel 5ths (Example 3a). Fourth, the A-E path cannot be a descending fourth in the soprano as this will give hidden octaves with the bass (avoided in Example 3b). Fifth, the descending-third path, D-B, cannot be in the soprano as this gives hidden fifths (avoided in Example 3c). With this Phrygian cadence, then, there are only 6 paths on the potential map, and 3 of those paths have warning signs posted.

Potential map

a. b. c.

good okay good

A B A B A B
F G# F G# F G#
D E D E D E

Example 4: Voice leading for the progression iv^6-V in A minor.

The final two-chord four-voice progression to be considered is the half cadence, IV-V, in C major, as shown in Example 5. This progression can pose problems for beginning students as there are no common tones between the chords and the danger of committing parallel fifths or octaves is therefore greater. In the potential map, the bass-line path, F-G, is bolded, while the fifth-fifth path, C-D, is excluded at the outset to preclude parallel fifths. The A-G, C-B, F-D and A-D paths are all possible, though they are flagged as having to descend, either for melodic reasons (e.g. A-G, C-B and F-D), and/or to avoid the possibility of hidden perfect intervals if one of these paths occurs in the soprano. The two possible approaches to the B, A-B or C-B (both stepwise) are mutually exclusive as B is the leading tone and therefore cannot be doubled. Example 5 also shows two possible realizations of this progression using some of the paths identified above.

Potential map

a.

b.

C D

A B

F G

C D

A B

F G

Example 5: Voice leading for the progression IV-V in C major.

The foregoing progressions are all typical of what students might be expected to master within the first couple of months of starting four-part writing. At this level, potential maps are intended as visual cues for discussion. Using this discussion as a springboard, and armed with just a few rules about doubling, spacing and melody writing, the student can then proceed to generate different 4-voice realizations of these chord progressions. The key is to use the maps to have the student experiment and discover for her/himself which paths work best, for instance, that paths involving the smallest possible melodic intervals are generally the easiest to traverse.

Instructors of first-year theory have at their disposal a variety of ways of expressing the rules and norms of common-practice voice leading. One might refer, say, to scale degrees (“the leading tone resolves upwards to the tonic”), to intervals above the bass (“in a cadential $\frac{6}{4}$ the 4th above the bass resolves down by step”) or to members of the chord (“the seventh of the dominant seventh is quit downwards by step”). All these ways of conceptualizing voice leading are useful, necessary and complementary. Why, one might then ask, add a further layer of complication in the form of pitch-class letter names? The answer to this objection is that, in my experience, more often than not, students already *do* write in pitch-class letter names in theory exercises. For example, one might see letter names added as chord tones for a figured-bass realization, or as the available consonant pitches above or below a cantus firmus in species counterpoint. Moreover, these *ad hoc* student annotations are frequently incorrect, incomplete or lacking crucial accidentals (e.g. the notes of the tonic chord in Db major given as D, F and A!). Voice-leading maps simply offer a means of systematizing, checking and extracting the maximum benefit from what is often already done informally.

At this juncture, several other helpful features of voice-leading maps should be highlighted:

1. The pitch-class options for each chord and the possible paths between them are clearly laid out. Rather than learn rote progressions, the student is encouraged to explore alternative voice-leading paths and work out which of these tend to be used for melodic or harmonic reasons.
2. Maps may be annotated in whatever way the instructor feels is helpful or relevant. The above examples show some of the simpler types of labeling that can be employed. In addition,

- other strategies such as color coding for different parts can of course be adopted.
3. Paths that would allow parallel fifths and octaves are discounted from the outset or at least dealt with directly in discussion.
 4. As illustrated with the dominant 7th in Example 3, the essential difference between consonance and dissonance is emphasized. Chordal 7ths are notated conspicuously on the voice-leading map as a visual reminder that they must be controlled carefully.
 5. The more abstract nature of pitch-class notation can actually be a boon: because pitch-classes are by definition octave-neutral, a student can plan out a particular path without immediately having to commit to a specific range or voice. Alternatively, a student may decide to assign a voice-leading path to a particular voice/octave early on, and be prepared to revise that at a later stage. If, then, in the process of revision, the original musical notation is erased, the presence of the map serves to jog the student's memory that a certain path is still required in another voice.

One limitation, the flip-side of point (5) above, should also be noted: these maps do not necessarily represent the spatial aspects of melody, i.e., whether a line descends or ascends and the size of the melodic interval traversed. Instead, the three members of each triad are vertically ordered by root, third and fifth for the sake of consistency. For this reason, maps are best used *in conjunction with* rather than instead of conventional musical notation. As already mentioned, they provide another way of thinking of voice leading that complements but does not replace normal notation.

In order to see the possibilities for voice-leading maps beyond elementary progressions, we shall consider one example of a longer four-voice progression, such as a student might encounter in her/his second year of theory. Example 6a shows what a student might be given to start with: a figured bass that contains, among other things, several seventh chords, an augmented 6th, a secondary dominant 7th and a cadential 6₄. The student's first task is to write in the implied pitch classes below the staff system and mark in the path taken by the bass line (these are both shown on Example 6a, too). Note that any chordal sevenths are placed to the side of the main column for their chord since this makes them visually more conspicuous and situates them near their likely note of resolution in the next chord. In

addition, there are two sonorities in this exercise which arise purely out of voice leading and for which the conventional ordering of root-third-fifth is either meaningless or unhelpful. These sonorities are the Italian 6th (m.1, b.4) and the cadential $\frac{6}{4}$ (m.3 b. 2). For these, the vertical ordering of the chord members in the map is mutable: in this instance the Italian 6th has been arranged to highlight the notes it has in common with the chord that precedes it; the $\frac{6}{4}$ has been ordered similarly to highlight voice-leading proximity.

5th C# G# F# F# G# G# E A D A G# C#

3rd A E-D-D E# E# A C# F# F# E# A#

7th F# C# B B# C# C# F# A-D G# C#-C#-F#

R F# C# B B# C# C# F# A-D G# C#-C#-F#

Example 6a: Starting map for a figured-bass exercise in F# minor.

The image displays a musical score for a piece in D major, 4/4 time, consisting of two staves. The upper staff is in treble clef and the lower staff is in bass clef. The melody is written in the upper staff, and the bass line is in the lower staff. The key signature has two sharps (F# and C#), and the time signature is 4/4. The melody consists of the following notes: D4 (quarter), E4 (quarter), F#4 (quarter), G4 (quarter), A4 (quarter), B4 (quarter), C#5 (quarter), B4 (quarter), A4 (quarter), G4 (quarter), F#4 (quarter), E4 (quarter), D4 (half). The bass line consists of the following notes: D3 (half), G2 (quarter), F#2 (quarter), E2 (quarter), D2 (quarter), C#2 (quarter), B1 (quarter), A1 (quarter), G1 (quarter), F#1 (quarter), E1 (quarter), D1 (half). Below the staves, the tendency-tone paths are shown as a series of letters and symbols connected by lines. The paths are: 5th C# G# F# F# G# G# C# E A D A G# C# 3rd A E-D-D E#-E# A C# F# B F#-E# A# 7th R F# C# B B#-C# C# F# A-D G# C#-C# F#

Example 6b: Example 6a with tendency-tone paths added.

Example 6c: Example 6b with common-tone paths added (shown stemmed).

5th C# G#-F#-F#-G#-G# C# E A D A-G# C#

3rd A E-D-D E#-E#-A C# F# B F#-E# A#

7th F# C#-B-B#-C#-C# F# A G F# B C#-C#-F#

R

Example 6d: The completed realization of the figured bass.

Once the map has been started, it can be used in this more extensive type of exercise as a sort of scratch pad, a space to work out both obligatory and optional paths before they are added. There are several stages to realizing a figured bass like this that can be planned and executed on the map. The first stage, shown in Figure 6b, is to deal with obvious tendency tones, namely the leading tone and sevenths of chords, both of which are easy to find on the map. In this exercise, every occurrence of the leading tone, E#, can be highlighted and linked to an F# in the next chord (if there is one). These resolutions of the leading tone to the tonic can then be provisionally filled in as musical notation in one of the upper voices. Similarly, all sevenths of chords, located conveniently on the side of their respective columns, can be linked to the pitch in the next chord that lies a step lower. Again, these resolutions can be notated on the score, subject to possible octave (and voice) change later on. If these obligatory resolutions connect up with each other, then they can probably be assigned to one voice, as is the case with the putative alto voice in Example 6b.

The second stage, also shown in Example 6b, is to deal with other obligatory voice leadings that are not so obvious, in this exercise the resolutions of the Italian 6th, the secondary dominant and the cadential $\frac{6}{4}$. The map does not help as such with recognizing these voice-leading paths. However, it does allow the student to place them on a kind of “to-do list” once they are recognized. In Example 6b they are part of the potential map shown under the staves and are notated provisionally on the staves.

The third stage, which is not strictly obligatory, but can be very helpful, is to link all common tones between chords that have not already been identified through other means. The voice-leading map, again, makes these more conspicuous than figured bass alone does. This third stage is shown in Example 6c with pitches that arise from linking common tones distinguished with the presence of stems in the musical notation.

Once these three stages have been completed, there is usually not much of the exercise left to do. The remainder can be filled out either using the voice-leading map or not, depending on the exigencies of the exercise. One further pitfall that the map can help avoid is parallel fifths: if both the root-root and the fifth-fifth paths of a progression are used, the student must make sure that parallel fourths rather than parallel fifths are created. This particular hazard is present in the exercise shown in Example 6 between the second

and third chords of measure 1. Here the C#-B path must sit *above* the G#-F# path if parallel fifths are to be avoided. As it turns out, such a requirement means that much of what was put into the tenor in Example 6c will work better in the soprano, necessitating some reworking. Here again, the map serves as a reminder of the paths that have been used and which must be transposed. As can be seen from the completed exercise in Example 6d, almost all the paths that were worked out on the map are used ultimately in one of the voices: the only paths that have been changed are those that make up the resolution of V⁷ at the cadence, in order to allow a fuller final chord.

VOICE-LEADING MAPS AND 8-VOICE WRITING EXERCISES

Why Write in 8 Voices?

A further fact may also be apparent from the previous examples: with a couple of exceptions, four-part voice leading does not usually come close to exhausting all the paths between two triads. It turns out that the limits of triadic voice leading are only reached when one has 8 or more independent lines. I personally have found much pedagogical benefit in having students confront these limits in some of their own writing exercises. Constructing 8 truly independent lines that are singable and that fit together harmonically is a fulfilling challenge for more advanced students. Every voice-leading option has to be weighed in the balance, and the student must consider part-writing possibilities that might otherwise be overlooked. In fact, in setting 8 voices, the use of voice-leading maps becomes almost a necessity if one is to avoid parallel fifths and octaves and control dissonance. Also, after venturing into the realms of 8-voice writing, a return to writing in 4 parts seems simple by comparison. A further bonus is that there exists a splendid corpus of 8-voice music that can be used for both emulation and analysis: the polychoral repertoire from the 16th and early 17th centuries. Exercises in 8 or more voices provide a formal venue for the student to get to know this music in the sort of detail that would otherwise be missing in the theory curriculum.

The Late 16th-Century Polychoral Style

For the purposes of writing exercises, a fairly narrow, stylistically consistent repertoire is most manageable. The styles of Palestrina

(and his continental-European contemporaries) tend to be used most often as the rules of dissonance control, melodic writing and rhythm are the most stringent and therefore make the best training for the student. For these reasons, the model repertoire used here is the corpus of two-choir, 8-voice masses, motets and psalm settings by Palestrina, Lassus and Victoria. The 8-voice writing that I shall describe makes a worthy conclusion to a course in 16th-century counterpoint that has focused on these composers.

As an aside, many of the terms employed here, terms such as “chord,” “triad” and “dominant,” are unabashedly anachronistic for the late 16th century. According to writers such as Zarlino, Burmeister and Lippius, there seems to be an emerging sense of triadic harmony around 1600.² However, we cannot really know to what extent composers of the late Renaissance and early Baroque thought of harmonic sonorities as unified entities rather than just collections of harmonic intervals. Certainly, functional harmony, as symbolized by roman-numeral analyses, would have been alien to these writers, and I eschew such analyses in my discussion of the polychoral repertoire. The modern terminology that is employed is put into service simply because it is comprehensible to 21st-century theory instructors and students. My ultimate concern is to provide an access point to polychoral techniques for modern students rather than to be historically authentic.

Exercises in 8-voice texture do not usually appear in counterpoint texts. The only volume with 8-voice examples of which I am aware is Gauldin’s *A Practical Approach to Sixteenth-Century Counterpoint*, which provides a thorough but extremely condensed overview of polychoral writing in chapters 19 and 20.³ The following nuts-and-bolts description of the polychoral style is therefore necessary to set the scene for detailed discussion of 8-voice writing exercises. Interested readers will find ample illustrations of the principles outlined in any polychoral piece by Palestrina, Lassus or Victoria.

² Gioseffo Zarlino, *Le istitutioni harmoniche* (Venice: Franceschi, 1558), trans. of Part III G. Marco, ed. C.V. Palisca as *The Art of Counterpoint* (New Haven: Yale University Press, 1968); Joachim Burmeister, *Musica Poetica* (Rostock: Ruhnke, 1606), trans. B. Rivera, ed. C. Palisca as *Musical Poetics* (New Haven: Yale University Press, 1993); Johannes Lippius, *Synopsis musicae novae* (Strassburg: K. Kiefer, 1612), trans. B. Rivera as *Synopsis of New Music* (Colorado Springs: Colorado College Music Press, 1977).

³ Robert Gauldin, *A Practical Approach to Sixteenth-Century Counterpoint* (Englewood Cliffs: Prentice Hall, 1985).

In 8-voice settings the harmonic rhythm tends to be quite slow, typically with chord changes every whole note or slower. Sometimes a single triad may be extended over several half-note beats. The vast majority of sonorities in 8 voices are root-position triads. Occasionally, and usually only briefly, one may find a first-inversion triad. Second-inversion triads, being a type of dissonance, are not used as an overall sonority. Every so often, one individual choir within a polychoral texture may introduce second-inversion chords, although the root of the chord will usually be present as the lowest sounding voice in the bass part of the other choir. For the duration of any given chord, there is a general concern to maintain a balance between the three pitch classes that make up a triad. Situations where one particular pitch class is underrepresented are avoided, although there are two exceptions: (1) the resolution of a suspension, which is not doubled, and (2) when the third of the chord is raised by *musica ficta*, in which case the raised third is not doubled unless it forms part of a chord that concludes a section.

Voice crossing and overlapping is possible in this style, although the usual choral ranges of the different voice types must be respected. Given that the harmonic rhythm is slow, much melodic and rhythmic activity can occur in different voices while the ensemble “sits” on one chord. We shall call this “within-chord voice leading.” However, the student must pay particular attention to the voice leading at the point where a chord changes, what we shall dub “between-chord voice leading.” It is with between-chord voice leading that the voice-leading map really comes into its own. With either type of voice leading, parallel unisons, fifths or octaves are avoided, although consecutive perfect intervals in contrary motion are allowed in certain circumstances (see below). Non-chord tones are generally limited to either unaccented neighbor or passing tones, or to 4-3 type suspensions. Needless to say, seventh chords are not part of the style.

The image displays three musical examples, labeled a, b, and c, illustrating voice leading for 8-voice settings. Each example consists of a musical staff with a treble and bass clef, and a corresponding chord diagram below it.

- Example a:** Shows a progression from a D major chord (D, F#, A) to a G major chord (G, B, D). The bass staff shows a contrary motion bass line where the root D moves down a fourth to G, and the fifth A moves down a fifth to D. The treble staff shows common tones F# and A.
- Example b:** Shows a progression from a D major chord (D, F#, A) to a B major chord (B, D#, F). The bass staff shows a contrary motion bass line where the root D moves down a third to B, and the fifth A moves down a sixth to F. The treble staff shows common tones D# and F.
- Example c:** Shows a progression from a D major chord (D, F#, A) to an E major chord (E, G#, B). The bass staff shows a contrary motion bass line where the root D moves down a second to C, and the fifth A moves down a seventh to G. The treble staff shows no common tones, with the word "none" written in the treble staff.

Example 7: Availability of contrary motion-bass lines (relaxation 1) and common tones (relaxation 2) for different types of root progressions.

COMMON RELAXATIONS OF RULES IN 8 VOICES

Before considering 8-voice writing through the lens of voice-leading maps, three idiomatic relaxations of rules should be noted.

1. Contrary-motion consecutive parallels are allowed, i.e. octave-unison or vice versa. This technique is particularly common between the two bass voices of 8-voice two-choir music, and works well when the basses sing the root of the chord and the roots move by fourths or fifths (Example 7a, bass staff). This technique does not work so well with root-progressions by a third as this progression would necessitate one of the bass voices moving by a sixth (Example 7b, bass staff), and is highly undesirable in this style with root movements by a second as one of the bass voices must move by a melodic seventh (Example 7c, bass staff).
2. Common tones between two adjacent chords, which do not, of course, actually involve any melodic movement, may be duplicated at octaves and unisons as many times as is feasible while still maintaining a balance of pitch classes. The presence of common tones between two successive chords greatly eases the constraints on voice leading. Chords whose roots are a fourth/fifth apart have one common tone (Example 7a, treble staff), chords whose roots are a third/sixth apart contain two common tones (Example 7b, treble staff), while chords whose roots are a second/seventh apart have no common tones (Example 7c, treble staff).

3. When setting three or more chords in succession in 8 voices, parallels are also avoided by using consonant skips within any one chord. Consonant skips within a chord allow voices, as it were, to reposition themselves for the next chord change (Example 8).

The image displays musical notation and a voice leading diagram. The notation consists of two systems, labeled I and II, each with a grand staff (treble and bass clef) in 4/2 time. System I shows a progression of chords: a triad of A, D, F in the treble and D, B, G in the bass; a dyad of D, B in the treble and D, G in the bass; and a triad of D, B, G in the treble and D, G in the bass. System II shows a progression: a triad of D, B, G in the treble and D, G in the bass; a dyad of D, B in the treble and D, G in the bass; and a triad of D, B, G in the treble and D, G in the bass. Below the notation is a voice leading diagram showing the movement of voices between the two systems. The diagram uses letters A, D, F, B, G, C to represent notes. Solid lines show the movement of voices between the two systems, while dashed lines show the movement of voices within a chord. A bracket below the diagram is labeled "Within-chord voice leading (only moving paths shown)".

Example 8: Relaxation 3 (consonant skips within a chord) used to facilitate voice leading.

The image displays a musical score and two voice leading diagrams. The score is for eight voices, organized into two systems of four staves each. The first system, labeled 'I', consists of a soprano and alto staff (treble clef) and a tenor and bass staff (bass clef). The second system, labeled 'II', also consists of a soprano and alto staff (treble clef) and a tenor and bass staff (bass clef). The progression is from a G-C chord to a G-C chord. The first system shows the initial G-C chord, and the second system shows the final G-C chord. The voice leading is indicated by lines connecting the notes between the two systems. The top diagram, labeled 'Potential map', shows all possible voice leading paths between the G-C chord and the G-C chord, with lines connecting D to G, B to E, G to C, and G to C. The bottom diagram shows a specific voice leading path, with lines connecting D to G, B to E, G to C, and G to C, and a thick line indicating the G-C path in the basses.

Example 9: Eight-voice voice leading for the progression G-C.

EXAMPLES OF 8-VOICE PROGRESSIONS

To put these principles into practice, we shall consider some potential maps of chord progressions in 8 voices. First, let us return to the G-C progression with which we started, only now considering it in 8 voices (Example 9). The same constraints on melodic lines apply as in 4 voices, namely B-C, D-C and D-E must all be stepwise motion rather than leaps of sevenths. Also, the fifth-fifth path, D-G, is again excluded. However, although we are now handling more voices, the relaxations mentioned above make our job a bit easier. Relaxation 1 allows us to duplicate the G-C path in contrary motion in the basses. Relaxation 2 permits several versions of the common-tone G-G path, if necessary. Also, in 8 voices, we can double the

third in both chords so there are different options leading from the antecedent B and to the consequent E. The potential map at the top of Example 9 reveals at least 10 different paths, depending on the number of G-G paths used. Example 9 also shows a possible 8-voice realization of this progression accompanied by an actual map.

Example 10: Eight-voice voice leading for the progression C-a.

The progression C-a, mapped in Example 10, is subject to different constraints and relaxations. In this case, the path G-A will be an ascending stepwise motion (not a descending 7th), and C-A, C-E, and E-C will all be melodic thirds rather than sixths. Although relaxation 1 does not work so well here, relaxation 2 comes into play with two common-tone paths, C-C and E-E. In fact, it is the possibility of multiple C and E common tones that makes this progression viable, with at least 10 paths shown in the potential

map at the top of Example 10. An 8-voice realization is provided at the bottom of Example 10.

Potential map

Actual map

Example 11: Eight-voice voice leading for the progression C-d.

A third example, the progression C-d (shown in Example 11), where the roots are a second apart, is much more tightly constrained and, for this reason, almost never used in 8-voice writing. Let us consider it for a moment, however, in the interests of theoretical completeness. First, the paths C-D, E-D, E-F and G-F must all be stepwise motion rather than dissonant leaps. Likewise, C-A will have to be a descending third rather than a rising sixth. Note that neither relaxation 1 nor relaxation 2 is applicable in this case. In fact, a true 8-voice rendering of this progression is only just possible; all paths shown in Example 11 will have to be used, and thus the potential and actual maps shown in this example are identical.

One last compositional example is given as Example 12. This progression is considerably longer and the task of balancing melodic and harmonic demands is correspondingly more complex. Example 12a again shows what the student might start with: both bass lines, minimal figured bass and the available pitch classes. Note that the map has been started, including within-chord consonant skips shown with wavy lines. Example 12b shows the two soprano lines added. These soprano lines are intended to be smooth, singable (if not particularly inspired) lines in the middle to upper registers of a choral soprano's range. Example 12c has the cadence sketched in for all voices. Most notable at this point is the inclusion of the suspension (with its preparation and resolution) as this requires special treatment and takes the only path involving B in the penultimate chord. These additions are tentative and may be subject to revision. Example 12d shows all voices included with the paths used checked off in the voice-leading map. Note that voice leading from the penultimate to the final chord has been altered in choir II to provide a fuller sonority on the final C chord. Finally, example 12e rhythmicizes example 12d, sets it to the words "alleluia, alleluia" and adds dissonances. Three handy techniques should be noted here. First, those voices that sing a common tone between two chords can, for the sake of a bit of rhythmic zest, introduce syncopation over the chord change (for example alto II). Second, any time a voice moves by a melodic third, that interval can be filled with a passing tone (e.g. soprano I, mm 1 and 2), provided the passing tone does not cause parallel fifths and octaves. Third, the suspension can be ornamented with two eighth-notes (as in tenor I, m. 3).

Musical score for "The Rose Tree" in 4/2 time. The score is written for a single melodic line on a treble and bass staff. The key signature is one flat (B-flat). The score includes a first ending (I) and a second ending (II). The first ending leads to a double bar line, and the second ending leads to a final cadence. The lyrics are: D A E B G, B F C G E, G D A A E C.

Example 12a: Possible starting point for the student with a more extended 8-voice exercise.

The image displays a musical score for two choirs, labeled I and II, in 4/2 time. Each choir part consists of a soprano line and a bass line. The score is divided into two systems, each containing two staves. The first system (I and II) shows the initial chords, and the second system (I and II) shows the final chords. The soprano lines are added to the original bass lines. To the right of the score is a harmonic diagram showing the progression of chords. The diagram uses letters A through G to represent notes. Solid lines connect notes between chords, and dashed lines indicate voice leading. The diagram shows a progression from a D major chord (D, F, A) to a G major chord (G, B, D) and then to a C major chord (C, E, G). The notes are arranged in a grid, with the first column representing the first chord, the second column representing the second chord, and the third column representing the third chord. The notes are connected by lines, showing the movement of each voice part. The diagram also includes a 4-measure rest and a 3-measure rest, indicating the duration of the chords.

Example 12b: Example 12a with soprano lines added in both choirs.

The image displays a musical score and a corresponding voice leading diagram. The score is divided into two systems, labeled I and II, each with two staves (treble and bass clef). The time signature is 4/2. System I shows a sequence of chords: C major (C-E-G), F major (F-A-C), and C major (C-E-G). System II shows a sequence: C major (C-E-G), F major (F-A-C), and C major (C-E-G). The voice leading diagram on the right illustrates the movement of individual voices between these chords. It shows the following connections: C to C, E to E, G to G, F to F, A to A, and C to C. A 'suspended' note (B) is shown in the F major chord, with a wavy line indicating its movement to the C note in the final C major chord. The diagram is labeled '4-3' at the bottom.

Example 12c: Example 12b with common-tone paths added (shown stemmed).

The image displays a musical score for a four-part setting, labeled 'I' and 'II', with corresponding chord diagrams. The score is written in 4/2 time, with the first system (I) in treble and bass clefs, and the second system (II) in treble and bass clefs. The notes are as follows:

System	Part	Measure 1	Measure 2	Measure 3	Measure 4
I	Soprano	C4	C4	C4	C4
	Alto	E4	E4	E4	E4
	Tenor	G3	G3	G3	G3
	Bass	C3	C3	C3	C3
II	Soprano	C4	C4	C4	C4
	Alto	E4	E4	E4	E4
	Tenor	G3	G3	G3	G3
	Bass	C3	C3	C3	C3

The chord diagrams on the right show the harmonic structure for each measure. The first diagram (I) shows a C major triad (C-E-G) in the first three measures, and a C major triad with a suspended fourth (C-E-G-F) in the fourth measure. The second diagram (II) shows a C major triad in the first three measures, and a C major triad with a suspended fourth (C-E-G-F) in the fourth measure. The diagrams are labeled with the notes C, E, G, and F, and the measure numbers 1, 2, 3, and 4.

Example 12d: Example 12c with middle voices sketched in.

The image shows a musical score for eight voices, arranged in two systems of four parts each. The parts are Soprano, Alto, Tenor, and Bass. The music is in 4/4 time and features a setting of the word "alleluia". The lyrics are: "Al - le - lu - ia, al - le - lu - ia." The score includes rhythmic diminutions and passing dissonances.

Example 12e: Example 12d turned into a setting of the word "alleluia" with rhythmic diminutions and passing dissonances added.

VOICE-LEADING MAPS IN ANALYSIS

The Repertoire for Analysis

For the purposes of analysis, we can cast our stylistic net wider than for writing exercises. There are many examples of pieces in more than 8 voices ranging from the Eton Choirbook (c.1500) through to polychoral compositions of the early 17th century. The grander compositions on this list include the 12-voice "Earthquake" Mass by Brumel, the 19-voice motet, *O Bone Jesu*, by Carvor, a 24-voice canon, *Qui habitat in adiutorio*, by Josquin/Anonymous, and two 40-voice motets, *Ecce beatam lucem* by Striggio and *Spem in alium* by Tallis. This repertoire makes instructive study and can be illuminated by the application of voice-leading maps. Even in settings for large numbers of voices, where transgressions may be very difficult or impossible to hear, composers strive to avoid

parallel perfect intervals. Not surprisingly, to help them in this endeavor, they routinely make use of the three relaxations listed earlier. To these a fourth relaxation may be added:

4. Rests of different lengths are used to break up and therefore “remove” parallel fifths and octaves. The rationale seems to be that, provided two voices do not make the same move at the same time, no parallel fifths or octaves have been committed.

In the early to mid 16th century, rests seem to be able to interrupt melodic lines, almost willy nilly, although control over these increases greatly in the style of Palestrina and Victoria. The following two examples are offered to illustrate some of these stylistic differences.

Example 13 is taken from Palestrina’s 12-voice (3-choir) festive motet on words from Judith, Book 16, *Laudate Dominum in tympanis*.⁴ Most of this motet consists of antiphonal dialogue among the three choirs, however, the extract shown (“mm” 44-46) is the first instance in this piece of true 12-voice writing. The extract consists simply of alternating G and C chords; the compositional skill here lies in the setting of 12 independent lines that are all rhythmically self-sufficient, and, in some cases at least, melodically interesting, too. Note the liberal use of all four relaxations mentioned above. First, every chord change involves a contrary-motion octave-unison or unison-octave motion in two of the three bass voices. Second, numerous G common tones are employed, in some cases moving up or down the octave. Third, within-chord consonant skips are plentiful, some of which are filled in with dissonant passing or neighbor tones which give the parts concerned more rhythmic variety and melodic direction. Consonant skips (shown as wavy lines on the map in Example 13) are particularly noteworthy in m. 45 where the full four beats on the C chord allow various voices ample time to reposition themselves for the chord change on the downbeat of m. 46. Fourth, this very chord change at m. 46 is facilitated further by the use of half-note rests in certain voices, delaying, as it were, their move to the G chord until the second beat of that measure. This “delay” is represented on the accompanying map by a second G-chord on beat two, which is the terminal node

⁴ Gustave Frederic Soderlund ed., *Examples of Gregorian Chant and Works by Orlandus Lassus, Giovanni Pierluigi Palestrina and Marc Antonio Ingegneri*, 3rd ed. (New York: Appleton Century Crofts, 1946).

The image displays a musical score for twelve voices across five systems, with measures 44, 45, and 46 indicated. The notation includes various note values and rests. To the right of the score is a detailed voice leading diagram. This diagram illustrates the movement of individual voices between two chords. The first chord (left) consists of the notes D, B, G, G, E, C. The second chord (right) consists of the notes D, B, G, G, E, C. A dashed line labeled 'desc. 8ve' indicates a downward octave shift for one voice. A bracket on the right side of the diagram is labeled 'Within-chord voice leading (only consonant skips shown)'. The diagram uses solid lines to show voice paths and wavy lines to indicate specific voice leading techniques.

Example 13: Twelve-voice voice leading in Palestrina's *Laudate Dominum in tympanis*, showing between-chord and within-chord paths.

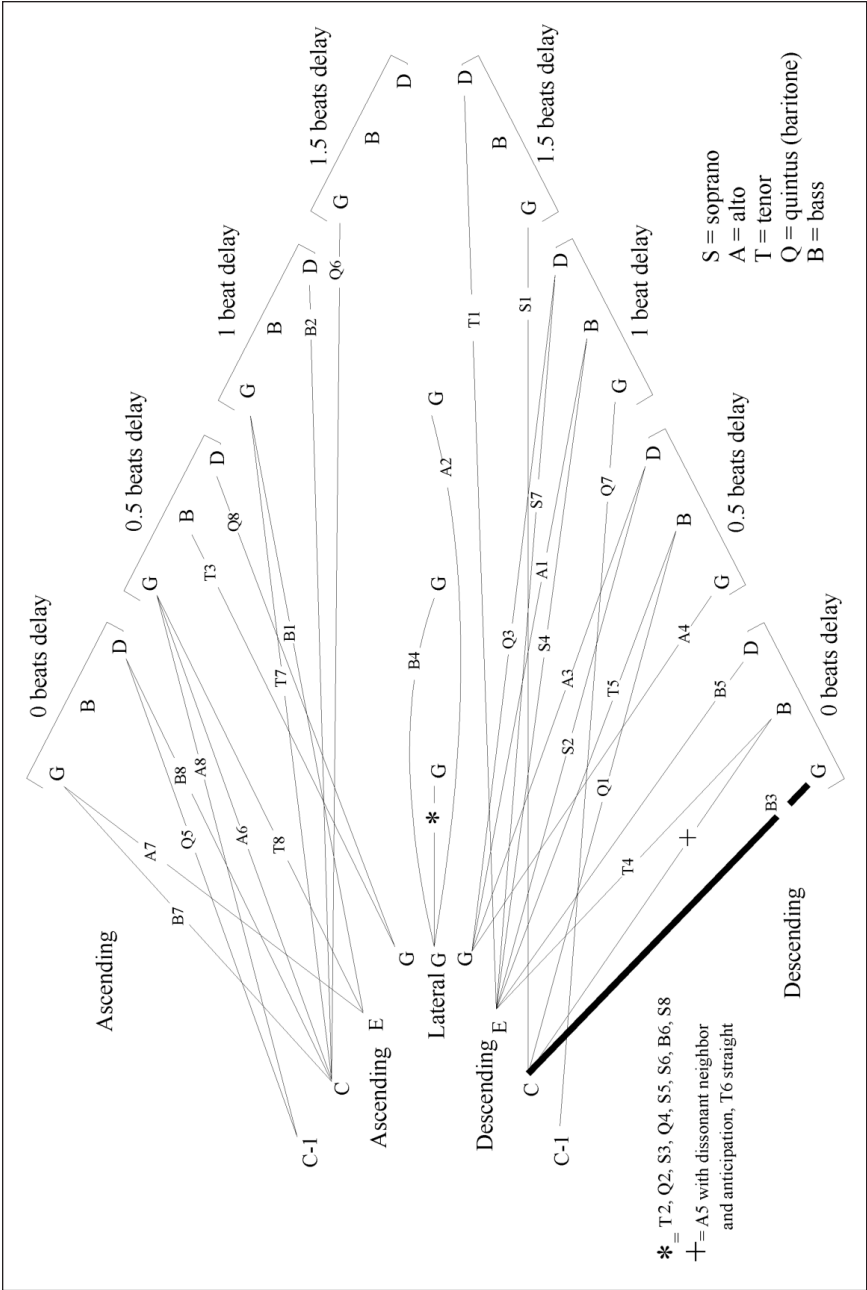


Figure 2: Actual map of the voice leading of the final plagal cadence at “measure” 135 of Thomas Tallis’s *Spem in alium*.

for four of the voice-leading paths from the previous chord (those for soprano 2, alto 2, bass 2 and tenor 3). Note that no two voices move along the same path in the same direction at the same time; for instance, both tenor 2 and tenor 3 make use of the C-D path, but tenor 3 arrives at the D one beat later than tenor 2.

If Palestrina had to resort to rests to break up potential parallels in 12 voices, so the need for this technique mounts as the number of voices increases beyond 12. Figure 2 maps the voice leading in the final chord change (the plagal cadence, C-G) of Thomas Tallis's famous 40-part motet *Spem in alium nunquam habui*.⁵ By this point, mm. 134-135 in Brett's modern edition, all 40 voices are singing, with the last four measures maintaining a continuous G harmony following the chord change on the downbeat of measure 135. Despite the huge forces (8 five-voice choirs), Tallis avoids parallels by deploying the following rest lengths in various voices just after the chord change: quarter note (0.5 beats), half note (1 beat), and half plus a quarter note (1.5 beats). In addition, several voices drop out one half note (1 beat) before the chord change.

The antecedent C chord is shown on the left side of Figure 2: the pitch classes of this chord, C, E and G, are given multiple representations to allow the map to distinguish three directions of motion, ascending, lateral (the G common tone only) and descending. In addition, the voices that drop out one beat before the chord change (as it happens, all on the pitch-class C) are represented by the symbol "C-1". On the right side of Figure 2, the different temporal positions of the pitch classes that make up the consequent G chord are shown ordered from left to right, starting with 0 beats delay (those voices that change chord right on the downbeat), then 0.5, 1 and 1.5 beats delay. Each iteration of the G chord is placed on two diagonals, one above and one below, in order to capture something of the melodic direction involved and to minimize line crossing on the diagram. Each voice-leading path is labeled with a letter and a number indicating which voice(s) follow(s) that path: thus, for example, A3 stands for alto in choir 3 or Q7 stands for quintus (first bass) in choir 7. The acting bass line, the descending C-G line with no rest, as presented by bass 3, is bolded. Its contrary-motion partner (following relaxation 1) is presented by bass 7.

⁵ Thomas Tallis, "Spem in alium nunquam habui:" Motet in forty parts, ed. P. Brett (London: Oxford University Press, 1966); reprint of edition in *Tudor Church Music*, vol. 6 (London, Oxford University Press, 1928).

Figure 2 reveals several facts about Tallis's plagal cadence:

1. With two exceptions, Tallis assiduously avoids duplicating paths, i.e. committing parallel unisons or octaves. The exceptions are the lateral common-tone G path which, following relaxation 2, can be used multiple times, and the descending C-B path with no rest. This latter path is presented by both alto 5 and tenor 6, but the alto 5 line embellishes the basic voice leading with a neighbor-tone eighth-note figure so that its B is not approached directly from C.
2. There are several paths that are not used. These unused paths are seemingly avoided because they entail ungainly melodic intervals: C-B ascending (major 7th), E-D ascending (minor 7th), and C-D descending (minor 7th). The descending minor 6th G-B is used in only one voice (alto 1), and that is with one beat's delay.
3. The fifth-fifth path, G-D, is used, but very carefully. It is not employed in either direction (ascending 5th, descending 4th) with 0 beats delay as such a path would introduce parallel fifths with one of the root-root bass lines in bass 3 or bass 7 noted above. The G-D path is used in the following directions and with the following beats delay: ascending with .5 beats delay in quintus 8, descending with 1 beat delay in quintus 3, and descending with .5 beats delay in alto 3. In none of these cases are parallel fifths formed with a C-G path moving at the same time. The quintus 8 path does, however, form parallel 4ths with the alto 6 C-G path, both of which ascend and both of which have .5 beats delay.

All this suggests that Tallis planned and orchestrated his final 40-voice cadence with very great care, and with some sort of awareness of voice-leading paths: parallels, whether unisons, octaves or fifths between voices moving in the same direction at the same time are avoided. This avoidance of forbidden parallels seems to be respected more for reasons of principle than perception, but it is consistent with his practice in the rest of the motet, whether 40 or fewer voices are sounding.

CONCLUSION

To summarize, I have proposed voice-leading maps as a way of clearly displaying the various available paths between the pitch classes of two (or more) chords. The primary advantage of this kind of visual organization of pitch-class material is that voice-leading paths can easily be tracked and parallel fifths and octaves avoided. Second, the student is encouraged to treat voice leading as primarily a phenomenon between chord tones; any dissonances beyond chordal sevenths are then added as a second step of musical enrichment. In conjunction with conventional notation, maps can be used as a method for introducing simple four-part voice leading, or for systematizing more advanced four-part exercises. Moreover, maps are ideally suited for helping the student write exercises in eight voices. I have argued that such exercises are worthwhile as they force students to confront the limits of triadic voice leading. These limits are best evidenced in the large-scale choral works of the 16th and 17th centuries. As two brief examples from Palestrina and Tallis show, maps can provide some detailed analytical insight into this repertoire, in addition to any compositional utility they possess.



A Pedagogical Approach to Minor Pentatonic Riffs in Rock Music

GUY CAPUZZO

I: INTRODUCTION

The college teacher of rock music is fortunate to have excellent pedagogical contributions covering topics such as form, melody, and harmony.¹ One central feature of rock music that has yet to receive pedagogical treatment is the *riff*, which J. Bradford Robinson defines as follows:

In jazz, blues, and popular music, a short melodic ostinato... The blues-influenced rock bands of the late 1960s and 70s and subsequent heavy metal groups often used riffs [to] confirm the tonic throughout the verses... Riffs were also an integral part of funk and other forms of dance music.²

Many riffs use the minor pentatonic scale (e.g. ⟨C, E $\flat$, F, G, B $\flat$ ⟩) as a source of pitch material.³ Tonal and post-tonal theory textbooks illustrate the minor pentatonic scale with folk song melodies or art music excerpts, and present effective methods for identifying the

¹ See Burns 2005, Covach 2005, Everett 2004, Folse 2004, London 1990, Stephenson 2002, and Temperley 2007.

² Robinson 2007. Similar definitions of “riff” appear in Covach 2006, 283 and Garofalo 2008, 372. Other discussions of riffs include Danielson 2006, Fast 2001, and Monson 1999. The closest thing to a theoretical discussion of rock riffs that I have found is a passage in Moore 1995, 188–90 in which Moore discusses “melodic patterns” (188). Moore’s work differs in two important ways from the present paper: the melodic patterns take place against harmonic backgrounds, and he does not use scale degrees to generalize melodic functions.

³ Angle brackets ⟨ ⟩ indicate ordered segments. On the minor pentatonic scale in rock, see Covach 2004, Everett 2004, §19–22, 2008, 160–4, and 2009, 166–71 and 262–7, Temperley 2007, and Stephenson 2002, 37–8. In contrast to the present paper, these studies are primarily harmonic in orientation.

scale and determining the tonic pitch.⁴ Jane Piper Clendinning and Elizabeth West Marvin offer perhaps the most specific guideline in the literature: if a melody contains every natural minor scale degree except $\hat{2}$ and $\hat{6}$, and features $\hat{1}$ and $\hat{3}$, then the melody employs the minor pentatonic scale.⁵ However, this does not cover the many minor pentatonic riffs that do not use five pitch-classes (pcs) and do not contain $\hat{1}$ and $\hat{3}$. Example 1 shows three such riffs (for the time being, the reader is asked to ignore the keys suggested by the key signatures). Example 1a contains four pcs from the B minor (Bm) or F#m pentatonic scales.⁶ Example 1b contains three pcs from the Em or Am pentatonic scales. Example 1c contains two pcs from the Dm, Gm, or Cm pentatonic scales. How does each riff “confirm the tonic,” as per Robinson’s definition?

⁴ Tonic indicates the first degree of the minor pentatonic scale at hand, as distinct from the meaning of tonic in common-practice diatonic tonal theory, which carries connotations of key and harmony that do not apply to riffs.

⁵ Clendinning and Marvin 2005, 75. Scale degrees of the minor pentatonic scale appear as $\hat{1}$, $\hat{3}$, $\hat{4}$, $\hat{5}$, $\hat{7}$ to conform to the natural minor scale. This is the approach taken by Clendinning and Marvin, 74–5. Also following Clendinning and Marvin, 74–5, I notate minor pentatonic riffs with the key signature of the natural minor scale to which the minor pentatonic scale belongs. There is no standard practice for notating key signatures in popular music transcriptions; see Covach and Boone 1997, 86 and Winkler 1997.

⁶ Alternatively, Example 1a presents four pcs from the B Dorian, B Phrygian, B Mixolydian, or B Aeolian scales. However, in the present context I shall only consider minor pentatonic scales as supersets.

II: SCALE-DEGREE PATTERNS

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what Joseph N. Straus defines as *centricity*: “notes that are stated frequently, sustained at length, placed in a registral extreme, played loudly, and rhythmically or metrically stressed tend to have priority over notes that don’t have those attributes.”⁷ Indeed, in Example 1a, B is stated frequently (at the outset) and sustained, placed in a registral extreme, played loudly (through accents), and rhythmically and metrically stressed.

The second set of factors at work are *scale-degree patterns*, short melodic figures that permit the identification of a tonic note in the absence of a complete minor pentatonic scale. For this approach we need to define three terms: segment, neighbor, and scale-degree pattern. A *segment* is an ordered series of adjacent minor pentatonic scale pcs. Example 2a presents the minor pentatonic segments; strikethroughs eliminate stylistically uncommon segments. For instance, the two-note segments of the Em pentatonic scale are ⟨E, G⟩, ⟨G, A⟩, ⟨A, B⟩, ⟨B, D⟩, and ⟨D, E⟩. Of these, only ⟨E, G⟩ and ⟨D, E⟩ are common self-standing segments, perhaps since both contain $\hat{1}$. A *neighbor* is any two-note segment, whether the resultant interval is a major second or a minor third. A *scale-degree pattern* (SDP) assigns scale degrees to a segment. For example, the segment ⟨E, G, A⟩ realizes the SDP ⟨ $\hat{1}$, $\hat{3}$, $\hat{4}$ ⟩ in Em pentatonic or ⟨ $\hat{5}$, $\hat{7}$, $\hat{1}$ ⟩ in Am pentatonic. In actual riffs, the elements of an SDP may appear in any order and with duplications. For instance, the SDP ⟨ $\hat{1}$, $\hat{3}$ ⟩ can appear as ⟨ $\hat{1}$, $\hat{3}$ ⟩ or ⟨ $\hat{3}$, $\hat{1}$ ⟩ or ⟨ $\hat{1}$, $\hat{3}$, $\hat{1}$ ⟩ or ⟨ $\hat{3}$, $\hat{1}$, $\hat{3}$ ⟩, etc.

⁷ Straus 2005, 131.

	E	G	A	B	D	E	G	A...
2 note:	1̂	3̂ 3̂—4̂	4̂—5̂	5̂—7̂	7̂	1̂		
3 note:	1̂	3̂ 3̂—4̂	4̂—5̂	5̂—7̂	7̂	1̂	3̂	
4 note:	1̂—3̂	3̂—4̂	4̂—5̂	5̂—7̂	7̂	1̂	3̂	4̂

Example 2a. Minor Pentatonic Segments

Let us return to Example 1 to determine the role of SDPs in each riff. Example 1a employs the SDP $\langle 4̂, 5̂, 7̂, 1̂ \rangle$ in Bm pentatonic. The alternative, $\langle 7̂, 1̂, 3̂, 4̂ \rangle$ in F#m pentatonic, is not stylistically common and is thus ruled out (cf. Example 2a). Example 1b employs the SDP $\langle 1̂, 5̂, 7̂ \rangle$ in Am pentatonic. The alternative, $\langle 1̂, 3̂, 4̂ \rangle$ in Em pentatonic, is unlikely given the metric emphasis on A2, the registral emphasis on A2 and A3, and the $\langle A2, E3 \rangle$ and $\langle E3, A2 \rangle$ perfect fifth leaps, all of which point to an A tonic.⁸ Lastly, Example 1c employs the SDP $\langle 7̂, 1̂ \rangle$ in Gm pentatonic. Following Example 2a, this is the only possibility for a lone whole-step, and the metric emphasis on and repetitions of G2 support this reading.

There are numerous pedagogical strategies for teaching SDPs. The material can be used at any point in the undergraduate aural skills curriculum, in a class on rock harmony, or as part of a class on twentieth-century music. In class, I have students conduct and

⁸ C4 indicates middle C.

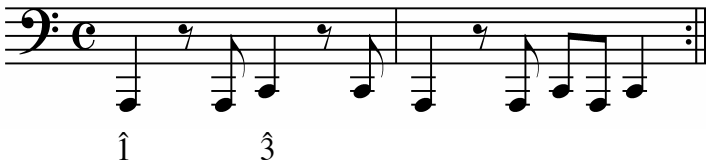
sing in rhythm the vocal warm-ups in Example 2b, using solfège syllables, scale degree numbers, or note names. Throughout, I direct their attention to the tonic pitch. Additionally, instructors can point to solfège syllables, scale degree numbers, or note names on the board and ask students to sing the given notes. A given student can then sing or play a series of SDPs, asking the other students to sing each back in call-and-response style. I also devote class time to identifying SDPs by name in recorded songs, and to “melodic dictation” with riffs as well. Finally, I often assign dictation for homework, using carefully chosen songs that feature particular SDPs.

Example 2b. Vocal Warm-ups

TWO-NOTE SEGMENTS

In the $\langle \hat{7}, \hat{1} \rangle$ and $\langle \hat{1}, \hat{3} \rangle$ SDPs, $\hat{7}$ acts as a lower neighbor to $\hat{1}$ while $\hat{3}$ acts as an upper neighbor to $\hat{1}$. Example 3 presents two riffs that illustrate $\langle \hat{1}, \hat{3} \rangle$. Both riffs end with $\hat{3}$ on a weak beat, creating a drive toward $\hat{1}$ and the downbeat upon repetition. Other songs featuring $\langle \hat{1}, \hat{3} \rangle$ include “The Wizard” by Black Sabbath, “Bring the Pain” by Missy Elliott, and “Drown Me” by Soundgarden.

Bass, $\text{♩} = 80$



Example 3a. Poundinghound, “Rain” (Doug Pinnick), *Pineappleskunk* (2001): $\langle \hat{1}, \hat{3} \rangle$

Guitar, $\text{♩} = 110$

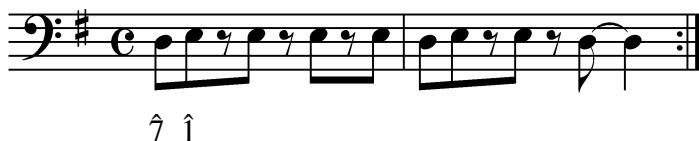


Example 3b. Beck, “Nausea” (Beck Hansen), *The Information* (2006): $\langle \hat{1}, \hat{3} \rangle$

Example 4 illustrates $\langle \hat{7}, \hat{1} \rangle$. Each riff uses only two pcs, D and E. In “Novacane” [sic], D and E occupy a single register. In “Thank You,” D and E occupy two registers, with $\langle D_2, E_2 \rangle$ in the lower register connected by octave leap to $\langle E_3, D_3 \rangle$ in the upper register. Scale degrees above and below the staff indicate the upper and lower registers. The octave leap and metric emphasis on E_3 highlight pc E as $\hat{1}$. Both riffs end with $\hat{7}$ on a weak beat, creating a strong push toward $\hat{1}$ and the downbeat upon repetition. Other songs featuring $\langle \hat{7}, \hat{1} \rangle$ include “To Bring You My Love” by PJ Harvey, “My Generation” by The Who, and “Abacab” by Genesis.⁹

⁹ See Everett 2004, §17 on “My Generation.”

Bass, ♩ = 90



Example 4a. Beck, “Novacane” [*sic*] (Beck Hansen-John King-Michael Simpson), *ODelay* (1996): ⟨ $\hat{7}$, $\hat{1}$ ⟩

Bass, ♩ = 100



Example 4b. Sly and the Family Stone, “Thank You (Falettinme Be Mice Elf Agin)” [*sic*] (Sly Stone), *Greatest Hits* (1970): ⟨ $\hat{7}$, $\hat{1}$ ⟩ and ⟨ $\hat{1}$, $\hat{7}$, $\hat{1}$ ⟩

THREE-NOTE SEGMENTS¹⁰

Example 5 illustrates the three-note segment ⟨ $\hat{1}$, $\hat{3}$, $\hat{4}$ ⟩.¹¹ E2 frames the riff in Example 5a to support ⟨ $\hat{1}$, $\hat{4}$, $\hat{3}$, $\hat{1}$ ⟩ in Em pentatonic over ⟨ $\hat{5}$, $\hat{1}$, $\hat{7}$, $\hat{5}$ ⟩ in Am pentatonic. Additional factors supporting the E

¹⁰ Pertinent discussion of three-note minor pentatonic segments appears in Everett 2004 and Capuzzo 2004. Everett notes that “the three-note collection [0-2-5] appears at four different places in the five-note (pentatonic) scale” (§17). Capuzzo discusses “three-chord segments whose root successions can be derived from pentatonic collections” (193). The present article differs from Everett’s and Capuzzo’s work in its systematic derivation of pentatonic segments, its assignment of scale degrees to those segments, and its focus on non-triadic riffs.

¹¹ Examples 5a and 5b are the first riffs in this paper that are not monophonic. The parallel dyads elaborate monophonic ideas; the extra voices form root/fifth “power chords” (Everett 2008, 160–4). As a rule of thumb: with parallel fourths (Ex. 5b), the upper pitch is the root of the power chord; with parallel fifths (Ex. 5a), the lower pitch is the root of the power chord.

$\hat{1}$ (E3), much in the same way that the Example 5 riffs feature $\hat{3}$ as an upper neighbor to $\hat{1}$. Other songs featuring $\langle \hat{5}, \hat{7}, \hat{1} \rangle$ include “Fire” by The Jimi Hendrix Experience, “Whole Lotta Love” by Led Zeppelin, and “Love Me Two Times” by The Doors.

Bass, $\text{♩} = 70$



Example 6a James Brown, “The Payback” (James Brown-Fred Wesley-John Starks), *The Payback* (1973): $\langle \hat{1}, \hat{5}, \hat{7} \rangle$

Keyboard, $\text{♩} = 160$



Example 6b. Ray Charles, “What’d I Say” (Ray Charles), *What’d I Say* (1959): $\langle \hat{1}, \hat{5}, \hat{7}, \hat{1} \rangle$

The final three-note SDP is $\langle \hat{7}, \hat{1}, \hat{3} \rangle$. Example 7 illustrates it in a formation that I call the *pentatonic double-neighbor figure*.¹³ The figure combines $\hat{1}$ with $\hat{7}$ (lower neighbor) and $\hat{3}$ (upper neighbor). The figure takes two forms. In the first form, illustrated by Example 7a, the SDP is $\langle \hat{1}, \hat{7}, \hat{3}, \hat{1} \rangle$.¹⁴ In the second form, illustrated by Example 7b, the SDP is $\langle \hat{1}, \hat{3}, \hat{7}, \hat{1} \rangle$.¹⁵ The two forms are equally common. Other songs featuring pentatonic double-neighbor figures include “Hello, I Love You” by The Doors, “I Can’t Drive 55” by Sammy Hagar, and “Rebel Yell” by Billy Idol.

FOUR-NOTE SEGMENTS

Example 8 illustrates $\langle \hat{4}, \hat{5}, \hat{7}, \hat{1} \rangle$. This SDP often occurs at the end of riffs, just prior to repetition. The material preceding $\langle \hat{4}, \hat{5}, \hat{7}, \hat{1} \rangle$

¹³ See Traut 2005, 15 for a discussion of double-neighbor figures in non-pentatonic, triadic rock contexts.

¹⁴ See Everett 2004, §21 on “All Day and All of the Night.”

¹⁵ Parentheses isolate D and E because they are not part of the double-neighbor figure. Interpreted as $\langle \hat{6}, \hat{7}, \hat{1} \rangle$ (Aeolian scale degrees) and harmonized with power chords or major triads, $\langle D, E, F\# \rangle$ forms a common rock cadence.

Bass, ♩ = 130



Example 7a. The Kinks, “All Day and All of the Night” (Ray Davies) (1964): Pentatonic Double-Neighbor Figure

Bass, ♩ = 120



Example 7b. Ozzy Osbourne, “Crazy Train” (Ozzy Osbourne-Randy Rhoads-Bob Daisley), *Blizzard of Ozz* (1981): Pentatonic Double-Neighbor Figure

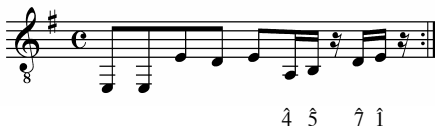
establishes the tonic by presenting scale degrees $\hat{1}$, $\hat{4}$, and $\hat{5}$ (Example 8a) or $\langle \hat{1}, \hat{7}, \hat{1} \rangle$ (Example 8b). By contrast, two songs featuring $\langle \hat{4}, \hat{5}, \hat{7}, \hat{1} \rangle$ at the *onset* of their riffs are “Desperate People” by Living Colour and “Changes” by Yes.

Guitar, ♩ = 150



Example 8a. Black Sabbath, “Paranoid” (Ozzy Osbourne-Tony Iommi-Geezer Butler-Bill Ward), *Paranoid* (1970): $\langle \hat{4}, \hat{5}, \hat{7}, \hat{1} \rangle$

Guitar, ♩ = 90



Example 8b. Wild Cherry, “Play That Funky Music” (Robert Parissi), *Wild Cherry* (1976): $\langle \hat{4}, \hat{5}, \hat{7}, \hat{1} \rangle$

Example 9 illustrates $\langle \hat{5}, \hat{7}, \hat{1}, \hat{3} \rangle$. The riffs in Examples 9a and 9b display the arc melodic contour typical of this SDP. The $\langle \hat{5}, \hat{7}, \hat{1}, \hat{3} \rangle$ SDP places little metric or registral emphasis on $\hat{1}$, substituting durational emphasis and repetition instead. Other songs featuring $\langle \hat{5}, \hat{7}, \hat{1}, \hat{3} \rangle$ include “Iron Man” by Black Sabbath and “Wanted Dead or Alive” by Bon Jovi.

Guitar, $\text{♩} = 110$



Example 9a. Sly and the Family Stone, “Don’t Call Me Nigger, Whitey” (Sly Stone), *Stand!* (1969): $\langle \hat{5}, \hat{7}, \hat{1}, \hat{3}, \hat{1} \rangle$

Piano, $\text{♩} = 90$



Example 9b. Genesis, “That’s All” (Phil Collins-Tony Banks-Mike Rutherford), *Genesis* (1983): $\langle \hat{5}, \hat{7}, \hat{1}, \hat{3}, \hat{1} \rangle$

MINOR PENTATONIC, BLUES, AND ALTERED BLUES SCALES

Example 10 presents two riffs that use complete minor pentatonic scales. In addition to the presence of all five pentatonic pcs, each riff defines its tonic through two-, three-, or four-note SDPs. For example, Example 10a begins with $\langle \hat{7}, \hat{1} \rangle$ to confirm D as $\hat{1}$. Likewise, $\langle \hat{4}, \hat{5}, \hat{7}, \hat{1} \rangle$ and $\langle \hat{1}, \hat{7}, \hat{1} \rangle$ confirm E $\flat$ as $\hat{1}$ in Example 10b.¹⁶ Other songs featuring complete minor pentatonic scale riffs include “Shining Star” by Earth, Wind, and Fire, “I’m The Slime” by Frank Zappa, and “Born Under a Bad Sign” by Albert King.

¹⁶ Hughes 2003, 140–77 discusses “Superstition.” With Hughes’s permission, I have reproduced his Example 14 (157) in my Example 10b.

Guitar, ♩ = 120



Example 10a The White Stripes, “Cold Cold Night” (Jack White), *Elephant* (2003): D Minor Pentatonic Scale

Clavinet, ♩ = 90



Example 10b Stevie Wonder, “Superstition” (Stevie Wonder), *Talking Book* (1972): E $\flat$ Minor Pentatonic Scale

Example 11 illustrates the *blues scale*, a six-note scale consisting of the minor pentatonic scale with an added lowered ($\downarrow$) $\hat{5}$.¹⁷ As with the minor pentatonic scale, SDPs permit the identification of $\hat{1}$. Specifically, Example 11a begins with $\langle \hat{1}, \hat{7}, \hat{1} \rangle$ and ends with $\langle \hat{1}, \hat{3}, \hat{1} \rangle$, while Example 11b begins with $\langle \hat{1}, \hat{3} \rangle$ and ends with $\langle \hat{5}, \hat{7}, \hat{1} \rangle$ on the repeat. Other songs featuring blues scales include “Heartbreaker” by Led Zeppelin, “Outshined” by Soundgarden, and “Rockit” [*sic*] by Herbie Hancock.

Guitar, ♩ = 100



Example 11a. Cream, “Sunshine of Your Love” (Eric Clapton-Jack Bruce-Pete Brown), *Disraeli Gears* (1968): D Blues Scale

Bass, ♩ = 85



Example 11b. King’s X, “Groove Machine” (Jerry Gaskill-Doug Pinnick-Ty Tabor), *Tape Head* (1998): B $\flat$ Blues Scale

¹⁷ The arrow notation for scale-degree alterations appears in Henry and Rogers 2005, 60.

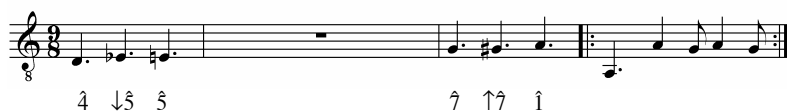
Example 12 illustrates the *altered blues scale*, a seven-note scale consisting of the blues scale with an added raised ($\hat{1}$) $\hat{7}$.¹⁸ While the riff in Example 12b lacks $\hat{3}$, the closing SDP $\langle \hat{1}, \hat{7}, \hat{1} \rangle$, the metric and registral emphasis on A2, and the octave leap from A2 to A3 combine to secure A as tonic.

Guitar, $\text{♩} = 64$



Example 12a. Black Sabbath, "Iron Man" (Ozzy Osbourne-Tony Iommi-Geezer Butler-Bill Ward), *Paranoid* (1970): B Altered Blues Scale

Guitar, $\text{♩} = 125$



Example 12b. The Jimi Hendrix Experience, "Manic Depression" (Jimi Hendrix), *Are You Experienced?* (1967): A Altered Blues Scale

III: CONCLUSION

Scale-degree patterns offer a concise approach to the pitch language of minor pentatonic riffs. Example 13 summarizes the minor pentatonic SDPs. The two-note SDPs act as neighbors to $\hat{1}$. Each three-note SDP adds a neighbor to the two-note SDPs: $\langle \hat{1}, \hat{3} \rangle$ becomes $\langle \hat{1}, \hat{3}, \hat{4} \rangle$, while $\langle \hat{7}, \hat{1} \rangle$ becomes $\langle \hat{5}, \hat{7}, \hat{1} \rangle$ or $\langle \hat{7}, \hat{1}, \hat{3} \rangle$. The latter typically occurs as $\langle \hat{1}, \hat{3}, \hat{7}, \hat{1} \rangle$ or $\langle \hat{1}, \hat{7}, \hat{3}, \hat{1} \rangle$, the pentatonic double-neighbor figure. The four-note SDPs both elaborate $\langle \hat{5}, \hat{7}, \hat{1} \rangle$. In addition, $\langle \hat{5}, \hat{7}, \hat{1}, \hat{3} \rangle$ combines $\langle \hat{5}, \hat{7}, \hat{1} \rangle$ and $\langle \hat{7}, \hat{1}, \hat{3} \rangle$.

Several avenues for further study present themselves. One involves the enumeration of common SDPs formed by *every other* note of the minor pentatonic scale, such as $\langle \hat{1}, \hat{4}, \hat{7} \rangle$ in "Toys in the Attic" by Aerosmith, "Desire" by U2, and "Gloria" by Patti Smith (written by the band "Them"). A second avenue is the study of riffs that do not use the minor pentatonic scale. The most common alternatives are the major pentatonic scale (e.g. "My Girl" by The Temptations, "Sir Duke" by Stevie Wonder, and "In the

¹⁸ The term "altered blues scale" is in widespread use among pop musicians. See Capuzzo 1996, 48, Haslip 2001, 95, and Hiland 1995, 50.

	$\hat{1}$	$\hat{3}$	$\hat{4}$	$\hat{5}$	$\hat{7}$	$\hat{1}$	$\hat{3}...$	Comment
2 note:	$\hat{1}$	$\hat{3}$			$\hat{7}$	$\hat{1}$		$\hat{3}$ = UN to $\hat{1}$ $\hat{7}$ = LN to $\hat{1}$
3 note:	$\hat{1}$	$\hat{3}$	$\hat{4}$					Elaborates $\langle \hat{1}, \hat{3} \rangle$
				$\hat{5}$	$\hat{7}$	$\hat{1}$		Elaborates $\langle \hat{7}, \hat{1} \rangle$
					$\hat{7}$	$\hat{1}$	$\hat{3}$	Double neighbor
4 note:			$\hat{4}$	$\hat{5}$	$\hat{7}$	$\hat{1}$		Elaborates $\langle \hat{5}, \hat{7}, \hat{1} \rangle$
				$\hat{5}$	$\hat{7}$	$\hat{1}$	$\hat{3}$	Elaborates $\langle \hat{5}, \hat{7}, \hat{1} \rangle$; combines $\langle \hat{5}, \hat{7}, \hat{1} \rangle$ and $\langle \hat{7}, \hat{1}, \hat{3} \rangle$
Example 13. Summary of SDPs.								

Summertime” by Mungo Jerry), the diatonic modes (e.g. G Dorian in “Cult of Personality” by Living Colour, F Lydian in “Free Will” by Rush, and E Mixolydian in “Third Stone From The Sun” by The Jimi Hendrix Experience), and arpeggio riffs (e.g. “Pretty Woman” by Roy Orbison, “Day Tripper” by The Beatles, and “Ain’t Talkin’ ‘Bout Love” by Van Halen). Third, attention to the instrument that a given riff is played on introduces issues such as timbre, the relation between the tonic note and the keys idiomatic to the instrument, and often microtonal inflections, particularly those involving $\hat{3}$ and $\hat{1}\hat{3}$; $\hat{4}$, $\downarrow\hat{5}$ and $\hat{5}$; and $\hat{7}$, $\uparrow\hat{7}$, and $\hat{1}$. Fourth, the analysis of complete songs can demonstrate the interaction of riffs with hypermeter, as well as how simultaneous riffs may combine to establish a tonal center (or competing tonal centers). Finally, the use of riffs as springboards for improvisation can clarify the relation between the minor pentatonic scale and the diatonic modes that contain it (Dorian, Phrygian, and Aeolian).¹⁹

¹⁹ I thank Shaugn O’Donnell, Timothy A. Smith, Adam Ricci, Virginia Williamson, and the anonymous *JMTP* readers for their comments on this paper.

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Bridging Common Practice and the Twentieth Century: Cadences in Prokofiev's Piano Sonatas¹

COURTENAY L. HARTER

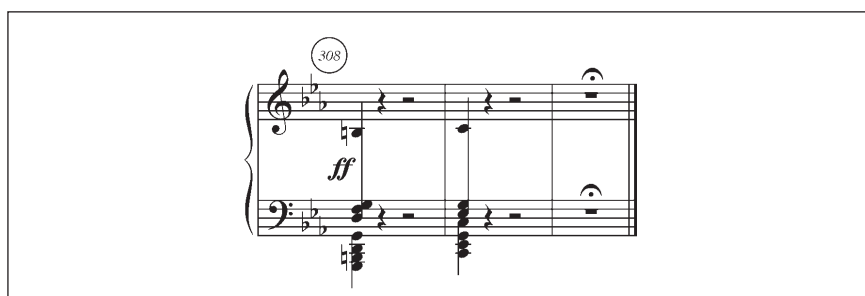
In the typical freshman-sophomore theory sequence, space is a precious commodity. This is especially true in degree plans where more advanced courses are available to students only on an elective basis. The desire of theory instructors to incorporate a broad range of musical styles into these two years must always be measured against the need to give students a strong grounding in tonal music of the common-practice era. A fundamental curricular dilemma is that the students, while steeped in the routines of classical tonality in theory classes, are at the same time studying and performing a much wider variety of music in applied lessons and ensembles. While we may not be able to make room for the independent coverage of many different styles, taking the opportunity to discuss elements of those styles within the context of traditional tonal practice can help students begin to develop an understanding of the connections, as well as the discontinuities, among different approaches to tonal composition.

Consider, for example, the twelve-bar blues progression. In Memphis, where I teach, students hear these chord connections every day on street corners and in clubs. The opening measure of the progression can be described as tonic prolongation with emphasis on plagal motion (I-IV-I); the various chords that may appear in the eighth measure all function as preparation for the dominant in the ninth measure; and the retrogression (V-IV) in mm. 9-10 represents a departure from classical harmonic practice. What students can learn from such a discussion is that more recent composers often incorporate aspects of older music into their own works, yet there are other elements of their tonal language that distinguish it from earlier styles. Bringing these types of relationships into the study of theory not only enriches, but also reinforces students' understanding of tonal music.

¹ Many of the examples used here originate from an earlier study: Courtenay L. Harter, "Phrase Structure in Prokofiev's Piano Sonatas" (Ph.D. diss., University of Connecticut, 2003).

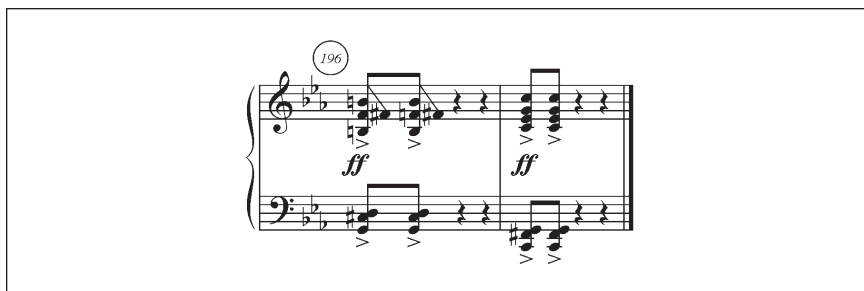
In the music theory curriculum, cadences are encountered at different times: first, as harmonic formulae typically introduced among the earliest progressions covered in the study of diatonic harmony; and later, as tonal punctuation and delineators of structure in the study of musical form. An understanding of cadences is essential in identifying small-scale formal units such as phrases, sentences, and periods, and also important in defining larger formal relationships expressed through contrasting themes, keys, and sectional divisions. Because they are such a fundamental element of tonality, cadences provide unique insights into how early twentieth-century composers retain certain conventions of common-practice tonality within their own harmonic language.

Using Sergei Prokofiev's piano sonatas as a resource, this study offers terminology for and systematic categorization of early twentieth-century cadence types that can facilitate their integration into the undergraduate theory curriculum. There is no attempt to organize this information sequentially in terms of level of difficulty, but the relationship of the various cadence types to those found in the study of common-practice harmony is generally obvious. It is assumed, then, that each type can be introduced to good effect whenever a similar, traditional cadence type is encountered.



Example 1 Beethoven, *Sonata No. 8*, Op. 13, I, mm. 308-310
(score excerpt)²

² Beethoven, Ludwig van. *Complete Piano Sonatas*, Volume 1. Edited by Heinrich Schenker. New York: Dover Publications, Inc., 1975.



Example 2 Prokofiev, *Sonata No. 4*, I, mm. 196-197
(score excerpt)³

As a point of departure, consider the progressions shown in Examples 1 and 2. Both of these cadential extensions exemplify the dominant to tonic progression in C minor: the lowest voice in both examples moves from the fifth scale degree to the first scale degree, and the highest voice incorporates the resolution of the leading tone to tonic. Both also incorporate the seventh of the dominant chord, correctly resolving the F down by step. But there are extra notes in Prokofiev's progression: the F-sharp in the dominant harmony could be considered a split-note function, which resolves by ascending to G.⁴ There are two altered fourths in the left hand of both chords, but considering these as added notes in each harmony does not effect the overall motion and function of the chords. Instead, they can be considered as one of Prokofiev's harmonic innovations that extend beyond the conventions of common-practice tonality.

Various music theory texts explain the role of cadences within the domain of musical form:

- "Cadence types are the tonal composer's primary means of articulating form."⁵

³ Prokofiev, Sergei. *Complete Piano Sonatas*. Moskva: Izdatel'stvo "Muzyka," 1967. Reprint, New York: Dover Publications, Inc., 1988. This and all subsequent score excerpts are reproduced from this source.

⁴ Stefan Kostka, *Materials and Techniques of Twentieth-Century Music*, 3rd ed. (Englewood Cliffs, NJ: Prentice-Hall, Inc., 2006), 55. Kostka identifies "split-note" chords as those that contain chromatic added notes, resulting in two versions of a chord member separated by semitone, i.e., root plus raised root, major and minor thirds above the root, perfect and diminished fifths, or major and minor sevenths.

⁵ Janet Schmalfeldt, "Cadential Processes: The Evaded Cadence and the 'One More Time' Technique," *The Journal of Musicological Research* 12, nos. 1-2 (1992): 10.

- "...a kind of musical punctuation, usually both melodic and harmonic, conveying a sense of close or of interruption in the rhythmic motion of the musical line."⁶
- "Cadential progressions confirm an implied tonality."⁷
- "Cadences are the immediate goal of a phrase, the chords that bring it to a close, a degree of finality expressed in terms of relative strength."⁸

Cadences, as points of structural articulation, delineate phrase lengths and emphasize tonal function. The identification of cadential formulas creates hierarchical relationships as described by their closure type. Cadences that require continuation and ultimate resolution are described below as "open" or "progressive," while the terms "closed" and "conclusive" will refer to cadences that complete a formal structure. This more generalized terminology allows for the inclusion of cadences that reflect distinctive style characteristics of early twentieth-century composers. Douglass Green summarizes some practices found in twentieth-century music that can further qualify any cadential category:

1. Addition or substitution of tones in the cadential chords
2. Omission of tones in the cadential chords
3. Contrivance of new penultimate chord made up of notes that resolve stepwise into the final tonic
4. Approach to final tonic by systematic descent or ascent of seconds, thirds, or fourths⁹

These categories further illuminate Prokofiev's cadential procedures.

⁶ Wallace Berry, *Form in Music*, 2nd ed. (Englewood Cliffs, NJ: Prentice-Hall, Inc., 1966), 8.

⁷ William E. Caplin, *Classical Form: A Theory of Formal Functions for the Instrumental Music of Haydn, Mozart, and Beethoven*. (New York: Oxford University Press, 1998), 27. See also William E. Caplin, "The Classical Cadence: Conceptions and Misconceptions," *Journal of the American Musicological Society*, 57/1 (Spring 2004): 57-117.

⁸ Douglass M. Green, *Form in Tonal Music: An Introduction to Analysis*, 2nd ed. (New York: Holt, Rinehart and Winston, 1979), 8.

⁹ Green, 10-11.

The first category, for example, can account for the “wrong notes” in Prokofiev’s harmonic vocabulary.¹⁰ Many of these chords are found in cadential extensions at the end of various movements, as in Example 3, the conclusion of the “Allegro molto sostenuto” of *Sonata No. 4*. The additional notes create a disturbance in the quality of the cadence implied by the dominant-to-tonic bass motion. While the dominant harmony typically contains a single tritone interval between the third and seventh (B-natural and F-natural in this example), the addition of another tritone between the G and the C-sharp increases the tension. The use of both F-natural and F-sharp produce a split-note chord on the dominant harmony. The F-sharp, while resolving to G in the right hand, is contained in the final chord; this added tension in the tonic harmony is a result of the parallel motion in the left hand.

Example 3 Prokofiev, *Sonata No. 4*, I, mm. 196-197
(score excerpt and bass-line summary)

¹⁰ The term “wrong notes” is consistently used in reference to Prokofiev’s music; its first usage is attributed to Patricia Ashley, “Prokofiev’s Piano Music: Line, Chord, Key” (Ph.D. diss., University of Rochester, 1963), 12; in his book *The Music of Sergei Prokofiev*, Neil Minturn summarizes Suzanne Moisson-Franckhauser who argues that the “wrong notes” in Prokofiev’s music are surface elements (New Haven: Yale University Press, 1997), 5-6; Israel Nestyev, in his biography *Prokofiev*, refers to the composer’s use of the tritone with terms such as “seasoned,” “sticking grace notes,” and “sound that is stuck.” (Stanford, CA: Stanford University Press, 1960), 479-481.

AUTHENTIC CADENCES

The conclusive cadence in the common-practice repertoire typically refers to two types of authentic cadences: the perfect (PAC) and the imperfect (IAC).¹¹ In Prokofiev's music, there are some instances of the traditional perfect authentic cadence, such as that found at the end of the exposition in Prokofiev's *Sonata No. 1* (Example 4). This progression exhibits root position dominant-to-tonic motion in the bass with the upper voices moving in a conventional stepwise descent, $\hat{3}-\hat{2}-\hat{1}$. Prokofiev's added note (F-flat) occurs on the downbeat of m. 92 within a cadential six-four function.

Example 4 Prokofiev, *Sonata No. 1*, mm. 90-93 (score excerpt)

Harmonic inversion is not as important in Prokofiev's music as other relationships, such as harmonic function. Thus, the general category of *authentic cadence* (AC) can be used as a more inclusive designation of dominant-to-tonic resolution. These arrivals can be classified as "progressive" or "conclusive" depending on the hierarchical placement in a composition.

Example 5 illustrates another non-traditional cadence in its omission of chord tones (Green's second type). While both the dominant and tonic chords are missing their respective thirds, the progression implied by the bass-line movement clearly indicates an authentic cadence. The open fourths and fifths in these measures create a sound that contrasts with the more routine tertian construction. This type of construction is also highlighted through the use of the parallel fifths in the lower voices. The A common tone in the upper voice of the dominant harmony is precisely where one

¹¹ Green's conclusive cadences fall into two categories: those with a leading tone (authentic and related: V-I, VII-I, III-I) and those without a leading tone (plagal and related: IV-I, (b)VI-I, (b)II-I), 9.

might expect the leading tone to appear in an ordered progression of predominant, dominant and tonic functions. The F-sharp in m. 231 implies the use of melodic minor, creating the expectation of the leading tone with the $\hat{1} \rightarrow \hat{7} \rightarrow \hat{1}$ upper voice-leading formula. While the anticipated raised $\hat{7}$ is thwarted, the cadence still implies functional harmony.

The image displays a musical score excerpt and a corresponding bass-line summary for Prokofiev's Sonata No. 3, measures 230-232. The score is written in 2/4 time and features a treble and bass staff. The bass staff shows a half-note progression: C2 (m. 230), F2 (m. 231), C3 (m. 232). The treble staff shows a half-note progression: C4 (m. 230), F#4 (m. 231), C5 (m. 232). The bass staff is labeled with 'a:' in a box, followed by 'i', 'IV', 'V7', and 'i'. An arrow points from the 'i' to 'AC'.

Example 5 Prokofiev, *Sonata No. 3*, mm. 230-232
(score excerpt and bass-line summary)

One variation of Prokofiev's authentic cadence alters or substitutes the typical bass progression by a half-step displacement of the dominant (e.g., an authentic cadence in C would replace the dominant note G by either F-sharp or G-sharp). The symbol **subAC** describes these situations where a substitution is made for the traditional dominant chord, as in the second phrase of the first movement of *Sonata No. 8* (Example 6). Despite Prokofiev's "wrong notes" in this periodic structure, the opening and closing harmonies, as well as the dominant harmony in mm. 4-5, firmly ground this structure within the B-flat major tonality. The movement revolves around B-flat major and exhibits some harmonic innovations that become evident in m. 3: reinterpreting the G-sharp as A-flat creates a parallelism with the progression in the consequent phrase (m. 8).

The musical score excerpt shows two systems of music. The first system (measures 1-4) starts with a piano (*p*) dynamic, followed by mezzo-piano (*mp*) and then piano (*p*). The second system (measures 5-8) starts with mezzo-forte (*mf*) and ends with piano (*p*). The bass line summary at the bottom indicates the following chord progression: I (B-flat major), *bvi*⁷ (F minor), #5 (F# major), and I (B-flat major). An upward arrow labeled 'subAC' points to the final I chord.

Example 6 Prokofiev, *Sonata No. 8*, I, mm. 1-9
(score excerpt and bass-line summary)

The harmonies in m. 9 illustrate the predominant, dominant, and tonic functions typically found in classical harmonic progressions. The C ($\hat{2}$) represents a predominant harmony, even though the notes in the upper voices do not form a conventional chord-type (a second-inversion F-minor triad and a third inversion D dominant-seventh chord). A cross relation in this beat (F to F-sharp in the right hand) foreshadows the dominant substitution. The use of the raised fifth scale degree in place of the diatonic note, F, creates a highly expressive tritone leap in the bass. All other pitches in these two beats resolve to tonic as expected: A and C move to B-flat; C-sharp moves to D, and the E-natural descends through E-flat to D. With its rhythmically dissonant melodic closure, this is a more progressive cadence in relation to one found on a strong beat: tonic harmony does not arrive until the fourth beat in the measure, thereby weakening the overall cadential effect, with a new section beginning in m. 10. This same structure occurs in mm. 26-34 as the

third part in a small ternary structure, as well as in the recapitulation of the complete movement (mm. 205-213).

A further modification of the authentic cadence is Prokofiev's use of multiple half-step resolutions to the tonic harmony without the dominant-to-tonic motion in the bass voice. These cadences are designated here as leading-tone authentic cadences (ltAC), as in Example 7. A sense of tonal ambiguity is created at the outset of Prokofiev's *Sonata No. 6* as the tonic (A major) is harmonized with a split third (both C-sharp and C-natural), while the bass alternates A with D-sharp, a substitute for the dominant.

Example 7 Prokofiev, *Sonata No. 6*, I, mm. 1-6
(score excerpt and bass-line summary)

On the downbeat of m. 4, the harmony used to approach the cadence includes a split root: the dominant pitch, E, as well as an E-flat (an enharmonic respelling of the opening D-sharp). The arrival point on beat 3 includes an ascending dominant-to-tonic motion in the upper voice, while two lower

parts resolve concurrently by half step to the final chord of the phrase: the tonic in the lowest voice is approached from above by a half step (B-flat → A), while the other half-step resolution, G to F-sharp, results in an added sixth within the harmony. At this initial point of repose, the unstable resolution is congruent with the ambiguity of the opening. The instability is somewhat reconciled as the same progression is repeated in m. 6. This progressive cadence occurs numerous times during the course of this movement, and eventually takes on the role of an expected resolution: mm. 1-4 are repeated as a parallel structure (mm. 8-11), and again to close the primary section of the sonata form (mm. 20-23). These structures are repeated exactly in the movement's recapitulation.

Another leading-tone authentic cadence is shown in Examples 8a and 8b. The finale of *Sonata No. 7* is a type of perpetual motion, articulating each of the seven eighth-note pulses in every measure. Repetitions of a two-measure rhythmic pattern create hypermetrical symmetry in the beginning of the movement. This symmetry is disturbed somewhat by the presence of nine two-measure groupings in the opening section. Balance is regained in m. 19, however, when the ninth two-measure unit ends as the next phrase begins—an overlap that creates a cadence point. The ensuing repetition of the structure includes some interpolations (encompassing mm. 19-45); the same opening structure is repeated in mm. 127-147.

Example 8b demonstrates the voice-leading motions from each two-measure grouping to the concluding harmony. The notes in the left measures function as preparation for the reiteration of members of the tonic harmony, shown on the right. By using common tones together with half-step resolutions to members of the tonic triad, Prokofiev in this instance assembles a type of leading-tone authentic cadence (**ItAC**) over the course of the phrase. The respelling of the left-hand's recurring C-sharp as D-flat creates a split-third relationship within B-flat tonic harmony (contextually less dissonant than Prokofiev's actual spelling: $\hat{1}$, $\hat{2}$, $\hat{3}$, $\hat{5}$). Harmonic tension builds in mm. 15-18 with the presence of the leading tone, A-natural, in the soprano. The chord in the right hand expresses a dominant function: A, E-flat and G are all pitches found in the *vii*^{o7}. Each of these pitches resolves to a member of the tonic harmony via a whole- or half-step motion, yielding an authentic cadence. The left hand also prepares for this point of resolution by using the fourth eighth-note in every second measure to lead to this cadence, as indicated by the slurs in Example 8b.

Example 8a shows a musical score excerpt and a phrase diagram for Prokofiev's Sonata No. 7, III, mm. 1-19. The score is in 7/8 time, key of B-flat major. It consists of five systems of staves. The first system (mm. 1-2) is marked *mp* and has a circled '1' above the first measure. The second system (mm. 3-4) has a circled '3' above the first measure. The third system (mm. 5-8) has a circled '7' above the first measure. The fourth system (mm. 9-12) is marked *mf* and has a circled '11' above the first measure. The fifth system (mm. 13-16) has a circled '15' above the first measure, is marked *cresc.* and *f*, and ends with a fermata. A phrase diagram with dashed lines connects the first measures of systems 1, 2, 3, 4, and 5. A bracket labeled 'ItAC' is at the bottom right.

Example 8a Prokofiev, *Sonata No. 7*, III, mm. 1-19
(score excerpt and phrase diagram)

resolution
m. 19

m. 2

m. 4 & 6

m. 8 & 10

m. 12 & 14

m. 16 & 18

ltAC

Example 8b Prokofiev, *Sonata No. 7*, III, mm. 1-19
(voice leading to leading-tone authentic cadence)

DECEPTIVE CADENCES

The *deceptive cadence* (DC) denotes motion from dominant to a harmony other than tonic, most often the submediant. This progressive cadence is typically found in the middle of a phrase group. Prokofiev uses this cadential formula in a manner similar to earlier composers, such as in the third phrase of the *Fourth Sonata* (Example 9).

In addition to the deceptive resolution to the submediant in this passage, a hemiola in the harmonic rhythm helps to create tension, beginning with the arpeggiation of tonic on the second beat in m. 9. The predominant harmony, implied by scale-degree $\hat{2}$ in the bass at m. 10 is also held for two beats, inviting the early arrival of scale-degree $\hat{5}$ to continue to the duple accent pattern. The leading tone (B-natural) finally arrives above the prolonged dominant bass note (G) one beat before the progressive resolution; this delay until the end of m. 11 creates more tension and heightens the impact of the deceptive cadence at its resolution.

Example 9 Prokofiev, *Sonata No. 4*, I, mm. 9-12
(score excerpt and bass-line summary)

HALF CADENCES

The *half cadence* (HC) refers to a phrase ending on the dominant; this progressive cadence, like the deceptive cadence, is typically found in the middle of a phrase group, such as in Prokofiev's *Sonata No. 1* (Example 10). In the macro-rhythm of this phrase, the dominant represents the mid-point in a parallel period where the harmonic goal is the tonic. A stepwise ascent to the dominant note (C) begins in m. 11, and is embellished by the leap to D3 in m. 13. The chromatic descent from D3 to C3 intensifies the motion to the dominant with an augmented-sixth interval (D-flat to B-natural) as well as the diminished fifth (B-natural to F-natural).

Example 10 Prokofiev, *Sonata No. 1*, mm. 11-14
(score excerpt and bass-line summary)

PLAGAL CADENCES

The *plagal cadence* (PC), as Caplin states, is typically used in cadential extensions and not for structural purposes in common-practice literature.¹² While it may not be necessary to teach this formula in relation to Classical composers, this construction allows

Example 11 Prokofiev, *Sonata No. 3*, mm. 24-28
(score excerpt and bass-line summary)

¹² Caplin states that the subdominant-to-tonic formula is not a true cadence in the same sense as the other cadences, because it only serves to embellish or prolong tonic harmony, *Classical Form*, 43-45. Caplin also states that he would like to banish the plagal cadence from most theoretical writings on the music of the eighteenth century, "The Classical Cadence," 113.

modern composers to differentiate their works from their predecessors. This formula should be embraced when the plagal motion used to create a sense of closure.¹³

As with the cadential formulas discussed previously, plagal cadences may be subjected to certain variants in Prokofiev's harmonic idiom. A plagal cadence with added half-step resolutions (**ItPC**) can be observed in *Sonata No. 3* (Example 11). The augmented-sixth interval formed between the B-flat and G-sharp resolves outward by half step over the $\hat{4}$ to $\hat{1}$ motion in the bass voice. This convergence creates a bi-functional harmony: the strong plagal motion implies a subdominant harmony while the augmented sixth strongly suggests an inversion of an altered dominant harmony. This end to the first thematic group creates an overlap with the rhythmic figuration of the following transition section. While the structure of the first thematic group consists of two-measure units, m. 26 represents an extension, both in terms of length, due to the time signature change, and in the completion of the harmonic motion, as it leads into the tonic harmony in m. 27.

Related to the half and plagal cadences is the arrival on the subdominant, or *plagal half cadence* (**PHC**). While defined in very few Classical treatises and contemporary texts, this term accurately describes an articulation of subdominant harmony at the mid-point of a phrase group, resembling in this sense the half cadence that ends on the dominant.¹⁴ The third movement of Prokofiev's *Sonata No. 8*, shown in Example 12, depicts this type of cadential procedure with the prominence of subdominant rather than dominant harmony.

¹³ See Green, note 11 *supra*.

¹⁴ Green defines the half cadence as a way of articulating a phrase that suggests closing but is not quite conclusive, ending on V, IV or even a "transposed augmented six-five-three chord," 14. Robert Ottman classifies cadences using the subdominant triad within the plagal category; the plagal half cadence occurs at the end of a phrase within a composition. *Elementary Harmony: Theory and Practice*, 5th ed. (New Jersey: Prentice-Hall, Inc., 1998), 108-110.

The first phrase in the period emphasizes the interval of a fourth with a two-measure expansion of the tonic through perfect-fourth leaps in the left hand: B-flat to E-flat to A-flat. Measure 4 is a cadential point for three reasons: the duration of the harmony, the reiteration of the opening motive in m. 5 at the subdominant level, and the symmetrical nature of the eight-measure grouping. This cadence marks the end of the four-measure antecedent phrase.

In the second phrase, subdominant harmony is expanded through the use of the lowered second scale degree, C-flat. The resolution to $\hat{5}$ in the bass builds anticipation for the authentic cadence, which provides closure following the preceding open-ended cadence. The phrases therefore complement one another harmonically, and their equal length emphasizes the symmetrical relationship.

The image displays a musical score excerpt and a corresponding bass-line summary for Example 12, Prokofiev, Sonata No. 8, III, mm. 1-8. The score is presented in two systems. The first system (measures 1-4) is marked with a circled 1 and a piano (p) dynamic. The second system (measures 5-8) is marked with a circled 5 and a forte (f) dynamic. Below the score is a bass-line summary showing the harmonic progression: Bb (I) in measure 1, and a progression from Bb to Eb to Ab (IV) in measure 4, labeled 'PHC'. The second system shows a progression from Bb to Eb to Ab (III) in measure 5, followed by Bb to Eb to Ab (V) in measure 6, and finally Bb to Eb to Ab (I) in measure 8, labeled 'AC'.

Example 12 Prokofiev, *Sonata No. 8*, III, mm. 1-8
(score excerpt and bass-line summary)

ARRIVAL POINTS

In a larger sense, all cadences are arrivals; however, a cadence completes a directed tonal motion, whereas some phrases in the sonatas may simply end at a point of articulation, requiring some kind of continuation.¹⁵ Therefore, a *dominant arrival* (V) differs from a half cadence in that it does not necessarily mark an ending, but rather articulates some structural point in the music.¹⁶ This

Example 13 Prokofiev, *Sonata No. 4, I*, mm. 112-124
(score excerpt)

¹⁵ Caplin equates the cadential arrival with a cadence, stating that a cadential arrival “marks the structural end of a thematic region,” *Classical Form*, 43.

¹⁶ Caplin differentiates between a dominant arrival and a half cadence in that the arrival is equated with a non-cadential ending when the dominant would be too unstable to function as a cadential goal, *Classical Form*, 79. Caplin also uses the term dominant arrival when a subordinate theme ends on the dominant, anticipating further material leading to a perfect authentic cadence, *Classical Form*, 115.

articulation can be viewed more from a rhythmic perspective rather than a type of harmonic progression.¹⁷ The typical example of this kind of arrival may be found at the beginning of a retransition in a sonata form movement, such as the first movement of Prokofiev's *Sonata No. 4* (Example 13). Two events occur simultaneously in m. 117: the previous phrase arrives at the dominant and an extension begins, creating an overlap. The cadential effect of the anticipated half cadence in m. 117 is superceded by the prolongational function of the G, creating an elision and a dominant arrival.

Wallace Berry states that in twentieth-century music, where there is an absence of functional harmonic relationships, cadences may be achieved through various means: by a rhythmic device such as a pause on a longer note value or an actual rest, or by a descent in the melodic line, or by an arrival upon a relatively consonant harmony.¹⁸ The category of *dissonant arrivals* (**DissA**) emanates from Berry's first two conditions. These arrivals are similar to cadences and to dominant arrivals in their articulation of phrase structure. In Prokofiev's piano sonatas, dissonant arrivals typically mark the end of a formal unit and create a strong progressive function, in that they encourage an expectation for some subsequent resolution. Dissonant arrivals differ from dominant arrivals in that the harmony has no clear tonal function and typically incorporates Prokofiev's distinctive harmonic vocabulary.

In Example 14, the beginning of the first movement of *Sonata No. 2*, the dissonant arrival occurs as a prolonged harmonic event. In the basic phrase, a sequenced melody occurs as the bass descends stepwise toward its harmonic goal. The outer-voice contrary motion beginning on D minor arrives on two tones belonging to the dominant harmony (A and C-sharp); however, the inclusion of B and D-sharp creates a whole-tone tetrachord. The chromatic notes in m. 3 foreshadow this harmony. The dissonant arrival substitutes for a stable harmony, creating the anticipation of closure. The instability of the harmony is extended by a twelve-measure prolongation (mm. 8-19, not shown in the example). These nineteen measures form the antecedent phrase of an open periodic structure.

The consequent phrase of mm. 20-31 reiterates the initial eight-measure unit. However, in m. 27, the bass line continues its descent for another full measure, thus disrupting the balance of the basic phrase lengths. An expectation for harmonic closure is implied by

¹⁷ Janet Schmalfeldt, "Coming to Terms: Speaking of Phrase, Cadence, and Form," *In Theory Only* 13, no. 1-4 (Sept., 1997): 101.

¹⁸ Berry, 13.

The image displays a musical score excerpt and a corresponding bass-line summary for Prokofiev's Sonata No. 2, I, measures 1-8 and 20-31. The score is written in D minor, 2/4 time, and consists of three systems. The first system (measures 1-8) begins with a treble clef staff marked *mf* and a bass clef staff with triplets. A circled measure number '1' is above the first measure. The second system (measures 20-31) begins with a treble clef staff marked *mp* and a bass clef staff with triplets. A circled measure number '20' is above the first measure. The third system (measures 22-31) begins with a treble clef staff marked *sf* and a bass clef staff with triplets. A circled measure number '22' is above the first measure. The bass-line summary is located below the score, showing a single bass clef staff with a series of notes and chords. A box labeled 'd:' is positioned above the first measure of the summary. The summary ends with a double bar line and a 'v' symbol. A 'DissA' label is placed above the final measure of the first system. A 'lunga' label is placed above the final measure of the third system. A 'iv' label is placed below the final measure of the summary.

Example 14 Prokofiev, *Sonata No. 2*, I, mm. 1-8 and mm. 20-31
(score excerpt and bass-line summary)

the arrival of dominant harmony in m. 28, which provides some stability in relation to the dissonant arrival that concludes the antecedent phrase. Instead of resolving to the tonic, the dominant is extended for four measures, and the phrase further evades resolution with the retrogression that arrives on the subdominant. Therefore, it is the use of diatonic harmonies in the key of D minor

that creates some degree of hierarchical closure in the consequent, in relation to the dissonant arrival that concludes and extends the antecedent phrase.

Another dissonant arrival closes the exposition in the first movement of *Sonata No. 6* (Example 15). A long, descending bass-line begins in m. 81 and the repetition of mm. 83-84 in augmentation implies that a cadence is forthcoming. However, the harmonic arrival on the longest rhythmic value in the phrase, a dissonant supertonic seventh, has no clear functional identity; although the melodic arrival on A in the right hand (m. 87) implies the tonic, its function is strongly clouded by the third between B and D in the bass. This dissonance anticipates the beginning of the development section that follows.

Example 15 Prokofiev, *Sonata No. 6, I*, mm. 81-87
(score excerpt)

SUMMARY

Formal design is an accessible entry point for the understanding of an unfamiliar musical work, and this is especially true for twentieth-century music where non-traditional compositional techniques and idiosyncratic harmonic practices vary from one composer to another. The identification of cadential procedures is a first step in describing phrase structure. Like earlier tonal composers, Prokofiev relies on tonic harmony to create strong closure of multi-phrase groups. Embellishments to these progressions comprise part of Prokofiev's unique harmonic vocabulary. His nine piano sonatas belong to a body of work that provides an opportunity to integrate twentieth-century procedures within a study of the common-practice.

In discussing the value of integrating written and aural components of theory, Michael Rogers writes that...

Integration . . . has to do with making connections and establishing relationships between thinking about and listening to music and does not necessarily or automatically require a coordination of timetables for the two topics in the semester outline or a blending of results in assignment of final grades. Integration and correlation, in other words, are two different things.¹⁹

In a similar vein, integrating more modern repertoire and techniques with common-practice terminology can help students begin to make some important connections among more diverse styles. Because students routinely encounter works from a wide range of styles outside the theory classroom, the idiosyncratic harmonic vocabulary of individual composers need not hinder nor confuse their understanding of basic concepts such as cadential procedures. As students become engaged with more complex works in their applied studies, the kind of integrated approach presented here can be helpful to them in making informed interpretive decisions about the music they perform.

¹⁹ Michael Rogers, *Teaching Approaches in Music Theory: An Overview of Pedagogical Philosophies*, 2nd ed. (Carbondale: Southern Illinois University Press, 2004), 18.



Teaching Non-Functional Tonality: A Part-Writing Approach¹

MATTHEW SANTA

Over the past two decades, many theorists have been inspired by the work of Hugo Riemann, applying a modern transformational approach that is commonly referred to as neo-Riemannian theory.² This work seeks to explain chord progressions in what will be referred to here as non-functional tonality: music with a harmonic language that is tertian, but which is not reliant on fundamental bass progressions for its syntax. While the initial work by David Lewin has sparked an explosion of research, little of this research has been in the area of pedagogy. One notable exception is Nora Engebretsen and Per F. Broman's 2007 article in the *Journal of Music Theory Pedagogy*, which outlines and defends an introduction to neo-Riemannian theory within the context of an undergraduate theory curriculum. This article is similar in many ways, in that it also outlines an approach to introducing concepts associated with neo-Riemannian theory in an undergraduate theory curriculum, but the focus here will be on a graduated series of part-writing exercises governed by parsimonious voice leading rather than on the transformational analysis of triadic progressions. Further, while Engebretsen and Broman's approach to analysis involves the mastery of three different neo-Riemannian transformations, *Tonnetz* representation, binary generated cycles, and ternary generated cycles, this article will suggest an alternative approach to analysis that requires the mastery of fewer key concepts, and thus can be covered in a shorter span of time. Finally, while Engebretsen and Broman's approach dealt exclusively with major and minor triads, this article advocates an approach that also includes dissonant triads as well as seventh chords, and thus is applicable to a much wider range of musical contexts.

¹ I wish to thank Michael Berry, Peter Martens, and Edward Pearsall for their invaluable comments on earlier drafts of this work.

² See Lewin (1982, 1987, 1991, 1998), Hyer (1989, 1995), Kopp (1995, 2002), Cohn (1996, 1997, 1998a, 1998b, 1998c, 1999, 2003), Mooney (1996), Callender (1998), Childs (1998), Clampitt (1998), Douhthett and Steinbach (1998), Gollin (1998), Morris (1998), Pacun (2001), Hook (2002, 2007), Siciliano (2002, 2005), Capuzzo (2003), Santa (2003, 2004), and Straus (2005b).

Engebretsen and Broman (2007) thoroughly review current pedagogical approaches to chromatic voice leading, so I will be as concise as possible on that topic. Many undergraduate theory textbooks address the problem of understanding harmonic progression in chromatic music, but few extend their studies into a systematic approach to part writing.³ They mostly seek to outline the problem for the student through the analysis of representative passages, like the Tristan prelude, and by explaining how chromatic sequences and patterns like the omnibus progression can serve to override the tendencies inherent in functional tonality. Two textbooks introduce neo-Riemannian theory in a more substantive way: the third edition of Joseph Straus's *Introduction to Post-Tonal Theory* (under the heading "triadic post-tonality"), and Miguel Roig-Francolí's *Harmony in Context*.⁴ Part-writing exercises where the student chooses the next harmony based on considerations of voice leading parsimony and not harmonic function are uncommon in the recent texts, however, and where they do occur (as in the Roig-Francolí), they are not used as building blocks for subsequent exercises that develop progressively more complex features of this kind of harmonic logic.

In this article, I outline a sequential approach to teaching non-functional tonality that is based on a series of part-writing exercises emphasizing parsimonious voice leading over tonal function, and then makes some suggestions on how this approach can mesh with the analytical work already being done in most theory classrooms. Two pedagogical orientations are evident in this approach: 1) a preference for exercises that maintain a consistent basic structure and assimilate new concepts as they are introduced; and 2) a preference for economy of terminology – i.e., avoiding the introduction of terms that are unlikely to become commonly used by performing musicians in the immediate future. Regarding the repetitive nature of the exercises, I expect little criticism, since it is already so common in teaching undergraduate harmony to return to exercises that consistently use four parts in a chorale style as new concepts are introduced. Regarding the preference for economy of terminology, I expect more resistance, since most music

³ The following recent editions of textbooks were surveyed for this study: Aldwell and Schachter (2003), Laitz (2003); Roig-Francolí (2003), Clendinning and Marvin (2004), Kostka and Payne (2008), and Gauldin (2004).

⁴ See Straus (2005a), 158-170 and Roig-Francolí (2003), 863-71.

theorists who introduce new terms probably believe they have a good reason for doing so. This does not necessarily mean, however, that all future musicians graduating from college must speak the language of the professional music theorist, and to believe that they could do so responsibly after a mere four-year program might be unrealistic. The approach outlined below introduces just two new terms – “parsimony” and “maximally smooth” – believing that fewer terms will result in a greater level of conceptual mastery.

PART WRITING

Example 1, given on the next two pages, shows the first lesson and pair of exercises. From reading through the first lesson, one can see that the two new terms are introduced and defined in a short paragraph. Though not shown in Ex. 1, I would give an example of a hexatonic cycle (without naming it as such) – C, Cm, A $\flat$, G $\sharp$ m, E, Em, C – to demonstrate the two concepts. I would follow with an example of only the major chords from that cycle played successively – C, A $\flat$, E, C – to demonstrate that a progression does not have to be maximally smooth to be parsimonious. As one can see from studying the example, the accompanying exercise requires students to write a series of quarter-note chords for three upper voices that is maximally smooth. The bass voice is allowed to move by common tone or by leap, but not by step. This strategy both ensures that parallel fifths or octaves are not created between the bass and some upper part, and also allows students to write exercises that sound more like examples from the literature, since one rarely finds extended passages that are parsimonious in all voices. The exercise also requires that the student begin and end with the same chord, and that the top voice should move *exclusively* by descending half step or by common tone. By requiring that the top voice descend only, we avoid any chance of redundancy, and by requiring that the first and last chord be the same, we ensure that the student’s solutions will all be of a suitable length.

The motion in the upper three voices will allow the students to work with the two most familiar neo-Riemannian transformations, P and L, as well as four other transformation types that connect triads and involve a single semitonal displacement – major to augmented, major to diminished, minor to augmented, and minor to diminished.

Example 1. The first lesson and pair of exercises.

Parsimonious and Maximally Smooth

Parsimonious literally means “frugal,” and *parsimonious voice leading* has come to mean voice leading in which the individual parts move as little as possible. *Maximally smooth voice leading* is the most extreme form of parsimonious voice leading, in which only one part moves by half step while the other parts hold common tones. The following exercises focus on writing music where the upper three parts are maximally smooth.

Exercise 1

Instructions: Write a series of quarter-note chords for three upper voices that is maximally smooth. It should begin and end with the same chord, and the top voice should move *exclusively* by descending half step or by common tone. All chords in the series should be one of the four triad types (major, minor, diminished, or augmented), but inversion may be used freely. Label all chords using chord symbols (C, Cm, C^o, etc.), but not with roman numerals. Then add a bass line that moves *exclusively* by common tone or by leap, and is composed solely of notes from the chords above. Hint: Compose the upper parts at the same time while playing them with your right hand on the piano. (Example 1 continued)

Example:

The musical notation shows a sequence of 14 chords in C major and minor, with a bass line. The chords are labeled above the staff: C, Em, E^o, E^b, Gm, B^b+, B^b, Dm, D^o, D^b, C[#]m, C[#]°, and C. The bass line consists of quarter notes: C, E, G, B, D, F, A, C, E, G, B, D, F, A, C. The chords are played in a sequence, with the bass line moving exclusively by common tone or by leap.

Parsimonious Voice Leading and Romanticism

Notice that by following the instructions, we have avoided the use of the whole step entirely. When one does this, it becomes impossible to write many of the most common chord progressions in tonal music that are functionally goal directed, like ii –V– I, for instance. The example below attempts to apply roman numerals to

a maximally smooth progression (the sample for Exercise 1), but as you can see, with very limited success:

Example:

The example shows a musical score with two staves (treble and bass clef) in common time. Above the treble staff, a series of chords are written: C, Em, E°, Eb, Gm, Bb+, Bb, Dm, D°, Db, C#m, C#°, and C. Below the bass staff, the corresponding Roman numerals are written: C: I, iii, vii°/IV, bIII°, v, V+4/V, bVII, ii, vii°/bIII, N°, n, vii°/ii, and I. Some numerals have additional annotations in parentheses: (iii/bIII?) under v, and (iii/bVII?) under bVII.

This might be why parsimonious voice leading is a prominent feature in the music of many Romantic composers: such voice leading creates chord progressions that are strikingly different than those found in the Baroque and Classical eras, and Romantic composers were often very concerned with setting their own music apart from the music of other composers and particularly the music that they inherited.

Exercise 2

Instructions: Write a series of quarter-note chords for three upper voices that is maximally smooth. It should begin and end with the same chord, and the top voice should move exclusively by *ascending* half step or by common tone. All chords in the series should be one of the four triad types (major, minor, diminished, or augmented), but inversion may be used freely. Label all chords using chord symbols (C, Cm, C°, etc.), but not with roman numerals. Then add a bass line that moves *exclusively* by common tone or by leap, and is composed solely of notes from the chords above. Hint: Compose the upper parts at the same time while playing them with your right hand on the piano.

By focusing attention on the flexible concept of maximally smooth voice leading in Example 1 above, rather than only two specific *maximally smooth* transformations - P and L - as in Engebretsen and Broman (2007), students learn to apply the concept of parsimonious voice leading to broader musical contexts, such as those that include augmented and diminished triads.⁵

As one can see from reading the rest of Example 1, the second part of the first lesson ties the sound of parsimonious voice leading to Romanticism, and explains why roman numeral analysis, which is so helpful in explaining much tonal music, is less useful in explaining music created from parsimonious voice leading strategies. The fact that almost none of the chord-to-chord motions here can be related to standard fundamental bass progressions should be enough to convince the students of the inadequacy of roman numerals when dealing with such music. Questions regarding labeling and regarding enharmonic equivalence will undoubtedly arise here, but the instructor should probably de-emphasize the “preferred” spelling of augmented triads here: the chord symbols are required merely to ensure that students are limiting their chord choices to triads, and the roman numerals are used only in this one example to make a point about harmonic function in this kind of music. I have avoided including bass position with my chord symbols for analytic clarity, and have chosen to label the augmented triads throughout based on their simplest spelling. Spending a lot of time on issues of enharmonic spelling and root finding here would risk the students missing the point. The second exercise provided in Example 1 is merely an inversion of the first and could be omitted at the discretion of the instructor (or the instructor could allow the students to pick which one they would like to complete).

Example 2 shows the second lesson and pair of exercises. As one can see from reading the example, the second lesson adds (027)s and incomplete seventh chords to the roster of available harmonies for our parsimonious chord progressions.

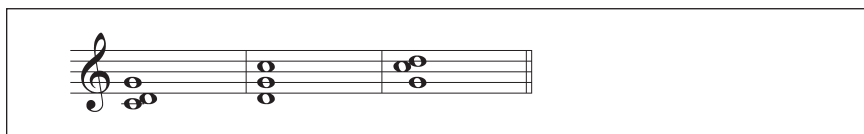
⁵ While adding augmented triads and diminished triads to the roster of available harmonies makes it harder to explain all of the harmonies in a single network that displays the same kind of group-theoretic elegance that one finds in Cohn (1996), Douhthett and Steinbach (1998) have already embraced the augmented triad in two very elegant networks they whimsically call “Cube Dance” and “Weitzmann’s Waltz,” respectively.

Example 2. The second lesson and pair of exercises.

(027) as an Agent of Parsimony

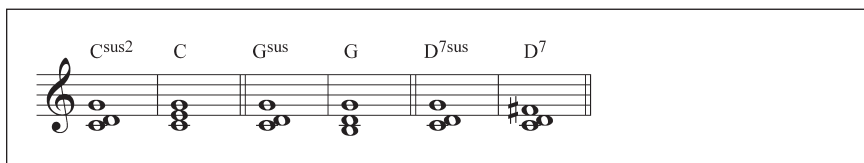
(027) is the name of a common harmony produced when the third of a triad or incomplete seventh chord is suspended or retarded, and it is often found in progressions that move parsimoniously. It is called (027) because in its most compact, most bottom-heavy voicing the middle note is two (2) half steps above the bottom note, and the top note is seven (7) half steps above the bottom note. There are three bass positions for (027):

Example:



As with the augmented triad and the diminished seventh chord, one can only tell the root of a given (027) by its context – i.e. by how it resolves:

Example:



Exercise 3

Instructions: Follow the instructions for Exercise 1 above (harmonizing a descending top voice), but this time add seventh chords with the fifth omitted as well as (027) harmonies to the roster of possible chord choices. Include at least one example of an (027) harmony and one example of an incomplete seventh chord in your setting.

Example:

[illegible]

Exercise 4

Instructions: Follow the instructions for Exercise 2 above (harmonizing an *ascending* top voice), but this time add seventh chords with the fifth omitted as well as (027) harmonies to the roster of possible chord choices. Include at least one example of an (027) harmony and one example of an incomplete seventh chord in your setting.

The use of (027) in Example 2 above might count as a new “term” for the theory sequences at some schools, but if a program covers set theory in its harmony sequence, then (037) would simply be introduced a little earlier than normal in the approach suggested here. It is defined here as though set theory has not yet been introduced, and in this it might provide one additional bridge between tonal and post-tonal harmonic thinking for the students. The third exercise keeps the structure of the first, but requires that the two new harmonic choices be used at least once. Both the (027)s and the incomplete seventh chords contain tendency tones—each (027) contains a note that sounds either like a retardation or a suspension, while the seventh chords obviously contain chordal sevenths—and thus come with an expected resolution; the instructor should probably specify whether or not these tendency tones must resolve as before, given that the new format is already abandoning doubling and spacing rules typically taught in four-part writing. (I prefer to allow them to ignore the traditional resolution rules here, because doing so opens up a lot more possibilities for the students.) The fourth exercise is merely an inversion of the third and could also be omitted at the discretion of the instructor (or the instructor could allow the students to pick which one they would like to complete).

The addition of new chord choices in Lesson 2 makes it difficult if not impossible for a pedagogy that relies on explaining harmonic progressions as paths through a single network. While Callender (1998), Childs (1998), Doughthett and Steinbach (1998) Gollin (1998), Santa (2003a), and Santa (2003b) have all included seventh chords in networks based upon parsimonious voice leading, none of these authors have explored a network that combines all of the chord types that are required in the exercises following Lesson 2. Such an all-inclusive network would be both unwieldy to teach and unwieldy to learn. This article suggests abandoning pedagogical strategies that focus on networks and instead adopting an approach that is closer to how we teach species counterpoint: a set of rules govern how one may proceed from chord to chord.

Example 3 shows the third lesson and pair of exercises. As one can see from reading the example, the third lesson keeps the expanded roster of available harmonies from the second lesson, but focuses on parsimonious progressions that are not quite maximally smooth. The fifth exercise keeps the structure of the first, but requires that students use the following voice leading pattern throughout: two voices move by half step while one voice holds a common tone. This creates the opportunity for students to write parallel fifths, so instructors using this approach should point out this new possibility and specify whether or not they will allow them in the format. (I prefer to allow them, again because doing so opens up a lot more possibilities) The sixth exercise is merely an inversion of the fifth and could also be omitted at the discretion of the instructor (or the instructor could allow the students to pick which one they would like to complete).

Example 3. The third lesson and pair of exercises.

Parsimonious, but not Maximally Smooth

While maximally-smooth voice leading is the most parsimonious, other less-parsimonious voice leadings can still achieve the same effect, especially if used consistently. The next two exercises focus on progressions which, while not maximally smooth, are still very parsimonious.

Exercise 5

Instructions: Write a series of whole-note chords for three upper voices using the following voice leading pattern throughout: two voices move by half step while one voice holds a common tone. It should begin and end with the same chord, and the top voice should move exclusively by *descending* half step or by common tone. Use the same chord qualities that were used in Exercises 3-4. Label all chords using chord symbols (C, Cm, C°, etc.), but not with roman numerals. Then add a bass line that moves *exclusively* by common tone or by leap, and is composed solely of notes from the chords above.

Example:

The example shows a sequence of 14 whole-note chords for three upper voices (treble clef) and a bass line (bass clef). The chords are labeled above the staff: C, G⁷, E, E^{b+}, E^b_{sus}, G^m, G^b, D, D^{b+}, D^o, D^b_m, E^b⁷, and C. The bass line consists of whole notes: C, E, G, B, D, F, A, C, E, G, B, D, F, A, C. The progression starts and ends with a C major chord. The voice leading follows the pattern of two voices moving by half step while one voice holds a common tone.

Exercise 6

Instructions: Follow the instructions for Exercise 5 above, but this time harmonize a top voice that moves exclusively by *ascending* half step or by common tone.

ANALYSIS

The part-writing exercises suggested here could be integrated with analysis assignments in any number of ways, and many choices made by an instructor would either influence or be influenced by the repertoire to be covered by the students. A general strategy and some repertoire choices are outlined here, but one could make the part-writing approach outlined above work with numerous other pieces, as long as the specifics of those pieces are taken into account and those specifics serve to guide the instructor in creating a logical progression throughout. For example, instructors should probably begin with pieces that are extremely parsimonious on the surface and in pitch space before discussing those pieces that are easily viewed as parsimonious only after rhythmic reductions and octave transfers have been made. One advantage to the approach outlined here over the one outlined in Engebretsen and Broman 2007 is that, just as with the part-writing exercises, parsimonious voice leading connections can be made between a wide variety of harmonies, not just major and minor triads. Thus, the approach is applicable to a much wider range of musical contexts than those found in the majority of neo-Riemannian studies.⁶

After introducing the terms *parsimonious* and *maximally smooth*, one could have students analyze passages of music that are parsimonious by adding chord symbols and roman numerals, but also providing a tally of how many voices held common tones, how many voices moved by half step, how many voices moved by whole step, and how many moved by more than a whole step, in each motion from chord to chord. This tally could be abbreviated as a 4-place vector (c, h, w, l), with c, h, w, and l representing the common tones, half step motions, whole step motions, and leaps, respectively, and a series of such tallies could stand in between where roman numerals usually stand in a tonal analysis. Furthermore, one could have students perform such a tally after normalizing the registers, enabling voice-leading motions that can be reduced to common tones, half steps, or whole steps through octave transposition to be recognized and tallied as such.

⁶ Most of the studies cited here deal only with major and minor triads. The only ones to deal with seventh chords are Callender (1998), Childs (1998), Cohn (2003), Douhthett and Steinbach (1998), Gollin (1998), Santa (2003a), and Santa (2003b).

It might at first seem contradictory to have the students apply both roman numerals and voice leading vectors at the same time, given that the first lesson in Example 1 shows the students how roman numerals are problematic when parsimonious voice leading is the logic governing a harmonic progression. However, in much of the repertoire involving parsimonious voice leading, fundamental bass strategies are seamlessly interwoven with parsimonious voice leading strategies to create the progression. The following examples are meant to show the students how these two strategies of harmonic progression interact with one another in real musical contexts

Example 4 displays two systems of musical notation, each showing a sequence of chords and their corresponding Roman numeral and voice leading vector analysis.

System 1:

- Chord: C#/E# (Roman Numeral: C#: I⁶, Vector: (1,2,1,0))
- Chord: E7 (Roman Numeral: V7^bVI, Vector: (2,2,0,0))
- Chord: B^b7/F (Roman Numeral: E^b: V³₃, Vector: (0,1,2,1))
- Chord: E^b/G (Roman Numeral: I⁶, Vector: (1,2,1,0))
- Chord: G^b7 (Roman Numeral: V7^bVI, Vector: (2,2,0,0))
- Chord: C7/G (Roman Numeral: F: V³₃, Vector: (0,1,2,1))

System 2:

- Chord: F/A (Roman Numeral: I⁶, Vector: (1,2,1,0))
- Chord: A^b7 (Roman Numeral: V7^bVI, Vector: (2,2,0,0))
- Chord: D7/A (Roman Numeral: G: V³₃, Vector: (0,1,2,1))
- Chord: G/B (Roman Numeral: I⁶, Vector: (1,2,1,0))
- Chord: B^b7 (Roman Numeral: V7^bVI, Vector: (2,2,0,0))
- Chord: E7/B (Roman Numeral: A: V³₃, Vector: (0,1,2,1))
- Chord: A/C# (Roman Numeral: I⁶, Vector: (1,2,1,0))

Example 4. Roman numeral and voice leading analysis of *Scheherazade*, mm. 11-20 (chordal reduction).

Example 4 shows a chordal reduction of mm. 11-20 from Rimsky-Korsakov's *Scheherazade*.⁷ The example includes the voice leading patterns expressed as vectors in addition to a traditional roman numeral analysis. The voice leading patterns expressed as vectors are (1,2,1,0), (2,2,0,0), and (0,1,2,1), which are repeated in that order three times after the initial statement. Example 4 shows how a parsimonious voice leading analysis coupled with a traditional roman numeral analysis can demonstrate a very Romantic compositional strategy: voice leading connections between key areas are smoother than those that can be understood diatonically within a single key area.

⁷ The passages analyzed in Examples 4-6 were chosen because they are all used in the 6th edition of the popular undergraduate theory textbook *Tonal Harmony*, by Stefan Kostka and Dorothy Payne. The passage in Example 4 can be found on pp. 476-477. The three examples chosen for this article are all from the Romantic period, but Capuzzo (2004) shows examples of neo-Riemannian transformations in pop and rock music, so one could easily expand the repertoire to be studied by using his examples.

a)

b)

g: V Ger⁺⁶ F: V₅ I Bb: V Ger⁺⁶ Ab: V₅ I
 (0,4,0,0) (2,2,0,0) (1,2,1,0) (0,4,0,0) (2,2,0,0) (1,2,1,0)

Ab A7 F#7/A# B B C7 A7/C# D
 Db: V Ger⁺⁶ B: V₅ I E: V Ger⁺⁶ D: V₅ I
 (0,4,0,0) (2,2,0,0) (1,2,1,0) (0,4,0,0) (2,2,0,0) (1,2,1,0)

Example 5. Roman numeral and voice leading analysis of Schumann, "Die Löwenbraut," Op. 31, No. 1, mm. 73-76 (piano part only).

Example 5a shows the piano part in mm. 73-76 of Schumann's "Die Loewenbraut," Op. 31, No. 1.⁸ Because it is very difficult to trace the voices in the piano part, having the students analyze a chordal reduction of the passage would work much better than

⁸ The passage in Example 5 can be found in the workbook to *Tonal Harmony*, 6th edition, p. 260.

having them analyze the score directly. Asking the students first to create a chordal reduction of the passage in four voices that avoids leaps and moves as smoothly as possible, and then to apply a vector analysis, should yield the result given as Example 5b (I would give the students the first voicing in the reduction to ensure the best result). The reduction approach would better lead to an understanding of the key concepts: parsimonious voice leading can substitute for strong fundamental bass progressions in Romantic music, and it is also used in Romantic music to sew together several key areas within a single larger harmonic motion.

a)

Am: +6? (0,2,0,2) V7 (1,0,0,3) C: +6? (0,2,0,2) V7 (1,0,0,3) ii^{#4} (0,2,0,2) Em: V7

NB: lines connect common tones between chords

b)

Am: +6? (2,2,0,0) V7 (3,0,1,0) C: +6? (2,2,0,0) V7 (2,2,0,0) ii^{#4} (0,4,0,0) Em: V7

Example 6. Roman numeral and voice leading analysis of the main harmonies in Wagner, Prelude to *Tristan und Isolde*, mm. 1-13.

Example 6 shows two chordal reductions of the main harmonies from mm. 1-13 of the prelude to Wagner's *Tristan und Isolde*. The chordal reduction given as Example 6a shows the voicings as they appear on the musical surface, and highlights the voice exchanges and other common tones held between the adjacent chords, while the chordal reduction given as Example 6b freezes the common tones in the register of the first voicing and shows how the entire

progression can be understood in terms of stepwise motions and common tone retentions. Once again, it illustrates how multiple key areas can be woven together in a seamless way over a relatively short span of time simply through parsimonious voice leading.

Note that Examples 4-6 have been ordered so as to introduce a new level of reduction with each one. Example 4 is really just a rhythmic reduction of the passage from *Scheherazade*, but it leaves the register of the pitches in place (except for the fact that it excludes octave doublings). Examples 5 and 6, however, take a further reductive step by shifting the registers of individual pitches to show underlying stepwise connections that exist in pitch-class space. This leads to the choice of format for these latter two examples: the pitches are shown first in their original registers, and then in a parallel layout with the registers adjusted to show stepwise connections. I recommend adopting such a format for any other examples of voice leading parsimony that have underlying stepwise connections, since many students must first be convinced that the reduction actually does reflect the structures of the musical surface before they will accept that voice-leading parsimony is the logic behind those structures.

Examples 4-6 differ from the part-writing exercises in two ways that are worth mentioning: 1) the bass lines are disjunct in the exercises but are conjunct in Examples 4-6; and 2) the harmonic progressions are not sequential in the sample exercises provided, but are sequential in Examples 4-6. The reasons for these two differences are practical. The bass lines are disjunct in the exercises to more closely match the kind of part-writing exercises (and, in many cases, keyboard exercises) that the students have had earlier in their theory sequence, and also to facilitate and encourage performances of the exercises in a keyboard style (i.e. three voices played by the right hand). One could choose different analytical examples that follow a similar pattern, but at some point the instructor needs to introduce the idea that the leaping voice does not always have to be the bass. The sample exercises provided are not sequential in order to separate out the concepts of parsimonious voice leading and chromatic sequence for the students: they are independent concepts, and without some experience with non-sequential parsimonious voice leading, students might easily confuse the two. Examples 4-6 were chosen because their sequential nature makes them easier for the student to analyze.

CONCLUSIONS

The approach to teaching parsimonious voice leading outlined here could be expanded in several different directions. One could keep returning to the harmonization of chromatically descending and ascending lines, and keep changing different elements: 1) the upper three parts could be allowed to move freely by common tone or by half step; 2) a fourth upper voice could be added, creating a five-part texture in which the top four parts move parsimoniously; or 3) one could allow the bass part to introduce new notes that would transform triads into seventh chords. One could alternately keep the parsimonious method of harmonization as given in Exercises 1-6, but choose different melodies to harmonize (either newly composed or from the literature). Or one could take a completed harmonization exercise like those given here and compose it out by adding different figuration patterns (for example, eighth-note figuration embellishing a harmonic rhythm in whole notes).

The differences between the approach outlined here and the approach outlined in Engebretsen and Broman 2007 are substantial. First of all, Engebretsen and Broman write “one might reasonably question whether an approach designed to address a rather narrowly circumscribed repertoire—tonally indeterminate but predominantly triadic passages—is worth this time investment” (2007, 55). This article broadens the repertoire addressed considerably by including dissonant triads, non-triadic harmonies such as (027)s, and all the qualities of seventh chords. This point is the most important one of all. Romantic-period music is the reason that many of us turned to neo-Riemannian theory in the first place, and that repertoire is filled with seventh chords, not to mention diminished and augmented triads. Any approach that can include more colors from this repertoire’s harmonic palette and at the same time capture the insights that neo-Riemannian theory has given us should be seriously considered.

Second, Engebretsen and Broman 2007 cover the three main neo-Riemannian transformations (Relative, Parallel, and *Leittonwechsel*), *Tonnetz* representations, binary generated cycles, and ternary generated cycles, while the approach here adds only the terms “parsimonious” and “maximally smooth,” and focuses only on the relative smoothness of the voice leading. By focusing on the relative smoothness of the voice leading rather than on labeling its various transformations, we avoid the dangers inherent in analyzing music according to a set of transformations that can connect any two triads in five steps or less. Arthur von Oettingen warned that the latter approach leads to a “chaos of possibilities” (1866, 156). A neo-

Riemannian analysis transcends mere descriptive accounting when it explains the logic behind a given passage. While binary and ternary generated cycles provide a compelling logic that a transformational analysis demonstrates nicely, so does an analysis that calculates voice-leading parsimony, and the latter kind of analysis can also be applied to musical settings in which binary and ternary generated cycles are not present.

Third, Engebretsen and Broman state that their approach takes “roughly two weeks to work through—admittedly a substantial amount of class time in a semester already typically packed with a survey of various chromatic chords and linear processes, modulatory techniques, and stereotypical formal patterns” (2007, 54-55). The approach outlined here introduces fewer terms and concepts, so it consequently requires less class time to cover—about four 50-minute class sessions.

Finally, the activities in Engebretsen and Broman 2007 are mainly framed as in-class activities and they vary greatly in structure: “As an introductory exercise, students are encouraged to explore the *Tonnetz* by identifying the shortest path between a given pair of triads...by calculating the result of apply a given compound transformation (such as RPRP) to some given triad, and, as Roig-Francolí recommends, by composing short progressions based on various combinations of L, P, and R—on paper and / or improvising at the keyboard” (2007, 45). The exercises given in this article have more specific instructions, are accompanied by sample solutions, and all follow the same structure, so they can each be assigned for homework and the instructor only has to spend time explaining the structure of the assignment once. By assigning a series of homework assignments, the instructor will get a better sense of how well the concepts are understood by the entire class, rather than just the students who tend to take charge of in-class activities.

While the terms “parsimonious” and “maximally smooth” are not historical, the spirit of exploration that exercises such as these promote is decidedly Romantic, and thus the study of voice-leading parsimony deserves a place in our curriculums. Many theorists now believe that voice-leading parsimony is often the most efficient way to explain harmonic progressions in Romantic music when roman numeral analysis fails to do so. The approach that I have outlined here adds part-writing exercises to the analytical work already being done in most theory classrooms, and advocates the same kind of double exposure to parsimonious voice leading that students typically receive with voice leading in functional tonality: a healthy balance of analysis and part writing.

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The Evolution of a Styles Simulation Course for Graduate Theory Students

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In the teaching of collegiate music theory the accessibility to a wide range of literature afforded by anthology collections has in recent years shifted the pendulum away from such writing skills courses as counterpoint, stylistic simulation, or composition toward an emphasis on purely analytical techniques. Indeed, the only compositional decisions required of most current graduate theory majors are the pushing around of a few white notes in two-voice species studies. Therefore, when the Eastman School of Music decided to inaugurate a master's degree in Music Theory Pedagogy some years ago, it recognized that the teaching of undergraduate theory necessitated the acquisition of correctional pedagogical tools that went beyond the mere detection of parallel fifths in partwriting assignments. For more creative student projects, such as melody harmonization, prospective teachers not only needed the knowledge and ability to state whether this choice or that choice was better and why it was better, but also the compositional skills to demonstrate other options that might produce more musical results. Toward this end the faculty initiated a new one-semester course entitled "Advanced Harmony and Composition," whose content was designed to rectify two deficiencies in the department's then current graduate offerings.¹ This seminar essentially represented the resurrection of a "styles practicum," in which students attempted to simulate characteristics of various historical periods or even specific composers through the assignment of compositional exercises and projects.² It also explored the realms of harmony and tonal design

¹ Three articles in previous issues of this journal have described the general theory program at some specific institutions (David Ward-Steinman at San Diego State University, 1987, Mary Wennerstrom at Indiana University, 1989, and John Buccheri at Northwestern University, 1990). This essay will confine itself to the development and content of a single course.

² I will not attempt to provide an extensive bibliography on the topic of "model or simulation composition," but will mention several relevant articles that have appeared in this journal.

during the late 19th century, an era that until recently has been unduly neglected.

Enrollment was limited to eight students or less, allowing a significant portion of the hourly sessions to be spent around the keyboard with the teacher and class members playing, discussing, and critiquing their pieces. During the time I served as instructor, I gradually evolved a syllabus that seemed relatively successful in fulfilling the original goals. In addition to a number of preliminary exercises that served to introduce and establish various techniques indigenous to the style and genre in question, I assigned four major compositional projects, incorporating characteristics from the late Baroque, Classical, and Romantic periods. These completed pieces were performed and recorded in class, providing each student with a permanent memento of their work.

The remainder of this article will document the subsequent history and progress of the course, pointing out what I believe to be both successful and unsuccessful pedagogical procedures. The resultant syllabus not only lays out the content and sequence of study but also includes illustrative snippets from some of the various assigned exercises perfected over the years, as well as a few brief excerpts from actual student compositions.

PART 1: BAROQUE CHORALE HARMONIZATION

The initial quarter of the semester centered on Baroque chorale harmonization, a skill that appears to have fallen on hard times in recent years. While the partwriting ability of most graduate students is usually adequate, many of them lack proper guidance and instruction in the art of effective melody harmonization. Consequently, after a brief review of chord terminology and function and well as rudiments of Baroque figured/unfigured

Whereas the first of Thomas Benjamin's essays deals with the more general teaching of composition (1987), the second consists largely of a collection of composition-oriented assignments suitable for an undergraduate theory class (1989). Matthew Bailey-Shea's more philosophical discussion of license in model composition (2004) contrasts with Sylvia Parker's practical recipes on how to compose a Classical sonata movement, complete with student examples (2006). Finally, two texts that view theory through more creative-colored glasses are Nicholas Cook, *Analysis Through Composition* (New York: Oxford University Press, 1966), and Earl Henry and Michael Rogers, *Tonality and Design in Music Theory* (New Jersey: Pearson-Prentice Hall, 2005).

bass and harmonic preferences for the various scale degrees (via the *Regola dell' ottava* or "rule of the octave"), I established some methodical step-by-step strategies for four-voice chorale settings. Since much of this information is contained in two of my previous articles, I will defer the reader to the guidelines outlined there and mention only a pair of pertinent techniques in passing.³

The duet between the melody and bass voice forms the contrapuntal basis for almost all Baroque composition. The interaction resulting from their linear and intervallic relationships is no less crucial in chorale settings. Comparisons utilizing multiple harmonizations of the same tune are particularly instructive in this regard; one class handout aligned the outer-voice duets from four different Bach settings of "Christ lag in Todesbanden."⁴ Since the harmonic language employed in this genre is somewhat limited (mainly diatonic triads, seventh chords, and closely-related tonicizations using applied dominants),⁵ the concept of scale degree reinterpretation is especially useful for achieving tonal variety. A kind of tunnel vision that relates melodic pitches and their key implications to only *one* basic tonic center seems to inhibit some students from reinterpreting diatonic scale degrees in that central key as diatonic scale degrees in *other* keys, either at cadential arrivals or during momentary tonicizations within the phrase. For instance, within a basic F major center the pitches G F E and D D C, usually thought of as scale degrees 2 1 7 (implying V I V) and 6 6 5 (implying IV IV6 I), may be reinterpreted to produce new cadence types in other closely related keys, as shown in Examples 1A and 1B.

³ Robert Gauldin, "An Intersection of Counterpoint and Harmony," *Journal of Music Theory* 15 (2001): 91-102, and "Fux to Bach: Bridging the Gap," *Indiana Theory Review* 14/2 (Fall 1993): 45-72. In addition, I referred the students to the informative chapter on chorale harmonization in Felix Salzer and Carl Schachter's *Counterpoint in Composition* (New York: McGraw-Hill, 1969), 245-328. Obviously, their approach and analysis is colored by a strong Schenkerian orientation. Allen McHose's statistical summaries on harmonic and non-harmonic materials in Bach's chorale settings are also valuable; see his *The Contrapuntal-Harmonic Technique of the 18th Century* (New York: Appleton-Century-Crofts, 1947).

⁴ Nos. 15, 184, 261, and 371 in the Riemenschneider collection.

⁵ There is only one Neapolitan sixth in all of Bach's chorale settings (see "Ach Gott vom Himmel sieh' darein," No. 262). Instances of augmented sixths and mixture chords are quite rare.

Example 1 - Two instances of scale-degree reinterpretation at cadences

Example 2, which compares four different harmonizations of the opening phrase from “Nun lob’, mein’ Seel’”, illustrates this technique—first with Bach’s simple diatonic setting in C major (Example 2A) and then with three additional versions beneath. While Example 2B remains diatonic, it now operates within the realm of the relative A minor. On the other hand, Example 2C employs both applied harmonies and sequential motion in tonicizing V and iii respectively (we will allude to Example 2D later). The application of this reinterpetive technique is, I feel, the single most important tool for obtaining tonal diversity in chorale harmonizations, since it not only influences the overall key scheme of the music but also the relationship of the bass line to the hymn tune; note the contrasting melodic contours of the lower voice in the four phrases.

Following a discussion of incorporating a “walking bass” or a pattern of second- species eighth notes in the bass voice (a typical Baroque device) and examination of several such settings,⁶ the students were given a reduced note-against-note version of “Herr Gott, dich loben alle wir” (No. 164 in the Riemenschneider chorale collection) and asked to elaborate the bass with continuous

⁶ Typical examples include “Meinen Jesum lass ich nicht, (No. 299), “Was frag’ ich nach der Welt (No. 255), and “Straf’ mich nicht in deinem Zorn” (No. 38). The last setting also employs a consistent eighth-note motive throughout.

The image displays four musical examples, labeled A, B, C, and D, each consisting of a grand staff (treble and bass clefs) in 3/4 time. Example A is in C major, with a treble staff showing a sequence of chords and a bass staff showing a sequence of notes. Example B is in A minor, with a treble staff showing a sequence of chords and a bass staff showing a sequence of notes. Example C is in C major, with a treble staff showing a sequence of chords and a bass staff showing a sequence of notes, including a trill marked 'v' and a trill marked 'iii'. Example D is in C major, with a treble staff showing a sequence of chords and a bass staff showing a sequence of notes.

Example 2 - Scale degree reinterpretation applied to the opening phrase of “Nun lob’, mein Seel’”

background motion. After their results were compared to Bach’s version, I requested that they compose two different second-species settings for the opening phrases of “Wie schön leuchtet der Morgenstern;” a pair of possible solutions appear in Example 3.



Example 3 - Two “walking bass” settings of the opening phrases of “Wie schön leuchtet der Morgenstern”

Next we considered some overall strategies for harmonizing an entire chorale tune, using a version of “Ein’ feste Burg” (No. 273) for our model melody. The initial plotting of phrase punctuations (via our reinterpetive method) not only guaranteed a variety of both cadential types and closely-related tonicizations but also provided points of tonal stability (or metaphoric “telephone poles”) through the use of root-position triads. By contrast, the phrase interiors were by nature more linear (= “stringing the wires between the poles”), favoring intervals of thirds and sixths between the voices of the soprano-bass duet and the use of inverted chords. At the same time, a prevalent sense of harmonic function (pre-dominant to dominant to tonic) continued to underlie most progressions. The last step of supplying the alto and tenor voices to complete the four-part texture was largely mechanical. After applying this approach to the “Ein’ feste Burg” tune, we then checked our results with Bach’s setting.

Since most students seemed somewhat tentative when faced with the task of harmonizing *modal* chorale tunes (typically Dorian, Mixolydian, or Phrygian), I outlined some general features of this literature: (1) the occasional alteration of pitches in the original melody to accommodate *tonal* settings, (2) harmonizing the various phrases in closely-related major or minor keys, and (3) the tendency for such melodies to begin and conclude on the modal tonic (or *finalis*) chord. Other characteristics included common transpositions, frequent cadential areas (such as D minor, A minor, and F major in untransposed Dorian),⁷ the choice of an authentic (G and D) versus a

⁷ Using such Dorian settings as “Christ lag in Todesbanden” or “Jesu, meine Freude.”

plagal emphasis (G and C) for Mixolydian harmonizations,⁸ and the tendency of untransposed Phrygian tunes to be set within either an A minor or C major context.⁹ The students were required to compose a setting for the Phrygian chorale “Gott hat das Evangelium,” Since each phrase is followed by its exact repetition, the second of each pair demanded a different harmonization.¹⁰

Finally, we addressed the topic of text painting, an extremely common attribute of chorale settings. Although this subject is rarely broached in the classroom, Baroque organists routinely employed different harmonizations in their accompaniments of unison congregational singing to match more accurately the texts of a hymn’s various verses.¹¹ Some typical techniques included sudden key shifts, unusual harmonic progressions, sequences, momentary imitation, and chromatic passages.¹² The latter usually employed a half-step descent from scale degrees 1 to 5 in the bass voice, although ascending 5-6 patterns may also be found (the previous Example 2D demonstrates one such application of a chromatic bass). As an illustration, I composed four different harmonic settings of the same melodic phrase in Example 4 in order to reflect its changing texts. Following the rather neutral initial phrase, Example 4B

⁸ For instance, compare the two settings of “Gelobet seinst du, Jesu Christ” (Nos. 160 and 288). Also see Lori Burn’s informative “J.S. Bach’s Mixolydian Chorale Harmonizations,” *Music Theory Spectrum* 15/2 (Fall 1993): 144-72.

⁹ In this regard we examined “Aus tiefer Not schrei’ ich zu dir (No. 10) and two different settings of “O Haupt voll Blut und Wunden.” While No. 89 appears in Bach’s *St. Matthew Passion* near the crucifixion scene (with an “A-minor orientation”), No. 80 occurs in the final triumphant chorus of his *Christmas Oratorio* (with a “C-major orientation”).

¹⁰ Bach’s setting occurs as No. 181 in the Riemenschneider collection.

¹¹ Apparently Bach himself wrote down some of these “improvisations” for about thirty chorale tunes, but they have been lost.

¹² A particularly beautiful ascending stepwise sequence occurs in the seventh phrase of “In dulci júbilo (No. 143). Several unusual instances of quasi-imitation may be found in “Dir, dir, Jehovah, will ich singen” (No. 209) and “Liebster Gott, wann werd’ ich sterben” (No. 43). Two phrases containing intense chromaticism appear in “Wer nur den lieben Gott lässt walten” (No. 146). The striking treatment of the word *Sterben* in “Christus, der ist mein Leben” (No. 316) is unique among the chorale settings. Finally, a comparison of the texts and harmonizations between phrases seven and eight of “Es ist genug” (No. 216) is highly instructive.

displays an appropriate shift from C minor to its relative major (“night to day”). While the unexpected D $\flat$ in Example 4C initiates the “wandering path” that culminates with a half cadence in the minor subdominant, the chromatic bass poignantly pictures the “pain and grief” of the last phrase.

The image displays four musical settings (A, B, C, D) of a chorale phrase, each in a grand staff (treble and bass clef) with lyrics written below the notes. The settings are arranged in two rows. Setting A: 'To Christ each day I turn.' Setting B: 'Til night shall turn to day.' Setting C: 'A wand'ring path I trod.' Setting D: 'For grief and pain a - bound.' The settings show various harmonic and melodic variations, including chromaticism and unexpected notes like D-flat in C.

Example 4 - Four different setting of the same chorale phrase, incorporating text painting

For their compositional project I chose the Dorian melody “Jesu, meine Freude,” a tune Bach harmonized many times. The selected stanza of text (in English translation) suggested varied opportunities for text painting. The students were instructed to write out their settings in full score with the text appearing between both the soprano/alto and tenor/bass staves. I had originally intended to perform all of their individual pieces by sight-singing them as a mini-choir, but some problems surfaced. A good distribution of voices was seldom possible in such small classes, since sopranos and tenors always seemed in short supply. Not only did the reading and recordings require an inordinate amount of class time, but the number of individual scores necessary for the entire group to sing each one became prohibitive. As a subsequent compromise, I collected all the scores, picked out at least one outstanding phrase from each setting, and consecutively strung my individual choices together to create a single “communal” harmonization. The results of one year’s collage (“Class of 2002”) appear in Example 5.

The image displays a musical score for the chorale "Jesu, meine Freude" in G major, 4/4 time. It is presented as a communal or collage harmonization, featuring five systems of piano accompaniment (treble and bass staves) with vocal lines. The lyrics are written below the vocal staves. The score shows various harmonic textures, including block chords and moving lines, typical of a collage style. The lyrics are: "In your arms I rest me. Foes that would molest me, Can not reach me here. Though the earth be shaking, Ev'ry heart be quaking, Je-sus calms my fears. Sin and hell in conflict fell, With their bitter storms assail me. Je-sus will not fail me."

Example 5 - Communal/collage harmonization of "Jesu, meine Freude" ("Class of 2002")

However, as one might suspect in such patchwork methodology, the tonal relationships and voice leading existing from the cadence of one phrase to the opening of the next were not always ideal.¹³

¹³ Following a performance of their communal harmonization in class, the students examined Bach's more polyphonic setting of this chorale in the third movement of his motet "Jesu, meine Freude," which may also be found as No. 283 in the Riemenschneider collection.

PART 2: CLASSICAL MINUET FOR STRING TRIO

In preparation for the second phase of the course, I reviewed some paradigm shifts that occurred from the Baroque to the Classical era, focusing in the latter on formal designs that featured thematic contrast, changes in texture, harmonic rhythm, stereotypical sequence patterns, foreign modulations, and certain indigenous altered chords (such as augmented sixths or the Neapolitan).

The second project was the composition of a Minuet in Classical style scored for string trio. My rationale for this assignment was two-fold. First, the two-reprise (= rounded binary) design so typical of this genre was doubtless the most pervasive formal/tonal structure utilized by composers during this period, appearing not only in both the Minuet proper and its subsequent Trio, but also serving as the model for most themes in variation sets and frequently functioning as the refrain (or even an episode) in rondo movements.¹⁴ Secondly, most creative assignments rarely involve musical settings in *three* voices, so that students are less familiar with the doubling and spacing characteristics of trio texture. After examining some schematic diagrams which highlighted stereotypical formal and tonal features of two-reprise design, the class then analyzed a number of short movements containing instances of less common procedures, such as cadential extensions at the end of each reprise, the closure of the first reprise in the tonic key, substitutions for the usual dominant-oriented retransition, and possible modifications in the restatement of initial material.¹⁵

Preliminary writing exercises focused on the eight-measure period that frequently constituted the initial reprise, with its typical motion either to the dominant (in a major key) or relative major (in a minor key). A number of note-against-note two-voice models were sketched, and both parts were elaborated employing some

¹⁴ It may even occur as the first (and/or contrasting) section in slow-movement ternary constructs; see Mozart's Piano Sonata in C major K. 330, II. Obviously, the expansion of this design results in the typical sonata form of the period.

¹⁵ I personally prefer to use the terminology proposed by Douglass Green in the second edition of his *Form in Tonal Music* (New York: Holt, Rinehart, and Winston, 1979), although one might also opt for those functional tags or abbreviations suggested by either Jan LaRue or William Caplin.

common motivic figure, as illustrated in Example 6.¹⁶ The students were then required to compose a first reprise, using their own original two-part framework as the basis for its underlying voice leading. One problem frequently encountered in these exercises involved a sense of “correct timing,” or getting to the right place at the right time. This situation often arose during the modulation to the new key center and its cadential confirmation at the end of the first section—some students perpetually seemed to “arrive” there either too early or too late.

Example 6 - Voice-leading models and their elaboration in the first reprise of a Minuet

In presenting those characteristics typical of the second reprise, I began by employing Joseph Riepel’s three little models (the *ponte* = prolongation of V, the *fonte* = V7/ii to ii, V7 to I, and the *monte* = V7/IV to IV, V7/V to V, etc.) as paradigms which frequently occurred at its inception, although other sequential patterns were certainly viable.¹⁷ Some students experienced difficulty in extending

¹⁶ In addition to Example 6, another similar instance appears in the “Fux to Bach” article, cited previously.

¹⁷ A short discussion of these models from Riepel’s *Anfangsgrunde zur musikalischen Setzkunst* II (1755) appears on pages 92-93 of my *A Practical Approach to Eighteenth-Century Counterpoint* (Prospect Heights, Illinois:

or bridging one of the Riepel devices (or some other sequence) to the succeeding dominant prolongation; a IV to It6 progression was recommended as an effective lead-in to the extended V area. Following the restatement of initial material back in tonic, our novice composers faced one additional challenge: modifying the music from the first reprise so that now it remained in the tonic key to the end of the movement. As a preliminary exercise I wrote out several first reprises for piano and then asked the students to complete an appropriate second reprise using the *same* motivic material. The relationship of the Trio to the Minuet proper was also briefly broached, stressing such issues as key relationships (if foreign, the necessity for a retransition to lead back to the Da Capo) or possible motivic similarities between the two sections.¹⁸

The final step involved a brief examination of the doubling and spacing procedures found in three-part texture in general and the string trio in particular, followed by some preliminary exercises incorporating these points. While analyzing several of the minuet or scherzo movements from Beethoven's Op. 9 String Trios, we discussed ranges, clefs, bowing, and effective voicing techniques for that medium, observing that double stops tended to occur most often in the viola at major cadences. While the students worked on their scores (with continual in-class "wet nursing" of their progress around the piano), we explored some of Beethoven's more innovative formal contributions to this genre.¹⁹ In addition, the introduction of canonic or retrograde minuets allowed the class to appreciate how

Waveland Press, 1995), although the emphasis in that chapter is on two-reprise form in Baroque Minuets.

¹⁸ For instance, in the Minuet from Haydn's Symphony No. 104 ("London"), the motion from the B $\flat$ major of the Trio back to the D major of the Da Capo incorporates an enharmonic augmented sixth.

¹⁹ These included the Scherzo to his Op. 28 Piano Sonata (the significance of the pitch class F# throughout the movement and the subtle thematic relationships between the Scherzo proper and the Trio), the "Minuet" to his First Symphony (the disproportional relation between the first and second reprises, the motion to the Neapolitan key area, and the curious chromatic retransition), the Scherzo to his Fifth Symphony (where the repeat signs are missing, and one must look carefully to detect any remnants of two-reprise design), and the Scherzo to his Seventh Symphony (cast in the lowered submediant but with a continual emphasis on A, the tonic of the symphony, as well as the repeats of the Trio and Scherzo, resulting in a kind of "rondo" construct).

such imitative processes could be reconciled within the tonal and thematic framework of a two-reprise design.²⁰ The first reprise of a crab minuet, which I wrote to demonstrate the various problems involved in these types of pieces, appears in Example 7; its second reprise may be generated by reading the first reprise backwards; all basic characteristics of the two-reprise design are present.

Example 7 - Demonstration of retrograde technique applied to a Minuet proper

After the completion of their full score (with appropriate rehearsal numbers), the students copied out parts, either in ink or with computer software. Following the reading and recording of the pieces in class, we engaged in some post-performance critique—what worked, what didn't work, and how a passage

²⁰ For instance, see the two-voice canon embedded in the Minuet of Haydn's D-minor "Quinten" String Quartet Op. 76 No. 2, the double-canon in inversion appearing as the Trio of the Minuet in Mozart's C-minor Wind Serenade K. 388, or the Minuet "al Roverscio" in Haydn's Piano Sonata in A major Hob. XVI 26.

might be rewritten to function more effectively. The string players themselves often contributed valuable insights of a more practical nature. Although I had first intended for the students to compose a complete Minuet, consisting of the usual Minuet proper, Trio, and Da Capo, I subsequently discovered that this project proved more challenging (see my former comments on “timing”) than originally anticipated. In addition, the rehearsal and recording of entire movements by the trio ensemble consumed too much class time. As a result, I eventually eliminated the Trio and concentrated solely on the Minuet proper.

PART 3: A LIED IN EARLY ROMANTIC STYLE

In preparation for the last two projects, the class reviewed some features of the tonal language associated with the Romantic period. These topics included the escalation of accented melodic dissonance (especially by leap) for expressive purposes, both primary and secondary mixture harmonies, embellishing chromatic chords, more exotic forms of the augmented sixth, the tonicization of third- or minor second-related keys and various ways of effecting their modulation, the submergence of the tonic triad in favor of an emphasis on the dominant, the possibility of a “double tonic complex” (à la Robert Bailey), and above all, the increase in linear and vertical chromaticism. One assignment arising from this discussion included the writing of short passages which illustrated specified examples of particular techniques; for instance, the composition of a period which employed (1) an embellishing diminished-seventh, (2) a modulation from E minor to G# minor via an enharmonic German sixth, and (3) a Neapolitan chord in root position.

Our third project entailed the composition of a short German Lied. We first surveyed some basic attributes of this literature, observing that these songs were basically lyrical in nature, as opposed to more violent shifts of mood and material encountered in operatic recitatives and arias of dramatic origin. Other pertinent topics included certain properties of the poems themselves (recollective versus narrative, metric scanning, and typical rhyme schemes), the text as a formal determinant (strophic versus modified strophic, binary/ternary/quatrains, and through composed, as well as the overall tonal scheme), surface musical characteristics (phrasing and periodicity, harmonic rhythm, text repetition, text accentuation, and text painting), and finally the role of the piano accompaniment

(relation to text, texture and motivic development, possible doubling of the vocal line, and the use of introductions, interludes, and/or codas).

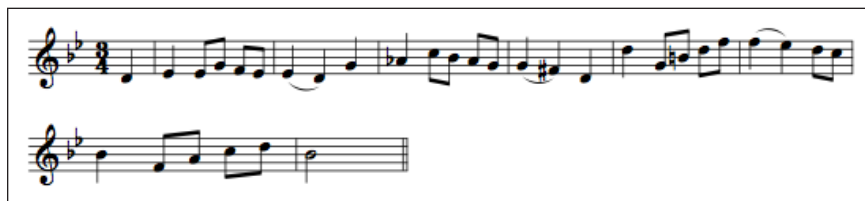
Several preliminary exercises preceded the actual project. I provided the German text and translation to the opening stanza of Schubert's "Gefrorne Thränen" (Müller) and asked the students to make two original setting, consisting of a single vocal line with commercial chord symbols beneath to denote the supporting harmonies.²¹ I then gave them a melody of period length (Example 8), which had the possibility of multiple harmonizations, and assuming it to be the vocal line, asked them to provide two different textural and tonal settings in their piano accompaniments. During these assignments we also analyzed a selection of Lieder cast in different structural designs, beginning with the literal strophes in Schubert's "Heiden-Röslein" D 257 and progressing to more complex examples of modified strophic form in Brahms' "Feldeinsamkeit" Op. 86 No. 2 and "Wie Melodien zieht es mir" Op. 105 No. 1.²² In addition, we examined Schumann's brief "Die Lotosblume" Op. 23 No. 7,²³ and two different settings of Franz Liszt's "Wer nie sein Bord

²¹ We then examined Schubert's setting (No. 2 in his *Winterreise*) with its off-accent "tear drops" in the piano part and the modulation from F minor to its relative A♭ major. The song continues to vacillate between these two keys, especially in the middle section where both dominants are successively prolonged.

²² In such literal strophic pieces as the Schubert, we discussed the possible conflict arising between the changing text in each strophe versus the exact repetition of the music. Here the composer purposely "juices up" the middle portion of each musical strophe with appoggiaturas and a phrase extension to reinforce the corresponding "emotional" section of each poetic stanza (see mm. 5-10 = 21-26 = 37-42). In Brahms' "Feldeinsamkeit" the approach to the dominant in the opening strophe is expanded chromatically via a momentary tonicization of flat VI during the same section of the second strophe (mm. 5-8 = 21-25). The "promissory" Neapolitan allusion in his "Wie Melodien" (m. 4) is repeated in each of its three strophes (m. 4 = 17 = 31) before its eventual tonicization at the song's climax (mm. 34-37). Both Edward Laufer and Patrick McCreless have discussed this aspect of the setting.

²³ While the tonal scheme of this brief song suggests a ternary structure, its thematic material continues to develop over the unwavering reiterated eighth notes in the piano accompaniment, much in the manner of a through-composed ballad. The enharmonic use of the raised-fifth versus the lowered-sixth scale degrees provides an excellent

mit Tränen aus," both of which date from 1862.²⁴ Finally, several selections from Gustav Mahler's more expansive orchestral songs ("Revelge" from *Lieder aus Des Knaben Wunderhorn* 1899 and "Das Trinklied vom Jammer der Erde" from *Das Lied von der Erde* 1909) rounded out our study pieces.²⁵



Example 8 - Provide different harmonic settings in two piano accompaniments

For the song project I provided the class with a common German text — "Ein Stündlein wohl vor Tag" or "An hour before dawn," a short poem of three stanzas by Eduard Mörike.²⁶ The nature and structure of this poem is such that it can be set either in a ternary, strophic, or through-composed design; its opening line (the title of the lyric) also functions as a refrain for the subsequent stanzas. As the fledgling composers began to sketch their pieces, we discussed the range and tessitura for soprano (or tenor) voice, as well as some

demonstration of Steven Laitz's "submediant complex." See his "The Submediant Complex: Its Musical and Poetic Roles in Schubert's Songs," *Theory and Practice* 21 (1996): 123-65.

²⁴ Liszt's first E-major setting consists of two large strophes, each of which is divided into several smaller components. The Neapolitan relation assumes an increasing significance as the piece proceeds. While the second setting (without key signature) is much abbreviated, certain of its ideas suggest motivic reminiscences of the earlier song. In several classes we also found time to examine his "Blume und Duft" (1862), which is a real "Chinese puzzle" to unravel. I feel the published analyses by such scholars as Robert Morgan, Harold Cinnamon, and Edwin Hantz fail to adequately address certain crucial issues in this piece.

²⁵ Both employ complex strophic constructs and unusual key schemes. While the former contains "rotational" elements (à la Warren Darcy) and no less than three different refrains, the four strophes of the latter resemble a sonata design with a modified repetition of the exposition.

²⁶ Its text and literal translation may be found on pp. 199-200 of *The Fischer-Dieskau Book of Lieder* (New York: Limelight Editions, 1984).

aspects of text setting in German. I found that most students tended to be a bit too adventuresome during their initial stanza, in some cases exploring distant tonal realms before first establishing a solid tonic “home base,” or exploiting the higher reaches of the vocal range too soon without sufficient dramatic justification.

Although I hired (out of my own pocket) some graduate vocal majors to practice on and record the songs, those pianists in the class were expected to supply their own accompaniment. After the recordings, the singers provided some excellent practical feedback. In hindsight, we examined two prior settings of this poem. The Robert Franz version (Op. 28 No. 2) is somewhat mundane, but Hugo Wolf’s more innovative approach (1888) features an opening prolongation of a German sixth to dominant, after which each successive strophe rises a half step higher before restating the introductory material as coda. I must confess I was not prepared for the unusual variety and excellent quality of original songs I received over the years. While most were cast in moderate tempo and tended to draw their stylistic inspiration from Schubert, the opening section quoted in Example 9 from a student setting resembles a Mendelssohn-like allegro.

PART 4: ROMANTIC CHARACTER PIECE FOR SOLO PIANO

As an introduction to our final project—the composition of a Romantic character piece for solo piano—we compiled a catalogue of the various types of genre found in the keyboard music of Schubert, Schumann, Chopin, and Brahms. Some students seemed to have picked up the mistaken idea that following the formal stereotypes of the Classical era, the subsequent designs in the 19th century were somehow more amorphous and free. Therefore I made a special effort to link certain genre with their preferred formal and tonal designs, such as minuet constructs with attendant two-reprise forms in mazurkas and polonaises, ternary structures in intermezzi, and sequence-like chains of repeated sections in waltzes.

Several preliminary exercises preceded the final project. After first demonstrating a wide variety of possible pianistic textures in which a melody in Romantic style might be cast, I gave the class a short passage in four-voice texture and requested that they provide two different textural settings. I next asked them to compose a harmonic progression of some twenty to thirty chords that could be elaborated in some consistent texture to form a kind of Romantic

Agitato

mp Der - weil ich

schla - fend lag, Ein Stünd - lein wohl vor Tag. Sang

vor dem Fen - ster auf dem Baum. Ein Schwäl - ble in nür,

hört es kaum, Ein Stünd - lein wohl vor Tag.

Example 9 - First strophe of a setting of “Ein Stündlein” by ManShan Yap “figuration prelude” (modeled after Chopin’s Op. 28 No. 1 in C major). In addition, we analyzed and extracted the basic voice-leading models underlying some typical chromatic sequences

utilized by Chopin.²⁷ His infamous little E-minor Prelude Op. 28 No. 4 afforded the opportunity to examine some non-sequential linear chromatic writing.²⁸

After each student had chosen a particular genre for their project, we examined and discussed some of their preliminary sketching around the piano, homing in on such issues as overall design and tonal scheme, texture considerations, positioning of climactic points, the possible use of chromatic sequences and where they might be best employed, transitions versus retransitions, technical pianistic features, etc. While their compositions progressed, we analyzed several character pieces from the literature. The A-minor Mazurka Op. 7 No. 2 by Chopin proved to be a virtual treasure-trove of various devices, including the problem of its “off-tonic” opening. (Many students were surprised to note how closely the design of most mazurkas resembled the older Classical Minuet model with its two-reprise sections and “trio.”) I found that the unexpected harmonic twists and turns in Schumann’s miniature No. 21 from his *Album for the Young* Op. 68 provided an excellent illustration of Leonard Meyer’s hypotheses of expectation and realization.²⁹ In our examination of Chopin waltzes (the C# minor Op. 64 No. 2, the A♭ major Op. 34 No. 1, and the A♭ major or “two-four waltz” Op. 42), we observed the traditional succession of repeated sections (of which the more virtuosic second one often functioned as a kind of refrain), the typical key change at the trio, and the occasional abandoning of strict hypermeter near the piece’s conclusion as the

²⁷ For instance, the chromatic prolongation of an introductory dominant (Polonaise in A♭ major Op. 53, mm. 1-13), a fifth-progression cycle compressed to descend by half-steps (Prelude in A♭ major Op. 28 No. 17, mm. 50-54), as opposed to 5-6 chromatic ascents (Prelude in D minor Op. 28 No. 24, mm. 39-52), patterns by consecutive minor thirds (Nocturne in G major Op. 37 No. 2, mm. 129-32, which also features an almost complete cycle of falling perfect fifths) versus those of the major third (“New Etude” in A♭ major 1839, mm. 13-29), as well as the “omnibus” progression (Nocturne in D♭ major Op. 27, No. 2, mm. 29-46, where it extends the retransitional dominant).

²⁸ In passing we briefly examined two analyses of this piece by Carl Schachter: “The Prelude in E minor Op. 28 No. 4: Autograph, Sources, and Interpretation” in *Chopin Studies* 2, ed. by John Rink and Jim Samson (Cambridge: Cambridge University Press, 1994), 161-82, and “The Triad as Place and Action” in *Music Theory Spectrum* 17/2 (Fall, 1995): 149-69. I personally believe the former more accurately “fits” the music.

²⁹ These theories were first postulated in his *Emotion and Meaning in Music* (Chicago: University of Chicago, 1956).

music built to a climax (Op. 34 No. 1). Schubert's $A\flat$ movement from his *Sechs Moment Musicaux* D. 780 (featuring Edward Cone's famous "promissory note") and Brahms' E-Minor Intermezzo Op. 119 No. 2 (largely based on a single motivic gesture) rounded off

The image displays a musical score for a piece titled "A Sunny Place in Autumn" by Sayaka Akiyama. The score is written for piano and is divided into four systems. The first system is marked "Cantabile" and "p" (piano). The second system is marked "poco rit..." (poco ritardando). The third system is marked "a tempo" and "mp" (mezzo-piano). The score features a mix of treble and bass staves, with various musical notations including eighth notes, quarter notes, and rests. The key signature is three flats (B-flat, E-flat, A-flat), and the time signature is 3/4. The piece is characterized by its Romantic style, with a focus on melodic development and dynamic contrast.

Example 10 - Opening section of a Romantic character piece "A Sunny Place in Autumn" by Sayaka Akiyama

our analytical repertoire. I have included the initial section from a remarkable student piece in Example 10; the programmatic title suggests a pensive mood. I only wish there were more space to reproduce the complete composition.

Following the performances and recording of the character pieces, we engaged in a little post-mortem open discussion on various

facets of the course -- for instance, what aspects of the compositional process did they find either easier or harder than they had originally anticipated, and what were some possible reasons? Did they tend to have more trouble at predictable points in the assigned piece? Did secondary parameters such as texture, register, range, timbre, dynamics, text setting, etc. play a more significant role that they might have initially expected?

Finally, a few words on changes in the course's structure and material. During the first several years I had originally assigned an additional project—a Wagnerian operatic narrative!

After supplying a short text (paraphrased from Act II of *Die Walküre*), I asked them to sketch some possible short “leitmotives” that might be used to underscore certain associative references in the poem, during which time we also examined some instances of this genre in the Wagnerian literature.³⁰ But I soon realized that most students were simply not familiar enough with the style to cope with an assignment of this magnitude. In addition, coming as it did near the end of the semester, the class lacked sufficient time to do proper justice to the narrative. As a result I decided to substitute in its place a short piece for solo woodwind and piano in the manner of early Debussy. Since time restraints, however, once again prevented the establishment of those compositional techniques necessary for a proper understanding of Impressionistic style, it too was subsequently dropped. On the other hand, I continued to modify and fine tune the preliminary exercises mentioned above.

In retrospect many of the students remarked that this course had not only been a valuable learning experience from a purely pedagogical standpoint, but that their direct involvement with the creative process had compelled them to look at music from the composer's “side of the fence” (most had never previously written any original music to speak of). They also voiced the opinion that this stylistic-compositional approach doubtless influenced the manner in which they would analyze and perform tonal pieces in the future.

³⁰ These included the Dutchman's Monologue (*The Flying Dutchman* Act I), the Rome Narrative (*Tannhäuser* Act III), “In fernam Land” (*Lohengrin* Act III), and Loge's Narrative (*Rhinegold* Scene 2).



The Idea and Value of "Book": A Comparative Review of *Sound in Motion: A Performer's Guide to Greater Musical Expression* by David McGill and *Deepening Musical Performance through Movement: The Theory and Practice of Embodied Interpretation* by Alexandra Pierce

JONATHAN DUNSBY

I would like to begin with a short, personal story. As a music major, I spotted a German book called *Das Meisterwerk in der Musik*, the enticing title of which translates as "The Musical Masterpiece."¹ Intrigued, I showed this library book to my tutor, who advised me to leave it alone. "Schenker is toxic" were his precise words. To a youngster of the post 1968 era, a forbidden idea just made it all the more alluring, and so I discovered what few of my generation seemed to be being taught. Admittedly, piano studies involved a venerable lineage through Heinrich Neuhaus of Moscow, who had taught many of the great teachers teaching my generation, back through such as Liszt and Czerny, all the way to Ludwig van Beethoven himself, who seemed to have more or less invented everything that mattered in piano virtuosity. Into the conceptual void strode Dr. Schenker, opining in his evocative Gothic script about how music fits together, so that you could think about it and know what it was you were thinking about. I sensed, at that moment, that I had been allowed at last to read, and not only hear, some of the secret knowledge of classical music that otherwise could be garnered only somehow intuitively, and for me only half-understood, in the studio.

¹ I have noted elsewhere that Cambridge University Press's English title *The Masterwork in Music* has been a regrettable contribution to Schenker translation (Cambridge: CUP, 1994; Heinrich Schenker's original publication *Das Meisterwerk in der Musik: Ein Jahrbuch*, Drei Masken Verlag, Munich, 1925, 26 and 30, was re-published by Georg Olms, New York, 1974; for many years it was best known in English through the selections in Sylvan Kalib, *Thirteen Essays from the Three Yearbooks "Das Meisterwerk in der Musik": An Annotated Translation*, Ann Arbor, University Microfilms 974).

If the message that music, or at least most Western art music, is *Sound in Motion* can hardly be overstated, McGill's subtitle, *A Performer's Guide to Greater Music Expression*, is less stable, inviting us to ask what kind of performer that might be (for performers do range, after all, from beginners to virtuosos). "Musicians of every stripe," as McGill says (:ix). Reading his engaging pages leaves one in no doubt that the college-level performance major is the author's intended audience, which is not to underestimate the value that others will find in McGill's work, from more junior students to experienced teachers. Yet the question of level is not only about aims and intended learning outcomes, but also the pedagogical philosophy behind his enterprise.

That is where McGill's inspiration is important to note, the work of Marcel Tabuteau. Tabuteau was long-time oboist of the Philadelphia Orchestra, 1915 to 1954, and an influential pedagogue, as is not quite conveyed in the short if eloquent biography by Laila Storch, "Tabuteau, Marcel," *Grove Music Online*. *Oxford Music Online*, 07 June, 2009.² McGill's guidance to us is reverently based on Tabuteau's teaching. Tabuteau had a particular take on phrasing, which he translated into effective pedagogical practice for instance by the simple expedient of getting students to count numbers that (in my words) provide mental grouping to reflect contrapuntally-harmonically underpinned melodic goal-direction. Very simply, for example, if you were playing groups of five even notes, quintuplets one after the other, and "thinking" anything, then "thinking" /12345/12345/12345... (where the oblique, '/', precedes a downbeat) does not produce the kind of dynamic, animated phrasing that will usually be achieved by "thinking" x1234/51234/51234..., if anything. Obviously, there is a lot more to it than that, in practice, but we have a fundamental idea of mental configuration here, especially in the section on "note grouping" (:29-81) that no theorist is entitled to brush aside. This is where we get to the pedagogical issues raised above, in that case whether you have to be, say, a vicariously Beethoven-trained pianist in order to appreciate Schenker. For apparently Tabuteau believed that his number system for note grouping was a pedagogical device, something designed "for stupid people," and "for lesser days" (:78; emphasis original). McGill is aware of the dilemma that neither he nor others can resolve: whereas on the one hand techniques

² <http://www.oxfordmusiconline.com/subscriber/article/grove/music/27348>).

for getting beyond inexperienced mistakes in the studio may be of interest only pedagogically, on the other hand those techniques may reflect important musical truths and be potentially of much wider significance.

This larger issue raises all sorts of pedagogical questions of which I shall try to address, briefly, the one that may seem most significant in the mind of any music theory pedagogue: where can we inject basically anecdotal, rudimentary knowledge of execution and interpretation, of the kind that in fact both these books seek to offer, into the music student's learning experience? What our textbooks suggest is that the community of teachers of Western art music believes music to be best taught through theory, not through guides to performance. Mainstream undergraduate theory textbooks do not, by and large, address issues of actual musical execution and interpretation directly, and there is no presumption that they should. Were there a silver bullet that enabled us to teach how actual performance is conceived and achieved it might be called something like "The Art of Performance,"³ yet the nearest we have to that seems to be, for example, two multi-authored repositories of miscellaneous advice and critique that could hardly be used as textbooks in theory courses or in performance studies either.⁴ Contrast to that perhaps the most conspicuous contribution in recent decades to enlarging our vision of teaching music theory, by Nicholas Cook:⁵ and note that despite that author's extraordinary work elsewhere in the development of performance studies pedagogically and historically,⁶ still it is the traditional craft

³ I am referring obliquely of course to Heinrich Schenker's "recent," very posthumous publication *The Art of Performance*, ed. Heribert Esser, trans. Irene Schreier Scott (New York: OUP, 2000), a volume creatively edited from scattered, and even at that, slim notes, utterly fascinating to the Schenker expert perhaps, but hardly of use to music students.

⁴ John Rink, ed., *The Practice of Performance: Studies in Musical Interpretation* (Cambridge: CUP, 1995), reviewed by me in *Musicae Scientiae*, 1/1 (1997), 129-32, and *Music Performance: A Guide to Understanding* (Cambridge: CUP, 2002), to which, stated here for the record, I contributed the chapter "Performers on Performance," 225-36.

⁵ *Analysis Through Composition: Principles of the Classical Style* (New York: OUP, 1996).

⁶ Possibly Cook's most widely cited work has been the article "Between Process and Product: Music and/as Performance," *Music*

of writing music, in the broadest sense including improvising it, that he offers as a portal to music-analytical education, certainly enabling but not specifically addressing musical “execution and interpretation” as it was called above.⁷

In the context of that larger issue, it is frustrating that the hundreds of music examples in McGill’s volume, 393 if the book’s own count is accurate, are mostly just a few bars long. Extensive but short, they can never get below the musical surface in the sense that music theory explores; though there is indeed a chapter on “the larger picture” (about “skeletal structure,” “phrasing,” “line” and similar). And in the context of such a doggedly detailed approach, it is all the more remarkable that McGill says in this book nothing of importance about music with which Schenker would, in my opinion, disagree. We might even choose to view McGill’s work, somewhat idealistically, in the light of Matthew Brown’s interesting statement that what Brown calls the “model” of Schenker is a model “of how people learn to master functional monotonal compositions. Since this model has extraordinary implications both for music psychology and music pedagogy, it clearly needs to be *tested in*

Theory Online, 7/2 (April 2001), in which he adumbrated the seemingly very attractive idea of regarding a piece of notated Western art music as a “script.”

⁷ Again for the record, largely, I note that my own *Performing Music: Shared Concerns* (New York: OUP, 1995) is more about the work of the performer than about learning how to perform. The professionalization of performance does seem to be extreme, as expressed in the *Revised New Grove Dictionary*:

Professional performers are somewhat rare among the population. They also tend to be specialized; a case such as Mozart, considered by his father Leopold to have the potential to become as great a violinist as he was a pianist, is wholly exceptional. Amateur musical performance, on the other hand, is a huge human phenomenon, from Caribbean steel bands to Welsh choirs, from the Inuit throat games of the western north Atlantic coast and the northern Pacific Rim to the didgeridoo players of native Australia.

“Performance,” *Grove Music Online*, *Oxford Music Online*, 31 May, 2009: <http://www.oxfordmusiconline.com/subscriber/article/grove/music/43819>.

a systematic manner."⁸ It is not stretching a point to see *Sound in Motion* as just such a test, written by a connoisseur practitioner, that is "systematic" in the sense of being sharply focused on the issue of foreground phrasing in tonal music.

The compromise it makes, though, in addressing itself to the performance student, is that the result would be difficult to use with students who are beyond typical sophomore theory level. True, there is plenty here by way of professional advice, especially for wind players in Part 5, and also in general discussion of controversial matters such as vibrato (:211-18) and portato (:257-63). They would find the book, however, altogether too musically unsophisticated, unscholarly, unmethodical, compared with their theory textbooks. So we have an uneasy fit here. McGill's mentor's "stupid people" may be partly a very harsh reference to performance students who in fact do not even read music books, or want to do so; whereas students who have kept up with their core theory would be asking rightful questions:

- how does the McGill perspective pan out into playing longer stretches of music;
- is he implying that I don't need to learn to analyze the underlying harmonic prolongations; and
- to which repertory can I apply his ideas (or not), and how am I to know the difference?

The challenging truth may well be that what goes on in the studio does not translate into print usefully, unless it is in the form of a serious treatise. Even major treatise writers and musical meditators such as Hermann Scherchen, Erwin Stein and Alfred Brendel⁹ have not reached into the actual curriculum that forges the musicians of tomorrow. Persuasive and committed though McGill's work certainly is, it will probably see the dark of print along with the likes of work just mentioned largely as ancillary material, read if at all by teachers—and some theorists—rather than by students.

⁸ *Explaining Tonality: Schenkerian Theory and Beyond*, Rochester, University of Rochester Press, 2005, 237; my emphasis.

⁹ Hermann Scherchen, *Handbook of Conducting*, trans. M. D. Calvocoressi (Oxford: OUP, 1933); Erwin Stein, *Form and Performance*, with forward by Benjamin Britten (London: Faber, 1962); Alfred Brendel, most recently *Alfred Brendel on Music: Collected Essays* (Chicago: A Cappella Books, 2001), although his most influential collection may be said to be *Musical Thoughts and Afterthoughts* (London: Robson Books, 1976).

McGill has at least tried to encapsulate some of the central issues of “Baroque” interpretation—not that such an obviously unsound generalization is to be recommended—and is indeed rather amusing in his section headed “How to Become a Baroque Expert in Less than Five Minutes” (:243-6). With tongue in cheek, he lists the hopelessly misguided “rules” that will tend to evince this for the ordinary listener:

- A space should occur before the last note of each movement.
- All unslurred eighth and quarter notes should be well separated...
- All trills should start on the upper note...
- The last note of a slur should be clipped...
- A hairpin...should occur on long notes.
- No vibrato should be used...
- Use the open strings frequently...

With admirable restraint he is unpicking the question heading this section of Part 6, “Was There a Baroque Style of Playing?” (:237-50), and he is leading the student to conclude that probably there wasn’t, since “style” should refer to the “mood of the moment in music, not to an entire era” (:250). This advice would have been more convincing if McGill had shown in some crisp musical illustrations what it might mean: inappropriate initial upper notes that obscure the underlying melody, for example; or for instance cases where it is meaningless not to phrase a passage with optional, non-notated legatos articulating surface phrases.

That last reflection on McGill and earlier music points up one strong contrast with Alexandra Pierce’s book, preoccupied as *Deepening Musical Performance* is with “common practice” period music and the aesthetics of Classical and Romantic interpretation. One realizes that McGill’s work is more anchored in the realities of professional life. Pierce hardly ever dips her toes into pre-1750 waters, and when she does it can be with surprising insouciance (such as exploring the idea of “character-motif” through Mark Morris’s dance production of Purcell’s *Dido and Aeneas*, 160-1; a long step away from the concerns of music theory pedagogy of course, much as the broad view is to be encouraged).

The Pierce is curious not only in failing even to address the older repertory that is one staple of the music student’s diet, but also because of its orientation towards embodiment, which, as will be discussed, one may tend to assume is modern and valuable.

Some readers will know that Pierce is a major scholar, at least in the sense that her dissertation, which was disseminated through the UMI system, must count as one of the most insightful and original contributions to theory research of those times, and a document of unsurpassed originality in Schenker studies.¹⁰ She has penned more general work on embodiment.¹¹ Four decades on from her dissertation, she continues to surprise. Consider only some of her chapter headings: "Mobilizing Balance," "Melody Awakened: Seven Stages for Embodying Its Contour," "Resilience of Meter and Rhythm," "The Integration of Structural Levels," and "Shaping Phrase with Span and Climax." She is also a savvy author who begins by addressing her supposed constituent groups directly, for instance "movement professionals" and "music therapists." "To Music Theorists" offers five introductory paragraphs, explaining that her "goal has been to make theory as relevant, intriguing, and useful to practicing musicians—and to theory researchers—as it can be," though "perceiving a piece through movement can be a slower process than conceiving it through an already highly developed system of hearing," and also for performers "the topics of music theory are likely to appeal (if at all) less as ideas than as focal points of playing or singing technique." She invites us "not to be too quick to dismiss the work as lacking in intellectual rigor because it violates the implicit stylistic canons of theoretical literature or might seem at first glance to be 'mere pedagogy'" (:xiv-xv).

That last petition is probably not in fact quite the issue, once the reader has measured up to the task of figuring out what this book is really about. On the face of it, it is highly contemporary since the notion of embodiment is a key theme in the early twenty-first

¹⁰ "The Analysis of Rhythm in Tonal Music," Brandeis University, 1968.

¹¹ See for example Alexandra Pierce and Roger Pierce, *Expressive Movement: Posture and Action in Daily Life, Sports, and the Performing Arts* (New York: Plenum Press, 1989). "Embodiment" may also be expressed as the "physicality of musical experience," which has been neglected in traditional theory, according to Andrew Dell'Antonio, ed., *Beyond Structural Listening?: Postmodern Modes of Hearing* (Berkeley: University of California Press, 2004): he remarks, reasonably, that in *Beyond Structural Listening?* at least five chapters concern the general topic of "reclaiming the body," 8. See also the review of that volume by Judy Lohead, *Women and Music*, 11 (2007), 111-24, who observes how it is "not surprising that the one essay of the collection most clearly focused on embodiment is also one that directs attention to gender," 122, although Pierce's own work does not seem to me to be particularly gender-oriented.

century history of ideas. “Embodiment theory” is probably “toxic” too, like Schenker as was mentioned above. While embodiment may seem alarmingly similar to the idea of the “unconscious” launched more than a century ago—the latest and enduring excuse, for academics eager to make some kind of tenure-friendly noise in the world, to stumble through answers to rather insignificant questions—nevertheless proprioception is a stable and essential component of scientific understanding of the human species, as the physician Oliver Sacks illustrated to non-specialists.¹² Yet contemporaneity is no guarantor of relevance. The book seems to be really an account of what Pierce herself feels about music, and recommends as a way of feeling. She happens to feel music very physically, and undoubtedly enjoys introspecting about that. She has been an inspiring teacher, surely, and she enthusiastically takes on the task of providing a comprehensive picture of how her physical approach to feeling music maps in to her intellectual picture of it, which is Schenker-inspired. She also certainly goes so far as to indicate that if you do not feel music in the explicit physical way that she does, then you should.

In the end, however, that is as far as the book progresses. To be convincing, it would have needed to consider, for example, why this kind of embodiment has not been obvious since day one, why such as Mozart seem never to have mentioned it in the age of explicit, artistic self-reflection that is one of the main characteristics of the Enlightenment, or, a couple of generations later at the dawn of the virtuoso cult, Liszt and Paganini for that matter.¹³ Admittedly, her title’s reference to “deepening musical performance” is telling us about what might be rather than what has been. Yet we know from so many areas of music history that this subject is anything but new. Think only of the iconic evidence on how one stood or sat at the harpsichord in 18th-century France, not only as to bodily stance but also facial gesture (no frowning!).¹⁴ And to be convincing pedagogically she would have had to address some perplexing

¹² *The Man Who Mistook his Wife for a Hat* (London: Duckworth, 1985).

¹³ Lydia Goehr states baldly that “Romanticism was to replace the principle of imitation with a combined principle of expression and embodiment,” *The Imaginary Museum of Musical Works: An Essay in the Philosophy of Music* (Oxford: Clarendon Press, 1992), 142, my emphasis.

¹⁴ A good starting point for investigating this topic is Edward Kottick, *A History of the Harpsichord* (Bloomington: Indiana University Press, 2003).

epistemological questions that would in all likelihood bore and probably demotivate music students as course material, yet fascinate them in moments of contemplation and personal self-assessment.¹⁵

Pierce's book is also curious, just as a piece of writing, in that much of its evidence is presented in what, ideally, might have been case histories in some recognized sense, but they are in fact stories, of a kind, about her students' experiences. In our brave new world, we can say exactly what these stories are: they are blogs. It would be surprising if readers cared to buy an expensive hardback book, even from a press such as Indiana, bursting with little more than blogs. There are instances of a lot of other questions, aside from presentation, that this book raises but simply does not answer: whether it is true or not that "a distinct kinetic quality . . . can be vitalized by movement" (:3), assuming we can grasp what that means; whether musicians share a "paradoxical impulse to focus attention not *on* oneself but *through* oneself," and why anybody would call that a paradox if true. So we have the studio problem here also (matters that may fail to "translate into print usefully" as I put it above). It may seem to be more acute in Pierce's case than McGill's, since aside from the blogging Pierce offers a cogent academic study compared with McGill's more informal approach. Readers of Pierce's book would probably have loved to study with her, but lucid, permanent guidance to teachers and their students on how to transfer her ideas of embodiment into pedagogical practice would have required a rather different approach: in short, some kind of textbook.

Therein lies a tale, perhaps. A "book" in the recent, hybrid sense may be somewhat research-oriented, yet also somewhat usable in the classroom: it may bear the marks of the blog age; or may be trying to replicate in print the living language of the studio; it may reflect a lifetime's devotion to music and scholarship, as in the case of Pierce; or it may subscribe to estimable musical values, even without quite knowing what to make of them, as with the McGill. Possibly, because of the pressure to publish that is now endemic in the university system, people are writing books that make an uneasy compromise. While offering the semblance of research, the scholarly apparatus of these books may in fact be suspect, and their arguments anything but sophisticated. Because they do carry

¹⁵ Here is a potentially perplexing fact for the embodimentistas: one of the most inspiring music teachers in this writer's experience was a paraplegic.

a certain research cachet, with references to relevant secondary literature, some discussion of predecessors' ideas, a certain amount of rhetorical consideration of counterarguments, and so on, they have the further downside that they are of little pedagogical use either. What students need from a textbook, whether or not it is cloaked as research-informed, is guidance on ways to do things, not ways to worry about philosophical or indeed pedagogical issues. Also, the student's concept of "music" cannot be reflected in hundreds of disjointed little excerpts, but on the contrary—in my experience at least—students of all stripes have a vision of music as a holistic experience. There's nothing they like better, and need more, than to assimilate a long piece, to listen to it and, if possible, to perform it with some feeling that they understand it. Finally, from a professional perspective, one must suspect (and certainly one hears) that nowadays publishers' supposed referees are in fact unwilling to write down their true, negative responses to a proposed book. To express such a response may, after all, amount to professional damage. But I am more sympathetic than that when wondering what the real motivations are if referees encourage publishers to get away with an economy based essentially on this: library sales of books on which nobody is very keen, yet generating a modest profit that can be multiplied by high volume output from a publisher carrying a large specialist list in this or that discipline. In an age when it is not so apparent as it used to be what the idea of "book" really is, it becomes ever harder to say what the value of a book may be.





“Writ in remembrance more than things long past”: Cadential Relationships in Fauré's *Mirages*, op. 113

CLARE SHER LING ENG

The setting sun, and music at the close,
As the last taste of sweets, is sweetest last,
Writ in remembrance more than things long past.
Shakespeare, *Richard II*

The image shows a musical score reduction for the opening phrase of "Danseuse" from Fauré's *Mirages*, op. 113. The score is in 3/2 time and features a voice part and a piano accompaniment. The voice part consists of a single melodic line with rests. The piano accompaniment features a simple harmonic structure with repeated notes indicated by arrows. The score is divided into two systems, with the second system starting at measure 8.

Example 1: Reduction of mm. 1-14 of “Danseuse”

Fauré's musical language changed significantly during his long composing career. Towards the end of his life, his works are characterised by sparser textures and simpler sonorities. Example 1 illustrates with a reduction of the opening phrase of “Danseuse” in *Mirages*, op. 113.¹ The stark simplicity—to the point of austerity—of the music is striking and almost unsettling, particularly to those familiar with Fauré's chromatic mid-period works like *La Bonne Chanson*, op. 61. Unease and frustration frequently accompany analytic forays into this repertoire. Unease arises from a lack of certainty concerning how to interpret this “simple” yet enormously

¹ Rests in the vocal part have been retained, but repeated pitches not separated by rests have been consolidated durationally. In the piano accompaniment, repeated measures have been indicated by arrows in boldface to reduce unnecessary clutter in the graph.

expressive music; frustration develops as a consequence of realizing that a verbal articulation of the music's expressive eloquence is stymied by Fauré's musical economy. The music continues to speak, but our ability to put our understanding of its communication into words seems to have been lost to us.

In this article, I focus on interpreting one aspect of the song cycle *Mirages*—its closing moments. Beginning with the final cadence, I show how the interpretation of that moment is contingent upon realizing its relationships with earlier cadences. The method of presentation is accumulative in that an initial reading of the significance of the cadence is repeatedly nuanced and revised as the interpretational context broadens from the final song to the entire song cycle. The underlying premise posits the cycle as a composing-out of two progressions begun in the first song and sustained by later cadences—one involving outer-voice intervals, the other involving a pair of voice-leading motives.

Finally, I close by situating the analysis in relation to other work concerning cadences after the so-called “common practice.” That this period contains diverse cadential practices is often acknowledged, but analytical approaches hitherto adopted have generally been inadequate. This is because they have consistently discussed these post-classical cadences with reference to the traditional authentic/plagal/deceptive taxonomy, a practice that minimizes features not found in classical formulae and flattens out these cadences by according them a uniformly vague degree of imperfect closure. My analysis is an exploration of an alternative approach that uses contextual aspects to forge relationships between cadences so as to allow a narrative to emerge over the course of an entire work. I suggest, therefore, that it can serve as a prototype of how post-classical cadences may be interpreted in a way that facilitates a nuanced appreciation of their contextual significance.

COMPARING FAURÉ'S LATE SONG CYCLES WITH EARLIER WORKS

Before turning to *Mirages*, it is useful to elaborate upon my earlier comment on Fauré's late style. This would serve to explain how my chosen analytical approach responds to certain characteristics in the late works of the composer.

In Fauré's late song cycles, the mode of identifying how certain songs belong together changes. In earlier works, distinctive melodic

themes were heavily relied on. In his late style, however, thematic recurrences are not salient events. In his Grove article, Jean-Michel Nectoux accurately remarks that the last three song cycles "no longer have common themes; the unity is in the subject, the atmosphere and mainly in the writing, which renounces luxuriance and moves in the direction of tonal simplicity."² To that, I would add that the last two song cycles, written after the First World War, can be further distinguished from *Le jardin clos*, op. 106, on the basis of having a tonal unfolding that spans the entire opus instead of a part thereof.

Table 1 provides information substantiating the stylistic change described above. From Fauré's middle to his late style period, we observe a reduction on four fronts: the number of songs in a song cycle, the number of motives, the variety of keys and the type of unifying theme. *La Bonne Chanson* and *La Chanson d'Ève* comprise nine and ten songs, respectively, whereas *Mirages* and *L'Horizon Chimérique* comprise four each. The number of thematic motives decreases from at least six in *La Bonne Chanson* to none in the late cycles. There is decreased key variety—the late cycles favour proximate keys, reckoned either by key signature content or location of the tonic in pitch-class space. Finally, we also observe a change in the type of unifying theme. The poetic texts of the late cycles are not organized by a dramatic narrative. Instead, the cycles suggest large-scale tonal organization, beginning and ending with songs having identical key signatures. In fact, a systematic progression of keys can be traced in the late cycles, a progression that is absent in their mid-period counterparts. In *Mirages*, the progression comprises an addition of one flat to the key signature in the first three songs before ending with the relative minor of the opening song. In *L'Horizon Chimérique*, the progression comprises an intra-opus double-neighbor movement around the tonic of the framing songs, the key progression D–D♭–E♭–D underscoring a sense of movement away from, and back, to D.

If the late cycles privilege large-scale musical organization, then there should be further evidence of this on the musical surface. Listening to the songs suggests such organization, but the lack of discernible recurring themes frustrates attempts to explain this aural intuition in concrete terms. The question of which specific events imply large-scale musical organization therefore motivates the following analysis of cadences in *Mirages*.

² Jean-Michel Nectoux: "Fauré, Gabriel," *Grove Music Online* ed. L. Macy (Accessed 19 February 2008), <http://www.grovemusic.com>.

SONG CYCLE	LA BONNE CHANSON	LA CHANSON D'ÈVE	MIRAGES	L'HORIZON CHIMÉRIQUE
Style Period	MIDDLE		LATE	
Opus	61	95	113	115
Year(s) of Composition	1892-1894	1906-1910	1919	1921
Progression of Keys	1. A♭ major 2. G major 3. F♯ major 4. f♯ minor 5. e minor 6. D♭ major 7. B♭ major 8. G major 9. B♭ major	1. e minor 2. G♭ major 3. E major 4. c minor 5. D♭ major 6. C major 7. D major 8. G major 9. D major 10. D♭ major	1. F major 2. B♭ major 3. E♭ major 4. d minor	1. D major 2. D♭ major 3. E♭ major 4. D major
Number of Motives	At Least 6	2	0	0
Unifying Theme	Dramatic Narrative	Atmosphere/Image		

Table 1: Progression of aspects of Fauré’s style as observed in four song cycles

CADENTIAL RELATIONSHIPS IN *MIRAGES*

Example 2 is a reduction of the last song of *Mirages*, “Danseuse,” that will be the starting point of this analysis. Its primary purpose is to highlight harmonic motion at the level of the phrase, so the most significant notes are found at phrase beginnings and cadences, unless the phrase is extended by prolongation or it begins with an anacrusis. The reduction identifies the relative structural weight of notes graphically, representing the most important as whole notes and the least as filled and unstemmed notes. Cadences are also boxed and numbered. Five other graphical elements play supporting roles—dotted lines indicate prolongations; slurs connect adjacent iterations of the same pitch; phrase marks indicate directed motion within the phrase; numbers between staves indicate outer-voice intervals (sequences are bracketed) and square notes are pitches that have been analytically transferred from another octave.³

The musical score is presented in three systems. The first system covers measures 1 to 32, with a boxed cadence labeled '1 Eb-D' at the end. The second system covers measures 32 to 50, with a boxed cadence labeled '3 Eb-D' at the end. The third system covers measures 52 to 62, with two boxed cadences labeled '4 Eb-D' and '5 E-F' at the end. The score uses various graphical elements to highlight harmonic motion, including slurs, dotted lines, and interval numbers between staves.

Example 2: Reduction of “Danseuse”

³ The arrow between the staves in the third system indicates transfer of register in the descending line C–B–A–G. Since this is an *ad hoc* element, it is not included in the preceding clarification of graphing conventions.

There are four phrases in “Danseuse” (mm. 1-24, 25-32, 32-51 and 52-64), but there are five cadences because the final phrase ends with two cadences. The locations of the first four cadences correspond to points of repose in the text that mark the completion of poetic thoughts,⁴ although phrase boundaries do not always line up with line and stanza divisions. This produces a dovetailing effect between music and text that is characteristic of Fauré’s songs—a new poetic thought takes shape even as the arrival harmony of a cadence is articulated or prolonged. The most marked occurrence of this effect is in the first phrase. Measures 17-23 articulate a new poetic thought (beginning with the words “Vaste svelte...”) while the D-minor arrival harmony of Cadence 1 is prolonged.⁵ In Cadences 2 and 3, the coincidence of the arrival harmony with the beginning of new poetic thought produces the more familiar phenomenon of the elided cadence.

⁴ The locations of cadences are shown in the annotated text below. Cadential passages are italicized, cadence designations are given in angular brackets and text in boldface indicate words or syllables sung at the moment of cadence (text not in boldface are sung over repetitions of one or both of the cadential harmonies):

Sœur des Sœurs tisseuses de violettes,
une ardente veille blémit tes joues...
Danse ! et que les rythmes ai-**<CAD 1>gus dénouent**
Tes bandelettes.

*Vaste svelte, presque mouvante et souple,
Danse, danse, paumes vers nous tendues,
Pieds étroits fuyant, tels des ailes nues
Qu’Eros découple... <CAD 2>*

Sois la fleur multiple un peu balancée,
Sois l’écharpe offerte au désir qui change,
Sois la lampe chaste, la flamme étrange,
Sois la pensée ! **<CAD 3>**

Danse, danse au chant de ma flûte creuse,
Sœur des Sœurs divines.--La moiteur glisse,
Baiser vain, le long de ta **<CAD 4> hanche lisse...**
Vaine danseuse ! <CAD 5>

⁵ The chordal third, F, which is not included in the reduction, is sung by the voice in m. 14.

The cadential progressions involve a variety of harmonies, but the first four cadences share the characteristic of containing the descending semitone $E\flat$ —D. In the absence of authentic cadences and $C\sharp$ in general, $E\flat$ is a de facto substitute leading-tone to D.⁶ The lowered supertonic consistently signals a *cadential* arrival onto the tonic scale degree, even if this occurs over non-tonic or altered-tonic harmony, as is the case in Cadences 2 and 3, which end in $B\flat$ - and D-major triads, respectively. This motion, however, is excluded in Cadence 5, replaced by an ascending E—F. The final cadence, therefore, which must secure closure for the song, essentially repudiates the only voice-leading motive shared by earlier cadences. Nonetheless, the closure of the piece is not perceptually jeopardised by the substitution. The replacement of $E\flat$ —D with E—F sounds apt instead of incongruous. How can this be explained?

One way to justify this perception is to incorporate E—F into the structural narrative of the song. If we correlate structure with an essential voice that descends by stepwise motion to the tonic,⁷ we can observe that the essential structural descent from the dominant scale degree (A)—marked by the brace over the third system—occurs in mm. 55–57.⁸ In addition, if structural completion entails closure, then “Danseuse” attains full closure at Cadence 4. This means that the nature of Cadence 5 is different from that of the

⁶ The only passage in which $C\sharp$ appears is mm. 44–51, where it participates in Cadence 3 and the following prolongation of the D-major arrival harmony. Even there, it is used in conjunction with $E\flat$ to highlight the pitch class D by double neighbour movement.

⁷ Note that this entity, though similar to the *Urlinie*, is not situated within a Schenker-inspired analytical approach.

⁸ This structural descent is arguably twice foreshadowed by similar progressions, both of which are marked by braces in the first system. The first one in mm. 8–13 forms a strong associative bond with the final descent because the pitches involved are identical, since the last phrase is a modified return of the opening. Another descending progression, this time beginning on E, is in the lead-up to Cadence 2 in mm. 27–29. This time, however, the associative bond is weaker, not only because the pitches involved are different, but also because the E in m. 27 is an appoggiatura. Nonetheless, the aural salience of the progression, produced by its register—E5 is the highest pitch in the song—and its distinct Phrygian flavour, invites one to hear it as an echo of the earlier descent in mm. 8–13.

others—it is rhetorical rather than structural, since it follows the structural descent. The different voice leading merely reinforces the rhetoric-structure dichotomy; in reality, no genuine substitution takes place because $E\flat$ —D and E—F are motives located on different structural levels. This reading, however, is unsatisfactory because it minimizes the import of Cadence 5, reducing it to rhetorical afterthought. It validates the perception of closure, but locates it too early at Cadence 4; as a consequence, the function of Cadence 5 is only to confirm closure, not effect it. Furthermore, this reading does not explain the appropriateness of the substitution. Why *specifically* E—F in place of $E\flat$ —D remains unaccounted for. We shall see later how a comparison with the first song of *Mirages* may address the inadequacies of this first analysis.

Another argument for the structural importance of Cadence 5 can be made by examining the concluding outer-voice intervals of the various cadences in the song. Noting the number between the staves (which indicates interval class in diatonic scale steps) for the arrival harmony of each cadence, we derive the numerical sequence 4—6—3—6—8. This represents the interval progression P4—M6—M3—M6—P8.⁹ If the closural force of a cadence is correlated with the degree of perfection of its concluding interval, then Cadence 5 (P8) is more conclusive than Cadence 4 (M6).

The interval progression identified above can also serve as a starting point for our consideration of how the cadences in “Danseuse” are related to others in the song cycle. Specifically, the progression resonates with that formed by earlier final cadences. In the interval progression above, the perfect fourth, which comprises the tonic and dominant scale degrees, functions as an incomplete tonic triad instead of pure harmonic dissonance. As a consequence, the quality of the intervals making up the progression dips from

⁹ This progression is derived directly from Ex. 2. The only remark that needs to be made concerns the voice-leading interpretation of Cadence 2. In this cadence, the highest sounding pitches are a repeated F4. However, I have analyzed this pitch as the anticipation of the vocal ascent that begins the next phrase, which explains why F4 is a filled, unstemmed note at the end of the first system and a whole note at the beginning of the second system. This choice reflects the elision in Cadence 2 and Fauré’s tendency to create a dovetailing effect between phrases. Therefore, the highest structural voice of this cadence is analyzed as $E\flat$ —D, which produces a major sixth over the bass F in the arrival harmony.

less perfect to imperfect before ending in perfection. What makes this observation particularly interesting is that a similar quality progression may be traced by comparing the final cadences of all the songs in the song cycle. The less-perfect—imperfect—perfect quality progression in “Danseuse,” therefore, is a miniature version of another directed motion unfolding across the entire work, one that privileges the conclusiveness of the final cadence of “Danseuse” over those of preceding songs by considering it the embodiment of the final state of perfection in the progression. I substantiate this analytical assertion below.

Example 3 gives reductions of the final cadences of all the songs in *Mirages* and shows how we can analyze a large-scale less-perfect—imperfect—perfect quality progression across the song cycle using the combination of the two observations made earlier based on the graph in Ex. 2. Considering the quality of the concluding interval formed by the structural outer voices, we observe that they form a P8—P5—P5—P8 progression.¹⁰ This aspect, considered in isolation, only engenders a binary division that associates P5 with the state of imperfection and P8 with the opposite state of perfection. In order to perfectly mirror the ternary division of the quality progression observed in “Danseuse,” a third medial state of “less-perfection” is needed. This can be realized if we take into account the second

	Song I «Cygne sur l'eau»	Song II «Reflets dans l'eau»	Song III «Jardin nocturne»	Song IV «Danseuse»
Interval	P8	P5	M7 → P5	P8
E♭—D?	×	✓	✓ (reversed)	×
E—F?	×	×	×	✓
LESS PERFECT	→ IMPERFECT		→ PERFECT	

Example 3: Comparing final cadences in *Mirages*

¹⁰ The cadence in mm. 49-50 of “Jardin nocturne” is of secondary structural significance compared to the one that occurs later in mm. 53-57, not least because its closural effect is significantly diluted by the leading-tone (D) that does not resolve in the top voice. Consequently, its concluding outer-voice interval—a major seventh—is not taken into account for the purposes of the current discussion.

observation made earlier—that the voice-leading motives $E\flat-D$ and $E-F$ are factors that influence the perfection of a cadence. The quality of a cadence is therefore a composite attribute dependent on its voice leading and concluding structural outer-voice interval.

We observed earlier that the final cadence of “Danseuse” substitutes the $E\flat-D$ voice-leading motion with $E-F$. If we now associate $E\flat-D$ with imperfection and $E-F$ with perfection, we will realize the ternary division of the less-perfect—imperfect—perfect quality progression. In Songs II to IV, the addition of these qualitative associations only reinforce the imperfect—perfect opposition produced by the comparison of their concluding outer-voice intervals. This is because the final cadences of Songs II and III contain only $E\flat-D$, which contrasts with the $E-F$ in the final cadence of “Danseuse.” The final cadence of Song I, however, contains neither voice-leading motion. It thus occupies a position of neutrality vis-à-vis the other cadences in this respect. Since the overall quality of a cadence depends on the quality of its concluding outer-voice interval *and* that of its voice leading, the final cadence of Song I, with its perfect concluding interval but neutral voice leading, is designated as embodying the medial state of less-perfection.

It is appropriate at this juncture to explain why there are two cadences given for Song III, “Jardin nocturne.” The cadences represented are the last two in the song. Since $E\flat-D$ motion is not possible in a typical tonic cadence within the context of $E\flat$ major, I argue that this song performs the $E\flat-D$ motive in retrograde. The D component is part of the tonic major-seventh arrival chord in the penultimate cadence that only achieves partial closure (mm. 49-50); the $E\flat$ component is part of normative tonic harmony in the final cadence that secures full closure in the context of the song. This means that the performance of the $E\flat-D$ motive in Song III is also augmented in terms of duration—it is completed over two cadences instead of one.

These recurrences of $E\flat-D$ on different temporal levels in the cadences of Songs II and III subtly prepare the listener for the foregrounding of the motive in the cadences of “Danseuse,” so that when the motive does rise to prominence, the impression created is that of a long-submerged intuition finally emerging into the realm of conscious knowledge due to resonance with explicit external stimuli. A sense of musical *déjà vu* thus renders occurrences of $E\flat-D$ in “Danseuse” satisfying *and* unsettling. The motive is satisfying because it fulfils expectations created by earlier occurrences that

foreshadowed it; it is unsettling because the subtlety of those prognostications and the temporal distance that separates them has allowed the listener to lose conscious awareness of those latent expectations. The listener thus feels a sense of satisfaction that defies rationalisation based on conscious recollection. However, this analysis, while interesting, does raise two related questions: how can this narrative of emergence be reconciled with Fauré's treatment of $E\flat-D$ in "Danseuse"? Specifically, if the foregrounding of the $E\flat-D$ motive is a significant musical purpose, why would Fauré efface it at the final cadence?

Yet another question may arise at this point concerning the basis on which I have allowed myself to derive the two sets of qualitative associations that in combination realize the less-perfect—imperfect—perfect quality progression across the song cycle. Acoustic principles of consonance can justify my interpretation of the relative quality of concluding outer-voice intervals, but no analogous set of principles governs the interpretation of motives. Therefore, my association of $E\flat-D$ with imperfection and $E-F$ with perfection would seem to have been arbitrarily determined. Nonetheless, this qualitative interpretation of motives was not arrived at capriciously in a contextual vacuum. Rather, the motives and their qualitative associations are significant elements that suggest a large-scale temporal progression that accords coherence and unity to the songs that comprise *Mirages*. In a mediated sense, therefore, these associations may be said to derive from Fauré, insofar as what I have proposed purports to articulate one aspect of his compositional design for the work. Elements of this plan are sown in Song I ("Cygne sur l'eau"), so that the entire song cycle may be understood as a bringing to fruition of developments sketched in the opening moments of the work. This small- to large-scale extrapolation accords the songs a sense of directed development that allows the end of the work to resonate splendidly with the beginning, even in the absence of recurring themes. This quality is rendered particularly obvious whenever the song cycle is performed, or listened to, in its entirety at one sitting.

Let us now turn to Song I to locate the seeds for the opus-long progression I adumbrated above. Example 4 gives a reduction of the first thirteen measures of "Cygne sur l'eau," the first song in *Mirages*. The graphing conventions used here are the same as those for the reduction of "Danseuse" (Ex. 2), which were explained previously. These measures make up the opening phrase, which features

The image shows a musical score reduction for measures 1-13 of "Cygne sur l'eau". The score is in G minor, 3/4 time. Measures 1-13 are shown. Measure 1 is the start. Measures 4, 5, 6, 7, 8, 9, 10, 12, and 13 are marked. A box highlights the Eb-D interval in measure 7, and another box highlights the E-F interval in measure 13. The bass line shows a register transfer in measure 8.

Example 4: Reduction of mm. 1-13 of "Cygne sur l'eau"

a medial arrival on G-minor harmony (m. 7) and a concluding tonic cadence. As was the case in "Danseuse," musical motion within the phrase is characterised by stepwise progressions—two consecutive fourth-progressions (F—B $\flat$ and G—C) in the top voice are complemented by two descending progressions in the bass (F—C and G—A).¹¹

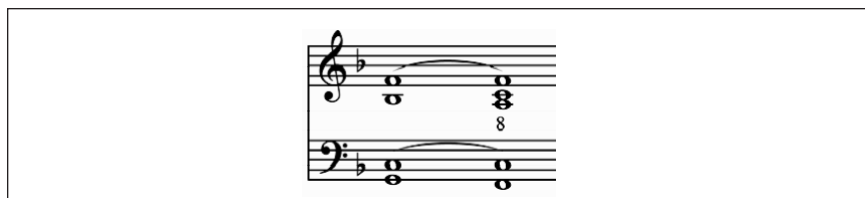
Observe that E $\flat$ —D and E—F are significant motions in this phrase, the former at the medial arrival and the latter at the cadence. Their locations are marked by boxes in the graph. Notice also how their relative positions ostensibly support their respective qualitative associations proposed earlier. E $\flat$ —D occurs at a transitory point of repose within the phrase; it effects closure, but only on the level of the subphrase. On the level of the phrase, it implies continuation. It declares that the phrase is incomplete, that the music must go on. E—F, in contrast, occurs at the concluding cadence, where it effects full closure. On the level of the phrase, therefore, it is associated with completion and repose.

The order in which the two motives appear also corresponds to that in the cadences of "Danseuse." This allows me to suggest that the first phrase of "Cygne sur l'eau" may be understood as a microcosmic outline of the aspect of *Mirages'* musical design

¹¹ Fauré often used octave transfers to allow stepwise progressions to remain within a particular pitch range. In the score of this opening phrase, the register transfer in the bass actually occurs in m. 8, where E2 leaps to E3. In my reduction, however, I have made this register transfer earlier by raising the bass notes in m. 7 (G2 to G3, F2 to F3). Doing this emphasises the linear continuity in the bass voice leading up to the cadence in mm. 12-13, but it also subordinates the medial arrival to the cadence, in that the bass of m. 7 is presented as the *beginning* of a progression directed towards the cadence. The score, on the other hand, places more emphasis on the *arrival* quality of the G-minor harmony m. 7 by using G2—the lowest pitch heard thus far.

that structures the current analysis. By repeatedly using $E\flat$ —D at closing cadences later in the song cycle, Fauré sustains and renews the "memory" of this motivic sequence (and, I would argue, its qualitative associations) embedded in the opening phrase. I concede that it is a very long-range connection that I am suggesting, one that would see motivic resonance between the first and last phrases of a song cycle. However, I would also defend it by observing that these motives are not isolated musical events. Besides occurring at the final cadences represented in Ex. 3, $E\flat$ —D recurs consistently throughout the song cycle as a result of the overall key scheme that makes use of flat key signatures exclusively. As subtonic, subdominant and flattened supertonic, $E\flat$ frequently resolves to D in Songs I, II and IV. This motive is also used in the third song, albeit in retrograde form in response to its key of $E\flat$ major, a point discussed earlier in conjunction with Ex. 3. The cumulative result of these reiterations of $E\flat$ —D is that when it gives way to E—F at the final cadence of "Danseuse," there is a sense of arrival and conclusion that can only be sufficiently explained by the listener having previously encountered this motivic sequence on a smaller scale *and* acquired the expectation that it will recur on a larger scale.

Returning to the opening phrase of "Cygne sur l'eau," this time seeking to validate the qualitative associations of intervals proposed earlier, we encounter an apparent problem. If we apply the associations, which correlate consonance with perfection, there appears to be a regression from perfection to imperfection within the unfolding of the phrase, since it begins with a P8 (F3—F4) and arrives at a P5 (F2—C4) at the cadence. This problem disappears, however, if we recollect that the qualitative associations for intervals were earlier derived by comparing concluding outer-voice intervals of different cadences. To be consistent with our foregoing approach, therefore, we should not be comparing the intervals that begin and end the opening phrase. Rather, we should compare the concluding interval of the first cadence with an analogous one in the same song. The perfect candidate for this comparison may be found in the last phrase. The first and last phrases of "Cygne sur l'eau" are comparable because the song has an ABA form in which the opening phrase is recapitulated with only minor modifications beginning in m. 46. One of the modifications involves the concluding tonic cadence, a reduction of which is given as Ex. 5.



Example 5: Reduction of final cadence of “Cygne sur l’eau”

Two important changes are made at the final cadence, changes that seem to engender contradictory conclusions. First, the highest structural voice is changed from the dominant (C) to the tonic (F) scale degree, so that the concluding outer-voice interval is now a P8. This means that in terms of concluding interval quality, the final cadence is more “perfect” than its counterpart in m. 13, thus echoing the imperfect-to-perfect narrative told by the voice-leading motives in the first phrase. Second, the E—F motive is removed from the final cadence. According to the qualitative associations proposed earlier, however, this would render the final cadence less perfect than its earlier counterpart. The close of “Cygne sur l’eau,” therefore, has mixed attributes. It is conclusive according to the criteria of tonal composition (ending on tonic harmony) and relative perfection of concluding interval; yet there is simultaneously an intimation of continuance in its bouquet because a previously presented motivic progression has been left incomplete. The absence of the E—F motive signals the beginning of a musical quest for its return that spans the entire song cycle. This endeavour is sustained by a continual renewal of the sense of musical longing—a state of mind evoked by recurrences of the motive associated with incompleteness (E♭—D).¹² A vague, almost inexplicable, memory of some painful loss thus subtly pervades the work, but conscious recollection of it is prevented until the final measures of the song cycle, when the motivic goal of the quest is attained.

¹² One of the most interesting examples of how the song cycle musically sustains the “memory” of the incomplete motivic progression (E♭—D becomes E—F) can be found in the closing section of Song II, “Reflets dans l’eau.” Beginning in m. 34, the vocal melody dwells for many measures on E4 (part of A-major harmony) as the poetic text describes circular ripples forming and fading in still water. After three beats of silence in m. 44, the piano raises E4 to F4 (part of D♭-major harmony), but this is quickly overwritten by the re-assertion of E♭4 in the vocal melody, which the piano resolves to D4 (part of B♭M7 harmony) in m. 47, a sequence that is further emphasised by repetition in mm. 47–49.

Revisiting “Danseuse,” the many instances of $E\flat-D$ now no longer appear as a simple case of leading-tone substitution, but as a building up of tension. Each occurrence is a plaintive reminder of the state of incompleteness rectifiable only by the restitution of $E-F$. Taking another (and a closer) look at the final eight measures of the song, this time with the narrative sketched in the opening phrase of “Cygne sur l’eau” in mind, we now discover (or realize?) one further reference to the narrative. Example 6 provides a reduction of the relevant measures.

The image shows a musical score reduction for measures 57-63 of the song "Danseuse". It consists of two staves: a treble staff and a bass staff. The treble staff begins at measure 57 with a half note G4, a quarter note A4, and a half note B4. The bass staff begins with a half note G2, a quarter note A2, and a half note B2. The key signature has one flat (B-flat). The score is divided into two sections by a double bar line. The first section, measures 57-60, is labeled "Gm7" below the bass staff. The second section, measures 61-63, is labeled "Eø7" below the bass staff. Measure 61 starts with a half note E4 in the treble and a half note G2 in the bass. Measure 62 has a half note F4 in the treble and a half note A2 in the bass. Measure 63 has a half note G4 in the treble and a half note B2 in the bass. The score ends with a double bar line at the end of measure 63.

Example 6: Reduction of mm. 57-63 of “Danseuse”

What is even more fascinating is how the poetic text to which the replacement of $E-F$ by $E\flat-D$ is set seems to resonate with the psychological dimension of the motivic narrative presented above—that $E-F$ represents an earlier desired state of being that was lost in Song I and $E\flat-D$ serves as a reminder of that loss. (The poet likens the water to a desired but inaccessible past—“Ô cher Passé mystérieux” [“Oh dear mysterious Past”]. The ripples that break the water surface, therefore, represent his attempt to breach the divide and reunite with the past. In the end, however, the poet realizes the futility of his efforts—“Et puis le miroir enchanté/Reprendra sa limpidité/Froide et sereine.” [“And then the enchanted mirror will regain its cold and serene limpidity.”])

¹³ F2 is bracketed because its duration has been analytically expanded in my reduction. The actual duration of this pitch in the score is a sixteenth note that precedes the G2 half note. The decision to imply F2 (and hence the D-minor triad) at the beginning of the measure in my reduction, however, is supported by two observations—the minor mode has been indicated by the F4 in the vocal melody’s structural descent in m. 56, and this passage is a modified return of the end of the first phrase that was in D minor (see mm. 12-16 and note 5 above).

Between mm. 57-60, the piano accompaniment oscillates between two harmonies. The first half of each measure articulates a D-minor triad,¹³ but the second half replaces the pitch class A with G and B $\flat$, changing the harmony to a G minor-seventh chord. This pattern is only broken in m. 61, where the replacement of pitch class F with E creates the E half-diminished chord of the final cadence. The G minor-seventh chord, considered in isolation, is merely a surface detail inconsequential with regards to the structure of the song. However, when considered together with the opening of “Cygne sur l’eau,” this unassuming chord invites the listener to hear it as a reference to the G-minor medial arrival of the earlier phrase—an oblique final reminder of E $\flat$ —D before its replacement by E—F.

This revised interpretation of the closing moments of “Danseuse” has several merits over the ones proposed earlier. On a work-specific level, it accounts for both the emergence of E $\flat$ —D and its specific substitution by E—F at the final cadence. It accords the final cadence (cadence 5 in Ex. 2) a degree of structural importance that agrees with my aural perception of its closural effect. Most importantly, and this brings us back to the beginning of the analysis, it answers the question of how a cadence that apparently repudiates the only voice-leading motive shared by earlier cadences can secure convincing closure for the song (and the song cycle). On the level of aesthetics, this interpretation allows both ends of the song cycle to resonate with each other, even though it begins and ends in different keys. A sense of directed motion is also set up across the songs, so that while each is a self-contained tonal piece, they collectively effect the emergence of an opus-long design that defines the identity of the work.

CLOSING REMARKS

The disintegration of the “common practice” was accompanied by fundamental changes in the way composers conceived of and wrote cadences. Cadence was rejected as a stylised element, which meant that classical cadences no longer functioned as formulae whose integrity was preserved regardless of the musical context in which they were deployed. A proliferation of cadence forms has thus ensued, each as unique as the music that precedes them, and many compositions are replete with cadences that resist the traditional authentic/plagal/deceptive taxonomy. Music analysis has generally acknowledged the development of such diverse cadential practices.

It has not, however, responded satisfactorily to it.

Scholarship broadly divides into two camps when treating of post-classical cadences. Endings are interpreted as open or closed depending on whether their difference from, or similitude to, classical cadences is highlighted.¹⁴ Both perspectives, however, share the feature of consistently discussing post-classical cadences with reference to the traditional taxonomy. This is appropriate in some cases, but can be Procrustean in others, especially when the cadences considered bear little resemblance to the classical models. Even when post-classical cadences refer to aspects of classical cadences, the practice of discussing the former in terms of the latter is problematic. This is because it minimizes features not found in classical formulae and flattens out post-classical cadences, according them a uniformly vague degree of imperfect closure, since they are outliers to the classical cadential hierarchy.¹⁵ The conclusions that arise as a consequence—which may even be claimed to reflect embedded beliefs—are inherently biased against post-classical cadences: what is unlike a classical cadence has inferior closural force by default and cannot be organized into hierarchical relationships.

One of the implicit aims of this article is therefore to undermine these beliefs by proving that post-classical cadences can reward analysis and interpretation on their own terms. I have sought to achieve this by demonstrating that a number of relationships can be read between post-classical cadences in *Mirages*. Since the cadences examined in the foregoing analysis are largely unique entities, they can only be related to one another if they can be situated within an overarching compositional plan or structural narrative. This has been done by interpreting the song cycle as a large-scale composing-out of two qualitative progressions established in the first song, one involving outer-voice intervals and the other involving a pair of voice-leading motives. Within this analytical “space,” I have interpreted cadences as significant events that propel this opus-long narrative

¹⁴ The “open” interpretation is most frequently applied to nineteenth-century works that purportedly exemplify the Romantic aesthetic of the fragment; see Agawu 1987 and 1991, Meyer 1989, Rosen 1995 and Satyendra 1997. The “closed” interpretation typically forms part of a narrative of continuity that seeks to connect the new cadential forms to their classical counterparts; see Bryden 2001 and Murphy 2004.

¹⁵ See Schmalfeldt 1992.

along. The fallout from this analytic exercise is hopefully greater confidence that the reading of cadential closure can be liberated in analytically rewarding ways from classical cadences. In fact, that it is *necessary* to do so when analyzing certain compositions, so as not to needlessly blind ourselves to relationships and associations that can further our understanding of the musical significance of these cadences and expand the horizon of their musical meaning.

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A Model of Common-Tone Connections Among Jazz Scales

STEFAN LOVE

One of the more difficult tasks confronting the jazz musician is the necessity of improvising over chord progressions that often imply many keys in quick succession. Even standards of the repertoire rarely employ chords from a single key only. The opening measures of “Stella By Starlight” are a familiar example:

The image shows a musical score for the opening of "Stella By Starlight". It is written in E-flat major (three flats). The notation is for a piano accompaniment, with a treble and bass staff. The chord progression is: E-7b5, A7, C-7, F7, F-7, Bb7, EbM7, and Ab7. The melody is played in the treble staff, and the bass line is in the bass staff. The first two chords (E-7b5 and A7) imply D minor, the next two (C-7 and F7) imply B-flat major, and the last four (F-7, Bb7, EbM7, and Ab7) present a ii-V-I cadence in the (non-tonic) key of E flat.

Example 1: *Stella By Starlight*

The first two chords imply D minor, the next two B-flat major, and the last four present a ii-V-I cadence in the (non-tonic) key of E flat. To tackle this challenge, jazz instructors often teach their students to associate each chord type with several possible scales. (I use the term “scale” to refer to a pitch-class collection from which the student derives improvised material.) Before improvising, a beginning student labels each chord in a lead sheet with a particular scale, and then plays only notes from that scale at that point in the improvisation. Eventually, this process no longer requires advance planning: the student understands intuitively which scales are possible over a given chord and can choose among them without forethought. This association of chords with scales is often termed “chord-scale theory.”¹

Although students practice each scale type carefully to learn its shape and sonic effect, instruction on scalar connection is rare; in other words, a student with deep understanding of chord-scale theory might not consider how a scale relates to the scale that

¹ This concept underlies much jazz pedagogy. An early source is George Russell’s *The Lydian Chromatic Concept of Tonal Organization for Improvisation* (New York: Concept Publishing, 1959).

follows. Yet scalar connection profoundly affects the sound of an improvised solo. Independent of chord-scale theory, students often learn the importance of using common tones to link chords together. But seldom is this technique explicitly tied to the theory of scalar connection. In fact, the two are intimately related. In this paper I present a model of scalar connection applicable to jazz pedagogy and analysis.

A jazz handbook might present the Dorian scale beginning on D as a distinct scale, though it is identical in pc content with its “parent” scale, the major scale on C. (I use the term “parent scale” to refer to an *unordered* pc set.) Many other jazz scales are similarly redundant, and reducible to a smaller group of parents. Example 2 shows four common parent scale-types, transposed to begin on C: Diatonic, Melodic minor (degrees six and seven always raised), Harmonic minor, and Octatonic (half-whole).²



Example 2: Some parent scales

From left to right: Diatonic (D), Melodic minor (M), Harmonic minor (H), Octatonic (O)

The letters D, M, H, and O refer to these types, with a subscript indicating the *reference* pc (casually, “scale degree one”). For example, M3 designates the pcs of the melodic minor scale begun on E flat, *irrespective of order or rotation*. In total, there are 39 transpositions of parent scale-types considered here (12 Diatonic, 12 Melodic, 12 Harmonic, and 3 Octatonic).

² A fascinating discussion of the origins of these parent scales appears in Dmitri Tymoczko’s “The Consecutive-Semitone Constraint on Scalar Structure: A Link Between Impressionism and Jazz” (*Integral* 11 (1997): 135-179).

Maj7 _r	Dom7 _r	min7 _r	min7♭5 _r	minM7 _r	dim7 _r
D _r (Ionian)	D _{r+5} (Mixolydian)	D _{r+10} (Dorian)	M _{r+3} (Loc.nat.9)	M _r (Melodic)	O _{r+2} (W-H)
D _{r+7} (Lydian)	H _{r+5} (Mixolydian ♭13)	D _{r+3} (Aeolian)	D _{r+1} (Locrian)	H _r (Harmonic)	D _{r+8} (Mixolydian)
M _{r+9} (Lydian #5)	M _{r+5} (Mixolydian ♭13)	D _{r+8} (Phrygian)		D _{r+10} (Dorian)	D _{r+2} (Mixolydian)
	M _{r+7} (Lydian ♭7)	M _r (Melodic)		D _{r+3} (Aeolian)	D _{r+5} (Mixolydian)
	M _{r+1} (Altered)			D _{r+8} (Phrygian)	D _{r+11} (Mixolydian)
	O _r (Half-Whole)				

Table 1: Common jazz chord-types and associated scales, with root r (pc)

Table 1 converts chord symbols to parent scales. In effect, this is a distillation of the chord-scale theory described above. The heading of each column in the table gives a chord type, with the subscript “r” referring to the pc of the chordal root. Each entry in a column gives a possible scale associated with that chord, along with its conventional name (as it might appear in a chord-scale handbook) in parentheses. Consider E7, a dominant-seventh chord with root E. Refer to the “Dom7_r” column and let r = 4. The first possible parent scale is D₉, the Diatonic scale with A (r + 5 = 9) as reference pitch (i.e., “E Mixolydian”). Over E7, one could also use the notes of a harmonic minor scale with reference tone A (r + 5 = 9) (“Mixolydian ♭9, ♭13”), a melodic minor scale with reference tone B (r + 7 = 11) (“Mixolydian ♭13”), and so forth. I must reiterate that parent scales are best understood as unordered collections whose pitch classes are neutral with respect to function: the pitches of the parent scale D9 are treated differently when played over an E7 chord compared to when played over an Amaj7 chord.

Lead sheets often include extensions or alterations in their symbols: for example, a chord might be labeled “G7♭9#11.” This additional information would seem to imply certain scales and preclude the use of others. However, in practice, experienced players tend to treat these as suggestions only, and use whatever extensions or alterations they wish over a given chord. Therefore, I assume that one is reading a lead sheet for chord root and quality only, not extensions or alterations. My inclusion of the Dorian, Aeolian, and Phrygian scales over the minor-major seventh chord is similarly pragmatic: though the scale would seem directly to contradict the

chordal seventh, in certain styles, it is acceptable to preserve only the major or minor quality of the triad.

THE MODEL

Chord-scale theory becomes much more powerful when combined with consideration of common tones. In a solo built from scales sharing many common tones, the melody seems to glide over the shifting harmonies. On the other hand, a soloist could employ successive scales with *few* common tones for another effect, using the common tones as pivots. This technique can reinvigorate banal progressions: consider the incredible variety of scales often used over the ii-V-I cadence, the most clichéd progression of all. In the following section, I formalize the common-tone connections between the parent scales named above.

I define the relation between two scales as parsimonious if the scales share six common tones.³ In parsimonious relations between seven-note scales, the seventh pc is replaced by a pc a semitone away.⁴ Due to the differing cardinalities, relations between an octatonic scale and a seven-note scale are less elegant, though I retain the six-common-tone definition of parsimony. Table 2 shows all parsimonious scalar relations among the four types, and then generalizes them with respect to a root *r*.

³ For an analogous discussion of parsimony between triads, see Richard Cohn's "Neo-Riemannian Operations, Parsimonious Trichords, and Their 'Tonnetz' Representations" (*Journal of Music Theory* 41/1 (Spring 1997):1-66).

⁴ I borrow this careful phrasing ("replaced") from David Lewin's "Cohn Functions" (*Journal of Music Theory* 40/2 (Autumn 1996): 181-216). The obvious alternative formulation, in which a pc "moves" by semitone along the chromatic gamut, carries too many voice-leading connotations, which are unnecessary to my argument. The parsimonious relation between seven-note scales mirrors the single semitone-displacement of Cohn's "maximal smoothness" (Richard Cohn, "Maximally Smooth Cycles, Hexatonic Systems, and the Analysis of Late-Romantic Triadic Progressions," *Music Analysis* 15/1 (Mar., 1996): 9-40).

2.1: From Diatonic

	0	1	2	3	4	5	6	7	8	9	10	11			0	1	2	3	4	5	6	7	8	9	10	11
D ₀	C		C		C	C		C		C		X		D ₀	C		C		C	X		C		C		C
D ₅	C		C		C	C		C		C	X			D ₇	C		C		C		X	C		C		C

	0	1	2	3	4	5	6	7	8	9	10	11			0	1	2	3	4	5	6	7	8	9	10	11
D ₀	C		C		X	C		C		C				D ₀	X		C		C	C		C		C		C
M ₀	C		C	X		C		C		C		C		M ₂		X	C		C	C		C		C		C

	0	1	2	3	4	5	6	7	8	9	10	11
D ₀	C		C		C	C		X		C		C
H ₉	C		C		C	C			X	C		C

Generally: $D_r \rightarrow D_{r+5}, D_{r+7}, M_r, M_{r+2}, H_{r+9}$

Table 2: Parsimonious scalar connections
C = common pc, X = discarded/replaced pc

2.2: From Melodic

	0	1	2	3	4	5	6	7	8	9	10	11
M ₀	C		C	X		C		C		C		X
D ₀	C		C		X	C		C		C	X	

	0	1	2	3	4	5	6	7	8	9	10	11
M ₀	C		C	C		C		C		X		C
H ₀	C		C	C		C		C	X			C

Generally: $M_r \rightarrow D_r D_{r+10}, H_r O_{r+2}$

Table 2: Parsimonious scalar connections (continued)
C = common pc, X = discarded/replaced pc

2.3: From Harmonic

	0	1	2	3	4	5	6	7	8	9	10	11		0	1	2	3	4	5	6	7	8	9	10	11
H_0	C	C	C	C		C		C	C			X	H_0	C		C	C		C		C	X			C
D_3	C		C	C		C		C	C		X		M_6	C		C	C		C		C		X		C

	0	1	2	3	4	5	6	7	8	9	10	11
H_0	C		C	C		C		X	C			C
O_2	C		C	C		C	X		C	X		C

Generally: $H_r \rightarrow D_{r+3}, M_{r3}, O_{r+2}$

2.4: From Octatonic

	0	1	2	3	4	5	6	7	8	9	10	11		0	1	2	3	4	5	6	7	8	9	10	11
O_0	C	C		C	C		C	X		X	C		O_0	C	C		C	C		C	X		C	X	
M_1	C	C		C	C		C		X		C		H_1	C	C		C	C		C		X	C		

Generally: $O_r \rightarrow M_{r+1}, M_{r+4}, M_{r+7}, M_{r+10}, H_{r+1}, H_{r+4}, H_{r+7}, H_{r+10}$

Table 2: Parsimonious scalar connections (continued)
C = common pc, X = discarded/replaced pc

The table compares pairs of parsimoniously related scales. Within a row, Cs and Xs designate pcs held in common or replaced between the two scales. Two examples should clarify the table: D_0 ("C major") connects to D_5 ("F major") by removing pc 11 and replacing it with 10. This generalizes to $D_r \rightarrow D_{r+5}$. Similarly, D_0 connects to M_2 ("D melodic minor") by discarding pc 0 and replacing it with 1. This generalizes to $D_r \rightarrow M_{r+2}$.

From the generalized parsimonious connections I derive my scale wreath, Figure 1.⁵ This Figure illustrates the connections between the 12 transpositions of the diatonic, melodic, and harmonic scales. For simplicity, I exclude the octatonic scale for now. The specific placement of the various scales is arbitrary; Table 2 dictates only the network of connections. Each node represents a particular transposition of one of the four parent scales; each line indicates a parsimonious connection (the different types of line are for visual clarity only). I refer to motion between connected nodes as a "step."

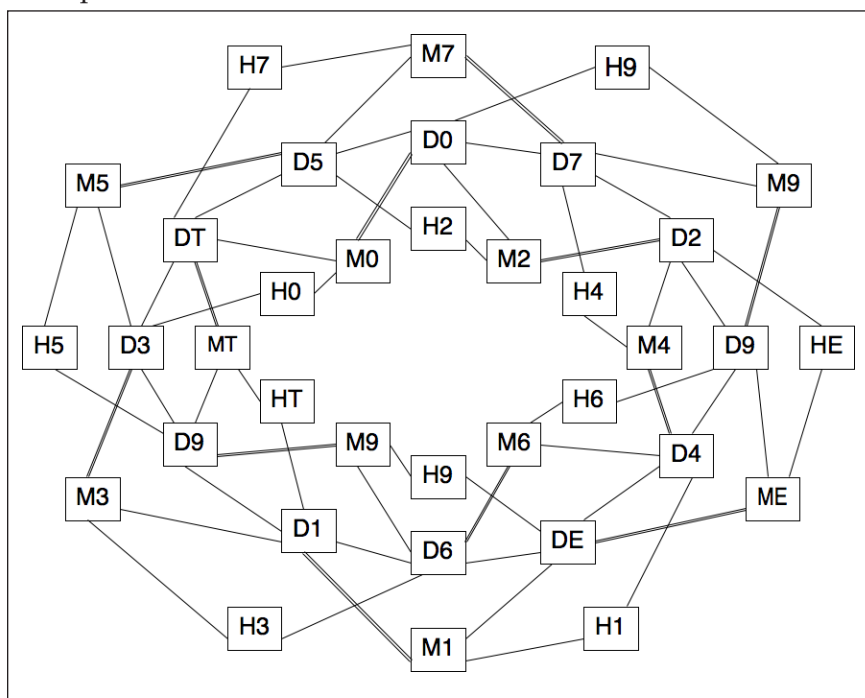


Figure 1: Scale wreath

⁵ Though his wreaths function differently, I adapted the idea of a wreath from Robert Morris, "Voice-Leading Spaces," *Music Theory Spectrum* 20/2 (Autumn 1998): 175-208.

The wreath consists of three concentric rings. The middle ring is the familiar circle of fifth-related diatonic scales. The outer and inner rings contain alternating harmonic and melodic scales; the outer ring's scales have odd-numbered roots, the inner, even. Though a single step always implies the loss of a single common tone, this property is inconsistent when making multiple steps.⁶ For example, scales four steps apart typically share three common tones, but sometimes share four. These exceptional cases manifest the effect shown in Table 3:

	0	1	2	3	4	5	6	7	8	9	10	11
M_0	X		C	C		C		X		X		C
D_{10}	~		~	~		~		~		~	~	
D_3	~		~	~		~		~	~		~	
M_3	~		~	~		~	~		~		~	
H_3			C	C		C	X		X		X	C!

Table 3: An exceptional relation

Common-tone replacement in one possible path from M_0 to H_3

A series of steps on the wreath can result in a common tone being lost and then regained, respelled enharmonically. In Table 3, the B-natural of C melodic minor (M_0) is replaced with C flat in E-flat harmonic minor (H_3), resulting in an unexpected common tone. Despite the respelling, the practical emphasis of my theory requires that I consider it a common tone: it would sound as such, on a keyboard at least, and it could function as a pivot between these scales. This exception prevents us from using the wreath as a *precise* guide to the common-tone relation between distant scales. However, the wreath remains accurate for all scales two steps apart, and most scales three and four steps apart. Relations between different scale types five or six steps distant *always* feature Table 3's exception. But scales far apart on the wreath, even if they have more common tones than they "should," will still sound distantly related. Therefore, the wreath presents a useful approximation of the closeness of scalar connection.

⁶ Consider motion from a scale all the way around the wreath back to itself: somewhere along the line, the common-tone mechanism must "flip."

The octatonic scale complicates matters somewhat. Table 4 presents the octatonic scale’s relations to scales with reference pcs 0, 1, and 2, with the others easily derived.

Relation	O/D0	O/D1	O/D2	O/M0	O/M1	O/M2	O/H0	O/H1	O/H2	O/O1	O/O2
CTS	4	5	5	4	6	4	3	6	5	4	4
Steps btw.	3	2	2	4	1	4	4	1	4	4	4

Table 4: Complete Octatonic relations

The octatonic scale’s only parsimonious relations are with the melodic and harmonic minor scales. Figure 2 shows the wreath with the addition of the three octatonic scales (see Table 2.4 for their parsimonious relations). The scale’s limited transpositions make this wreath less useful. For visual clarity, I include multiple nodes for each octatonic scale. It is tempting to view the multiple nodes as “wormholes” that allow one to move quickly from one end of the wreath to the other, with far fewer steps than before. For example, one might think that M_9 , in the upper right corner, is now only two steps from H_3 , in the opposite corner, via O_2 . But this reifies the wreath inappropriately, and leads away from the initial emphasis on common tones. When octatonic nodes are used as intermediate steps on a journey between other scale types, step relations on the wreath no longer correlate with common tones. Thus, when calculating scalar connection, the octatonic nodes should be considered only when they are endpoints of the journey.

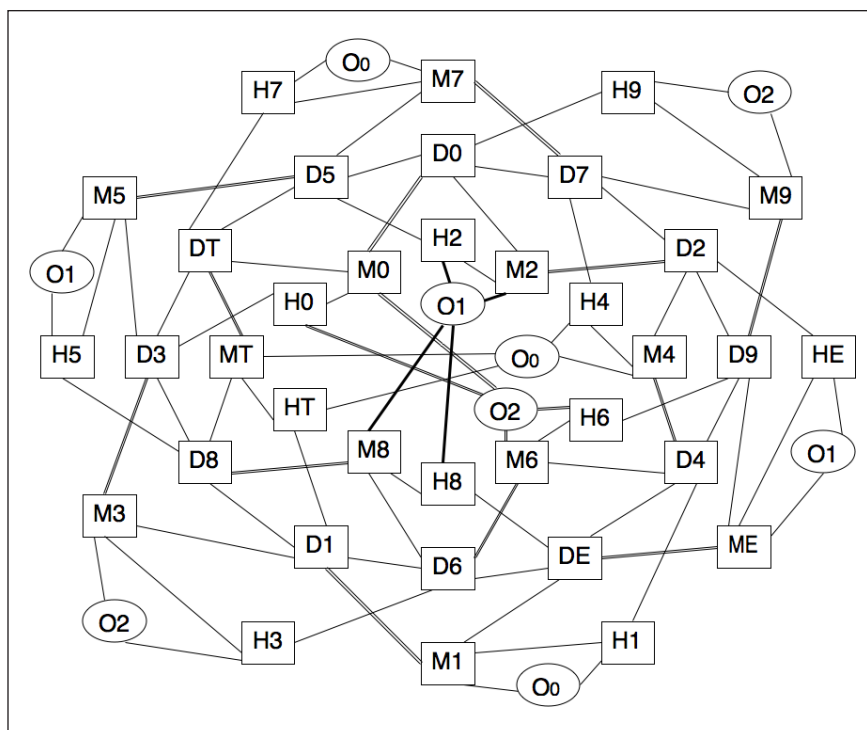


Figure 2: Scale wreath with octatonic included

APPLICATIONS

Used in conjunction with Table 1, the wreath in Figure 2 could be of great use to jazz students. It provides an excellent starting point from which to tackle a new tune. In this situation, jazz students are often trained to pick a scale for each chord before they begin playing, and to practice their improvisation using these scales; in the worst case, the students' scale choices are arbitrary, and the result sounds disjoint and "vertical." However, if they base their choices on the common-tone wreath, their chosen scales will reflect a conscious desire for close or distant connection. They will experiment with sounds based not on the superimposition of single scales over single chords, but rather on the connections between scales. The wreath illustrates that common-tone relations are not an isolated element of improvisation, but rather are closely tied to scale choice. Should a student experiment with particularly distant scales, the careful use of common tones becomes all the more important: the student must use the few common tones available if coherence is to be achieved.

To model this procedure, Table 5 presents possible scales for the opening eight bars of “Stella By Starlight” (Ex. 1), based on the chord-scale associations shown in Table 1.

<i>min7</i> _{b5} ₄	Dom ₇ ₉	<i>min</i> ₇ ₀	Dom ₇ ₅	<i>min</i> ₇ ₅	Dom ₇ ₁₀	Maj ₇ ₃	Dom ₇ ₈
<i>M</i> ₇	D ₂	<i>D</i> ₁₀	<i>D</i> ₁₀	<i>D</i> ₃	<i>D</i> ₃	<i>D</i> ₃	<i>D</i> ₁
<i>D</i> ₅	<i>H</i> ₂	D ₃	<i>H</i> ₁₀	<i>D</i> ₈	<i>H</i> ₃	D ₁₀	<i>H</i> ₁
	<i>M</i> ₂	<i>D</i> ₉	<i>M</i> ₁₀	<i>D</i> ₂	<i>M</i> ₃	<i>M</i> ₀	<i>M</i> ₁
	<i>M</i> ₄	<i>M</i> ₀	<i>M</i> ₀	M ₅	<i>M</i> ₅		<i>M</i> ₃
	<i>M</i> ₁₀		M ₆		M ₁₁		M ₉
	<i>O</i> ₀		<i>O</i> ₂		<i>O</i> ₁		<i>O</i> ₂

Table 5: Possible scales for “Stella”

Note: *italics* indicate scales from the “in” collection. **Bold** indicates the “out” collection (both begin with *D*₅).

The heading of each column lists the chord from the lead sheet (with subscript root), and the entries in each column present the possible scales, derived from Table 1. Using Figure 2’s wreath, I have chosen two sets of scales for this segment: one “in” set using closely related scales, and one “out” set using distantly related scales. Italicized scales represent the “in” collection, and bold scales are from the “out” collection.

Based on these collections, I composed two possible melodies over the opening chords of “Stella By Starlight” (Example 3). For the purposes of demonstration, I avoided non-scale tones and attempted to use many notes from each scale. Consequently, the passages sound a bit forced, but they should suggest the opposing effects of the two options. In identical fashion, a student could devise two complete sets of scales for a new tune and practice improvising with each set. Great benefits would be derived from alternating choruses of “in” and “out” improvisation.

3.1: "In"

3.2: "Out"

The image displays two musical examples, 3.1 and 3.2, each consisting of a piano (upper) and bass (lower) staff. Example 3.1, titled "In", shows a sequence of chords: E-7b5, A7, C-7, F7, F-7, Bb7, Eb, and Ab7. Example 3.2, titled "Out", shows the same sequence of chords. The notation includes various accidentals and note values, with the bass staff often featuring more complex rhythmic patterns and accidentals.

Example 3: Two renderings of "Stella"

Note: background scales are shown in lower staff

The procedure I describe above may seem laborious. Linking familiar scale-names (Dorian, Mixolydian, etc.) with the abstract parent scales of the wreath probably presents the largest intellectual hurdle. However, with experience, a student would begin to understand and manipulate the relations between scales with less forethought. Much jazz pedagogy is based on the premise that a student generalizes and unconsciously reapplies the lessons learned through laborious scale and chord analysis. The wreath and its associated procedures are a guide to the control of a particular improvisational variable – degree of common-tone scalar connection – of which the student can ultimately develop an internal, personal understanding. I believe that with practice, a student would come to understand and manipulate common-tone connections between scales intuitively.

The wreath is especially useful to determine smooth scalar connections across the unusual progressions typical of jazz from the '60s onwards (think of John Coltrane, Wayne Shorter, etc.). As an

example, consider the first eight bars of the bridge of “Very Early,” shown in Example 4.



Example 4: “Very Early” (bridge)

The unusual root motion of this chord progression requires extra attention to scalar connection to avoid calling attention to harmony at the expense of melody. Such a progression causes consternation to inexperienced players, who may be able to assign logical scales to each chord in isolation without knowing how to connect them. Furthermore, the scales that create smooth connections in this situation are far from obvious. The student’s goal is to find *some* set of scales that connect smoothly and facilitate melodic coherence.

Table 6 shows the full range of possible scales for this passage, derived from Table 1.

Bmaj7	Ab7	Dbmaj7	Bb7	Bmaj7	G7	Cmaj7	Ab7
D ₁₁	D ₁	D ₁	D ₃	D ₁₁	D ₀	D ₀	D ₁
D ₆	H ₁	D ₈	H ₃	D ₆	H ₀	D ₇	H ₁
M ₈	M ₁	M ₁₀	M ₃	M ₈	M ₀	M ₉	M ₁
	M ₃		M ₅		M ₂		M ₃
	M ₉		M ₁₁		M ₈		M ₉
	O ₂		O ₁		O ₁		O ₂

Table 6: Smooth scalar relations in “Very Early”

Note: solid lines between scales indicate parsimonious relation or identity; dotted indicate two-step relation.

Based on the Figure 2 wreath, solid lines between scales indicate a parsimonious relation (or identity), and dotted lines indicate a two-step relation. There are few smooth scalar paths leading through the entire progression, that is, paths using only parsimonious or two-step connections. Furthermore, the octatonic scale is the only scale over G7 that can connect Bmaj7 to Cmaj7. This is a perfect example of an

unintuitive scale choice. It is hard to imagine that a student assigning scales to this passage would stumble upon these paths. The difficulty of devising a convincing melody across these disjunct chords might frustrate the student a great deal. A better understanding of scalar connection would no doubt make easier the transition from “standards” to the more unusual progressions of later jazz.

Table 6 also reveals some of the patterns that the student would come to understand intuitively. Notice the isomorphic network of connections between BM7-G7 and CM7-A $\flat$ 7. Naturally, all progressions from a major-seventh chord to the dominant-seventh chord a major third below will feature analogous connections. Even these unusual chord connections would come to be understood through practice. A dedicated teacher could devise pages of exercises that included examples of every possible chord connection. The student who assigned scales to these progressions and practiced them diligently would be equipped to play over any modern jazz tune.

EXTENSIONS

The most natural extension to the theory is the inclusion of other parent scales, such as the harmonic major, whole-tone, and hexatonic. These latter two would share the octatonic’s awkwardness, but connect to many other scales. Additional scales could enrich the theory, though they would make the wreath more difficult to render and interpret. The theory could also be used to suggest parsimonious scalar shifts *within* a given harmony, as commonly occur in modal jazz.

My discussion of applications is focused on pedagogy rather than analysis, but the theory could serve well in an analytical role. Analysis might reveal that particular players tend to use certain scalar relations consistently. For example, over a ii-V-I progression, a player might favor close connection between ii and V, but distant connection between V and I – or vice versa. Along similar lines, the theory could reveal hidden consistencies in the chord progressions used by a particular composer. For example, a certain composer may favor adjacent chords that allow very few close scalar connections. More broadly, certain degrees of relation may be typical of certain style-periods, in both compositions and improvisations. Any jazz student or analyst will benefit from careful attention to the scalar relations modeled above.



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GUIDELINES FOR CONTRIBUTORS

1. Articles on any aspect of teaching or learning music theory will be welcome. Contributions will be judged on originality, relevance, interest to a diverse audience, and clarity of writing.
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