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Steven G. Laitz, Director

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From the Editor

Welcome to Volume 28 of the *Journal of Music Theory Pedagogy*. As has been the tradition over the past half-dozen years, this hefty issue contains a wonderful variety of articles, a veritable cornucopia of creativity and cutting-edge contemplation. The six articles, two review articles, and conference report will surely provide pedagogical fodder for years to come. The depth and breadth of the current issue's articles is impressive.

Nancy Rosenberg's "Bach, Beck, and Bjork Walk into a Bar: Reclassifying Harmonic Progressions to Accommodate Popular Music Repertoire in the Traditional Music Theory Class" presents a fascinating pedagogy for introducing popular music in the theory classroom. Through many examples Rosenberg reveals her method of integrating this relevant body of music into the classical canon.

Guy Capuzzo revisits the omnibus progression in "The Backcycle Progression: A Supplement to the Omnibus Progression for the Study of Chromatic Harmony." By considering the omnibus in a new light, Capuzzo examines enharmonic transformation and modulation in the common-practice repertoire of Mozart, Beethoven, Chopin, and Brahms. Capuzzo then considers its role in post-tonal music.

John Check offers a detailed report of last summer's *Eastman Institute for Music Theory Pedagogy*, and David Yeary and Carla Colletti present highly relevant review articles. Prof. Colletti's detailed overview of the state of music theory fundamentals compares five recent publications in that crucial area. Prof. Yeary confronts the very-real problem of undergraduate remediation, details the need for specific materials for ameliorating deficiencies and then focuses on new materials in computer-assisted instruction.

In "Dalcroze's Approach to Solfège and Ear Training for the Undergraduate Aural Skills Curriculum," authors Gregory Ristow, Kathy Thomsen, and Diane Urista expertly offer a detailed look at one of Dalcroze's pedagogical innovations: eurhythmics. The presentation of practical and eminently musical exercises are drawn from Dalcroze's work; additionally the authors share their own exercises, methods of instruction applicable to all curricula and students at all levels. These exercises range widely, from tonal position finding to modulation and improvisation.

Scott Dirkse's "Effective Questioning Strategies for the Music Theory Classroom" takes up a central and often neglected issue in

teaching music theory: “the art of questioning, and how questioning can be used to improve learning.” This remarkably practical contribution lays out tried-and-true techniques that enhance assessment, class participation, and students’ internalization of concepts.

Samuel Ng’s “Recorded Performances as Text in the Music Theory Classroom” confronts the ever-challenging question of music theory’s relevance. By tackling the slippery connection between analysis and performance, Ng presents a sure-footed approach that integrates recorded performances, which together with strong pedagogical support, provides a wealth of opportunities for the theory instructor to have a lasting impact on his/her students.

David Beach, one of the world’s leading scholars of Schenkerian theory, contributed an article to *JMTP* over 25 years ago. “The Analytical Process—A Practical Demonstration: The Opening Theme from Beethoven’s Op. 26” introduced the basic tenets of Schenkerian analysis through a step-by-step process that begins with a clear discussion of the theme’s form, and then moves through various rhythmic and pitch reductions, and closes with an elegant reading of the tonal, contrapuntal, metric and motivic processes the theme undergoes using basic notational symbols that prepare students for studies in Schenkerian analysis. The article is still widely cited and should be required reading in any theory class, not only in Schenkerian techniques. Still, when the article appeared in 1983, there were a few, yet substantive, errors in the sketches, which warrant correction given the continued influence of Beach’s work. The corrected version in this volume also pays tribute to this scholar’s crucial contributions over a period of nearly half a century.

From the Outgoing Editor:

After serving for six years as Editor of *JMTP*, I am stepping down to assume the position of Director of the Gail Boyd de Stwolinski Center for Music Theory Pedagogy, a position previously held by Dr. James Faulconer, Professor of Music at the University of Oklahoma for many years, and co-founder of the Center and the Journal in 1981 along with Alice Lanning and Michael Rogers.

I am delighted to introduce the Journal’s new Editor, Elizabeth Sayrs, Associate Professor of Music Theory and Dean, University College, and Vice Provost for Undergraduate Education at Ohio

University. Elizabeth received her B.A. in Music from Wellesley, a M.A. in Music Theory at the Eastman School of Music as a Sproull Fellow, and a Ph.D. in Music Theory from Ohio State. Prof. Sayrs is renowned as both a musician and a pedagogue, a fact recognized by the Ohio University School of Music Distinguished Teaching Award in 2007.

Professor Sayrs has presented her work on nineteenth-century music, cognitive linguistics and music, pedagogy, and gender studies and music at regional and national conferences. Her articles and reviews have been published in *College Music Symposium*, the *Journal of Schenkerian Studies*, *Music Theory Online*, and *Music Theory Spectrum*; in addition, the book chapter “Playing the ‘Science Card’: Science as Metaphor in the Practice of Music Theory,” with co-author Gregory Proctor, was published in *What Kind of Theory is Music Theory? Epistemological Exercises in Music Theory and Analysis*, edited by Per F. Broman and Nora Engebretsen. Her e-text, *MFun: Music Fundamentals* was published by MacGAMUT Music Software International in 2012. Elizabeth has already begun her duties as editor of *JMTP* by working with authors, sharing her expertise, and setting the highest standards.

From the Incoming Editor:

Under outgoing editor Steve Laitz, the *Journal of Music Theory Pedagogy* has continued to thrive. Steve has been an extraordinary editor, dedicated to maintaining the excellence of the journal while reaching out to both professional theorists and non-specialists who teach theory. Under his leadership, the innovative journal *Music Theory Pedagogy Online* and the accompanying resources have been established and continue to grow. In 2013, Steve became the new director of the Gail Boyd de Stwolinski Center for Music Theory Pedagogy at the University of Oklahoma. I look forward to Steve’s continued leadership in music theory pedagogy, and I am honored to follow him.

As editor, I will make every effort to uphold the high quality of the journal and serve our diverse colleagues. In the past decade, music theory pedagogy—indeed, all pedagogy—has been both challenged and transformed by digital technologies, from open source software and MOOCs (massive open online course) to flipped classrooms and new models of music distribution and

scholarly publication. External pressures, including an increased reliance on non-tenure track faculty, lingering budget pressures due to the recession, and broader changes in the music professions, have continued to influence music theory's role in the academy. As scholars and teachers we value dialogue, and I hope that the pages of JMTP continue to serve as a forum to discuss how these critical issues interact with music theory pedagogy and the discipline as a whole.

Finally, as a reminder, our website, *Music Theory Pedagogy Online* is designed for a range of instructors, from those who teach in the high school and community college, to those at the conservatory, liberal arts college, and university. The variety of curricula and teaching strategies employed across the country is so diverse that it can be bewildering, especially given the variability of the training and experience of the faculty, the goals of the program, and the students' experience and aptitude. Ultimately, our aim is to improve the quality of teaching nationwide by providing the specialist and non-specialist with clear and up-to-date musical models and materials. In other words: we offer access to tried-and-true best practices. For information on subscribing to the site, see jmtp@ou.edu

Sincerely,

Steve Laitz, the Eastman School of Music and the Juilliard School
Editor, *Journal of Music Theory Pedagogy*
Director, the Gail Boyd de Stwolinski Center for Music Theory
Pedagogy



THE ANALYTIC PROCESS: A PRACTICAL DEMONSTRATION The Opening Theme from Beethoven's Op. 26

BY DAVID BEACH

INTRODUCTION

This article is the direct result of an invitation to give the keynote address at the 1988 meeting of the Central Gulf Theory Society, held at the University of Southwestern Louisiana in Lafayette.¹ After agreeing to do so, I gave considerable thought to what would be an appropriate topic, given my interests and what I assumed to be that of my audience. Though I have varied interests, my primary area is the analysis of tonal music, and I guess it is no secret at this point that my orientation is Schenkerian. So I asked myself, what could I, a Schenkerian involved primarily in the education of graduate students, offer a group of musicians whose primary teaching responsibility in theory is with undergraduates? My solution was to talk about the analytical process in general and to provide a practical demonstration of this process from a Schenkerian perspective, using the opening theme from Beethoven's Piano Sonata, op. 26, as the focus of my discussion. What follows is that presentation.

I think I need not justify music analysis to an audience of music theorists or teachers of music theory. There are, of course, many reasons for studying and analyzing music, as there are countless ways to go about it. I have to admit that my main reason for studying a particular piece in detail is for the sheer joy of discovering what makes it tick, of unraveling and trying to answer the questions that inevitably arise. But, aside from this selfish reason, my motivation is pedagogical, as I suspect it is for most others. I am concerned with what I should be asking my students to look for (listen for) and about how I should direct them to discover what is there to be uncovered by analysis. Ideally, of course, we may consider the process of musical analysis as completed only when all aspects of the composition—its formal and motivic design, its harmonic and metric organization, and its contrapuntal structure—are

¹ A slightly altered version of this paper was read at the meeting of the Central Gulf Theory Society, March 26, 1988, held at the University of Southwestern Louisiana in Lafayette.

thoroughly investigated and when the questions that arise from our investigation are satisfactorily answered. As professionals, we know that such a level is rarely achieved; indeed, we would be hard put to name many published analyses that would qualify. And as teachers we know full well the necessity of readjusting our sights in various ways to accommodate students at different levels of development and sophistication. That is at least part of what teaching is about—learning what questions to ask of our students (or perhaps more appropriately learning how to get them to ask such questions of themselves) at various stages in the educational process.

Thus, at least as far as the *teaching* of musical analysis is concerned, I think we must be careful to view the process not as a single and indivisible task but as a series of stages, each potentially complete as an explanation of certain phenomena, yet open-ended in that it cannot answer all the questions posed and thus must lead at some time to another stage, and so forth, until the process is complete. To a certain extent, what I have just said may be taken as a description of musical analysis as it is commonly taught, but with one exception. I insist that the initial stages, though in some respects self-contained, remain open-ended. Too often these steps are taught not only as mechanical processes, which bothers me no matter what type of analysis is involved, but also as ends in themselves. While I understand the advantage of assigning to a student a task that can be completed satisfactorily, I think it is unfortunate to imply anywhere along the way that there is nothing more to be discovered. I would much rather leave the task with unanswered questions than never to have asked them. My experience is that the process is continuous, each stage offering a solution while uncovering more that needs to be explained. With this in mind, you might understand why I would have little patience with a paper that purports to be a description of one's initial "hearing" of a piece, since such a hearing cannot be equated with what is actually there. Though such an approach is not without interest, it is just the initial step in analysis. But it is no more a completed analysis than the initial rehearsal is a polished performance of a musical work.

I think it is very difficult to specify just how many stages there should be in the analytic process, since that depends to a large extent on the length and complexity of the particular composition. But in general I would identify three major stages, each of which is subject to various subdivisions. First comes a consideration of the formal design of the work, its division into larger and smaller parts

(e.g., sections, themes, phrases, etc.) and the appropriate labeling of those parts according to the perceived patterns of repetition and contrast at the musical surface. Concurrent with this process is the identification of key changes and larger-scale harmonic motions in relation to these formal divisions, and, where appropriate, the corresponding metric organization. This is a crucial step in analysis, since you must always know where you are in the piece. As one who has taught advanced analysis, I can assure you that many of the problems that arise at subsequent stages are attributable to the age-old problem of losing sight of the forest for the trees, that is, of forgetting where you are in relation to where you have been and where you are going.

The second stage involves coming to grips with the details of the individual parts—the motives, important features of rhythm and meter, including perhaps an analysis of the rhythm, and the harmony. At this stage we are concerned with surface articulations and the familiar task of labeling chords, at least to the extent that we are going to do so. Finally, we must examine the contrapuntal structure of the work, a process that involves several steps, beginning with a metric reduction of the voice leading and ending with our graph of the deep-level structure. In my opinion, all that was done before is preparatory to this stage, since it is here that we really come to grips with how all aspects of the musical composition—the harmony, the voice leading, and the elements of design, such as motive and form—interact to create a unified whole. And, hopefully, it is here that some or all the conflicts are resolved or explained to our satisfaction.

I realize, of course, that what I have just outlined is hypothetical, subject to change according to the demands of the piece and whether or not a comprehensive analysis is intended. Though I recognize the reasons for analysis aimed at elucidating a particular feature of a composition (e.g., its form, the harmony, its rhythmic organization, etc.), it is my intention in the following analysis to aim for and possibly even to achieve a comprehensive view of the work. This is the one reason I have chosen the opening theme of Beethoven's Piano Sonata, op. 26. Not only is it a familiar work, one that many of you may have given to your students to analyze, but it is short enough to examine in some detail and from several points of view in a reasonable amount of time. The approach I will take is a modification of the three-stage process outlined above. The initial stage, an examination of the formal design and identification

SONATE

für das Pianoforte

L. van Beethoven

Op. 26.

Andante con Variazioni.

7

14

22

29

Example 1: Beethoven, Piano Sonata, op. 26 (Theme)

of the corresponding harmonic and metric groupings, will remain intact. However, for the purpose of presentation, I have simplified the remainder of the process by combining the detailed harmonic analysis with the metric reduction of the voice leading. Also I will

not present a separate rhythmic-metric analysis, but instead will deal with that aspect of organization as I proceed.

Finally, before turning to the Beethoven theme, I would like to mention a secondary reason for choosing this topic. It happens all too frequently, I think, that individuals perceive there is something mystical, perhaps even magical, about Schenkerian analysis, or, even worse, that it is arbitrary. I'm afraid we have ourselves to blame, at least in part, for this perspective, in that we are not careful under appropriate circumstances to explain the reasons for the choices we make, though, quite honestly, it would be a burden on us all if we were always to do so. Clearly there are times when a lengthy justification of choices is not appropriate. Indeed, a musical graph can tell us a lot: it provides us with an interpretation of the structure of a particular work or part of it. But it cannot tell us why certain choices were made or rejected.² This is what I am hoping to accomplish in the following discussion of op. 26, namely to provide both an interpretation—which, by the way, is based on Schenker's³—and an explanation. And in so doing I hope to dispel any notion that all this is in any way arbitrary or the result of some magical incantation known only to the select few.

² One attempt to address this issue of choices was provided by Carl Schachter in his talk, "Either/Or," given at the Schenker Symposium at the Mannes College of Music, March 15-17, 1985.

³ There are several graphs of all or part of this theme in *Free Composition*. See particularly Figure 85.

A

A(8): Antecedent Phrase
A¹(8): Consequent Phrase

x (4)	+	y (4)	x ¹ (4)	+	y ¹ (4)
I		V, IV ⁶	I		V, IV ⁶ V I.

B

B (10)

4	+	6 (internal expansion of 4)
z (2)	+	z (2)
sequence (2 + 2)	I	[V] V,

A¹

A¹ (8)

x ¹ (4)	+	y ¹ (4)
I		V, IV ⁶ V I.

Table 1

FORMAL DESIGN

A diagram of the formal design of the Beethoven theme is provided in Table 1. This diagram is organized visually according to the large-scale ternary plan, where the first part is closed in the tonic (m. 16), the second leads to the dominant (m. 26), and the last, a varied repetition of the consequent phrase of the first part, closes again in the tonic (m. 34). The overall organization may thus be represented as A B A¹ (I V I). Before discussing the divisions of these sections, there are two features of this diagram that require comment. First, the symbol [V] is used to designate a dominant of the following chord—in short, a secondary dominant. Second, you may have noticed by now my use of punctuation symbols at various points of division. Here you must indulge me a bit for my interest in the history of theory. It was a common practice during the latter half of the eighteenth century and beyond to equate harmonic cadences with various punctuation symbols, a natural extension of the commonly accepted parallel between music and

rhetoric to the sphere of harmony.⁴ Though the parallel is not well defined, I find the idea of using these symbols useful to represent a hierarchy of cadences within a section, period, or phrase. Certainly the idea would not have been foreign to Beethoven.

As shown in our diagram, the first section consists of an eight-bar antecedent phrase, ending on the dominant harmony, and its varied repetition, closing on the tonic. Thus this first section is really a sixteen-bar period, divided into two parallel phrases: A(8) + A'(8). Each of these phrases is divided in half by an internal cadence, and I have labelled the two parts x and y (or in the consequent phrase x' and y') to represent their contrasting characters. Though eventually we will see that there are strong motivic links between these two parts of the phrase, for now we will focus on their surface characteristics, which are contrasting. Turning now to the harmonic motions corresponding to the various divisions and subdivisions of this period, you will note my use of the semi-colon after the dominant harmony in m. 8 to show it as the major point of division of the sixteen bar period, the end of which is appropriately marked with a period. Thus I am making a distinction between the dominant in m. 4 (or m. 12), which is the division of the phrase, and the dominant in m. 8, which in the hierarchy is the more important of the two. That is, the dominant in m. 8 is the goal of the phrase (as the tonic in m. 16 is the goal of the consequent phrase), while the dominant in m. 4/12 marks a division of the phrase. This is not at all an insignificant point, since eventually we must understand and explain the role of these dominants in relation to the voice-leading structure. Put a different way, we must come to grips with the juxtaposition of dominant and subdominant chords in mm. 4-5/12-13 and their function within the phrase. The issue has been raised, but we are not yet equipped to offer an answer. This is exactly what I meant earlier by saying that these initial stages in the analytical process must be open-ended.

From a melodic point of view, we may understand the B section (mm. 17-26) as being generated from repetitions of a new rhythmic-motivic idea (marked z), which is characterized by a strongly articulated eighth-note anticipation of the downbeat. The first two statements of this idea (l.h.) and their accompaniments are stated

⁴ See for example, Johann Philipp Kirnberger, *The Art of Strict Musical Composition*, trans. by David Beach and Jürgen Thym with an Introduction and Explanatory Notes by David Beach (New Haven and London: Yale University Press, 1982), p. 114.

sequentially, forming a four-bar group ending on the tonic harmony. What begins as a third statement with the $E\flat$ octave in the right-hand part on the third beat of m. 20 soon breaks down, and the subsequent material—twice recalling the dotted rhythm characteristic of the opening section—is extended until the cadence in m. 26. For the first and only time in this simple theme, we have an irregular metric group, six bars instead of four, meaning overall the B section is ten rather than eight bars in length. At a rather basic level we understand this irregularity—which, by the way creates tension and makes the phrase more interesting—as resulting from avoidance of a perfect authentic cadence in m. 24. Certainly we do not hear the last two bars of this sub-phrase as tacked on, nor would we play it that way, since the goal is not reached until m. 26. Thus I think we must understand this six bar group as arising from some process of internal expansion, but an explanation of just how this happens must wait until we have an opportunity to examine the voice leading.

Bars 1-16

A tri-level representation of the pitch structure and harmonic organization of bars 1-16, with the levels vertically aligned, is provided in Figure 1. Level c is a metric reduction of the voice leading, below which the progression of harmonies is indicated in the traditional manner by means of Roman numerals. The Arabic numerals between the staves indicate metric groupings, which for this section are very regular: 8 (4 + 4) + 8 (4 + 4). Levels a and b are interpretations of level c, a being a simplification and further interpretation of b, which shows both immediate as well as some long-range connections.

The metric reduction is a simplification of the voice leading, where note values represent durations and the direction of stems indicates different parts in a traditional SATB format. Regarding the latter, it should be made clear from the outset that I have not attempted to represent changes in texture as they actually occur, but to indicate what I take to be the most important lines in a particular phrase or subphrase. For example, in the opening four bars I have shown only the outer voices, except for the unstemmed $E\flat$ and its relationship to the uppermost voice. However, in the latter half of the phrase I have indicated four parts to represent the voice leading as accurately as possible. Thus, while the metric reduction does indeed show changes in texture, it must be understood that these textures represent different levels of voice-leading complexity but not the

The image displays three systems of musical notation for the opening theme of Beethoven's Op. 26, labeled (a), (b), and (c). Each system consists of a treble and bass staff joined by a brace. System (a) covers bars 1-4, system (b) covers bars 5-8, and system (c) covers bars 9-12. The music is in a key with three flats (B-flat, E-flat, A-flat) and a common time signature. Harmonic analysis is provided below the staves, with Roman numerals indicating chords and letters (I, IV, V, N, P) indicating notes. Fingering numbers (1-8) are placed above notes. A box labeled '13' is positioned between systems (b) and (c). A bracket labeled 'Repeat bars 1-4' spans the first four bars of system (c). The analysis for system (a) shows a sequence of chords: I, IV⁶, I, IV⁶, V, I, IV⁶, and I. The analysis for system (b) shows a sequence of chords: I, IV⁶, V, I, IV⁶, V, I, IV⁶, and I. The analysis for system (c) shows a sequence of chords: I, IV⁶, V, I, IV⁶, V, I, IV⁶, and I. The analysis for system (d) shows a sequence of chords: I, IV⁶, V, I, IV⁶, V, I, IV⁶, and I.

Figure 1. Bars 1-16.

actual number of sounding parts in the composition. In this sense and as a simplification of the voice leading, the metric reduction is one full step removed from the musical surface.

The process of simplification itself is relatively straightforward; it involves elimination of all notes of embellishment, e.g., non-harmonic tones, though I have made two exceptions to this procedure in m. 4 and one in m. 15 for reasons that will become clear in the following discussion. However, the notation of the reduction, that is, the representation of relative duration by means of note values, is not so simple, since it involves two separate, though related, procedures.

First, the duration of a note at this level may represent the time occupied by that pitch plus its embellishment(s) in the actual composition. For example, the G in m. 2 is notated as a dotted quarter note in the reduction, since it exerts control throughout the entire measure. Likewise, the vertical third G/B $\flat$ in m. 8 is notated by quarter notes, the total value of the embellishing appoggiaturas, this third, and the following sixteenth-note rest.

Second, there are instances where the entrance of a note is delayed in the composition, either by a rest, as in the bass in m. 3, or because the line skips between parts, as in the melody in m. 1. In such instances, the notation in the reduction shows the total value of the note as sounded and its displacement. Thus the bass note C in m. 3 is shown in the reduction as if its entrance had not been delayed, and likewise the soprano note A $\flat$ in m. 1 is notated as if it had not been displaced momentarily by the E $\flat$, which belongs to an inner part. In summary, then, the basic principle of reduction and notation used here involves the elimination of both melodic and temporal displacements.

There are several special features of this metric reduction that require clarification. Probably the most striking of these, in view of what I have just said, is the inclusion in the reduction of the appoggiatura D $\flat$ on the downbeat of m. 4, though by not giving it a stem or durational value, I have attempted to indicate its dependence on the following note for its meaning. My reason for including this appoggiatura is not capricious. It is the initial tone of a clearly articulated statement of the third D $\flat$ /C/B $\flat$, which foreshadows or anticipates an expanded statement of that third in the following measures. The reason for the curly bracket is to identify this third as an important unit and to provide a visual aid for comparison with subsequent statements, as shown in level b

of this figure. Though less significant, I should also mention the retention in the reduction of the passing note C in the upbeat figure to m. 5 and later the passing note B $\flat$ as a subdivision of the first beat in m. 15. Neither is necessary, but somehow the parallel gestures seemed incomplete without them.

The melody in bars 4-8 involves several leaps between what I have shown as an inner line and an outer part. For example, the C on the third beat of m. 5 seems both to continue on by step to the following B $\flat$, as well as to leap to the high F, thus initiating a series of leaps between lines. I have highlighted these leaps in the reduction by slurs as I have done in the initial four bars, thus showing how this idea carries through the phrase. (This particular use of the slur is unique to this level. In the analytic graphs, they are used to show structural units.) The bracket over the dyad F/E $\flat$ in m. 6 and later in m. 14 has no apparent meaning at this point, but I have indicated this important covering motion here in anticipation of its role later in the piece and at deeper levels within this section.

Finally, I should say a few words about the bass part in bars 4-8, which, like the melody, is formed by two lines. There is a clearly audible registral link between the Fs on the downbeats of mm. 5 and 7, which is indicated by the dotted line. The intervening notes, which are in a different register, are really part of a separate line, and the "true" bass may be considered as continuing only after the return to the lower register. My use of the dotted line here in the bass and in the corresponding harmonic analysis indicates an analytic decision that exceeds the normal boundary of a metric reduction. Likewise with the curly and square brackets. They result from analytic decisions made at later stages in the process, and they have been included here only because of their importance to what follows. But, in general, I would advise students not to clutter their metric reductions with analytic interpretations of this sort, since they properly belong to some later stage.

Decisions about what to include (or exclude) depend in part on how far one intends to go in the analytic process. For example, I have indicated the harmonic progression in detail here without attempting to show any hierarchical organization, since I know that will come later. On the other hand, I do not think it would be inappropriate for the student to indicate some interpretation of the harmony at this level, particularly if the intent were to go no further with the analysis. Yet I add a word of caution: a proper consideration of harmonic motion at different levels requires an

understanding of the voice leading. With that in mind, let us move on to the graph at (b), our first-level interpretation of this material.

The notation at both levels a and b of Figure 1 is intended to reflect analytic decisions regarding structural hierarchies. Note values do not indicate relative duration, as they did in the metric reduction, but relative structural importance, which at deeper levels is also indicated by the lengths of stems. It is possible, of course, for a pitch to belong to more than one level, in which case it is given the note value corresponding to the deeper/deepest of the levels involved. Slurs no longer indicate motion between parts, but rather groupings of elements belonging to the same structural level. Let us consider, for instance, my interpretation of bars 1-4 as given at level b. The notation shows that the first three chords are a first level prolongation of the tonic harmony and that this motion is embedded within a deeper-level prolongation incorporating the first five chords. The exchange of neighboring and passing functions between parts and levels within this prolongation is a very common procedure in tonal music.

What is unusual here—or perhaps I should say potentially problematic for the beginner (as well as for some of my esteemed colleagues)—is that the goal of the ascending third, C^2 , would appear not to be a pitch of deeper structural significance, as I have indicated it to be. In fact, on the surface it appears as a fleeting passing tone within the motivic third $D\flat/C/B\flat$. But remember that the $D\flat$ is an appoggiatura, a displacement of the C. So we have a real dichotomy here between surface design and structural weight. What, in fact, is stated as a passing surface event is the displaced goal of the deeper-level ascending third $A\flat/B\flat/C$, and, as it turns out, this goal pitch is the primary tone (scale degree 3) of the piece and thus a member of the deepest structural level. I do not want to belabor the point, but it is crucial to understand that *there is no correspondence between duration and structural significance in tonal music*, and I would take another look at the theoretical literature that makes claims to the contrary. Duration is indeed an important aspect of surface design, but it does not determine or influence structure.

The thirty-second-note figure leading to and including the downbeat of m. 5 is an elaboration of the ascending $B\flat/C/D\flat$, which may be considered both a reversal of the preceding melodic gesture (the “appoggiatura” motive) and an answer, in diminution, of the middleground ascent of the third $A\flat/B\flat/C$ in bars 1-4. Though

these thirds exist at different levels of structure, as reflected in the notation, there is an important parallel between them. The first leads up to the primary tone, which, as already noted, is displaced by the appoggiatura $D\flat$, and the second one reaches up to this $D\flat$, now consonantly supported by the subdominant harmony. The dotted slurs in my graph at level b show the subsequent prolongation of this $D\flat$ and the IV^6 harmony, and the slur, in what I have notated as the tenor voice, indicates that the progression to the I^6 chord on the third beat of m. 6 is embedded within this prolongation. The melodic F and $E\flat$ in m. 6 leads back to the $D\flat$, and I might well have indicated the covering third $F/E\flat/D\flat$ by a slur in the graph.

However, I have chosen to indicate the $F/E\flat$ motion by a bracket, since I know this gesture, which covers the prolonged $D\flat$, becomes an important motivic idea in the B section. In fact, it is important here. The melodic $F/E\flat$ in m. 6 is answered immediately by the inner-voice chromatic motion $F/F\flat/E\flat$ in the next two bars, as is indicated by another square bracket. And, as shown at level a, both these statements exist within an even larger statement in the bass voice spanning bars 5-8. According to this interpretation, the prolonged subdominant leads to the dominant in m. 8.

But what, then, of the motion through the diminished seventh chord to the tonic in m. 7? How can I ignore it? The answer, of course, is that I am not ignoring it, but assigning it to a lower structural level. Even if we consider these four bars purely from a harmonic point of view, it should not be difficult to understand the tonic chord in the progression $IV^6 I V$ as connecting the IV and V. The dominant, not the tonic, is the goal. The function of the tonic chord within these measures becomes clearer when we consider its relation to the main melodic voice. It is the harmonization of the C within the clearly articulated statement of the third $D\flat/C/B\flat$ in bars 7-8, which, as indicated by the curly brackets in the graph, is embedded within a larger and controlling statement of that third spanning this four-bar subphrase. The function of this tonic chord, then, is to offer consonant support to the passing tone C within this motivic third, but at a deeper level we hear both the C and its support as passing within the motion $D\flat B\flat$ ($IV^6 V$).

As you may recall, I mentioned somewhat earlier that the two halves of this eight-bar phrase are motivically related despite their contrasting surface characteristics. What I meant in part by that statement is that the opening third $A\flat/B\flat/C$ in bars 1-4 is answered by the descending third $D\flat/C/B\flat$ in bars 5-8, a motion that is anticipated

by the appoggiatura figure on the first two beats of m. 4. Now, maybe, you can see why I was reluctant to eliminate that appoggiatura in my metric reduction. It initiates a clearly audible gesture that anticipates the deeper level statement of the same third in the following measures. It is by such motivic connections that the two halves of the phrase are related, thus forming a larger coherent unit.

The graph at level a shows the role of these thirds within the deeper level structure of the phrase. The initial third leads to $\hat{3}$ of the prolonged tonic harmony, a connection indicated by the diagonal line, and the second one leads to $\hat{2}$ over the dominant, creating a larger-level connection between $\hat{3}$ and $\hat{2}$, harmonized by I and V. As indicated by the two parallel lines after $\hat{2}$, the motion is interrupted at this point (in m. 8), and we begin again, so to speak, this time closing to $\hat{1}$ over the tonic harmony in m. 16. Since this closure is local, that is, occurring only at the end of the initial section, I have indicated the interruption at a deep middleground level. According to my notation, we might understand this $\hat{3} \hat{2} // \hat{3} \hat{2} \hat{1}$ as prolonging $\hat{3}$, which moves to closure at the deepest level only in m. 34.

Before moving on to a consideration of the B section, there are two important matters that must be addressed. First, we must return to an issue raised earlier, namely the meaning of the dominant harmony in m. 4/12. Clearly it cannot be considered equivalent to the dominant in m. 8. Rather, as indicated in the graph, it divides the phrase while prolonging the tonic. The harmony moves beyond this point to the subdominant, which is subsequently prolonged, and then on to the dominant in m. 8. Thus, the controlling harmonic progression for this eight-bar antecedent phrase is I-IV⁶-V, with the dominant in m. 4 functioning on a more local level as a means of dividing the phrase.

Second, I would like to point to an apparent inconsistency in my interpretations of bars 15-16. At level b I have indicated by my notation that the third C/B $\flat$ /A $\flat$ forms a structural unit at a higher level. Certainly we hear this third as a unit because of its articulation, and, because of the repetition of the thirty-second-note figure from the beginning of this subphrase to the cadence, we hear a longer-range connection between the D $\flat$ (N) and the C/B $\flat$ /A $\flat$. However, at a higher structural level, I believe this C is passing, as it was in the first phrase, within the third D $\flat$ /C/B $\flat$, as indicated at level a. I am suggesting that there is a real difference here between the surface design, which is what we tend to hear more easily, and the underlying structure. What I hear is shown at level b, but what I think this represents in a structural sense is given at level a. I would prefer

[illegible]

Figure 2. Bars 17-27

not to think of these two interpretations as necessarily representing an inconsistency, though in one sense they clearly do. I would rather have you view level a as a reinterpretation of level b at a deeper level.

Bars 17-27

My interpretation of the B section is given in Figure 2, which is organized in the same way as Figure 1. I think I need not say much about this organization, except to remind you that level c is a metric reduction of the voice leading, where the notation reflects relative duration after the elimination of melodic embellishments and temporal displacements. The notation at levels a and b, on the other hand, reflects relative structural weight.

Let us look for a minute at the opening bars of this section, which, as was noted previously, is formed by the repetition of the initial two-bar idea (z) a step lower. Though this idea is ostensibly new, its sequential treatment articulates an important motivic component from the previous section, the covering dyad F/E $\flat$. You will note that the anticipations in the left-hand part—the F on the upbeat to m. 17 and the E $\flat$ on the upbeat to m. 19—have been eliminated in the metric reduction. This does not suggest in any way that these anticipations are unimportant, since quite obviously our hearing of this dyad is directly related to the strong dynamic and rhythmic articulation of these two pitches.

Perhaps this underscores just what a metric reduction does and does not represent. It is a simplification of the melodic and rhythmic content of the piece, but in no way can it be considered a substitute for the score. Quite obviously our perception of this statement of the motivic F/E $\flat$ is partially dependent on its unique rhythmic articulation. As shown by the brackets in the sketch at level b, I interpret this four-bar sub-phrase as containing two overlapping statements of this dyad, the one in the left-hand part being answered by the highest sounding pitches in the right hand. They are temporally expanded statements of the idea originally stated in m. 6 and again in m. 14.

The harmonic organization of the remainder of the phrase must be viewed on at least two levels. The primary motion is from the tonic (downbeat of m. 21) to the dominant (m. 26), which is transformed into a dominant-seventh chord in preparation for the return of the tonic harmony and the opening material in m. 27. However, at a more local level we hear the progression in relation

to the dominant, as indicated by the chord-by-chord analysis below the metric reduction and by my interpretation of this material at level b. All of this is quite straightforward, except possibly for the notation "V" under the six-four chord on the downbeat of m. 23. This cadential six-four is not a tonic harmony but a delay of the dominant—hence the label.

In place of the expected resolution to the five-three, however, we get a secondary diminished-seventh chord when the bass note changes from B $\flat$ to B $\natural$, propelling the motion forward to the submediant harmony. It is by this deceptive motion that closure on the dominant (E $\flat$) is avoided, requiring continuation until a proper cadence is achieved. The result of this avoided cadence is to stretch the phrase to six bars, but to show its genesis as a four-bar idea, I have marked the measures in the metric reduction as follows: 1 2 - - 3 4. I do not mean to suggest that these six bars are really four, just that the six-bar group can be understood as an expansion of four. The implication is clear enough: that a normal four-bar phrase results from elimination of the two bars in the middle. Furthermore, it is only this two-bar group that can be eliminated while maintaining the integrity of the phrase.

My interpretation of the voice leading of this passage is given at level b of Figure 2. The melodic E $\flat$ of m. 21 moves back up to the F, which, according to my analysis, is prolonged until its resolution back to the stable E $\flat$ in m. 26. As indicated, this prolongation results in yet a further expansion of the F/E $\flat$ dyad. In fact, we can now see that the entire B section can be interpreted as successive expansions of this motivic idea. The F in m. 22 is first prolonged by a voice-exchange with the bass, then by a descent through the E $\flat$ to D $\natural$, the leading tone in E $\flat$ (V). This initial motion and its subsequent resolution is put in parentheses to indicate their role in the expansion of the phrase. (The parentheses correspond to the measures marked by dashes in the metric reduction.) The F is subsequently picked up again at the end of m. 24, and the line descends a second time through the E $\flat$ to D $\natural$ before resolving finally to the E $\flat$ in m. 26. According to this interpretation, the melodic E $\flat$ on the downbeat of m. 23 (and of m. 25) is a dissonant passing note within the third F/E $\flat$ /D $\natural$.

Though the melodic line appears to hover around the E $\flat$, we must make a distinction between the E $\flat$ s on the downbeats of measures 23 and 25, which are passing notes, and those on the downbeats of measures 24 and 26, which are goals, the second more stable than the

one harmonized deceptively. If we are not diligent in this regard, the result might be what I have given as solution A in Figure 3, which, in fact, is a recreation of a sketch done by one of my students, who will remain anonymous. The student's idea was that the cadential six-four is prolonged from the downbeat of m. 23 until its resolution on the last beat of m. 25 and that both the bass note B $\flat$ and the melodic E $\flat$ are prolonged by their upper and lower neighbor notes.

According to this interpretation, the fourth and fifth bars extend the third bar of the phrase. It is easy enough to understand where this idea might come from, considering the metric stress given to the E $\flat$ s and the supporting six-four chord. But once again I throw up the red flag as a warning about drawing a direct parallel between metric placement and structural significance. The E $\flat$ s on the downbeats of mm. 23 and 25 are dissonances (accented passing tones) that move on to their resolutions. The solution at A ignores this, showing instead the consonantly supported E $\flat$ in m. 24 as part of a prolongation of the dissonantly supported E $\flat$ s in the surrounding measures. The only worse scenario I can imagine is to interpret the six-four chords as tonic harmonies in the key of the dominant.

There remains just one important matter to be discussed, namely the large-scale connection between the B section, which leads to the dominant, and the A sections, which are harmonically closed. As shown at level a of Figure 2, one might interpret the dominant that is the goal of the B section as supporting its seventh (D $\flat$), the upper neighbor note of the primary tone (3), which is reinstated over the tonic harmony before the final descent to closure. This large-scale motion to the D $\flat$ may be viewed as a further expansion of the neighbor-note relationship exploited in the initial section. Such an interpretation, though perfectly correct in my opinion, is rather abstract in that it diverges from the actualities of the musical surface. This D $\flat$ appears only as a passing note in an inner part on the last beat of m. 26; its appearance in this lower register is mandated by the return of the opening material. As I have shown at level b, this section is really controlled by an expanded statement of the F/E $\flat$ dyad. But, as before, this dyad may be viewed as covering or leading to the structurally more important D $\flat$, as I have attempted to show at level a. The beamed third C/D $\sharp$ /E $\flat$ attempts to show a feature prominent in Schenker's graph of this section (*Free Composition*, Figure 85), though quite honestly I do not view the D $\sharp$ as passing up from an inner voice but as the lower third of the F.

Solution A

Solution B

[21]

Figure 3

Possibly the two interpretations are not incompatible, as I have attempted to show. In any event, it is Schenker's contention that this ascending third follows two earlier ascending thirds from the initial section, the $A^b/B^b/C$ in bars 1-4 (or bars 9-12) and the $B^b/C/D^b$ immediately following. Intriguing as this may be, I think the relationship is somewhat forced, since even after being pointed out, I cannot hear this final third, the $C/D^b/E^b$, as a compositional unit. And in the end I think we must use our ears as well as our minds in making analytic decisions.

This concludes what I have to say about the Beethoven theme, though I would not want to suggest that my comments have covered everything of importance. I do hope I have been at least partially successful in fulfilling my original intentions—to provide a practical demonstration of the analytic process from a Schenkerian perspective and, along the way, to provide explanations of why certain analytic decisions were made. From this point of view, I hope the discussion has been stimulating and perhaps even convincing.



The Backcycle Progression: A Supplement to the Omnibus Progression for the Study of Chromatic Harmony¹

GUY CAPUZZO

INTRODUCTION

Appearing in numerous undergraduate theory textbooks, the omnibus progression is a standard topic in the study of chromatic harmony and enharmonicism.² While the progression has several variants, three current textbooks use the progression in Example 1 as a keyboard harmony exercise.

The musical notation for the Omnibus progression is presented in a grand staff (treble and bass clefs) in 3/4 time. The progression consists of six measures. The first measure is labeled 'C: V7' and contains a C major triad (C4, E4, G4) in the treble and a C major triad (C3, E3, G3) in the bass. The second measure contains a C major triad in the treble and a C major triad in the bass. The third measure contains a C major triad in the treble and a C major triad in the bass. The fourth measure contains a C major triad in the treble and a C major triad in the bass. The fifth measure contains a C major triad in the treble and a C major triad in the bass. The sixth measure is labeled 'I' and contains a C major triad in the treble and a C major triad in the bass. The progression is a sequence of C major triads, which is the standard form of the Omnibus progression.

Example 1. Omnibus progression in three current textbooks.

Each textbook provides the student with different instructions. Gauldin asks the student to “play this progression then transpose it to two other keys of your choice.”³ Aldwell, Schachter, and Cadwallader instruct the student to play every keyboard progression in their book “through at least the first four sharp and flat keys, major and minor.”⁴ In an exercise titled “Driving the Omnibus,”

¹ I wish to thank Steven Laitz, Edward Pearsall, Matthew Santa, and the anonymous *JMTP* readers for their valuable suggestions. I also thank Joseph N. Straus for permission to reproduce the diagram in Example 22.

² Aldwell, Schachter, and Cadwallader (2011, 638), Benward and Saker (2003, 227-28), Clendinning and Marvin (2011, 620), Gauldin (2004a, 746-49), Kostka, Payne, and Almén (2013, 444-46), Laitz (2012a, 641-42, 644). Relevant non-textbook sources include Gauldin 2004c, Telesco 1998, and Yellin 1998.

³ Gauldin (2004b, 459).

⁴ Aldwell, Schachter, and Cadwallader (2011, 670, 690).

Laitz asks the student not only to transpose the progression, but also to demonstrate the enharmonic equivalence between the major-minor seventh chord and the German augmented sixth chord. His instructions read, "Play the progression in keyboard style as written, and then transpose to the key of F major (you'll be starting on C⁷ since this omnibus expands the dominant). Then try leaving the sequence at various points, treating the first chord of any measure as a V⁷ or as a Ger⁶."⁵ When the first chord acts as V⁷, Laitz asks the student to resolve it directly to I; when the first chord acts as Ger⁶, the student is to follow it with the cadential progression V⁶₄₋₃ - I.

In "Brain Twister," the keyboard exercise that follows "Driving the Omnibus," Laitz further drills the concept of enharmonic equivalence between V⁷ and Ger⁶, asking the student to use E^b-G-B^b-D^b (or its enharmonic equivalent) "in at least two different ways. Recall that enharmonic changes permit different harmonic destinations."⁶ In addition, Laitz includes the sonorities C[#]-E-G-B^b and C-D-F[#]-A^b. With C[#]-E-G-B^b, Laitz drills enharmonic modulation with the fully diminished seventh chord. With C-D-F[#]-A^b, Laitz demonstrates the enharmonic equivalence shared by V⁷ with a lowered fifth (e.g. A^b-C-E^b-G^b as V^{o7} in D^b) and the French sixth (Fr⁶) chord (e.g. A^b-C-D-F[#] as Fr⁶ in C).⁷

The present paper introduces numerous variations to the Example 1 omnibus progression with the goal of deepening the student's theoretical and analytical command of enharmonic transformation and enharmonic modulation. I begin by reviewing the enharmonic equivalence shared by V⁷ and Ger⁶, and present a *tritone network* to represent the equivalence (Examples 1-6). I then introduce the *backcycle progression*, a harmonic sequence containing root-position major-minor seventh chords with root motion by descending fifth. This prompts the addition of two new tritone networks (Examples 7-14). Next, I discuss a version of the backcycle progression containing a chromatic descending bass line (Examples 15-17). Two summary examples from Chopin Mazurkas then follow (Examples 18-19). In the final section of the paper, I point out aspects of the

⁵ Laitz (2012b, 449).

⁶ Laitz (2012b, 449).

⁷ V^{o7} indicates a V⁷ chord with a lowered fifth; V^{o6}, V^{o4}, and V^{o2} inversions appear as well. I use the locution "in X" as shorthand for "in the parallel keys of X major and X minor."

backcycle progression that foreshadow topics typically covered in undergraduate post-tonal theory textbooks, including interval cycles, pitch-class integers, parsimonious voice leading, atonal pitch space, and transformational voice leading (Examples 20-22).

PRELIMINARIES: A FIRST TRITONE NETWORK

Nearly every textbook that covers the enharmonic equivalence of V^7 and Ger^6 stresses the respelling of the minor seventh interval in V^7 as an augmented sixth interval in Ger^6 .⁸ The minor seventh interval involves $\hat{5}$ and $\hat{4}$; the latter resolves down by step to $\hat{3}$ while the former holds as a common tone. The augmented sixth interval, involving $\flat\hat{6}$ and $\sharp\hat{4}$, resolves to $\hat{5}$ in both voices.⁹ Example 2 demonstrates another enharmonic transformation that takes place between these harmonies, one that is generally overlooked.

F, B = $\hat{4}$, $\hat{7}$ E $\sharp$, B = $\sharp\hat{4}$, $\hat{1}$

C: V^7 I B: Ger^6 V_4

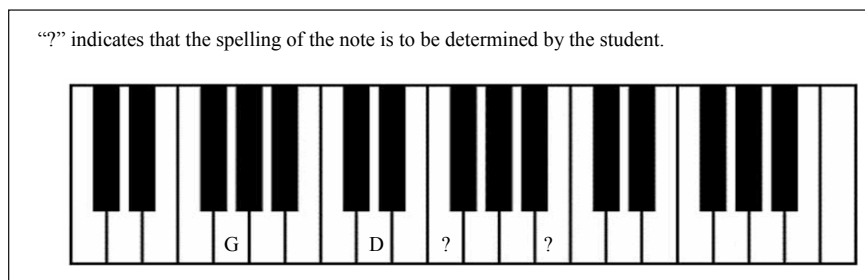
Example 2. Enharmonic transformation of the tritone interval.

The transformation involves the tritone interval in each chord. As indicated by the circle in m. 1, the tritone of V^7 in C is spelled with F as $\hat{4}$ and B as $\hat{7}$. As indicated by the circle in m. 2, when V^7 in C is reinterpreted as Ger^6 in B, the tritone is respelled with E $\sharp$ as $\sharp\hat{4}$ and B as $\hat{1}$. Example 3 displays a keyboard diagram that indicates G and D, the notes shared by V^7 and Ger^6 , but labels the notes of

⁸ Aldwell, Schachter, and Cadwallader (2011, 583), Benjamin, Horvit, and Nelson (1997, 158), Clendinning and Marvin (2011, 630-33), Gauldin (2004a, 552), Kostka, Payne, and Almén (2013, 395), Laitz (2012a, 485-87), Roig-Francolí (2011, 579-80). Biamonte (2008, §3, 4, 7 and Example 6) is a relevant non-textbook source.

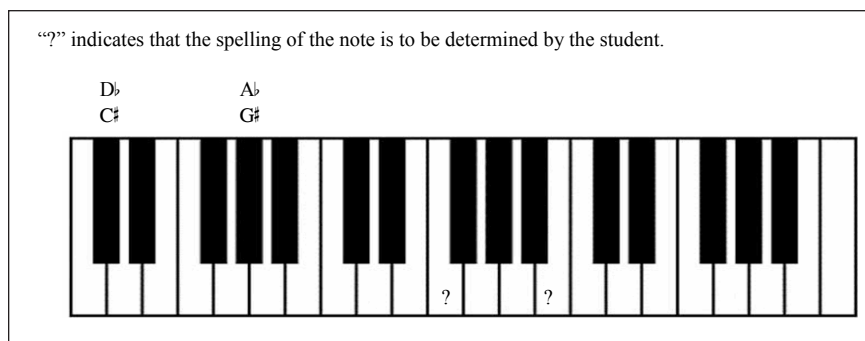
⁹ I use a downward-pointing arrow to indicate a lowered scale degree and an upward-pointing arrow to indicate a raised scale degree.

the tritone with question marks. This encourages the student to determine enharmonically-equivalent spellings for the tritone.¹⁰



Example 3. Keyboard diagram illustrating the tritone.

A second feature of the keyboard diagram is the ease with which it leads students to discover that there is a *second* pair of V^7/Ger^6 chords that contain the same tritone. Example 4 illustrates that the tritone in Example 3 acts as $\hat{4}$ and $\hat{7}$ not only in C, but in $F^\sharp$ (or $G^\flat$) as well.



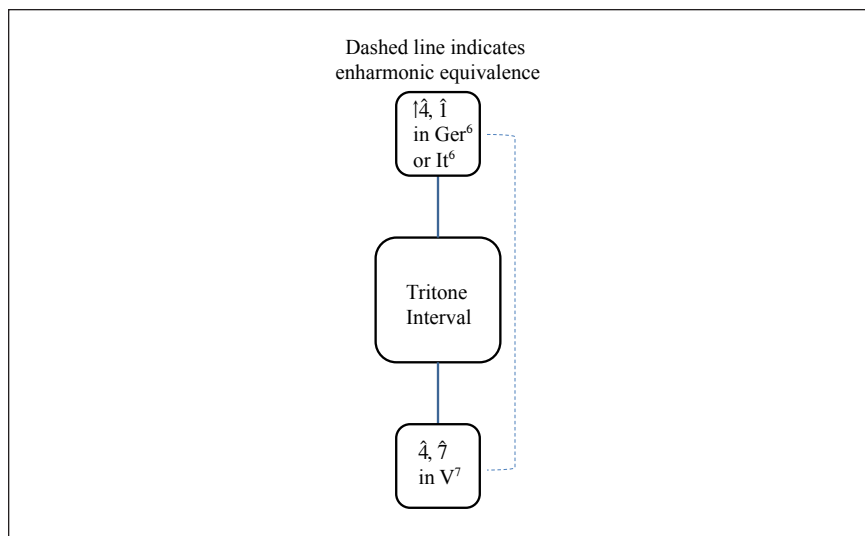
Example 4. Another V^7/Ger^6 pair that contains the same tritone.

Here, the student holds the tritone in the right hand, and locates a second perfect fifth (one other than G/D) with the left hand. In this case, the spelling of the tritone changes to $E^\sharp/B$ (in $F^\sharp$) or $F/C^\flat$ (in $G^\flat$). Similarly, the same tritone acts as $\hat{4}$ and $\hat{7}$ not only in B, but in F as well. In this case, the spelling of the tritone changes to $F/B^\flat$. In summary, the tritone can form part of a V^7 chord in two tritone-related keys (here C and $F^\sharp/G^\flat$), and part of a Ger^6 chord

¹⁰ I use the term "note" in place of the more precise but awkward "pitches that are octave-equivalent but not enharmonically-equivalent."

in two tritone-related keys (here B and F). Students versed in jazz harmony will recognize the tritone-related keys as a phenomenon akin to tritone substitution.¹¹

Example 5 summarizes the preceding observations in a diagram that I will refer to as a *tritone network*.



Example 5. Tritone network for V⁷, Ger⁶, and It⁶ chords.

It conveys that a tritone interval may realize ♯4 and ♯1 in V⁷ (this is the pair of tritone substitutes), or ♯4 and ♯1 in Ger⁶. ♯4 and ♯1 can also realize two of the three scale degrees in an Italian sixth chord (It⁶) because It⁶ is a subset of Ger⁶. Tritone networks will prove useful for keeping track of the ways in which a tritone interval can participate in various harmonies.

Shifting the focus from the minor seventh or augmented sixth interval in V⁷ or Ger⁶ to the tritone interval offers a new perspective on Laitz's "Driving the Omnibus." As an illustration, please see Example 6.

¹¹ Gauldin (2004a, 546-47), Roig-Francolí (2011, 567), Spencer (2004, 352), Tymoczko (2011, 360-65).

a. D, G# = $\hat{4}$, $\hat{7}$ A: V⁷ I

b. A $\flat$, D = $\hat{4}$, $\hat{7}$ E $\flat$: V⁷ I

c. A $\flat$, D = $\hat{1}$, $\hat{4}$ A $\flat$: Ger⁶ V $\frac{6}{4}$ $\frac{5}{3}$ I

d. D, G# = $\hat{1}$, $\hat{4}$ D: Ger⁶ V $\frac{6}{4}$ $\frac{5}{3}$ I

Example 6. Four resolutions for Laitz, "Driving the Omnibus," bar 2, beat 1.

The example reproduces m. 1 of Laitz's progression, followed by four resolutions for the chord on beat one of m. 2. They are: 1) V⁷ - I in A; 2) V⁷ - I in E $\flat$; 3) Ger⁶ - V $\frac{6}{4}$ $\frac{5}{3}$ - I in A $\flat$; 4) Ger⁶ - V $\frac{6}{4}$ $\frac{5}{3}$ - I in D.¹² As illustrated by Example 6, the student should always use the same exact keys on the keyboard for the tritone in the fourth chord; this facilitates the process of determining multiple resolutions.

In the next section of the paper, I introduce and develop another context for the enharmonic reinterpretation of V⁷ and Ger⁶. The root-position backcycle progression will provide a new setting for exchanging these harmonies, as introduced in "Driving the Omnibus," and will also accommodate the enharmonic transformations of vii^{o7} and V^{o7}/Fr⁶ that Laitz describes in "Brain Twister."

¹² In Examples 6b and 6d, the chordal seventh of the third chord (F $\sharp$) does not resolve down by step.

THE ROOT-POSITION BACKCYCLE PROGRESSION;
TWO ADDITIONAL TRITONE NETWORKS

Example 7 presents the root-position backcycle progression. The outer voices form a 10-7 linear intervallic pattern.¹³ The top staff alternates between incomplete (no fifth) and complete voicings, in that order. The bottom staff alternates between complete and incomplete voicings, in that order.¹⁴

Example 7 shows two systems of piano accompaniment. Each system consists of a grand staff with a treble and bass clef. The top staff is labeled 'Incomp. Comp.' and the bottom staff is labeled 'Comp. Incomp.'. Both systems show a sequence of chords: C: V7, F7, Bb7, Eb7, Ab7, Db7, Gb7, and C: V7. The chords are connected by a descending second interval in the outer voices. The bottom staff ends with a final C: V7 chord and a first inversion (I) chord.

Example 7. The backcycle progression.

Like most sequences, the backcycle progression goes by several names in current textbooks and anthologies. Aldwell, Schachter, and Cadwallader, as well as Burkhart and Rothstein, refer to it as a “descending fifths sequence with applied chords and interlocking sevenths.”¹⁵ Roig-Francolí refers to it as a “descending fifths sequence with secondary dominants.”¹⁶ Laitz refers to it as an example of “applied V⁷s in a descending second

¹³ The term “linear intervallic pattern” first appears in Forte and Gilbert (1982, 83-102).

¹⁴ Roig-Francolí (2011, 431) discusses the voice-leading issues attendant with this progression, and suggests alternating between complete and incomplete chords to prevent “irregular resolution of the leading tone and the seventh.”

¹⁵ Aldwell, Schachter, and Cadwallader (2011, 704), Burkhart and Rothstein (2012, 660).

¹⁶ Roig-Francolí (2011, 429-31).

(descending fifth/ascending fourth) sequence with interlocking sevenths."¹⁷ Kostka, Payne, and Almén refer to it as "a series of major-minor seventh chords in a circle-of-fifths sequence."¹⁸ Clendinning and Marvin refer to it as "dominant seventh harmonies in a descending fifth sequence."¹⁹ Jazz musicians refer to it as an example of *backcycling*, so named because the chord roots move counterclockwise ("backwards") on the circle (cycle) of fifths.²⁰ I will refer to this progression as the backcycle progression, and will use the verb *backcycle* in a manner akin to Laitz's use of the verb "drive" in "driving the omnibus."

The backcycle progression shares a number of features with the omnibus in Example 1. Both root progressions divide the octave equally (the omnibus bass line by minor seconds from beat to beat, or minor thirds from downbeat to downbeat; the backcycle bass line by perfect fifths from beat to beat); each prolongs a single dominant seventh harmony when played in its entirety; both are heavily chromatic; and both feature semitonal voice leading (the omnibus in all voices, the backcycle in the upper voices). What distinguishes the backcycle progression is its distillation of the possibilities for enharmonic transformation present in the omnibus. That is, by omitting the passing $\frac{6}{4}$ chords in the omnibus, which do not invite enharmonic reinterpretation, *any* chord in the backcycle progression may serve as a launching pad for enharmonic reinterpretation and subsequent cadential resolution.²¹

Examples 8 and 9 provide examples from the literature that illustrate the potential for enharmonic transformation latent in each chord of the backcycle progression.²²

¹⁷ Laitz (2012a, 364).

¹⁸ Kostka, Payne, and Almén (2013, 272).

¹⁹ Clendinning and Marvin (2011, 440).

²⁰ Backcycling is discussed in many jazz theory textbooks, including Fisher (1995, 44), Greene (1971, 78-80), Marohnic (2000, 37-39), Rawlins and Bahha (2005, 61), and Scott (2003, 58, 236, 478).

²¹ Examples of the root-position backcycle progression appear in Burkhart and Rothstein (2012, 175, m. 9; 381, m. 13); Aldwell, Schachter, and Cadwallader (2011, 485-86 (Chopin); 704 ("sequences with applied chords")); and Kostka, Payne, and Almén (2013, 273).

²² The Example 8 passage is discussed by Gauldin (2004a, 667-68), Roig-Francolí (2011, 441) and Clendinning and Marvin (2011, 542-43).

The musical score for Example 8 is presented in two systems. The first system covers measures 21 to 24, and the second system covers measures 25 to 28. The instrumentation includes Violin I (Vln. I), Violin II (Vln. II), Viola (Vla.), and Violoncello (Vc.). The key signature is D minor (three flats). The time signature is 3/4. The score includes dynamic markings such as *p* (piano), *pp* (pianissimo), and *f* (forte). Chord symbols are provided for the Viola and Violoncello parts: E⁷, A⁷, D⁷, G⁷, C⁷, F⁷, B^b, and Dm: Ger⁶, It⁶, HC. The passage begins with a series of major-minor seventh chords whose roots descend by perfect fifth: E-A-D-G-C-F. A final descending fifths motion alights on a B^b major triad, not a major-minor seventh harmony (m. 27). As B^b holds in the lowest voice, the highest voice descends to G[#], forming an augmented sixth interval in the outer voices. The inner voices flesh out the augmented sixth interval with Ger⁶ and It⁶ harmonies. The passage ends on a half cadence (HC) in D minor, the key of the movement.

Example 8. Mozart, String Quartet in D minor, K. 421, III.

Example 8 reproduces a passage from a Mozart string quartet. The passage begins with a series of major-minor seventh chords whose roots descend by perfect fifth: E-A-D-G-C-F. A final descending fifths motion alights on a B^b major triad, not a major-minor seventh harmony (m. 27). As B^b holds in the lowest voice, the highest voice descends to G[#], forming an augmented sixth interval in the outer voices. The inner voices flesh out the augmented sixth interval with Ger⁶ and It⁶ harmonies. The passage ends on a half cadence (HC) in D minor, the key of the movement.

The latter authors read a Fr⁶ chord on beat two of m. 28, viewing C[#] as a lower neighbor to D.

89

93

F#m: Ger⁶ (C# = B#) V₄

Example 9. Chopin, Mazurka 38 in F# minor, Op. 59, No. 3.

Example 9 reproduces a passage from a Chopin Mazurka. As does the Mozart, the Chopin begins with a series of major-minor seventh chords whose roots descend by perfect fifth: B-E-A-D. However, the Chopin passage introduces a notational twist. Despite its spelling as D-F#-A-C#, the D chord acts as Ger⁶ in F# minor, such that the notated C# functions as B#. The following cadential $\frac{5}{4}$ chord harmonizes the return of the work's opening motive and resolves to root-position tonic harmony in F# minor, the key of the entire piece. In summary, while the notation of each backcycle sonority in Example 8 reflects its function as a V⁷ or Ger⁶, the notation of the final backcycle sonority in Example 9 (D-F#-A-C#) does *not* reflect its function. Such discrepancies often arise in common-practice tonal music.

Let us return to the backcycle progression in Example 7. It may be put to several uses prior to enharmonic reinterpretation. After playing the progression in its entirety as a prolongation of V⁷ in C, the instructor may ask the student to backcycle to, say, an imperfect authentic cadence (IAC) in E $\flat$. In this case, the progression does not *prolong* V⁷ in C, but rather *progresses* to the key of E $\flat$.²³ Example 10a provides a straightforward solution.

²³ Laitz (2012a, 808) draws the important distinction between sequences that prolong a single harmony, versus sequences that progress from one harmony (or key) to another. See also Clendinning and Marvin (2011, 440).

Example 10 consists of six variations (a-f) of resolving the fourth chord in a backcycle progression. Each variation is shown in piano notation with treble and bass staves, and Roman numerals below the bass staff.

- a.** $A^b, D = \hat{4}, \hat{7}$. Roman numerals: $E^b: V^7 \quad I$.
- b.** $D, G\# = \hat{4}, \hat{7}$. Roman numerals: $A: It^6 \quad V^7 \quad I$.
- c.** $D, G\# = \hat{1}, \hat{4}$. Roman numerals: $D: It^6 \quad V \quad I$.
- d.** $A^b, D = \hat{1}, \hat{4}$. Roman numerals: $A^b: It^6 \quad V \quad I$.
- e.** $D, G\# = \hat{1}, \hat{4}$. Roman numerals: $D: Ger^6 \quad V^{\frac{9}{8}} \quad \frac{3}{2} \quad I$.
- f.** $A^b, D = \hat{1}, \hat{4}$. Roman numerals: $A^b: Ger^6 \quad V^{\frac{9}{8}} \quad \frac{3}{2} \quad I$.

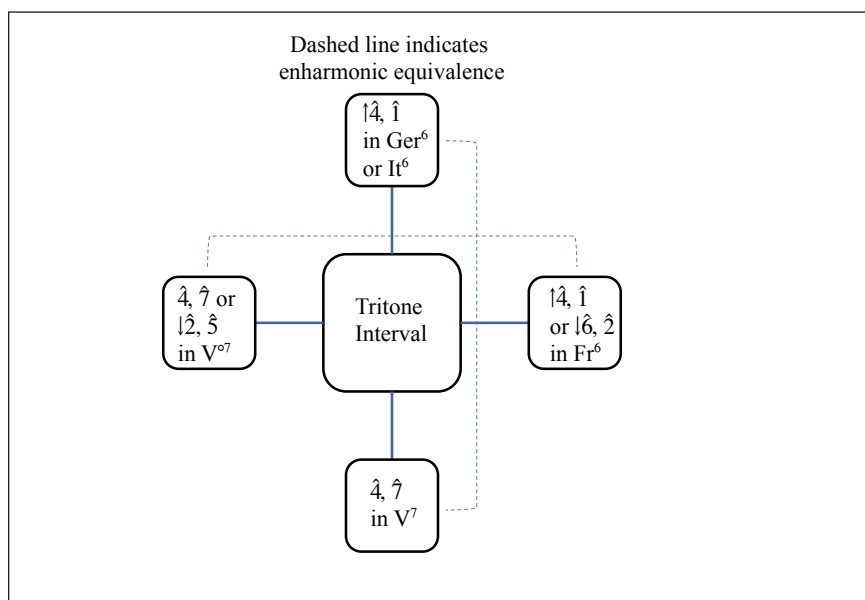
Example 10. Resolving the fourth chord in the backcycle progression.

After playing the first three chords as written, the student would treat the fourth chord as V^7 in E^b . In this case, the tritone in the fourth chord acts as $\hat{4}$ and $\hat{7}$ in E^b (spelled as A^b/D). By resolving the chordal seventh down by step, an IAC results.

A first enharmonic transformation will treat the fourth chord as V^7 in the tritone-related key of A. Example 10b offers an illustration. The chordal tritone will be respelled as $\hat{4}$ and $\hat{7}$ in A ($D/G\#$). The bass note B^b will be replaced by E. This time, the cadence will be perfect authentic (PAC) to resolve the leading tone in the soprano up by step.

Having resolved the D/G $\sharp$ or D/A $\flat$ tritone as part of two dominant seventh chords, we can proceed to resolving it as part of two It 6 or Ger 6 chords. In Example 10c, the fourth chord functions as It 6 in D. The tritone is spelled as D/G $\sharp$ to function as $\hat{1}$ and $\hat{4}$. Notice that Example 10c begins with a complete chord voicing; this permits smooth voice leading from FMm 7 to It 6 . In Example 10d, the tritone functions as $\hat{1}$ and $\hat{4}$ in A $\flat$, as part of an It 6 chord preparing a PAC in that key. Examples 10e and 10f treat the fourth chord as Ger 6 in D and A $\flat$ respectively, thereby exhausting the possibilities presented by the tritone network.

Example 11 expands the tritone network to accommodate the Fr 6 and V o7 chords in Laitz's "Brain Twister."²⁴



Example 11. Adding the Fr 6 and V o7 harmonies to the tritone network.

Whereas the Ger 6 , It 6 , and V 7 harmonies each contain one tritone, the Fr 6 and V o7 chords each contain two. For this reason, each tritone in Fr 6 can act as $\flat\hat{4}$ and $\hat{1}$, or as $\flat\hat{6}$ and $\hat{2}$. Examples 12a-d illustrate these resolutions for Fr 6 , using the fourth chord of the backcycle progression as the exit point.

²⁴ Laitz (2012a, 672-74) discusses the roles of Fr 6 and V o7 in a work by Scriabin.

Example 12 consists of eight short musical exercises (a-h) in 2/4 time, each showing a progression of three chords. The exercises are arranged in four rows of two. Each exercise is labeled with a letter (a-h) and a key signature/degree symbol. The chords are written in both treble and bass staves. Below each exercise, the chord names and their functions are listed.

- a. D, G# = $\hat{1}$, $\hat{4}$. Chords: D: Fr⁶, V, I.
- b. A $\flat$, D = $\hat{1}$, $\hat{4}$. Chords: A $\flat$: Fr⁶, V, I.
- c. D, A $\flat$ = $\hat{2}$, $\hat{6}$. Chords: C: Fr^{o3}, V, I.
- d. G $\sharp$, D = $\hat{2}$, $\hat{6}$. Chords: F $\sharp$: Fr^{o3}, V, I.
- e. D, G# = $\hat{4}$, $\hat{7}$. Chords: A: It⁶, V^{o7}, I.
- f. A $\flat$, D = $\hat{4}$, $\hat{7}$. Chords: E $\flat$: V^{o7}, I.
- g. A $\flat$, D = $\hat{1}\hat{2}$, $\hat{5}$. Chords: G: V^{o6}, I.
- h. E $\flat$, A $\flat$ = $\hat{1}\hat{2}$, $\hat{5}$. Chords: D $\flat$: V^{o6}, I.

Example 12. Resolving the fourth chord using Fr⁶ or V^{o7}.

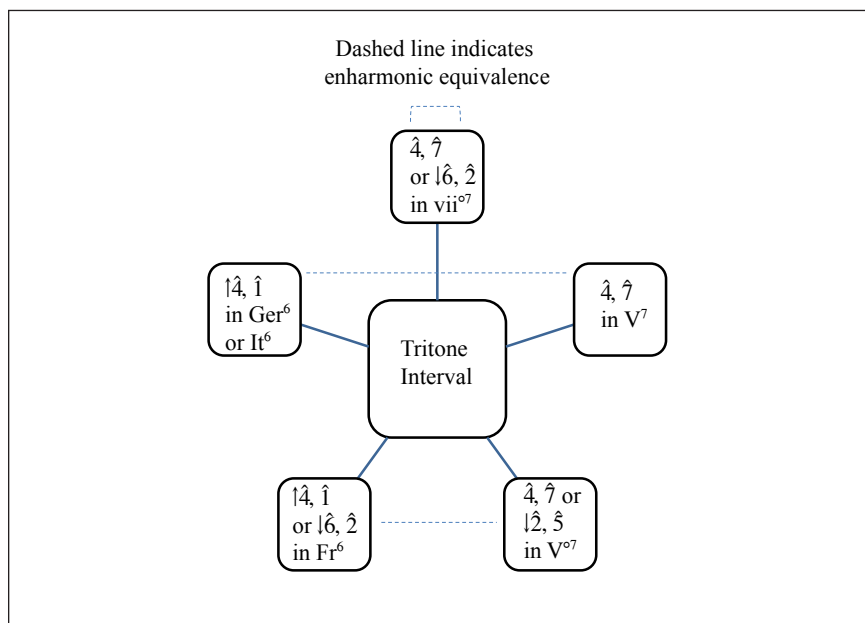
In Example 12a, the tritone D/G# acts as $\hat{1}$ and $\hat{4}$ in D major. In Example 12b, this tritone is spelled as A $\flat$ /D $\natural$ to form $\hat{1}$ and $\hat{4}$ in A $\flat$ major. Examples 12c and 12d treat the same tritone as $\hat{6}$ and $\hat{2}$ in C and F $\sharp$, respectively. Here, Fr^{o3} appears in place of Fr⁶ so that the D/A $\flat$ or D/G# tritone may remain fixed in the right hand.²⁵

Examples 12e-h illustrate resolutions for the V^{o7} chord. Each tritone in V^{o7} can act as $\hat{4}$ and $\hat{7}$ (as in the unaltered V⁷) or as $\hat{1}\hat{2}$ and $\hat{5}$. In Example 12e, the tritone D/G# acts as $\hat{4}$ and $\hat{7}$ in A major; in Example 12f, it is spelled as D/A $\flat$ to form $\hat{4}$ and $\hat{7}$ in E $\flat$ major. Examples 12g and 12h treat the same tritone as $\hat{1}\hat{2}$ and $\hat{5}$ in G and D $\flat$, respectively. Similar to Examples 12c and 12d, V^{o6} appears in

²⁵ Additional keyboard exercises involving “inverted” augmented sixth chords appear in Brings et al (1979, 111).

place of V^{o7} so the $D/A\flat$ or $E\flat/A\flat$ tritone may remain fixed in the right hand. This wraps up the possibilities presented thus far for resolving the fourth chord, and indeed any chord, in the backcycle progression: as V^7 , Ger^6 , or It^6 (following the first tritone network in Example 5), and Fr^6 , Fr^{o3} , V^{o7} , or V^{o5} (following the second tritone network in Example 11).

Example 13 presents a third tritone network that accommodates enharmonic modulations using the diminished seventh chord, the last sonority in Laitz's "Brain Twister."



Example 13. Adding vii^{o7} to the tritone network.

Like the V^{o7} and Fr^6 chords, the diminished seventh chord contains two tritones. Each tritone can function as $\hat{4}$ and $\hat{7}$ in two tritone-related keys (as in the unaltered V^7 chord) or as $\hat{2}$ and $\flat\hat{6}$ (as in the Fr^6 chord), also in two tritone-related keys. Example 14 illustrates these scale degree functions, using the fourth chord of the backcycle progression as the exit point.

a. $A\flat, D = \hat{4}, \hat{7}$ $E\flat: vii^{\circ 6}_5 \quad I^6 \quad V^7 \quad I$

b. $D, G\# = \hat{4}, \hat{7}$ $A: vii^{\circ 6}_5 \quad I^6 \quad V \quad I$

c. $D, A\flat = \hat{2}, \hat{6}$ $C: vii^{\circ 4}_3 \quad I^6 \quad V \quad I$

d. $G\#, D = \hat{2}, \hat{6}$ $F\#: vii^{\circ 7}_7 \quad I \quad V \quad I$

Example 14. Resolving the fourth chord using $vii^{\circ 7}$ and its inversions.

As in Examples 6, 10, and 12 previously, I will continue to exit the backcycle progression on the fourth chord. Examples 14a and 14b treat the $D/A\flat$ or $D/G\#$ tritone as $\hat{4}$ and $\hat{7}$ in $E\flat$ and A , respectively. Examples 14c and 14d treat this tritone as $\hat{2}$ and $\hat{6}$ in C and $F\#$ respectively. It is important to point out that there are multiple possibilities for the bass note of each diminished seventh chord. For example, in Example 14a, the bass note could also be $C\flat$, forming $vii^{\circ 4}_2$. The choice of $vii^{\circ 6}_5$ instead of $vii^{\circ 4}_2$ is based on two factors: the bass note F is maintained from beat one to beat two and, generally speaking, $vii^{\circ 4}_2$ is less common than $vii^{\circ 6}_5$.²⁶ These factors also guide the choice of bass notes and chordal inversions in Examples 14b, c, and d.²⁷

THE BACKCYCLE PROGRESSION WITH CHROMATIC BASS LINE

When the major-minor seventh chords in the backcycle progression are inverted so as to alternate between $\frac{6}{4}$ and $\frac{4}{3}$ positions (beginning on either), a descending chromatic bass line results,

²⁶ Aldwell, Schachter, and Cadwallader (2011, 427); Roig-Francoli (2011, 359).

²⁷ The diminished seventh chords in Examples 14 and 15 may form a bridge to other versions of the omnibus that include diminished seventh chords. See Aldwell, Schachter, and Cadwallader (2011, 631), Gauldin 2004c, and Telesco 1998.

recalling the omnibus chromatic bass line in Example 1. To illustrate, Example 15 provides a passage from Beethoven's Piano Sonata, Op. 27, no. 2 (Trio).²⁸

44

pp

f

$\frac{5}{4}$ $\frac{4}{2}$ $\frac{5}{4}$ $\frac{4}{2}$ D $\flat$: IV⁶

Example 15. Beethoven, Piano Sonata, Op. 27, No. 2 (Trio).

The excerpt opens the B section of the Trio. Beginning in the first full measure, the right hand presents the chordal roots of the sequence: B $\flat$ -E $\flat$ -A $\flat$ -D $\flat$. The parallel tritones in the left hand recall those in the Example 7 root-position backcycle progression, as do the descending fifth/ascending fourth leaps in the right hand. In fact, by switching the hands of the Example 7 progression and changing the contour of the bass line from “down-up-down-up” to “up-down-up-down,” the Beethoven passage results (to within key transposition). The closing G $\flat$ $\frac{6}{4}$ chord acts as IV⁶ in the overall tonic of D $\flat$, and leads directly to an IAC in that key.

Example 16 presents two model progressions for backcycling with a chromatic bass line.

²⁸ Laitz (2012a, 364) discusses the passage in Example 15. Additional examples of the backcycle progression with chromatic bass line appear in Roig-Francolí (2011, 433) and Aldwell, Schachter, and Cadwallader (2011, 484).



C: $V^{\frac{1}{2}} \quad \frac{4}{2} \quad \frac{4}{2} \quad \frac{4}{2} \dots$... $V^{\frac{1}{2}} \quad I^6$



C: $V^{\frac{1}{2}} \quad \frac{4}{2} \quad \frac{4}{2} \quad \frac{4}{2} \dots$... $V^{\frac{1}{2}} \quad I$

Example 16. Backcycling with chromatic bassline.

The first progression begins on V_2^4 in C, chromatically descends a complete octave by the downbeat of the final measure, and resolves to I^6 . The outer voices move in parallel tritones, forming the linear intervallic pattern +4, °5. The second progression begins on V_5^6 in C and works similarly, resolving to a root-position I chord. Here, the outer voices form the pattern °5, +4.

The chordal inversions and opportunities for enharmonic reinterpretation in Example 16 open up new possibilities for resolving a given chord in the backcycle progression. To organize these options, Example 17 provides a table arranged by tritone network.

N.B.: If the resolution to I is abrupt, append a V-I or IV-V-I cadence.

Tritone Scale Degrees	Scale Degree In Bass	Progression	Comment
Tritone Network 1 (Example 5)			
$\hat{4}, \hat{7}$	$\hat{5}$	$V^7 - I$	Cf. Examples 6 and 10
$\hat{4}, \hat{7}$	$\hat{7}$	$V^{\flat}_5 - I$	Cf. Example 16
$\hat{4}, \hat{7}$	$\hat{4}$	$V^{\flat}_2 - I^6$	Cf. Example 16
$\hat{1}\hat{4}, \hat{1}$	$\hat{1}\hat{6}$	$Ger^6 - V^{\flat}_{4-3} - I$	Cf. Examples 6 and 10
$\hat{1}\hat{4}, \hat{1}$	$\hat{1}\hat{6}$	$It^6 - V - I$	Cf. Example 10
$\hat{1}\hat{4}, \hat{1}$	$\hat{1}$	$CT\ Ger^6 - I$	Enharmonic respelling of $V^{\flat}_5$
$\hat{1}\hat{4}, \hat{1}$	$\hat{1}$	$CT\ It^6 - I$	Enharmonic respelling of $V^{\flat}_5$
$\hat{1}\hat{4}, \hat{1}$	$\hat{1}\hat{4}$	$Ger^{\circ 3} - V - I$	Enharmonic respelling of $V^{\flat}_2$
$\hat{1}\hat{4}, \hat{1}$	$\hat{1}\hat{4}$	$It^{\circ 3} - V - I$	Enharmonic respelling of $V^{\flat}_2$
Tritone Network 2 (Example 11)			
$\hat{4}, \hat{7}$ or $\hat{1}\hat{2}, \hat{5}$	$\hat{5}$	$V^{\circ 7} - I$	Cf. Example 12
$\hat{4}, \hat{7}$ or $\hat{1}\hat{2}, \hat{5}$	$\hat{1}\hat{2}$	$V^{\circ 3}_4 - I$	Enharmonic respelling of $V^{\circ 7}$
$\hat{4}, \hat{7}$ or $\hat{1}\hat{2}, \hat{5}$	$\hat{7}$	$V^{\circ 6}_5 - I$	Cf. Example 12
$\hat{4}, \hat{7}$ or $\hat{1}\hat{2}, \hat{5}$	$\hat{4}$	$V^{\circ 4}_2 - I^6$	Enharmonic respelling of $V^{\circ 6}_5$
$\hat{1}\hat{4}, \hat{1}$ or $\hat{1}\hat{6}, \hat{2}$	$\hat{1}\hat{6}$	$Fr^6 - V - I$	Enharmonic respelling of $V^{\circ 7}$
$\hat{1}\hat{4}, \hat{1}$ or $\hat{1}\hat{6}, \hat{2}$	$\hat{2}$	Fr^6 with $\hat{2}$ in bass - V - I	Enharmonic respelling of $V^{\circ 3}_4$; root-position equivalent of Fr^6 ; predominant function as $V^{\circ 7}/V$. (Aldwell, Schachter, and Cadwallader 2011, 579)
$\hat{1}\hat{4}, \hat{1}$ or $\hat{1}\hat{6}, \hat{2}$	$\hat{1}$	$CT\ Fr^6 - I$	Enharmonic respelling of $V^{\circ 6}_5$
$\hat{1}\hat{4}, \hat{1}$ or $\hat{1}\hat{6}, \hat{2}$	$\hat{1}\hat{4}$	$Fr^{\circ 3} - V - I$	Enharmonic respelling of $V^{\circ 4}_2$
Tritone Network 3 (Example 13)			
$\hat{4}, \hat{7}$ or $\hat{2}, \hat{1}\hat{6}$	$\hat{7}$	$vii^{\circ 7} - I$	Cf. Example 14
$\hat{4}, \hat{7}$ or $\hat{2}, \hat{1}\hat{6}$	$\hat{2}$	$vii^{\circ 6}_5 - I^6$	Cf. Example 14
$\hat{4}, \hat{7}$ or $\hat{2}, \hat{1}\hat{6}$	$\hat{4}$	$vii^{\circ 4}_3 - I^6$	Cf. Example 14
$\hat{4}, \hat{7}$ or $\hat{2}, \hat{1}\hat{6}$	$\hat{1}\hat{6}$	$vii^{\circ 4}_2 - V^{\flat}_{4-3} - I$	Cf. Example 14

Example 17. Resolving any chord in any tritone network.

The leftmost column lists the tritone scale degrees under discussion. The next column indicates the scale degree in the bass. A sample harmonic progression then follows. The rightmost column lists the examples that illustrate the progression and provides commentary on select progressions. Specifically, in tritone network 1, V_3^6 may be enharmonically reinterpreted as a common-tone (CT) Ger^6 with $\hat{1}$ in the bass. Likewise, V_2^4 may be enharmonically reinterpreted as a $Ger^{\circ 3}$ chord with $\hat{4}$ in the bass. Omitting $\hat{3}$ from CT Ger^6 creates CT It^6 , and omitting $\hat{3}$ from $Ger^{\circ 3}$ creates $It^{\circ 3}$. In tritone network 2, $V_7^{\circ 7}$ may be reinterpreted as $V_3^{\circ 4}$ or Fr^6 ; V_5^6 may be enharmonically reinterpreted as $V_2^{\circ 4}$ or CT Fr^6 with $\hat{1}$ in the bass; $V_4^{\circ 4}$ may be reinterpreted as Fr^6 with $\hat{2}$ in the bass; and $V_2^{\circ 4}$ may be reinterpreted as $Fr^{\circ 3}$. In all cases, a V-I or IV-V-I cadence may be appended to the listed progression if an immediate resolution to I sounds abrupt.

TWO SUMMARY EXAMPLES

Two passages from Chopin Mazurkas will serve to summarize two important features of the backcycle progression: enharmonic transformation between major-minor seventh and augmented sixth sonorities, and tritone substitution. Examples 18 and 19 reproduce the passages.

32 *pp* D^7 G^7 C^7 F^7

36 B^b7 E^b7 D^7 $C/F\sharp$ not $C/G\flat$ F/B not $F/C\sharp$

$Fm:Ger^6$ *Ped.*
(not Mm^7) V_4° *

Example 18. Chopin, Mazurka 49 in F minor, Op. posth. 68, No. 4.

Example 18 presents an eight-measure phrase that alternates between strong and weak measures; the closing cadential $\frac{4}{4}$ chord prompts a reprise of the opening material in F minor, the key of the entire work. Annotations on the example indicate a portion of the backcycle progression projecting the roots D-G-C-F-B $\flat$ -E $\flat$. The sequence breaks in m. 38, where D 7 appears in place of A $\flat^7$; the chordal tritone C/F $\sharp$ thus replace C/G $\flat$. This tritone substitution permits a stepwise chromatic bass descent from E $\flat$ to C (mm. 37-40). The descent prepares the return of the tonic key by projecting $\hat{7} - \hat{6} - \hat{5}$ in F minor. During the descent, a second enharmonic transformation takes place in which D $\flat$ supports Ger 6 instead of V 7 ; the chordal tritone F/B $\flat$ thus replaces F/C $\flat$. The Ger 6 also creates momentum toward F minor, which the subsequent cadential $\frac{4}{4}$ intensifies. An intricate and beautiful series of suspensions and half-diminished seventh chords breaks up the parallel motion from D 7 to B $\flat^7$, and from E $\flat^7$ to D 7 to the Ger 6 .²⁹

* indicates tritone substitution

128

C $\sharp$ m: V 7

131

D 7 *D $\sharp^7$ C 7 *B 7

C $\sharp$ m: ii $^{\circ 7}$

Example 19. Chopin, Mazurka 21 in C $\sharp$ minor, Op. 30, No. 4.

Example 19 presents the second passage. In terms of phrase rhythm, m. 128 is hypermetrically weak; m. 130 begins a four-bar

²⁹ While half-diminished seventh chords contain a tritone, they do not typically undergo enharmonic transformations in common-practice music. For this reason, I do not address them in this paper. Cohn (2012, 160-61) and Tymoczko (2011, 284-87) study the interaction of major-minor and half-diminished seventh chords in the Example 18 excerpt.

unit that alternates between strong and weak beats, and m. 133 is hypermetrically strong. Harmonically, the excerpt begins on V⁷ in C# minor, the tonic of the piece. A chromatic bass line descends from $\hat{5}$ to $\downarrow\hat{7}$. Starting on $\hat{4}$ (F#), a descending fifths sequence harmonizes the descent, with every other chord replaced by its tritone substitute. On the example, asterisks indicate the tritone substitutions. The resulting parallel voice leading is striking and ceases upon completion of the sequence, where the appearance of ii⁷ in the tonic key signals a return to functional harmony and prepares the conclusion of the piece.

THE BACKCYCLE PROGRESSION AS BRIDGE TO AN UNDERGRADUATE POST-TONAL THEORY COURSE

Like the omnibus progression, the backcycle progression exhibits properties that are covered in several undergraduate textbooks on post-tonal theory. As such, the backcycle progression may act as a bridge from the final semester of tonal harmony to a course on post-tonal theory. In what follows, I outline specific features of the backcycle progression that lay the groundwork for the study of post-tonal music.

The importance of presenting post-tonal theory as an extension of tonal theory, rather than something completely new, cannot be overstated. This stance finds support in Michael R. Rogers's book *Teaching Approaches in Music Theory*, where Rogers writes, "Good theory teaching—not just in harmony, but in all phases—constantly pursues opportunities for presenting one topic as an offshoot, variant, or relative of another."³⁰ Ken Bain voices similar sentiments in his book *What the Best College Teachers Do*: "When we encounter new material, we try to comprehend it in terms of something we think we already know. We use our existing mental models to shape the sensory inputs we receive...[W]e all use existing constructions to understand any new sensory input."³¹

The first such topic is pitch-class integers (mod 12).³² Please refer back to the keyboard diagrams in Examples 3-4. As stated earlier, the

³⁰ Rogers (2004, 57).

³¹ Bain (2004, 26-27).

³² Clendinning and Marvin (2011, 706-8), Henry and Rogers (2005, 461-62), Kostka, Payne, and Almén (2013, 495), Pearsall (2012, 43-46), Roig-Francolí (2008, 70), Straus (2005, 4-5), Williams (1997, 31).

purpose of such diagrams is to lead students toward a conception of note names that encourages enharmonically-equivalent spellings of each note. The descriptor “tritone” accomplishes this task, as do scale degree numbers. It requires only a modest conceptual leap to rename the individual piano keys with pitch-class integers. Each C or B $\sharp$, regardless of octave, will be named zero; each C $\sharp$ or D $\flat$, regardless of octave, will be named one; and so forth, ending with each B or C $\flat$, which will be named eleven. In the context of post-tonal theory, where (broadly speaking) enharmonic equivalence holds, students now have a way to name notes that does not involve scale degrees or the tonal implications of, say, B versus C $\flat$. In the context of the backcycle progression, where (broadly speaking), enharmonic equivalence does *not* hold, students now have neutral descriptors for tritones, such as “zero, six,” or Mm⁷/Ger⁶ chords, such as “zero, four, seven, ten” that may be translated into scale degrees in specific keys.

Sensitized to the benefits of having a single numerical name for each note on the keyboard, students are well positioned to reconceive of intervals, and to begin the study of interval cycles, another set of topics common to undergraduate post-tonal textbooks.³³ The instructor may begin by pointing out the slight discrepancy that arises when one describes the omnibus as an “equal division of the octave by minor thirds” or the backcycle progression as an “equal division of the octave by perfect fifths.” The discrepancy, of course, is that it is impossible to equally divide the octave by any interval without enharmonic respelling.³⁴ As such, the omnibus progression in Example 1 substitutes an augmented second for a minor third on the downbeats of mm. 3 and 4 (from C $\sharp$ to B $\flat$), and the backcycle progression in Example 7 substitutes a diminished sixth for a perfect fifth in m. 4 (from D $\flat$ to F $\sharp$). From the tactile perspective of the pianist, however, the bass note on each downbeat of Example 1 is “three keys away” (counting white and black keys). Likewise, in Example 7, adjacent bass notes *within* measures are “seven keys away,” while

³³ Intervals are covered in Clendinning and Marvin (2011, 720-24), Henry and Rogers (2005, 456-60), Kostka (2006, 186), Pearsall (2012, 50-56), Roig-Francolí (2008, 71-73), Straus (2005, 6-12), and Williams (1997, 35-44). Interval cycles are covered in Pearsall (2012, 57), Roig-Francolí (2008, 37-41), Straus (2005, 154-57), and Williams (1997, 200-203).

³⁴ Aldwell, Schachter, and Cadwallader (2011, 631-33), Cohn (2012, 9, 11), Gauldin (2004a, 737), Laitz (2012a, 648-53), Roig-Francolí (2011, 724-25).

the pairs of bass notes on beat two in one measure and beat one in the following measure are “five keys away.” From this perspective, one may rename the omnibus progression as an “interval three cycle” and the backcycle progression as an “interval seven or interval five cycle.” The concept may be further developed upon noticing that each voice in the omnibus progression moves by “interval one,” as do the upper voices of the backcycle progression in Example 7. The identification and naming of the remaining interval two, four, and six cycles is then straightforward; students will recognize these cycles by their familiar names: “whole-tone scale,” “augmented triad,” and “tritone.”

To illustrate all possible interval cycles using the backcycle progression, the student should direct attention to pairs of chords at increasing temporal distances. In Example 7, adjacent chords form an interval 5/7 cycle, since the root of each chord is a perfect fifth below (or perfect fourth above) the immediately preceding chord. Similarly, chords that occur two beats apart form an interval 2/10 cycle, since the root of each chord is a major second below (or minor seventh above) the immediately preceding chord. In like fashion, chords that occur three beats apart form an interval 3/9 cycle; chords that occur four beats apart form an interval 4/8 cycle; chords that occur five beats apart form an interval 1/11 cycle; and chords that occur six beats apart form interval 6 cycles. To play these cycles, the student may silently depress the piano keys on the chords that lie outside the cycle.

A final feature of the backcycle progression that looks ahead to post-tonal theory stems from the fact that dominant seventh and diminished seventh chords share three tones, with the remaining tones separated by one semitone. For example, CMm⁷ and C^{o7} share the common tones {E, G, B $\flat$ }, while the remaining tones C and C $\sharp$ lie a semitone apart. Several undergraduate tonal theory textbooks stress this point, noting the similar behavior of V⁷ and vii^{o7} (and their inversions), as well as the opportunities for modulations to distant keys that arise through this relation.³⁵ In the context of the backcycle progression, a semitonal alteration of V⁷ to vii^{o7} grants access to additional resolutions upon exiting the sequence, as illustrated by Example 14 in connection with tritone network 3. The Brahms passage in Example 20 illustrates this semitonal relation as well.

³⁵ Gauldin (2004a, 726), Laitz (2012a, 172), Roig-Francolí (2011, 359). See also Cohn (2012, 150-55).

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triangular noteheads:
G $\flat$ /G $\sharp$ semitonal relation

B 7 E 7 A 7 D 7 G 7

AM: I Am: vii $^{\circ 5}$

Example 20. Brahms, Symphony 3, I.

The excerpt begins in A major and ends on vii $^{\circ 5}$ in A minor, the closing key of the exposition in this sonata form movement. The passage backcycles through B-E-A-D-G $\flat$, with each root harmonized as a Mm 7 chord. The concluding GMm 7 and G $\sharp^{\circ 7}$ chords share three common tones (B, D, F $\flat$) and the remaining tones lie one semitone apart (G $\flat$, G $\sharp$). On the example, triangular noteheads indicate the semitonal relation. In sum, rather than continuing to backcycle past B-E-A-D-G $\flat$, Brahms exploits the semitonal relation shared by GMm 7 and G $\sharp^{\circ 7}$ to cadence in A minor more quickly.

Example 21 illustrates how the semitonal relation between Mm 7 and $^{\circ 7}$ chords extends to the other three types of seventh chords in tonal music as well.³⁶

$^{\circ 7}$ Mm 7 mm 7 $^{\circ 7}$ MM 7

Example 21. Semitonal relations among seventh chords.

Each adjacent pair of chords shares three common tones, while the remaining tones lie one semitone apart. Other orderings of the five types of seventh chords will create similar progressions, such as CMM 7 - CMm 7 - Cmm 7 - C $^{\circ 7}$ - C $^{\circ 7}$, or Cmm 7 - C $^{\circ 7}$ - BMM 7 - BMm 7 - C $^{\circ 7}$.

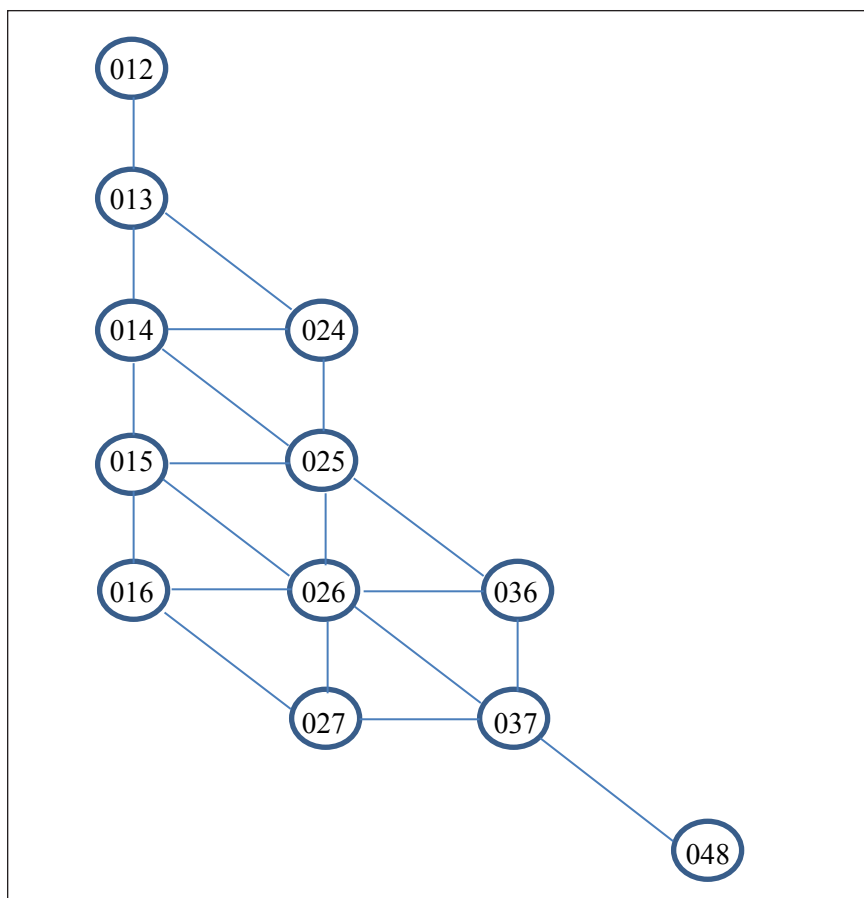
³⁶ Semitonal relations among four-note set classes are studied in Cohn 2003, Cohn (2012, 149-68), Straus (2003, 337-40), and Tymoczko (2011, 93-106).

Generalizations of this property underlie three topics covered in undergraduate textbooks on post-tonal theory. The first topic is parsimonious voice leading among major and minor triads, covered in texts by Roig-Francolí, Pearsall, and Straus.³⁷ The voice leading between two triads is parsimonious if they share two common tones and the remaining tones lie one (or two) semitones apart. Parsimonious voice leading, and the triadic transformations associated with it, provides a way to analyze music that uses major and minor triads outside the context of functional harmony. The second topic is atonal pitch space, covered in Straus's *Introduction to Post-Tonal Theory*.³⁸ Straus introduces this topic with the "voice-leading space for trichords" reproduced in Example 22.³⁹

³⁷ Roig-Francolí (2011, 729-37), Pearsall (2011, 10-12), Straus (2005, 158-66). A relevant non-textbook source is Engebretson and Broman 2007.

³⁸ Straus (2005, 110-12).

³⁹ Straus (2005, 111). Reproduced with permission of author. Straus includes Forte numbers for each trichord, which I have omitted. Similar diagrams appear in Straus (2003, 337) and Tymoczko (2011, 85-92).



Example 22. Reproduction of Straus, “Voice-leading space for trichords.”

The diagram displays the twelve trichordal set classes. Lines connect trichords that share two common tones and whose remaining tones lie one semitone apart. For example, 012 and 013 share two common tones (0 and 1), while the remaining tones differ by one semitone (2 and 3). In essence, the diagram extends the principle of parsimonious voice leading among major and minor triads to *all* three-note set classes.

Straus’s presentation of “transformational voice leading” in *Introduction to Post-Tonal Theory* extends the principle yet further. In the parlance of transformational voice leading, the semitonal relation between $C^{\circ 7}$ and BMm^7 is a “fuzzy- T_0 relation with an offset of one semitone.”⁴⁰ “Fuzzy- T_0 relation” indicates that $C^{\circ 7}$ and BMm^7 *almost* relate by T_0 – they share three common tones out of a possible four.

⁴⁰ Straus (2005, 108-9).

The “offset” number indicates the distance from an exact T_0 relation, as measured in semitones. Straus employs this methodology in the analysis of non-tonal excerpts from compositions by Webern and Sessions. In that setting, the approach is not limited to four-note sets such as seventh chords, and the offset number need not be one. However, the lower the offset number, the tighter the relation between two sets. Like parsimonious voice leading among triads and atonal pitch space, transformational voice leading places a premium on the coherence provided by common-tone retention and semitonal voice leading.

CONCLUSION

The backcycle progression equips the student to gain mastery of enharmonic equivalence, enharmonic modulation, and equal divisions of the octave at the keyboard. By seizing on a seldom-discussed aspect of the enharmonic equivalence between V^7 and Ger^6 involving the spelling of the chord’s tritone, the progression deepens the student’s understanding and command of enharmonic transformation. Tritone networks organize the myriad possibilities for transformation in a gradual, methodical framework. The progression and its associated networks thus synthesize several important topics in the undergraduate study of chromatic harmony. In addition, the backcycle progression grants analytic access to rich and challenging repertoire by Chopin and Brahms, forges connections with the study of jazz harmony via tritone substitution, and lays the groundwork for the study of post-tonal theory. An important avenue for future research is the pedagogical treatment of additional keyboard progressions that actively engage the student in the process of resolving a given chord through both cognitive and tactile modalities.

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Back to School: A Report on the Institute for Music Theory Pedagogy

BY JOHN CHECK

The inaugural Institute for Music Theory Pedagogy was held June 23–27, 2014 on the campus of the Eastman School of Music in Rochester, NY. The brainchild of Steven Laitz, the Institute drew fifty participants from twenty-two states along with Canada, Mexico, and Taiwan. These participants were affiliated with a variety of institutions: liberal arts colleges and regional comprehensive state universities, community colleges and major research institutions.

One of the main goals of the Institute was to begin to accord serious emphasis to the role of theory and aural skills *teaching*. In a time when money is tight and music programs must fight for every dollar they receive, a renewed commitment to teaching is essential. Exacerbating the problem of funding is that, more so than ever before, students enter college with limited preparation in the elements of music. Relatively few have studied piano, fewer music theory. Unsurprisingly, for many of these students, theory and aural skills classes become insuperable barriers: failing grades in these classes are often to blame (rightly or wrongly) for a student's decision to drop a major in music. (The Google search "Is music theory hard in college" leads to a distressing number of results.) No music program can long survive without a robust enrollment; this is why administrators concern themselves with student retention. A key to retention is strong teaching. Retention goes hand-in-hand with student success. And those programs that succeed in graduating students stand a better chance of maintaining their funding or, ideally, of having it increased.

If more and more music students enter college with limited understanding of the fundamentals, is it any wonder many of them fail to see the connection between analysis and performance? Is it any wonder they come to doubt the usefulness of their study of theory and aural skills? A second goal of the Institute was to equip teachers with an appreciation of the relevance of these subjects, to remind them of the implications arising from the close study of musical scores. In connection to this, I am reminded of the premises that guided Laitz in his textbook, *The Complete Musician*:

First, I believe students can learn to hear, comprehend, and model the structure and syntax of the music they love. Second, I hold the opinion that the same simple processes underlie all tonal music and that they are fleshed out in wondrously diverse ways. Third, I believe that students will rise to the challenge when all of their senses are stimulated and they are immersed in instrumental and vocal music from the tonal repertoire.

What I take from these premises is roughly this: Let students think that their work in theory or aural skills takes place in a vacuum, and you can be sure your efforts will be met with, at best, indifference.

A third goal of the Institute centered on the plight of non-specialists who, in order to fill out their teaching load, are assigned a section or two of theory or aural skills. Be they cellists or flutists, conductors or bassoonists, for them it is impractical to devote the time and attention necessary to acquire a specialist's command of music theory. All the same, they, too, must proceed with an eye toward retention and student success; they, too, need to become strong teachers, doubly so if they happen to be adjuncts: lacking the protection of tenure, they must continue to produce—and this means their students must succeed—otherwise they might find themselves unemployed. Then, too, this issue ought to be considered from the standpoint of the students: many of them will have standardized tests to pass if they are to achieve certification as a music educator. Should they go on to graduate school, they will most likely have an entrance exam to take: the better they know their theory and ear training, the more likely it is that they can avoid taking a remedial class. Whoever they learn their music theory from, it behooves them to learn it as well and as thoroughly as possible.

The underlying challenge—for Laitz the only challenge—is to *teach* as well as possible. To this end, he engaged an impressive faculty, all of them associated with Eastman, most as members of the theory department: William Marvin, Elizabeth West Marvin, Ted Goldman, John Covach, and Seth Monahan; Brian Alegant, who teaches at Oberlin, is an alumnus of Eastman, where he received a PhD. They were invited to participate because of their strong and shared commitment to the pedagogy of music theory and aural skills. Bill Marvin, a contributor to the *Journal of Music*

Theory Pedagogy, oversees the training of teaching assistants in the aural skills program at Eastman. Another contributor to the *JMTP*, Betsy Marvin is a co-author of *The Musician's Guide* series of textbooks. Goldman, an accomplished composer, pursues research interests in aural skills pedagogy and music perception. Covach, who works mainly in the discipline of popular music, has published, among other books, *What's That Sound? An Introduction to Rock Music*. Monahan, the author of a forthcoming book, *Mahler's Symphonic Sonatas* (Oxford University Press), has also contributed to *JMTP*. Alegant has written a number of articles on pedagogy and analysis, again several of which appear in the *JMTP*. Laitz, author of *The Complete Musician: An Integrated Approach to Theory, Analysis, and Listening*, Director of the Gail Boyd de Stwolinski Center for Music Theory Pedagogy at the University of Oklahoma, Executive Editor of *Music Theory Pedagogy Online*, is the outgoing editor of this journal. (Elizabeth Sayrs, of Ohio University, will expertly assume the role of Editor in Chief with Volume 29).

The Institute was structured so as to combine large-group lectures with small-group "breakout" sessions. The former, held on Monday and Tuesday and open to all participants, were each an hour long, with four lectures in the morning and three in the afternoon. Bill Marvin opened Monday's session with a lecture entitled "Developing Your Aural Musicianship Program," which took up broad ideas pertaining to curriculum and specific matters pertaining to music reading, dictation, singing, and keyboard harmonization. Betsy Marvin's presentation, "Developing an Undergraduate Core Curriculum," examined the many variables impinging on course design and individual class content. In "Technology in the Classroom: No Experience Required," Goldman delivered a fast-paced talk dealing with classroom technologies; the ease with which he maneuvered about the lecture room, tablet computer in hand, completely in control, was impressive. In "Pop Music in the Theory Classroom," Covach examined the challenges and opportunities of adding pop music to one's repository of teaching examples. Monahan's lecture, "Teaching Whole Pieces: Balancing Details with the Big Picture," dealt with the hardy problem of perspective: how to integrate minute observations into a more nearly comprehensive appreciation of an entire work or movement. In a talk entitled "Bringing it all Together: Model Composition," Laitz demonstrated his approach to the topic by leading volunteer participants at the chalkboard in front of the

lecture hall through the process of composing a short binary-form piece. Alegant, in "Thoughts on Designing a Post-tonal Aural Skills Course," provided insights into administering a demanding aural skills class, one emphasizing mastery and musicality, one in which students can feel an empowering sense of ownership.

In the interest of variety, the lecturers were largely scheduled at different times each day, with those who spoke in the morning Monday slated for the afternoon Tuesday. Betsy Marvin was first to speak; among other points, her lecture, "Building the Foundation: Teaching Fundamentals," highlighted the importance of contextual teaching, which calls for the use of actual compositions—of sounding music—for the conveyance of rudimentary concepts. Monahan spoke next; his presentation, "Making it Relevant: New Approaches to Species Counterpoint," sought to bring to life an abstract and remote-seeming subject, chiefly by showing the chordal implications of intervals when working on what he calls harmonic species counterpoint. In "Linking Aural Skills Teaching to Perception and Performance," Goldman outlined ways that students could get an A, yet have accidentally (or intentionally) bypassed acquiring the intended skill. He demonstrated ways to restructure typical aural skills activities that remedy this problem. Laitz's talk, "Tonal Improvisation in the Undergraduate Curriculum," concerned itself with the elaboration of simple musical structures, be they bass lines, figured basses, or outer-voice contrapuntal "skeletons"; elaboration and reduction—two activities that are often thought of as near opposites—were shown instead to be related symbiotically. Brian Alegant's "Intersections Between Analysis and Performance" addressed the way analytical observations—made at various level of consciousness—inform and influence a performer's interpretive practice. The piece under consideration was the Prelude from Bach's E-flat cello suite; among the interpretations were those of Yo-Yo Ma, Mischa Maisky, and Paolo Pandolfo. Bill Marvin, in "Linear Analysis in Core Undergraduate Training," made the case that Schenkerian analysis need not be incorporated into the core theory sequence, even though such a sequence, carefully constructed, provides an essential foundation for the study of this advanced subject. John Covach, in "MOOC Magic? Perils and Opportunities in Teaching Music Online," delivered a stimulating presentation examining the pros and cons of online education, a presentation supplemented by data that helped convey a picture of the kind of student who benefits most from this mode of instruction.

Unlike the lecture format of the first two days of the Institute, Wednesday through Friday featured small-group “breakout” sessions. The participants were divided into four groups of approximately a dozen each, with the individual groups attending up to three two-hour-long sessions per day. The relatively small size of each group allowed for a goodly amount of active participation and individualized attention. At Betsy Marvin’s breakout, participants were given the chance to make a five-minute presentation dealing with some topic of the fundamentals of music, one stipulation being that the topic be framed in relation to an actual piece of music. Each presentation was followed by a discussion of its strengths and weaknesses. At the session led by Bill Marvin, participants were assigned two sight-singing tasks, one in which they were put in the role of an instructor, the other in the role of a student. Again valuable feedback was given. Laitz’s breakout likewise dealt with classroom learning: given seven minutes, participants chose one of eleven possible activities to present, nearly all of them involving either improvisation or model composition. John Covach’s breakout centered on the use of rock music in the theory classroom; he brought home his points by demonstrating chords and riffs on his guitar. Goldman’s breakout focused on getting participants set up on their own portable electronic devices, mastering the basics so they could begin working with scores interactively in the classroom by the time they left. Monahan’s session concentrated on what he calls “piece-centered teaching” and used Schumann’s setting of Goethe’s “Heiss mich nicht reden” as a test case; he encouraged participants to explore ways they might make such a piece—one beyond the ken of all but the sharpest of beginning students—yield profitable analytical results.

Lest one assume that every moment of the Institute was occupied with music theory and its pedagogy, it ought to be emphasized that opportunities for socializing were abundant. The first of these came Sunday night, in the form of a reception in the atrium of the Hyatt Regency Rochester; it was then that Laitz welcomed the participants and introduced the members of the faculty. Throughout the week, faculty members and small groups of participants would often meet for lunch or sometimes supper. It was during these casual meetings that one picked up unsuspected bits of information about faculty members—about which one had a predilection for wearing garish ties or which one had a weakness for the stylings of sports-talk personality Jim Rome. Evening receptions were hosted off-campus

by Oxford University Press and W. W. Norton. Tours of the Sibley Music Library were given Wednesday through Friday. Thursday night a banquet for the participants (and significant others) was held at Veneto, a local favorite for pasta and wood-fired pizza and hosted by the Boston-based software company Noteflight. All during the week music resounded from the Xerox Rochester International Jazz Fest, at which over three hundred concerts were given in twenty venues throughout the city's East End.

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Participants were overwhelmingly positive in their evaluations of the Institute. The following comments, submitted anonymously, are representative:

- "Relevant and challenging topics, top notch faculty. This was the most intensive learning experience I've had since graduate school and it was great to be challenged."
- "...it was a remarkable experience that has provided me with countless new teaching methods, many new colleague friends, and a re-energized passion for teaching!"
- "I enjoyed the workshops, especially the ones that emphasized participants actually teaching. These skills are immediately applicable even to teachers and TAs that might not be in position to influence curriculum design...."
- "The variety of topics was excellent—many issues in current pedagogical practice were deeply explored. The practical focus of each breakout session was invaluable and provided opportunities to learn, extend and develop techniques. The chosen repertoire was very relevant and the gamut of topics was wide and constructed with care."
- "I'm simply amazed that all of the faculty were so supportive and encouraging with the participants. They genuinely seemed to care about each individual and their unique situation. They took the time to work with us (often one-on-one)—to listen to our concerns, diagnose our problems, and give constructive criticism and practical advice."

Participants also offered suggestions for the future of the Institute: perhaps more attention could be given to post-tonal music or to instructional technologies; maybe a few more breaks could be worked into the schedule, so as to allow time to mentally process the wealth of information imparted in the sessions; possibly a session could be devoted to planning the overall

structure of a four-semester theory sequence.

The tight organization of the Institute came in for frequent praise: "This conference took time, effort, and financial investment on the part of the organizers," wrote one evaluator, "and all of it was greatly appreciated. Thanks to everyone who made this week a success." This sentiment was echoed by another participant, who perceptively noted, "I can't even begin to imagine how much time and work this must've taken."

I wanted to draw out a couple of my acquaintances for further impressions of the Institute. One of these was Philip Ewell, who teaches at Hunter College and the Graduate Center of City University of New York. When asked what he hoped to get from attending the Institute, he replied, "a better understanding of where things are in terms of current trends and best practices in the music theory and musicianship classrooms. Some of my favorite conversations at theory conferences," he continued, "are those that deal with what we do in the classroom. So it was really nice to have a week to think just of that, without other distractions." I posed the same question to Renee Waters, who teaches at Southwest Baptist University in Bolivar, MO. Her reply: "We are updating the theory curriculum at my institution, so I was particularly interested in current trends and goals for an undergraduate core curriculum (including texts and other course materials). I have to say, the Institute far exceeded my hopes and expectations."

Ewell wrote me that he found "the atmosphere was quite collegial and nurturing." He added that he thought it a particularly good idea that Laitz asked participants to bring their instruments to his breakout session: "it's worth the time and effort." Waters, meanwhile, wrote that "I have already applied many of the ideas and suggestions we discussed at the Institute, and I can report that my students have greatly benefited as a result of my experiences. Personally," she added, "this was one of the most helpful and enriching experiences of my teaching career. I offer my sincere thanks to the faculty for their role in providing us with such a relevant, incredibly well-organized experience."

The most direct way I have of indicating the quality and intensity of the Institute for Music Theory Pedagogy is by relating my experience at one of the breakout sessions, Brian Alegant's presentation on atonal aural skills. A dozen of us participants gathered in a small classroom on the seventh floor of the Eastman School of Music annex building. As a warm-up activity, clusters of

notes were played at the piano and we were asked to identify their scalar or modal basis. Next we worked on “The Cage” by Charles Ives. With Alegant either seated at the piano or standing and keeping us in time, we performed the melody, each of us singing one note before passing the phrase on to our neighbor in the oval in which we had assembled. Another challenge was provided by a section of “Pour Luigi” by Philippe Hurel. Here our task was to perform the rhythm—no easy feat. The goal, to borrow a word of Alegant’s, was nothing short of “ownership.” Still another activity centered on cross rhythms. Together, in small groups, and individually we were encouraged to perform—using our voices and tapping our hands—combinations of various metric divisions—threes against fours, fours against fives, and so on. The time flew by, and only afterward did I realize how much effort I had expended in trying to keep up.

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Writing in tribute to Will Strunk, the original author of *The Elements of Style*, E. B. White, his onetime student, observed, “It is encouraging to see how perfectly a book ... perpetuates and extends the spirit of a man.” The same sentiment applies, I believe, to the Institute for Music Theory Pedagogy and its founder, Steven Laitz. Little more than a year ago, on a visit to the school where I teach, he said something that has stayed with me: “In the time I have left, I want to do all I can to improve the way we teach music theory.” The Institute extends an invitation to all of us to make this worthy endeavor our own.



Effective Questioning Strategies for the Music Theory Classroom

By SCOTT DIRKSE

As one would expect, the pages of this journal most frequently contain articles dealing with issues of subject-specific pedagogy, articles that offer instructors useful techniques for improving their students' theoretical and aural skills. However, it is also important for theory teachers to focus on general pedagogical techniques that can improve learning in their classrooms. Teaching in classrooms, as most theory teachers do, requires a different set of pedagogical skills than teaching private lessons or conducting ensembles. Unfortunately, the pedagogy of classroom teaching is often overlooked by researchers in music education who deal mostly with instrumental and vocal pedagogy. Instead, one must turn to the scholarship on teaching and learning in the general education literature to find useful information on classroom teaching.

One component of classroom teaching that has received much attention is the art of questioning, and how questioning can be used to improve learning. This article uses the findings from the general education literature to promote an increased awareness of our own questioning strategies and offer some ideas about how we might employ questioning tactics in our theory classrooms to enhance student learning. We are not concerned here with questioning strategies for private lessons or discussion sections, nor are we concerned with formulating questions for exams; rather, we seek to examine how we engage in questioning during the presentation of a normal theory class or any other lecture or skills-based course. For the purposes of this discussion, I define a "question" to be any teacher statement that elicits a student response (regardless of whether it ends in a question mark).

In order to determine whether or not a question is effective, it is important to understand *why* we ask questions in the first place. There are two main reasons why we ask questions in the classroom: 1) to stimulate thinking and 2) to assess our students. First, asking questions forces students to engage mentally in what is happening in the classroom. Often students just sit in class and passively take

This paper originated as a presentation at the 2010 annual meeting of the College Music Society in Minneapolis, Minnesota.

notes (or worse yet, they put in their ear buds and just copy down the PowerPoint slides). But if the instructor poses questions in the classroom, then students are encouraged to *think* and process the information in a different way. Secondly, questioning is used for assessment, or to check students' level of understanding. When a student responds to a question, it allows the teacher to assess what the student knows or does not know. (It also allows the teacher to assess whether he or she taught the skill or concept effectively.) Questioning for assessment is something that is not done as often as it should be. Many times teachers wait until the homework is turned in, or until the midterm, before they assess their students' comprehension of the material; however, it is better to assess students continually as one teaches each new skill or concept, so that the teacher always is aware of what the students know. If a teacher does not discover a comprehension problem until the midterm, it is often too late to go back, reteach the concept, and engage in sequential instruction to bring the students up to where they need to be.

Plenty of research exists on the art of effective questioning, although most of it focuses on the elementary or secondary level. Very little research on the topic has occurred in music classrooms; however, we can apply the findings of the general literature to collegiate level music teaching, specifically music theory classes. In general, the research shows that the teacher's use of questions in a classroom does make a difference: students in classrooms where teachers ask effective questions achieve more than students in classrooms where teachers do not ask effective questions.¹

Intuitively this makes sense, as there are many benefits that result from purposeful questioning in the classroom. First, asking questions helps to focus students' attention on what is important (or at least what the teacher thinks is important), which is generally the information that appears on tests and other graded material, thus enhancing achievement. Secondly, as mentioned before, asking questions helps elicit a greater depth of processing of information from students. Third, asking questions can activate students' metacognitive processes; when students are pondering a question posed by the teacher, they are becoming more aware of what

¹Many of the ideas presented in this article appear in multiple sources on teaching and learning. I have attempted to provide citations for all ideas that are credited to specific scholars, and I have included a bibliography with general sources on questioning practices in classroom teaching.

they know and what they do not know. This self-awareness is an important component for student success. Fourth, questioning can offer valuable practice and rehearsal, an important component of skills-based courses such as music theory and aural skills. Finally, asking questions can promote appropriate re-teaching by making teachers more aware of what concepts and skills students do not fully comprehend.

Although there are many benefits to asking questions, teachers should recognize that not all questions have equal pedagogical value. Some are much more effective than others at achieving the questioning goals: stimulating student thinking and assessing student learning. In the following pages, I examine six of the most important characteristics of an effective question, in order to gain a better understanding of how to best formulate questions in our theory classrooms.

Characteristic #1: Questions should be directed to all students

Whenever possible, the questions we ask should be directed to *all* students in the class. This means that when posing a question, we must ask the question *first* and call on the student's name *last*.

Bad Question: "Sasha: what scale degree does the melody end on?"

In this poorly phrased question, as soon as the teacher says "Sasha," all the other students in the classroom can stop thinking because they know they will not be responsible for the answer. In effect, the teacher has stimulated thinking for only one person: Sasha. A better way to ask this question is as follows:

Better Question: "Class: what scale degree does the melody end on—Sasha?"

In this case, by asking the question first and calling on the student's name last, the teacher has stimulated thinking for everyone in the class, not just a chosen student.

Characteristic #2: Each question should be followed by "wait time."

"Wait time" is the period of time in between when the teacher poses a question and when the teacher calls on a student (or

students) for a response. The leading scholar who “discovered” the benefits of wait time in the 1970s was Mary Budd Rowe.² In her research, Rowe found significant differences between classrooms where teachers incorporated three-to-five seconds of wait time before calling on students to respond and classrooms where teachers did not use wait time. Classrooms that consistently employed wait time enjoyed several benefits. First, teachers who used wait time had a higher student participation rate. The extra seconds after the question allowed more students enough thinking time to arrive at an answer. Second, teachers who used wait time received better student answers than those who did not use wait time. Students’ answers were longer on average and included more evidence and logical support. Finally, students showed more confidence in their responses in classes where the teacher employed wait time.

It can be very tempting to call for a student response as soon as one student raises his or her hand, but waiting those few extra seconds has definite pedagogical advantages. Some teachers find it difficult to incorporate wait time into their teaching habits, as those seconds of “awkward silence” can seem uncomfortable at first. But something very important is happening during those seconds: students are *thinking*. One of our main goals in asking questions is to stimulate student thinking, so we need to make sure we give students time to do so.³

Often teachers perceive a lack of student response to a question as evidence that the students do not know the material; however, sometimes a lack of response is really the *teacher’s* fault. The way a teacher poses a question can make a big difference in student response rates, as we will see in the two following questioning characteristics.

²Since Rowe first began investigating wait time in the early 1970s, numerous studies have examined the issue of using wait time in the classroom. For one review of the work of Rowe and her colleagues, see Mary Budd Rowe, “Wait Time: Slowing Down May Be A Way of Speeding Up!” *Journal of Teacher Education* 37 (January-February 1986): 43-50.

³In addition to the “post-teacher-question” wait time described in this section, there are additional types of wait time that also produce educational benefits, including “within-student-response” wait time, “pre-teacher-talk” wait time, “within-teacher-presentation” wait time, and others. Although beyond the scope of this article, discussions of the various types of wait time may be found in several of the sources included in the bibliography.

Characteristic #3: Questions should be precise and answerable

One of the biggest inhibitors to classroom participation is a fear of being wrong. Thus, if students are at all unclear about how to answer a particular question, they are probably not going to try for fear of being perceived as unintelligent by their peers or their professor.⁴ Instructors must ensure their questions are clear and precise, so students can be confident the answer they want to give is the answer the instructor seeks.

First, teachers should ask only one question at a time, and this question should not be incredibly long or more complex than it needs to be.

Bad Question: "So, what are the different parts of sonata-allegro form, and how does this form compare to the different types of binary and ternary forms we talked about earlier?"

This poorly designed question actually asks multiple sub-questions at once. Some students might know the answer to one or more of the sub-questions, but if they cannot answer all of them they will be unlikely to volunteer a response. It would be much better to break down this complex question into more manageable single questions and ask them one at a time.

Better Question 1: "What are the three main sections in a sonata-allegro form?"

Better Question 2: "What characteristics does sonata-allegro form share with rounded-binary form?"

Etc.

Secondly, it is important that our questions are not vague or ambiguous, and students clearly know what type of answer is expected.

Bad Question: "Alright, so what can you tell me about species counterpoint?"

⁴Several sociologists have investigated students' motivations for participation or non-participation in collegiate classrooms. See, for example, Polly Fassinger, "Professors' and Students' Perceptions of Why Students Participate in Class," *Teaching Sociology* 24, no. 1 (January 1996): 25-33; and Jay R. Howard and Amanda L. Henney, "Student Participation and Instructor Gender in the Mixed-Aged College Classroom," *The Journal of Higher Education* 69, no. 4 (July–August 1998): 384-405.

Many students may actually know quite a bit about species counterpoint, but they will be unlikely to volunteer an answer, since it is very unclear as to what type of answer is expected. Does the teacher want to know the general definitions of the different species? Or specific voice-leading rules? Or the history of species counterpoint? Or something else? As teachers, we often have a very clear idea of what information we are looking for, but we do not clearly articulate the question in such a way that it directly asks for this information.

Better Question: "What types of dissonances are allowed in third species counterpoint?"

Now the students who know the answer will be much more likely to speak up since there is a greater chance that the answer they will give will match the information the teacher is seeking.

Finally, our questions should be constructed in such a way so students know *how* they are supposed to respond.

Bad Question: (after drawing a brief progression on the board)
"So, what's wrong with my part-writing?"

Now, the problem is not that students do not know what type of answer is expected, but rather that they do not know *how* to answer the question. Should they shout out errors they notice? Should they raise their hand and identify one error when called upon? Should they raise their hand and identify all the errors they see when called upon? Should they go up to the board and mark the errors like they did last week in class? Anytime students are unsure about how to respond properly, they will be less likely to volunteer. A better way to pose the question is as follows:

Better Question: "Raise your hand if you can identify one error in my part-writing."

Phrasing the question this way gives students clear directions as to how they are supposed to respond, thereby increasing the likelihood that they will volunteer an answer.

Characteristic #4: Questions should be inviting, not intimidating

One of my education professors used to remind us that as teachers, we are engaging in "inquiry," not an "inquisition." If we want to encourage student participation, then it is important that the questions we ask are inviting, not intimidating. The teacher's

tone and body language can make a big difference in whether or not students feel comfortable responding to a question.

In general, it is better to avoid trick questions. If students think that you are often trying to trick them, then they will be hesitant to respond even if they have good answers. Teachers should also avoid creating questions that are potentially embarrassing. Refrain from starting questions with phrases such as “We talked about this last week....” or “Here’s an easy one....” Students will not want to risk answering a question that has been labeled as “easy” because it will be potentially embarrassing if they get it wrong.

Also, teachers should avoid using questioning as a form of punishment. If a student is sending a text message or falling asleep, it can be tempting to toss a question at them. In these cases, the teacher knows the student will get the answer wrong and is just using the questioning opportunity to embarrass the student in front of the class. The question/answer dialogue in our classrooms should be a positive experience, and using questioning as punishment does not contribute to that goal. There are other, more effective, classroom management techniques.

Characteristic #5: Questions should require student thinking

One of our main reasons for asking questions in the classroom is to stimulate student thinking, so we should make sure to construct questions that require students to think. In general, it is best to avoid yes/no or other 50/50 questions, as these often do not require much thought.

Bad Question: “Is this a perfect authentic cadence?”

Better Question: “What type of cadence is this?”

In some cases, however, 50/50 questions are perfectly acceptable, for example, when trying to distinguish between major and minor triads in a basic ear-training class. One way to approach 50/50 questions will be discussed in a later section.

Teachers should also avoid suggestive or leading questions.

Bad Question: “Since this triad is made of two stacked major thirds, it’s an augmented triad—right?”

Again, these types of questions do not encourage much thinking from the student.

Finally, teachers should make it a point not to answer their own questions. We have all had those teachers who seem to persist with their own monologue in front of the classroom:

Bad Question: "So what key has two sharps? D major of course. But what other key could also have two sharps? If you're thinking of B minor, you're correct!"

If students discover that the teacher is always going to answer the questions for them, then they learn that they do not have to engage in any thinking when the teacher poses questions.

Characteristic #6: Questions should elicit maximum student participation

When we pose a question to our class, we are not trying to discover what *one* student knows; rather we want to find out what *all* the students know. Thus, we should aim for maximum participation in our questioning strategies. This means teachers should not just call on the same three volunteers who sit in the front row and raise their hands all the time. If this happens, the rest of the students in the class will realize that they do not need to think when the teacher poses a question, since one of the three over-achievers in the front row will always volunteer. It may be necessary to call on non-volunteers at times, so students understand that everyone is accountable for thinking when questions are posed.

Some teachers do not like to put people "on the spot" (many of us were shy students ourselves), so another option to encourage maximum participation is to employ group responses. Unlike individual responses, group responses require the entire class to respond at once. Group response questions are great for assessment, one of our main reasons for asking questions. When a teacher poses a question and gets *all* students to respond, the teacher can immediately assess exactly what percentage of the class knows or does not know the answer and adjust his or her teaching accordingly. Group responses are a great way to encourage participation even in large classes, where it is often not possible to hear from each individual student. There are many types of group responses, six of which will be discussed here: oral response, thumb response, finger response, response card, pair answer, and everybody writes.

1) Oral Response

In an oral response, all students respond vocally to the posed question. The key here is to provide some type of signal so that all students respond at the same time.

Example: "I'm going to describe a key signature for a major key. On the count of three, shout out the name of the key with that signature.

-Three sharps. 1—2—3... (response)

-One flat. 1—2—3...(response)" Etc.

Oral responses are an easy way to drill fundamental concepts and provide lots of practice in a short period of time. Unfortunately, by the nature of the verbal response, it is often not possible to get an exact assessment of who knows the material. The following responses offer opportunities for more precise assessments.

2) Thumb Response

Thumb responses are useful when teachers do have 50/50 questions to assess. They are especially helpful in assessing ear-training concepts.

Example: "I'm going to play a triad on the piano. Show me thumbs up if you hear a major triad, thumbs down if you hear a minor triad, or thumbs sideways if you are unsure."

The sideways thumb option is important to include. It allows students to let the teacher know they have not fully grasped the material without having to raise their hand and admit it to the whole class. Students should know that your main goal in asking these questions is not to see which individuals are right or wrong, but rather to assess *yourself* and assess how well you have taught the skill or concept. Thus, if they do not know the answer, it is to their advantage to show that they are unsure (rather than to guess), so that you know to review or reteach that skill or concept.⁵

Thumb responses can also be used in conjunction with individual responses.

Example:

Teacher: "What error do you see in this part-writing—John?"

John: "There are parallel 5ths in measure 3."

Teacher: "Class: thumbs up if you agree with John, thumbs down if you disagree."

⁵I make it a point to tell my students that if they do not know an answer to a question, they should not feel bad or embarrassed, because it is probably *my* fault for not teaching well. I want them to feel comfortable communicating with me honestly about what they know and do not know so that I can adjust my teaching as necessary.

In this case, the teacher addressed a question to an individual but was still able to assess the rest of the class by using the thumb response.

3) *Finger Response*

Finger responses are useful when a question has a numerical answer.

Example: "I'm going to play a short melodic fragment. Show me using your fingers which scale degree the melody ends on."

The first time that question was asked in this article ("Sasha: what scale degree does the melody end on?"), it stimulated thinking for one person (Sasha) and assessed only one person (Sasha). In this case, however, the question is much more effective: it stimulates thinking for *all* students and assesses *all* students at once.

Finger responses can also be used when a question has more than two possible responses.

Example: "I'm going to play a triad. Show me one finger if you hear a major triad, two fingers if you hear a minor triad, three fingers for diminished, four for augmented, or five fingers if you're unsure."

It is helpful to have some type of key or legend on the board so students can see what options they have. This questioning method has many advantages. The teacher can accomplish a substantial amount of triad practice in a very short period of time and assess all students with each example. Moreover, the teacher can adjust the drill based on the needs of the students. If the teacher notices that almost all of the students correctly identify the major and minor triads each time, but only half of them correctly identify diminished and augmented triads, he or she can offer more practice with the latter types.

4) *Response Cards*

Response cards are also useful for questions with several answer options. Instead of showing finger numbers in response to a question, students can indicate their chosen answer on a response card. Response cards can be constructed for almost any topic. Figure 1 shows an example of a response card for a unit on seventh chords:

- MM7 -
- Mm7 -
- mm7 -
- dm7 -
- dd7 -

Figure 1. Sample Response Card: Seventh Chords

For an ear-training class, the teacher could play a seventh chord and ask the students to show what type of chord they hear by pointing to the appropriate line on their response cards. For a theory class, the teacher could show different chords on the board and have students indicate what type of chord they see using their cards. In both cases, the teacher is able to assess the entire class at once, instead of just hearing from individual students.

Figure 2 shows another example of a response card that can be used when practicing interval identification. Students can show the quality of the interval by touching the appropriate box with their right hand, and they can show the distance of the interval by touching the appropriate box with their left hand:

P		2
		3
M		4
m		5
+		6
		7
o		8

Figure 2. Sample Response Card: Interval Identification

The four group responses so far have all been good for *convergent* questions. Convergent questions are those that have only one right answer, such as “minor,” or “perfect fifth,” or “fully-diminished seventh chord.” Sometimes, however, we ask *divergent* questions—questions that have more than one possible right answer—or other higher order thinking questions. The challenge with these questions is still to strive for maximum student thinking and maximum participation. Obviously, these questions cannot be answered with a response card or a finger response; however, as the next two items show, there are ways to maximize student engagement.

5) *Everybody Writes*

One of the best ways to encourage classroom participation is to allow students to write down their responses before speaking aloud. Writing responses allows students to practice articulating their thoughts, increasing their confidence and willingness to participate. It also makes it easier to get otherwise shy students involved in classroom participation; the teacher can circulate while students write, find students with good responses, and just ask them to “read what they wrote,” ensuring a positive contribution experience. Moreover, including a writing component ensures that all students are engaged in thinking. Even though the teacher may only hear oral responses from one or two students, all students are engaged in thinking and responding to the posed question since they all have to write.

Bad Question: “Raise your hand if you can describe the non-chord tones we talked about last week.”

Better Question: “Last week we talked about non-chord tones. Everybody write down a list of all the different types of non-chords you remember. I’ll then randomly pick people to describe some items on their list.”

In the “Bad” question, there is no assurance that students are engaged in thinking, aside from the (hopefully) few who volunteer. In the “Better” question, *all* students are engaged in responding to the question in some way, and knowing they may be called on ensures that some thinking will take place. Collecting the papers at the end of class also adds an element of accountability that motivates students to participate. The instructor may glance through the papers to assess the level of the class, use them for

participation credit, or not look at them at all, but knowing that they will be turning in the paper encourages students to take the assignment seriously.

6) *Pair Answer*

When asking divergent or higher order thinking questions, it is usually impossible for the teacher to hear individual responses from every student in the class; however, this does not mean that each student cannot individually respond to the question. In “pair answer,” each student has the opportunity to respond to the question by talking with a partner, thereby allowing all students to practice articulating a response to the given question.

Bad Question: “Who can describe the structure and component parts of a sonata form—Jim?”

Better Question: “With your partner, practice describing the structure and component parts of a sonata form. Partner A talks first, followed by partner B. I will then pick one or two students to describe sonata form to the class.”

Again, in the “Bad” question, only one student gets the opportunity to talk through the parts of a sonata form, whereas in the “better” question, *all* students get practice in describing the form. Knowing they might be called upon encourages them to take this practice time seriously. Working with a partner also allows for collaborative learning and peer feedback, two important educational tools.

CONCLUSION

The six characteristics of an effective question discussed above provide useful guidelines for formulating questions in the music theory classroom. But changing one’s questioning habits is not easy—it requires careful thought, practice, and self-reflection. First, one must be able to evaluate his or her own questioning methods and determine what changes need to be made. Often, however, we can be quite unaware of our own teaching habits. I recommend recording yourself teaching, so you can listen to yourself and analyze your questioning techniques.⁶ Another option is to have one of your colleagues or someone from the instructional

⁶Check with your instructional development department on campus — it may offer good quality recording services at little or no cost to faculty.

development department sit in on your class and evaluate your teaching. After identifying areas where you might improve your questioning strategies, you can then practice making adjustments in the classroom. Doing this well will require a high level of conscious self-reflection; after asking a question to your students, ask yourself: Did you direct your question to all students? Did you use at least three seconds of wait time? Could you have phrased the question differently such that it stimulated thinking for and assessed more students? Etc. Although questioning strategies may seem like a small component of the theory courses we teach, they can make a big difference in classroom participation, teacher effectiveness, and student learning.

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Recorded Performances as Text in the Music Theory Classroom

BY SAMUEL NG

College music theory instruction is increasingly scrutinized for its practicality and relevance. As music students face mounting pressure to compete, network, and self-promote in our globalized and electronic age, appetite for pure music-intellectual pursuits will inevitably abate. In this atmosphere, empathy between theory instructors and music students is increasingly at a premium. Against this backdrop, the present essay aims to bring performance and analysis into a closer symbiosis through its commitment to a utilitarian approach to music theory instruction. In recent decades, many scholarly writings have addressed the practical values of analysis to performers as well as the significance of listening to performances when doing analysis; the past few years have further witnessed a remarkable surge of interest in analyzing performance as a scholarly pursuit.¹ What is ostensibly missing from this substantial output, however, is a pragmatic synthesis of the two areas within a pedagogical context. By way of three case studies, I intend to outline a model of instruction that incorporates recorded performances as part of the “text” for music theory instruction. As such, recordings initiate and define discussions of theoretical concepts, which in turn formulate queries into fundamental and practical questions related to performance.

In the past three decades, writings that advocate the use of analysis as the rational foundation for making performance decisions have given us many insights into the value of analysis to performers. One particular model—championed by such prominent theorists as Eugene Narmour and Wallace Berry—directs the flow of information

¹ One of the most recognizable developments of the surging interest in studying musical performance is the establishment of AHRC Research Center for Musical Performance as Creative Practice. Its vision statement, projects, and conferences may be found on its website at <http://www.cmpcp.ac.uk/>. Other significant achievements in this subfield include a number of monographs and special issues of periodicals devoted to analyzing performance in recent years. For examples, see *Music Theory Online* 18/1 (April 2012) and selected essays in the same journal 11/1 (March 2005).

exclusively from analysis to performance;² its perceivably condescending presupposition that analysts always have the upper hand has since rendered the model obsolete. In response, other scholars have made a concerted effort to strike a more balanced partnership between the two camps. Representative writings of Janet Schmalfeldt, William Rothstein, Tim Howell, Norman Carey, Jonathan Dunsby, Joel Lester, Nicholas Cook, and John Rink have generated much momentum in that direction.³ While invaluable to our understanding of the complexities and nuances of the field, these writings have nonetheless offered little with regard to concrete methods of implementing theory instruction in the classroom that embodies the very principles they have so eloquently articulated. My agenda in this essay is therefore to construct from this pool of ideas a practical model of theory instruction that aims to encourage performers to take ownership of theoretical knowledge, and to integrate it with performance experiences and considerations into a

² Eugene Narmour, "On the Relationship of Analytical Theory to Performance and Interpretation," in *Explorations in Music, the Arts, and Ideas: Essays in Honor of Leonard B. Meyer*, ed. Ruth Solie and Eugene Narmour (Stuyvesant, NY: Pendragon Press, 1988), 317–340; and Wallace Berry, *Musical Structure and Performance* (New Haven, CT: Yale University Press, 1989).

³ See Janet Schmalfeldt, "On the Relation of Analysis to Performance: Beethoven's Bagatelles Op. 126, Nos. 2 and 5," *Journal of Music Theory* 29, no. 1 (1985): 1–31; Tim Howell, "Analysis and Performance: The Search for a Middleground," in *Companion to Contemporary Musical Thought*, Vol. 2, ed. John Paynter, et al (London: Routledge, 1992), 692–714; William Rothstein, "Analysis and the Act of Performance," in *The Practice of Performance: Studies in Musical Interpretation* (Cambridge: Cambridge University Press, 1995), 217–240; Jonathan Dunsby, "Guest Editorial: Performance and Analysis of Music," *Music Analysis* 8 (1989): 5–20; Joel Lester, "Performance and Analysis: Interaction and Interpretation," in *The Practice of Performance: Studies in Musical Interpretation* (Cambridge: Cambridge University Press, 1995), 197–216; Nicholas Cook, "Analysing Performance and Performing Analysis," in *Rethinking Music*, ed. Nicholas Cook and Mark Everest (Oxford: Oxford University Press, 1999), 239–261, and "Between Process and Product: Music and/as Performance," *Music Theory Online* 7, no. 2 (2001): 1–31; John Rink, "Analysis and (Or?) Performance," in *Musical Performance: A Guide to Understanding* (Cambridge: Cambridge University Press, 2002), 35–58; and Norman Carey, "An Improbable Intertwining: An Analysis of Schumann's Kreisleriana I and II, with Recommendations for Piano Practice," *Theory and Practice* 32 (2007): 19–50.

unified enterprise. To illustrate the wealth of opportunities for this synthesis, I will examine the use of three types of analysis practiced by theorists and performers to varying degrees: (1) hypermetrical; (2) harmonic-contrapuntal; and (3) formal. As it will become apparent, my approach is not systematic, nor do I believe that the integration I propose here is best systematized. Rather, the discussion aims to show that my model of instruction can be imagined and implemented in numerous ways, and that the precise manner of execution depends ultimately on the experience and creativity of the instructor. Still, for each of the three analytical approaches, my discussion offers the same basic blueprint adoptable into a wide variety of contexts. A lesson plan is presented to engage performers in making important interpretive decisions regarding tempo, expressive timing, articulation, dynamics, tone color, and phrasing. The lesson prompts the performer to find answers through an assortment of activities, including (but not limited to) evaluating recordings, studying the score, soliciting insights from other performers, discovering and defining target issues, and exploring analytical approaches that maximize the performer's involvement with the above elements. Attention is directed particularly to how the analytical process interacts with other activities and becomes assimilated into the whole preparation for a performance. Each case study thus demonstrates an unapologetically utilitarian approach to music analysis, in which recordings clarify and reinforce theoretical concepts while inspiring novel ideas for performance choices.

HYPERMETRICAL ANALYSIS

Although not explicitly notated on the score, hypermeter—succinctly defined as the organization of notated measures into larger metrical units—is nonetheless a palpable phenomenon that substantively interacts with our perception and cognition of many other musical parameters. The absence of explicit notation opens the door for many contending interpretations of hypermeter, and different readings may influence—consciously or subconsciously—the performer's decisions about such diverse matters as tempo, expressive timing, articulation, and dynamics.⁴ Hypermetric analysis is thus rife with performance implications.

⁴ For a classic discussion on the impact of hypermeter on musical performance, see Edward T. Cone, *Musical Form and Musical Performance* (New York: W.W. Norton, 1968).

4-bar hypermeter: 1 2 3 4 1 2 3
 2-bar hypermeter: 1 2 1 2 1 2 1

272

279

Example 1. Beethoven, Symphony no. 1, IV: mm. 272-287: two-bar and four-bar hypermeters

While scholars have demonstrated many ways to introduce the notion of hypermeter to students,⁵ I will detail here a sample lesson plan that sets up the topic with a performance consideration. To begin, I direct students' attention to an important interpretive issue at the end of Beethoven's First Symphony in performances conducted by Arturo Toscanini, Joseph Krips, William Steinberg, and Zoltan Kocsis.⁶ A condensed score of the passage in question is shown in Example 1. The four conductors choose noticeably different tempi; more intriguing, however, are the various

⁵ For a recent music theory textbook that includes an informative discussion of hypermeter, see Miguel Roig-Francolí, *Harmony in Context*, 2nd ed. (New York: McGraw-Hill, 2011), Chapter 13. Ryan McClelland has also discussed how hypermeter may be taught through a specific repertoire in "Teaching Phrase Rhythm through Minuets from Haydn's String Quartets," *Journal of Music Theory Pedagogy* 20 (2006): 5-35.

⁶ Refer to the end of this paper for discographical information on all the recordings consulted.

approaches to expressive timing in last few measures: (1) Toscanini and Krips, lying at the extremes of tempi selection (Toscanini the fastest, Krips the slowest), employ absolutely no *ritard*; (2) Kocsis, whose tempo is almost as fast as Toscanini's, very subtly delays the last chord; and (3) Steinberg, choosing a more moderate tempo than Toscanini, most overtly slows down the end.

Following the comparison of these recordings, I ask students a seemingly irrelevant question: "What do you think is in the last measure on the score?" The list of answers usually ranges from the more expected—"C in several octaves," "C in unison," "root position I,"—to the more far-fetched—"I6," "I $\frac{1}{4}$," and even an occasional "vi" (which always gets a good laugh when I play it on the piano). Jaws drop when the truth is revealed: the score ends with a whole measure of rest! This curiosity, I suggest, is an important detail in Beethoven's compositional thought that tends to be glanced over when studying the piece.⁷ Why does Beethoven write a whole measure of rest at the end? How are performers supposed to perform it? And most importantly, what does it have to do with the issue of expressive timing at the end of the symphony, which was the main issue that emerged while listening to the four

⁷ A disclaimer about the authenticity of the last measure of rest is in order. Since it is generally believed that the autograph of the symphony has been lost, we must rely on the earliest published scores and parts, which have given contradictory evidences with regard to Beethoven's notation of the last measure of the symphony. An early edition published in London by Ciani and Sperati shows no extra measure of rest at the end of the score. This edition is called *Erstausgabe* in the digital archives of Beethoven-Haus Bonn. A different view, however, is given in George Grove's brief discussion of the history of the symphony, in which Grove claims that the symphony is first published in parts by Hoffmeister and Kühnel in Leipzig toward the end of 1801. These parts are labeled *Titelauflage* in the digital archives of Beethoven-Haus Bonn, and in them the measure of rest can be found in all the different instruments. Since no dates have been given for either of these publications, it may be difficult to ascertain their chronology, and which version best represents Beethoven's compositional idea. Still, it is safe to say that the measure of rest is clearly not a later nineteenth-century editorial maneuver, and is unlikely an arbitrary modification against Beethoven's will, given its very early appearance in the history of the symphony. For Grove's discussion, see his *Beethoven and His Nine Symphonies* (London: Novello and Company Ltd., 1896): 2–3; relevant documents in the digital archive of Beethoven-Haus Bonn can be accessed via <http://www.beethoven-haus-bonn.de/>.

recordings? Quite often, students are able to observe that the rest in the last measure may have to do with the completion of a multi-measure construction; a few may even comment that it completes an eight-bar “phrase” that begins in m. 280. But what is it that compels Beethoven to write an eight-bar construction at the end? What is aesthetically unsatisfactory about a seven-bar construction here? In other words, why is the perception of an eight-bar construction important to the closure of the piece? And how may answers to these questions be pertinent to the issue of expressive timing?

Herein lies the pivotal opportunity to introduce the notion of hypermeter. In this whole passage, measures are grouped together not just into phrases and subphrases, but also into larger metrical units that function analogously to the notated measures. A simple conducting exercise of mm. 272–287 will help students experience the four-bar hypermeter of the passage, as annotated in Example 1.⁸ Most significantly, this realization sheds light on the function of the last measure: it completes the last four-bar hypermeasure of the piece, and thus provides rhythmic closure to the movement (and the entire symphony).

This important consideration brings us back to the differences among the recordings. The fast and strict tempo of Toscanini makes it lucid that the last sonic event in the penultimate measure is not the end of the piece; rather, the definitive conclusion materializes some time during the “silence.” As the four-bar hypermeter of the passage also comes across the most strongly at this tempo, listeners’ entrainment to the hypermeter induces a strong anticipation of the last hyperbeat.⁹ From this perspective, Toscanini’s expressive timing

⁸ This conducting exercise needs to be set up carefully, as the preceding passage beginning in m. 248 is hypermetrically ambiguous. Since the convergence of the whole orchestra in m. 272 on the C, marked *sf*, provides a moment of clear hypermetrical anchor, I would start the recording slightly before m. 272, and ask students to begin conducting the hypermeter once they hear a clear downbeat. Recently, John Paul Ito discusses the importance of conducting to experiencing the hypermeter of a passage. See Ito, “Hypermetrical Schemas, Metrical Orientation, and Cognitive-Linguistic Paradigms,” *Journal of Music Theory* 57, no. 1 (2012): 47–85.

⁹ The concept of musical entrainment appears frequently in music-perception research. For an informative summary of the concept’s significance and relevance to music theory, see Martin Clayton, “What is Entrainment? Definition and Applications in Musical Research,” *Empirical Musicology Review* 7/1–2 (2012): 49–56.

(or lack thereof) seems the most in line with the compositional idea underlying the notated rest in the last measure.

This is not to suggest that Toscanini's performance is the only "correct" one. As Lester and Cook would emphasize, the four-bar hypermeter in Example 1 is but one analytical interpretation of the passage. The critical question, then, is whether a different hypermetrical interpretation could emerge from a different performance. The answer seems to be yes—albeit a qualified one—from the recordings consulted. For instance, the drastically slower tempo in Krips' recording attenuates the immediacy of the quadruple hypermeter, positioning it instead at the more moderate two-measure level, as shown in Example 1.¹⁰ The point about the last notated measure, however, is unaffected: the two-bar hypermeasure at the end still requires the whole-measure rest for its completion, although the need does not seem to be as urgent as it is at Toscanini's tempo.

What this comparison divulges is that performances often directly affect our perception of the hypermeter, and that a *ritard* at the conclusion of the passage can be effectively executed when the amount of *ritard* is deliberated vis-à-vis the overall tempo. This principle, I believe, accounts for the success of all four recordings despite their radically different approaches to expressive timing and overall tempo. At a fast tempo, *ritard* before the last chord risks enervating the sense of rhythmic completion at the last hyperbeat. Toscanini refrains from using any *ritard* altogether, while Kocsis circumvents this potential problem with an extremely subtle delay, which, I suppose, helps emphasize tonal-rhetorical (as opposed to rhythmic) closure. From Steinberg's recording, we glean that a higher degree of *ritard* seems permissible at a slower tempo without affecting the integrity of the rhythmic closure. Finally, all these observations imply that when a relatively fast tempo is chosen for the movement, noticeable *ritard* before the last chord may intrude upon proper rhythmic trajectory at the end.

All these conclusions aside, the most important aspect of the above exercise is that performers are able to engage in a network of activities from which interpretive questions arise and choices are evaluated. In my presentation, listening to performances brings

¹⁰ See Justin London, *Hearing in Time: Psychological Aspects of Musical Meter* (Oxford: Oxford University Press, 2004), Chapter 2, for a discussion of the relationship between absolute tempo and the perception of various levels of (hyper)meter.

to awareness an important interpretive issue. Close study of the score highlights an idiosyncrasy, the connection between which and the interpretive issue at hand is gradually revealed through exploring the hypermeter and phrase structure of the passage. A careful reflection on the analysis in turn sheds light on the individual strengths and weaknesses of the performances, while the distinctive attributes of each performance compels us to refine our analysis and generate further conclusions. This conglomerate of activities need not be strictly replicated in other exercises; rather, the important point is the integrated nature of the whole exercise and its utility for performers within the context of music theory instruction.

HARMONIC-CONTRAPUNTAL ANALYSIS

In American collegiate music education, harmonic analysis using Roman numerals constitutes one of the central music-analytical activities. This dominance of Roman numeral analysis is of course due to its intrinsic efficacy in teaching and reinforcing harmonic-functional concepts. Yet, as many recent music theory textbooks have demonstrated, Roman numeral analysis must not only be an end in itself, but must also serve as a means to heighten attention to many other musical constructs.¹¹ One particularly fruitful use of Roman numeral analysis is the discovery of simple species contrapuntal structures in free compositions. Prone to be perceived by students as an abstract intellectual exercise (because of its rule-driven character), the study of species counterpoint is nevertheless pertinent to performance considerations in that it sensitizes musicians to the sound of “ensemble”—broadly defined as an interactive collaboration among multiple musical agents. In most musics, performers are routinely engaged in a network of communication with other individuals in myriad ways. In this

¹¹ In this regard, music theory textbooks that adopt a more linear approach to harmony instruction rightly put a premium on the interaction between harmony and counterpoint, and thereby sensitize students to significant connections between Roman numeral analysis and the contrapuntal aspects of harmonic progressions. For more recent examples of these texts, see Jane Piper Clendinning and Elizabeth Marvin, *The Musician's Guide to Theory and Analysis* (New York: Norton, 2004); Steven Laitz, *The Complete Musician: An Integrated Approach to Tonal Theory, Analysis, and Listening*, 3rd ed. (Oxford: Oxford University Press, 2011); and Miguel Roig-Francolí, *Harmony in Context* (2011).

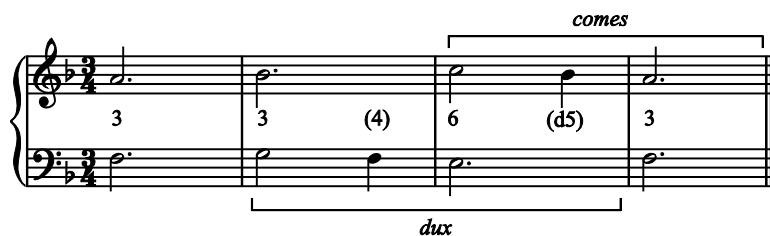
sense, counterpoint that exists even in a solo piece may also be imagined as an ensemble between two strands of musical utterance.

Three examples of various levels of complexity will demonstrate the reciprocal relationship between harmonic-contrapuntal analysis and performance considerations. Example 2(a) shows the first four measures of the Trio from Beethoven's Piano Sonata in F minor, op. 2, no. 1, second movement. The four-measure phrase is marked by a single slur in both hands, suggesting one legato articulation. The arc-like contour of the right hand (delineated by the rising A–B $\flat$ –C on the downbeats of the first three measures and the descent back to A in the last measure) suggests a subtle feeling of *crescendo* and *decrescendo*, while the lower line in the left hand may also swell toward the E on the downbeat of m. 3, which marks the lowest point of the line against the right-hand climax at the same location.

(a) Beethoven, Piano Sonata in F minor, op. 2 no. 1, III: opening of Trio



(b) Contrapuntal reduction of Example 2(a)



Example 2. Beethoven, Piano Sonata in F minor, op. 2 no. 1, III: opening of Trio

Contrary to these logical, albeit pedestrian implications, both Arthur Schnabel and Paul Badura-Skoda perform the opening of the left hand with noticeable *decrescendo* toward the D, resuming then a more solid articulation on the G in m. 2. This creates a very subtle emphasis on the second beat of the measure, the syncopated nature of which seems to go against the seamless quality of the

phrase. What may be the rationale for this treatment by two of the most celebrated interpreters of Beethoven's piano works? One could perhaps point to the fact that the opening four notes move in one direction, while the G reverses the contour with the biggest leap of the entire line. But what is the significance of this contour design that it may have inspired a specific, and arguably idiosyncratic, performance decision?

A quick Roman numeral analysis of the passage immediately sheds light on these questions. As students realize that each measure receives only one Roman numeral (even without inversions changes despite the arpeggiated bass), they promptly realize that Roman numeral analysis is not a mechanical exercise of putting a number on each apparent harmony; rather, it must start with active interpretation of where the "chords" lie, and what exactly constitutes a change in harmony that warrants a change in the Roman numeral. At the tempo that the four-measure phrase is usually performed, there is minimal sense of a change from I to I⁶ and I⁴ in m. 1. In other words, only the F on the downbeat in the left hand belongs to the actual bass of the counterpoint, while the A and C on beats 2 and 3 serve only to prolong the root-position tonic chord. By the same reasoning, the entire underlying bass line is revealed to be a simple double-neighbor figure embellished by a passing tone, $\hat{1}-\hat{2}-(\hat{1})-\hat{7}-\hat{1}$. A parallel probing of the upper line uncovers another compound line comprising $\hat{3}-\hat{4}-\hat{5}-(\hat{4})-\hat{3}$ in first and second species counterpoint with the underlying bass.¹²

The resulting contrapuntal awareness sheds light into Schnabel's and Badura-Skoda's *decrescendo* toward the D in m. 2 and returning to the original articulation and dynamic at the G. Clearly, one objective of the *decrescendo* is to render as lucid as possible the structural connection between F and G, and subsequently the contour of the underlying bass line. Another important feature highlighted by this clarification is a hidden repetition of a linear descending gesture. As I show in Example 2(b), the G in the left hand in m. 2 initiates a descending third motion to E, which is then imitated in the top voice by the C-B $\flat$ -A descent in mm. 3-4. The heightening of the G in Schnabel's and Badura-Skoda's performances subtly energizes the intriguing rhythmic interplay between *dux* and *comes* in consecutive measures, which is otherwise very much concealed by surface diminutions of the passage.

¹² For a similar discussion of this passage, see Felix Salzer and Carl Schachter, *Counterpoint in Composition: the Study of Voice Leading* (New York: McGraw-Hill, 1969), 123.

(a)

Subject:

i iv V⁽⁴⁾ i⁶ iv⁶ — iv V⁷ i

T PD D T

(b)

i iv VII III VI ii° — V⁽⁹⁾⁷ i

T —————> PD D T

Example 3. Bach, Fugue from *Well-Tempered Clavier II*: Two imaginary harmonizations of the subject

Example 3 shows a more complex scenario, one that involves imaginary harmonizations of the subject of Bach's G-minor Fugue from *The Well-tempered Clavier II*.¹³ The first rendition in (a) realizes the prolongational potential of mm. 1–3, harmonizing both occurrences of D–B♭ (♂–♂) in m. 1 and m. 3 with the tonic triad. The neighboring harmonies in m. 2 connect these tonic chords contrapuntally in a schema that Steven Laitz calls the “embedded phrase model” (EPM).¹⁴ Following this EMP in mm. 1–3, the PD-D-T progression in mm. 4–5 then provides the cadence (i.e., an IAC) to complete Laitz's “phrase model.” In this approach, the two-part design of the subject is underscored by the harmonization, as the opening

¹³ The exercise of imagining a harmonization here is inspired by William Rothstein's concept of “imaginary continuo.” See his “Rhythmic Displacement and Rhythmic Normalization,” in *Trends in Schenkerian Research*, ed. Allen Cadwallader (New York: Schirmer, 1990), 87–113.

¹⁴ In his discussion of the overall phrase-harmonic structure, Laitz stipulates that the standard harmonic paradigm of T-PD-D-T across an entire musical phrase, which he calls the “phrase model,” may be elaborated by embedding the paradigm within the initial tonic (T) as a means of prolongation. See *The Complete Musician* (2011), Chapters 9 and 12 for discussions of the “phrase model” and the “embedded phrase model.”

arpeggiated motives and the ensuing repeated-note gesture are delineated separately by prolongational and progressional spans.¹⁵

Example 3(b) illustrates a different approach to harmonizing the subject. Rather than emphasizing the parallelism between mm. 1 and 3 (by harmonizing both instances of D–B $\flat$ with the tonic), the transpositional relationship between mm. 2 and 3 motivates a sequential treatment of these measures. The zigzag contour of the underlying E $\flat$ –C–D–B $\flat$ motion in the melody betrays a connection to the descending fifths sequence, which, as the example shows, may indeed be used to harmonize the entire subject. In this treatment, the continuous harmonic trajectory of a uniform progression helps conceal internal subdivisions of the subject, lending it a much more seamless quality than that in Example 3(a).

These contrasting harmonic conceptions and their formal implications are keenly felt in performances by Jenő Jandó and Sviatoslav Richter. The two pianists share some commonalities in their interpretations: both *crescendo* in mm. 4–5 toward the cadence, and both set up the *crescendo* by a preceding drop in dynamic level. They differ conspicuously, however, on the exact location of this drop. Jandó puts it on the last note of m. 3 (i.e., precisely at the beginning of the second part of the subject); Richter, however, places it two notes later at the second C in m. 4. The different formal implications are unmistakable. Jandó's softer beginning of the second part of the subject distinctly separates mm. 4–5 from mm. 1–3, thereby highlighting the two-part design of the subject much in the same manner as the harmonization in Example 3(a). In contrast, Richter's maintenance of the same dynamic level until the downbeat of m. 4 clarifies the contrapuntal connection between the repeated Cs in m. 4 and the underlying voice leading of mm. 1–3; hence, the overall D–E $\flat$ –D–C–B $\flat$ (i.e., the $\hat{5}$ – $\hat{6}$ – $\hat{5}$ – $\hat{4}$ – $\hat{3}$ paradigm) in the top voice of the compound line is laid bare at the same dynamic level.¹⁶ The internal unity of the subject is thus much more tangible in this performance, just as the circle of fifths in Example 3(b) illumines the overall continuity of the subject despite the apparent division in m. 3.

¹⁵ For a summary of the different formal functions between prolongations and progressions, see William Caplin, *Classical Form: A Theory of Formal Functions for the Instrumental Music of Haydn, Mozart, and Beethoven* (Oxford: Oxford University Press, 1998), Chapter 2.

¹⁶ For an in-depth discussion of the standard voice-leading schemas in Baroque fugue subjects, see William Renwick, *Analyzing Fugues: A Schenkerian Approach* (Stuyvesant, NY: Pendragon Press, 1995).

Example 4. Bach, Fugue from *Well-Tempered Clavier II*: two Schenkerian interpretations

The differences between these performances inspire distinct but equally valid ways of analyzing the subject from a Schenkerian perspective. Jandó's treatment of mm. 1–3, more reflective of the “sectional” approach of Example 3(a), lends itself to the reading in Example 4(a). Here, the *Kopftone*¹⁷ D is elaborated in mm. 1–3 by the upper neighbor E $\flat$ and harmonized by a prolonged tonic; subsequently, the structural descent to the B $\flat$ occurs only in the second part of the subject in mm. 4–5. In the other interpretation in Example 4(b), the *Kopftone* receives no prolongation; rather, the upper neighbor E $\flat$ in m. 2 sets off a third-descent to the C in m. 4 over parallel thirds in the counterpoint. This alternative reading corresponds to Richter's performance in its attention to the structural significance of the C as the goal of a linear progression.¹⁸

¹⁷ In Schenkerian analysis, the *Kopftone* is the structural note from which the fundamental melodic line descends to the tonic at many different structural levels. For a clear explanation of this and other basic Schenkerian concepts of tonal structure, see Allen Cadwallader and David Gagné, *Analysis of Tonal Music: A Schenkerian Approach*, 3rd ed. (Oxford: Oxford University Press, 2010), Chapter 5.

¹⁸ Interested readers should consult Bach's harmonization of all subject entries to examine how both approaches in Example 3(a) and (b) are employed and synthesized. Of special interest is the subject-countersubject statement in mm. 28–32, which employs invertible counterpoint at the twelfth with the original statement in mm. 5–9. A close examination of this invertible counterpoint reveals an important linear connection on

Innig, lebhaft.

Du meine See - le, du mein Herz, du meine Wonn' - o du mein
 Schmerz, du meine Welt, in der ich le - be, mein Himmel du, da - rein ich schwe - be, o du mein
 Grab, in das hin - ab ich e - wig mei - nen Kum - mer gab! *ritard.*

Translation:

Du meine Seele, du mein Herz,	You my soul, you my heart,
Du meine Wonn', o du mein Schmerz,	You my bliss, o you my pain,
Du meine Welt, in der ich lebe,	You the world in which I live,
Mein Himmel du, da - rein ich schwebe,	You my heaven in which I float,
O du mein Grab, in das hinab	O you my grave, into which
Ich ewig meinen Kummer gab.	I eternally cast my grief.

Example 5. Schumann, *Widmung*, mm. 1–13

In the above illustrations, the cognitive distance between a Roman numeral analysis and evaluating a performance is exponentially reduced when the two are mediated through considerations of counterpoint. A further example will demonstrate the role of counterpoint in examining the relationship among musical structure, performance, and text. We shall consider here the first section of Schumann's *Widmung*, which is shown in Example 5. From a performance standpoint, the passage contains many provocative the downbeats of mm. 6–8, where the consecutive sixths are transformed into a chain of sevenths in mm. 29–31 that are assimilated into a chain of 9–8 suspensions. The linear connection in mm. 6–8 in turns point to a corresponding connection in mm. 2–4, which, as I have argued, can be discerned in Richter's performance.

elements: the large range of the vocal line presents various possibilities for *rubato* and dynamic shading, and the rich harmonic colors created by modal mixture invite further manipulation of timing and tone quality. The infatuation of a madman for his love, ingeniously portrayed by Schumann in one of the most beloved specimens of nineteenth-century German Lieder, incites intimate and personal readings of tempo, dynamics, timbre, and so forth.

Indeed, a cursory comparison of recordings reveals eclectic approaches to the performance of this excerpt. For instance, renditions by Elly Ameling and Elisabeth Schwarzkopf provide a telling comparison with regard to the use of *rubato*. Ameling's typifies expressive timing found also in many other recordings: slowing down through the descent on "o du mein Schmerz"; speeding up then in the ascent on "du meine Welt, in der ich lebe"; and a marked holding back again at "darein ich schwebe."¹⁹

Study the opening thirteen measures of Schumann's *Widmung* (from *Myrthen*, op. 25). Then, do the following tasks:

1. Part of the contrapuntal framework of the passage has been given below. Provide RN analysis below the bass line (one RN for each bass note).
2. On the upper staff, provide a first-species counterpoint against the bass. Your counterpoint should reflect the underlying structure of the vocal melody of the song. (The first structural melodic note has been given as E-flat in m. 2 in the framework.)
3. Between the staves, write down the intervals between the "cantus firmus" (i.e., the bass line) and your counterpoint.
4. Mark any instance of voice exchange in the framework.
5. Comment on the shapes of the individual lines and their contrapuntal relationship. Do they reflect any principles taught in species counterpoint? If so, which ones? Are there aspects of the framework that are inconsistent with principles of species counterpoint? If so, which ones?
6. Bonus: how do you think the properties of this contrapuntal framework (as you commented in questions #5 and #6) may be motivated by the meaning of the text?

Example 6(a). Roman-numeral and first-species reduction assignment on *Widmung*.

¹⁹ Interested readers may also consult recordings by Jessye Norman and Hermann Prey. Norman chooses tempo fluctuations that are very similar to Emeling's; Prey slows down "o du meine Schmerz" and speeds up "du meine Welt, in der ich lebe" but maintains a constant speed at "darein ich schwebe."

These tempo fluctuations make much musical sense both intuitively and analytically: the descent on “o du mein Schmerz” arrives at a pseudo-cadence in m. 5 on a ii half-diminished $\frac{5}{4}$ chord; the expressive change of tone color at the mixture harmony, where a V would have been more normative, is tenderly prepared and highlighted by the *ritard* toward “Schmerz.” The acceleration on “du meine Welt” effectively launches the sequential climb toward the climax on “schwebe,” while a *ritenuto* at the climatic G $\flat$ underlines the expressiveness of the chromatic pitch. In comparison, Schwarzkopf’s approach sounds stoic, as her much stricter tempo throughout the opening seems to negate these special poetic moments.

Example 6(b) shows a musical score with Roman-numeral and first-species reduction assignment. The score is in G major, 3/4 time. It consists of two systems of music. The first system has six measures with lyrics: Seele, Herz, Wonn, Schmerz, Welt, and Himmel. The second system has five measures with lyrics: schwebe, Grab, and two measures of a final cadence. Roman numerals are written below each measure, and first-species reduction numbers (1-6) are written above the notes. Arrows indicate voice leading between measures.

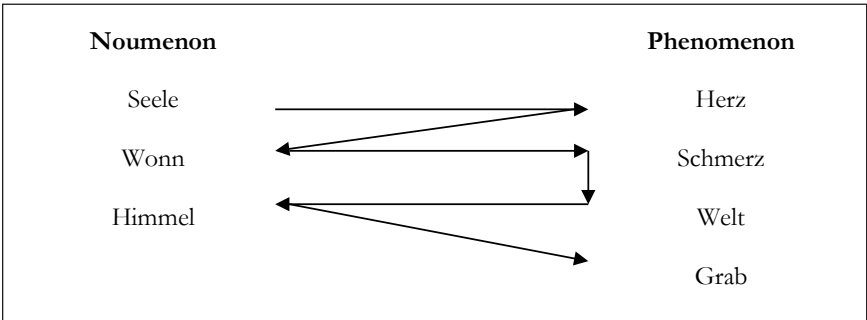
Measure	Lyrics	Roman Numeral	First-species Reduction
1	Seele	I	5
2	Herz	I	3
3	Wonn	I	3
4	Schmerz	IV	6
5	Schmerz	ii $\frac{5}{4}$	6
6	Welt	V $\frac{1}{2}$	6
7	Welt	I $\frac{6}{5}$	3
8	Himmel	V $\frac{1}{2}$	3
9	Himmel	I	6
10	Himmel	V $\frac{1}{2}$ /IV	6
11	schwebe	IV $\frac{6}{5}$	6
12	schwebe	V $\frac{1}{2}$ /IV	3
13	schwebe	IV	3
14	Grab	vii $\frac{5}{4}$	6
15	Grab	V $\frac{1}{2}$ /IV	3
16	Grab	IV	5
17	Grab	ii $\frac{5}{4}$	3
18	Grab	V $\frac{1}{2}$	6
19	Grab	I	5
20	Grab	I	8

Example 6(b). Roman-numeral and first-species reduction assignment on *Widmung*: sample solution.

Yet, considerations of deeper contrapuntal aspects of the excerpt illumine Schwarzkopf’s minimal use of expressive timing. Example 6(a) shows a Roman numeral/reduction assignment that I have used in teaching this excerpt. Students are instructed to analyze the passage with Roman numerals, which will then serve as the basis for reducing the vocal line into a first-species counterpoint framework with the given bass line. The importance of the Roman numeral analysis, of course, is that it helps students extract the main melodic tones from the surface within the overall framework. A common response is shown in Example 6(b). In general, students are able to observe many traits that agree with first-species counterpoint

principles: the independent contours between the two lines, the occurrence of a single climax in each (at different locations), the use of perfect consonances at the extremities (to establish and confirm modality) and imperfect consonances in the middle of the passage (to promote forward motion).

Even more intriguing, however, is the apparent disjointedness of the top line in the framework. To be sure, the melodic surface of the passage removes the disjunction by filling in the leaps. This realization is especially telling in that it reverses the more common procedure by which surface disjunction in tonal music arises from elaborations (or diminutions) of a stepwise underlying structure. Why does Schumann’s tonal structure contradict the normative paradigm? To investigate this, I ask students to study the text and pick out the most important words of the passage. Clearly, the metaphorical objects—*Seele, Herz, Wohn, Schmerz, Welt, Himmel, and Grab*—provide the backbone for this section of the poem, as they encapsulate the sense of “everything-ness” that the protagonist ascribes to the loved one.



Example 7. The noumenon and phenomenon in mm. 1–13 of *Widmung*

As students juxtapose these metaphors with the musical framework, a fascinating analytical detail emerges: not only are all the metaphorical objects set to structural melodic tones in the framework, but their delineation of two conceptual categories, which encompass the “everything-ness” that the loved one embodies, motivates a compound conception of the melodic framework. Example 7 illustrates this idea. On the left column, *Seele, Wohn, and Himmel* are representative of what Immanuel Kant calls noumenon, while the right column, *Herz, Schmerz, Welt, and Grab*, belong to Kant’s category of phenomenon.²⁰ To Kant, these

²⁰ Roughly, phenomenon refers to the realm of reality that is available to sensory intuition and judgment—the appearance of things to the

two categories make up the entire cosmos, thus constituting the “everything-ness” that the text ascribes to the loved one. Musically, as we see in Example 6(b), the two categories are carefully divided in the melodic framework between two voice strands initiated by E♭ and C. These implied voices proceed in different directions—the E♭ moves up in the upper strand, which depicts the noumenon, while the C moves down in the lower strand, which represents the phenomenon. Significantly, the musical alternation between the two strands faithfully follows that between the poetic categories in the text: after the first two rounds of moving from “high” to “low,” the third round reverses the order and presents an ascending sequence as the text “floats” from *Welt* to *Himmel*. The descent to *Grab* results in a quick drop in register, and the framework then returns to the higher register to set up a complete descent of the structural top line to the tonic.

With this analytical finding, we hear Schwarzkopf’s performance in new light. The two voice strands—and thus the two metaphorical categories—are rendered in her performance audibly distinct in two ways: not only is the lower strand sung more restrained dynamically than the upper one, but it is also differentiated by Schwarzkopf’s darker and less open vowels on the words *Herz* and *Schmerz*. By the same token, the diction and articulation of *Welt* and *Grab* are similarly differentiated from words associated with the upper strand by their softer dynamic level and subdued tone. Her performance thus puts a premium on the Kantian dualism and its musical analogue, whereas Ameling’s approach is predicated on the melodic surface and harmonic colors of a monistic entity.

Similar to Jandó’s and Richter’s performances of Bach’s fugue, the disparities between Ameling and Schwarzkopf also have far-reaching ramifications for the analyst, as shown in the Schenkerian sketches in Example 8. Ameling’s opening, where the Cs on *Du* and *Herz* are relatively undifferentiated, encourages the reading of the C as the prolonged *Kopftön*—such as in Schmalfeldt’s analysis of

human mind; in contrast, the noumenon comprises reality in itself—the so-called *Ding an sich*—which is not available to the senses. To Kant, only the phenomenon can be known, while the noumenon remains inaccessible to human reasoning and perception. As in most classical metaphysics, the whole cosmos is divided by this binary opposition in Kantian philosophy.

$\hat{3}$ as *Kopftön*

A

Innig, lebhaft.

Du mei-ne See - le, du mein Herz, du mei-ne

Wonn', o du mein Schmerz, du mei-ne Welt in der ich

le - be, mein Him - mel du, dar - ein ich schwe - be, o du mein

Grab, in das hin - ab ich e - wig mei - nen Kum - mer

gab!

ritard. **B** *p* Du bist die Ruh', du bist der

PAC into $\flat VI$ (E):

Example 8 (a). Schumann, *Widmung*, mm. 1–13: Schmalfeldt's analysis (2011)

the passage shown in Example 8(a).²¹ Schwarzkopf's treatment, on the other hand, reveals the possibility of reading both Cs as subsumed under the Eb—the alternative choice for the *Kopftön*, as shown in Example 8(b)—with the first C originating from a lower structural level than the second one. In this exercise, comparison between two recordings again prompts students to ask specific performance questions that motivate and inform musical analysis. In turn, the analysis sheds light on the specific performance choices in the recordings, particular those that may appear less intuitive than others.

♯ as *Kopftön* (gleaned from Schwarzkopf's performance)

Example 8 (b). Schumann, *Widmung*, mm. 1–13: an alternative interpretation

²¹ Schmalfeldt, "Keynote Address, Twenty-Sixth Annual SMT Conference." *Music Theory Online* 10/1 (2004). The same analysis also appears in Schmalfeldt, *In the Process of Becoming: Analytic and Philosophical Perspectives on Form in Early Nineteenth-Century Music* (Oxford: Oxford University Press, 2011), 237.

FORM ANALYSIS

In many ways, analysis of musical form provides the most direct avenue for drawing connections with performance. For instance, many studies have shown that experienced performers tend to articulate important formal divisions (e.g., phrase boundaries) with *tenuto* or other rhetorical markers.²² I wish to contribute to this area a brief but revealing case, one that is worth inclusion here because of the intriguing tension that it engenders among the score, performance practice, and theoretical considerations.

Example 9 shows the end of the Primary-Theme zone and the beginning of the Transition zone in the first movement of Schubert's Symphony no. 5. Students study the score of the juncture between the two zones while listening to recordings conducted by Nikolas Harnoncourt, Lorin Maazel, Charles Mackerras, and Neville Marriner. The listening exercise quickly draws attention to a discrepancy between the first three performances and Schubert's notation: Harnoncourt, Maazel, and Mackerras all shorten the half-note A in m. 40 to a quarter note (or even shorter), thereby creating a gap between mm. 40 and 41. This treatment may have been motivated by the parallelism between mm. 33–36 and 37–40: the quarter note A in m. 36 is replicated in m. 40 in keeping with the parallel structure between the two units. In contrast, Marriner performs the full length of Schubert's half note in m. 40, thus connecting the Primary-Theme zone to the Transition zone in an unbroken fashion. In my survey of many other recordings, Marriner's faithful transmission of Schubert's half note represents but a small minority; most conductors disregard this notational detail and shorten the A in m. 40 to various degrees.

To examine ways in which these performance decisions may influence our understanding of the formal juncture, and vice versa, we shall explore the potential meanings of the half note in m. 40 in lieu of the parallel quarter note in m. 36. For this purpose, I instruct students to carefully investigate the half note in question within its proper formal context. The movement opens with the Primary

²² For examples, see W. Luke Windsor, and Eric F. Clarke, "Expressive Timing and Dynamics in Real and Artificial Musical Performances: Using an Algorithm as an Analytical Tool," *Music Perception* 15, no. 2 (1997): 127–152; and Sigrun Heinzelmann and Amy Hess, "Interpretation as Analysis: Sonata form in the first movement of Ravel's String Quartet," paper presented at the annual meeting of Music Theory Midwest, 2012.

21 P (restatement)

V ----- (vii⁰⁷/V) ----- (7) I V (6) IV⁶ p₄⁶

Hypermeter: 1 2 3 4 1 2 3

32 Tr

BRD BRD?

ii⁶ vii⁰⁴₃ I⁶ ii⁶ V₄⁶ = ⁵₃ vii⁰⁴₃ I⁶ ii⁶ V₄₋₃⁶⁻⁵ I

4 1 2 3 4 1 2 3 4 1

HC? PAC?

Example 9. Schubert, Symphony no. 5/I: mm. 21–42

Theme in mm. 1–24, which arrives at a half cadence in m. 19, followed by an extension of the cadential V in mm. 19–24. An ostensible restatement of the Primary Theme begins in m. 25, proceeding then to the cadential function in mm. 35–36 with what William Caplin calls an expanded cadential progression: I6–ii6–Cadential $\frac{5}{4}$ –V.²³ The arrival at V in m. 36, however, is obviously too flimsy to serve as the rhetorical goal of the entire Primary-Theme zone, considering that the first statement of the theme in mm. 1–24 ended previously with a six-measure prolongation of the V in mm. 19–24. Perhaps due to the rhetorical “failure” in m. 36, Schubert reiterates the approach in mm. 37–40 to solidify the cadential gesture.²⁴

Herein arises an ambiguity: does the expanded cadential gesture, and hence also the whole Primary-Theme zone, conclude with a half cadence in m. 40, just as the first statement of the Primary Theme concluded on an expanded V? Or does the expanded cadential gesture spill over to the downbeat of m. 41, ending with an elided PAC? The ambivalence between these two options in numerous analogous situations has long spawned theoretical debates.²⁵ Why should this ambiguity also matter to performers, and how does understanding this issue help us evaluate the four performances as well as the structure of the passage? As I ask students to carefully consider these questions in the context of the larger formal construction, some revealing answers emerge. To begin, the interpretation of m. 40 as a half cadence faces several difficulties. It subverts the periodic potential of the Primary-Theme zone, assuming instead that the entire zone comprises a pair of phrases that end inconclusively. As is well known, a pair of

²³ See William Caplin, “‘The ‘Expanded Cadential Progression’: A Category for the Analysis of Classical Form,” *Journal of Musicological Research* 7, no. 2–3 (1987): 215–57. Although one could also hear an impending PAC in the next measure, the expectation is questioned by the quarter-note duration of the A and the subsequent break in melodic continuity.

²⁴ The repeat of the cadential approach, however, involves not just the expanded cadential progression, but returns to the entire subphrase that begins in m. 31. I will elaborate on the significance of this later in the essay.

²⁵ For an engaging discussion on this issue, see L. Poundie Burstein, “Half, Full, or In Between? Distinguishing Half and Elided Authentic Cadences,” paper presented at the annual meeting of the Society for Music Theory, Indianapolis, 2010.

melodically parallel phrases generally conforms to the antecedent-consequent harmonic scheme, where the HC of the first phrase is followed by a PAC in the second phrase. Further, a Primary-Theme zone that concludes with a HC rarely proceeds to an “independent transition”—the type used in this movement at m. 40ff. As James Hepokoski and Warren Darcy describe in their *Sonata Theory*, an independent transition is “often ignited by P’s PAC in the tonic key” and is “often marked by a *tutti* affirmation (or forte affirmation), typically elided with the PAC that ends P.”²⁶ On the other hand, a Primary-Theme zone that closes with a HC most logically proceeds to a transition that commences as a parallel consequent phrase but subsequently diverts into transitional rhetoric.²⁷ Reading an elided PAC in m. 41 thus aligns the passage with typical late 18th-century schemas: the Primary-Theme zone represents an expanded version of the standard antecedent-consequent model, while the elided PAC in m. 41 provides the typical launch of a *tutti* independent Transition as described in Hepokoski and Darcy’s taxonomy. Hermeneutically, then, Schubert’s half note in m. 40 secures him within the Viennese tradition: it lays bare the PAC in m. 41 and clarifies the P–Tr juncture as one that is similar to numerous precedents in the works of Haydn, Mozart, and Beethoven.

Returning to the four recordings, Marriner’s faithful preservation of Schubert’s rhythmic notation is, in light of the foregoing discussion, the most compatible with Schubert’s formal conception. What should we make of the other performances, then, where the half note in m. 40 is truncated? Instead of dismissing these great performers as sloppy or negligent—a proposition that appears reasonable but is certainly naive, I believe that we may glean something significant from their seemingly inferior choice. As students listen to these recordings again, one thing that they tend to agree on is that despite the truncated half note, the feeling that m. 41 is the *de facto* PAC is not drastically undermined. After all, perception of music trajectory is not completely reliant on sonic continuity. Musical syntax and schemas, for example, also play critical roles. Example 10, which shows a similar formal juncture in the opening of Beethoven’s Symphony no. 8, demonstrates this idea. After the weak IAC in m. 8, the renewed cadential approach aims for a definitive PAC in m. 12. That the dominant chord in m. 11

²⁶ James Hepokoski and Warren Darcy, *Elements of Sonata Theory: Norms, Types, and Deformations in the Late-Eighteenth-Century Sonata* (Oxford: Oxford University Press, 2006), 95.

²⁷ *Ibid.*, 101.

1770 - 1827

Allegro vivace e con brio (d. es)

P

2 Flauti

2 Oboi

2 Clarinetti in B $\flat$

2 Fagotti

2 Corni in F

2 Trombe in F

Timpani in F-C

Violino I

Violino II

Viola

Violoncello

Contrabbasso

Hypermeter: 1 2 3 4 1 2 3

1770 - 1827

Allegro vivace e con brio (d. es)

1. *p*

2. *p dolce*

3. *p dolce*

4. *p dolce*

5. *p dolce*

6. *p dolce*

7. *p dolce*

8. *p dolce*

9. *p dolce*

10. *p dolce*

11. *p dolce*

12. *p dolce*

13. *p dolce*

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264. *p dolce*

265. *p dolce*

266. *p dolce*

267.

Example 10. Beethoven Symphony no. 8/I: mm. 1–12

is rhythmically detached from the tonic in the following measure does not in any sense cast doubt on the cadential arrival in m. 12. (On the contrary, it would have been not only unnecessary, but also contextually odd, for Beethoven to turn the last G in the first violin in m. 11 into a dotted eighth note for the sake of clarifying phrase structure.)

Obviously, it is inadequate to simply assert that misreading the half note in m. 40 is after all not as egregious a violation as it may seem; we must also explain performers' general proclivity for this decision against Schubert's notation. Aside from the parallelism that I already pointed out, let us utilize both kinds of analysis that we have employed earlier in this essay—i.e., hypermetrical and Roman numeral—to further examine other musical parameters. Comparing Examples 9 and 10, we have already seen that both excerpts involve a phrase overlap between the Primary-Theme and Transition zones; hypermetrically, however, they demonstrate a subtle but significant difference. Scholars have pointed out that maintenance of a consistent hypermeter at a phrase overlap often requires a phrase expansion, without which a hypermetrical overlap, commonly known as "metrical reinterpretation," will likely occur.²⁸ The unperturbed four-bar hypermeter in Schubert's passage thus requires an extension of the last cadential approach (mm. 37–41) from a four-bar subphrase to a five-bar one. In contrast, the consequent phrase in Beethoven's passage undergoes no expansion, and the ensuing phrase overlap must therefore result in a metrical reinterpretation. Compared to the overlap in Beethoven's example, Schubert's m. 41 more expressly articulate a new hypermetrical unit, as the previous hypermeasure was already complete in m. 40. This intertextual comparison elucidates to some degree the proclivity for hearing m. 41 as a new start that is disentangled from m. 40.

Nonetheless, this observation alone cannot provide a sufficient account, as numerous analogous situations found in the eighteenth-century instrumental repertoire offer no similar incentive to break the formal juncture.²⁹ Our investigation may further solicit the help

²⁸ See William Rothstein, *Phrase Rhythm in Tonal Music* (New York: G. Schirmer, 1989), Chapter 3, for a seminal discussion of metrical reinterpretation and its corollaries.

²⁹ See, for example, the juncture between the Primary-theme and Transition zones in the first movement of Beethoven's Piano Sonata in C major, op. 2, no. 3. The excerpt is discussed in Rothstein, *Phrase Rhythm in Tonal Music* (1989), 44.

of Roman numeral analysis, which reveals something curious about the tonal design of Schubert's repeated cadential approach. Recall that the dominant harmony in m. 36 is too terse to fulfill the cadential expectation of the consequent phrase; Schubert thus restates the approach to reinforce the cadential rhetoric. The second approach in mm. 37–40, which is almost a literal repetition of mm. 33–36, creates an intriguing harmonic problem because of the content of m. 33. As seen in Example 9, m. 33 contains a ii^6 that originates from a typical IV^6 –Passing $\frac{6}{4}$ – ii^6 progression beginning in m. 29. The expanded cadential progression (I^6 – ii^6 – V) does not begin until m. 35, after the ii^6 in m. 33 subtly inflects to a $vii^{\circ\frac{4}{3}}$ in m. 34. As we hear in m. 37 a return to m. 33, our immediate perception is that the V in m. 36 moves regressively to a ii^6 in m. 37, making the V in m. 36 a back-relating dominant. In reality, however, the analysis in the example shows that Schubert discreetly adds an A natural in m. 37 to change the ii^6 into a $vii^{\circ\frac{4}{3}}$ to avoid the retrogression. This change, however, does little to override the parallelism between mm. 33 and 37. As a result, we may project a back-relating V in m. 40, just as we have heard in m. 36. Both tonal and hypermetrical considerations thus reveal a perceptual boundary between mm. 40 and 41, which helps explain performer's tendency to shorten the half note in m. 40. Thus interpreted, Schubert's notation of the second half note in m. 40 suggests an awareness of the intrinsic discontinuity between mm. 40 and 41, and that the half note is consciously put in place to clarify his intent.

CONCLUSION

In the above case studies, I have aimed to demonstrate the pedagogical relevance of myriad ideas from the scholarly literature on analysis and performance. In all three areas, we see a continuous dialogue between the analyst and performer (Schmalfeldt); a highly personal utilization of analytical results to corroborate performance interpretations (Rothstein); an active process of investigation and reflection that mingles aspects of performance and analysis (Howell and Carey); deliberate consultations of performances in making analytical decisions (Lester); and a radical synthesis of score study, historical and stylistic awareness, and listening (Cook). In bringing these ideas to practical fruition, recordings have become part of the text in the theory classroom. Whereas conventional music theory textbooks teach the fundamental concepts of harmonic, contrapuntal, and formal categories, performances illumine the relevance of these concepts in the vivid sounds of music making. Music theory instruction conceived this way is much like Alton Brown's quirky but effective approach to cooking on his popular show "Good Eats" on the Food Network."³⁰ Brown's aim is to recreate delicacies from cultures all around the globe through the lens of a scientist who strives to explain the mechanism of each minute detail in the cooking; in turn, these explanations inspire chefs (with Brown himself as an exemplar) to concoct their own recipes through personal interaction and experimentation with the principles at work. Obviously, one does not necessarily require Brown's approach to become a good chef; a gifted chef may very well bring a recipe to life by a combination of industriousness, passion, intuition, and experience. Yet, as chefs learn of the underlying causes of their culinary practices and traditions, creativity for innovative recipes elevates to new levels (as Brown himself has so efficaciously demonstrated), and culinary theories become an integral part of a practice that is fun, innovative, and rewarding.

³⁰ Information on the show may be found on the website <http://www.foodnetwork.com/good-eats/index.html>.

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Dalcroze's Approach to Solfège and Ear Training for the Undergraduate Aural Skills Curriculum

By GREGORY RISTOW, KATHY THOMSEN, AND DIANE URISTA

INTRODUCTION

Swiss composer and pedagogue Emile Jaques-Dalcroze (1865-1950) is most widely known as the creator of eurhythmics—a movement-to-music approach that engages the moving body in musical training. Today, eurhythmics is taught around the world, with the central unifying principle of connecting movement to music.

Eurhythmics, however, is just the tip of the iceberg. The Dalcroze approach is made up of eurhythmics, solfège, and improvisation. Dalcroze believed the combination of these was essential to a complete musician's training. Ideally, elements from each branch blend, resulting in an education that stresses musical motion, sensitivity to harmonic function, and improvisation—skills especially applicable to the training of performing musicians.

Much has been written about eurhythmics as an approach to training musicians through movement, and this has largely overshadowed Dalcroze's other pedagogical innovations.¹ His extensive ear training and solfège exercises—devised during his tenure as Professor of harmony and solfège at the Geneva Conservatory (1892-1910)—are largely unknown to all but those who have had Dalcroze training. His solfège texts have never been published in English.² This article aims to introduce some of these exercises—which we believe are immediately applicable in traditional aural skills curricula—to a broader audience.

¹ Please see an annotated bibliography of select Dalcroze Eurhythmics sources in appendix A.

² These include *Exercices Pratiques d'Intonation* (Practical Exercises for Intonation), Luasanne: Jobin et Cie, 1894, *Les Gammes et Les Tonalités, Le Phrasé et Les Nuances* (Scales and Keys, Phrasing and Nuance, in three volumes), Lausanne: Jobin et Cie, 1906, and many other smaller volumes of music for sight singing. His *Préparations pour une méthode de Solfège Rythmique Vocal* (Preparations for a Method of Vocal Rhythmic Solfège), Luasanne: Jobin et Cie, 1925 is an approach to teaching rhythm, and will not be discussed in this article.

Dalcroze's approach to teaching aural skills consists of exercises and games designed to develop facility in hearing function and harmonic context, even in highly modulatory music. Because it is a set of tools, not a specific sight singing or dictation sequence, it can be incorporated into any traditional undergraduate aural skills sequence. The exercises also work well in the music theory classroom as an effective aural/sensory tool to complement verbal explanations of tonal concepts.

In this article we present three types of exercises drawn from Dalcroze's solfège and ear training pedagogy: I. C-to-C Scales, II. Scalar Fragments, and III. Harmonic Proof Improvisations. Together these exercises have the primary goals of helping students develop:

- An acute awareness of half- and whole-steps
- Sensitivity to scale degree function
- Knowledge of one's position at all times within a tonal context
- The ability to sing and recognize a modulation to any key instantly
- Improvisatory skills

Some of the exercises we present are of our own invention, others are taken directly from Dalcroze's writing, but most have been passed down to us by leading Dalcroze practitioners in Dalcroze eurhythmics workshops. Workshops are the time-honored approach for training students and teachers in the Dalcroze method.³

Most of the exercises described here are introduced aurally, without written notation. Students listen and sing, repeating or altering what they've heard, with and without clues from the piano. Students are encouraged to improvise; the frameworks are carefully designed to guide them. The teacher can assess what students know by hearing what they invent. Written notation is used for clarification and further understanding, but it typically follows the aural experiences.

³We are indebted to many Dalcroze teachers from whom we received our training. In particular, we would like to thank: the late Robert Abramson, Gabriella Chrisman, Anne Farber, Herb Henke, Stephen Moore, Lisa Parker, and the late Marta Sanchez.

Many Dalcroze exercises are games—an effective pedagogical strategy that promotes active learning and models specific musical behaviors essential for the developing musician.⁴ The games and exercises we present range in difficulty from relatively easy (singing scales from notes other than tonic with support from the piano) to advanced (improvising modulatory phrases). All are variants on the common theme of connecting functional hearing with note names, and teachers should select exercises that are most appropriate for their students. By choosing exercises matching the ability levels of our respective students, we have used these exercises with a diverse range of students: music majors at both a liberal arts university and conservatory, advanced high school students, community college students, and graduate music education students.

ON SOLFÈGE SYSTEMS

Like most Europeans, Dalcroze used a fixed-Do system. In his writings on solfège, he suggested implementing altered syllables to reflect sharps and flats. Sharps were given an “-è” ending, and flats an “-eu” ending; double sharps were given an “-iè” ending, and double flats an “-ieu” ending.⁵ Today, however, the method is taught using the more traditional form of fixed-Do. All types of “F,” regardless of accidental, are called “fa.” Having students not name the accidentals has some advantages that we explain later in the article. The fixed-Do system names pitches, not their function. Among the main strengths of Dalcroze’s approach for those teaching with fixed-Do is that it brings awareness of function (contextual meaning) into a solfège system that might otherwise ignore it.

For those of us teaching in America, where moveable-Do is more widely used, the Dalcroze approach can have a converse benefit: it can help raise awareness to pitch (phenomenological naming) within a solfège system that might otherwise ignore it.

⁴ The approach is similar to the gaming techniques Deborah Rifkin and Diane Urista introduced in their article, “Developing Aural Skills: It’s Not Just a Game,” *Journal of Music Theory Pedagogy* 20 (2006): 57-78. We encourage the reader to consider using these games as preparation for, or in conjunction with, the more advanced scale degree and modulation exercises and games introduced in this article.

⁵ Emile Jaques-Dalcroze, *Les Gammes et Les Tonalités, Le Phrasé et Les Nuances*, p. 14.

This awareness helps students translate their functional hearing more directly to and from musical notation and an instrument. (Appendix B contains suggestions for teachers using moveable-Do to help make these exercises work most efficiently in that context.)

The real benefit of Dalcroze's approach is that it fuses contextual and phenomenological thinking, since each exercise requires students to be aware of both.

Dalcroze's exercises easily adapt to any singing system, but they are most effective when an absolute system (letter names/fixed-Do) is combined with a relational system (scale degree numbers/moveable-Do). This combined approach prepares students for fluent sight singing and dictation of highly modulatory music by enabling them to think functionally within the context of all major and minor keys.⁶

I. C-TO-C SCALES

The C-to-C scales are Dalcroze's most significant contribution to ear training pedagogy. These scales are often referred to as "Dalcroze Scales" or "Do-to-Do Scales." The C-to-C Scales develop:

- Sensitivity to scale degree function and functional transformation/modulation.
- The ability to conceive of any tone as any scale degree function.
- An acute awareness of whole- and half-step patterns for all keys.
- Knowledge of one's position within a tonal context at all times.
- A strong memory for C, and the ability to identify the key of a musical passage based on the function of C within the passage.

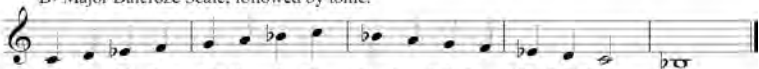
Introduction To C-To-C Scales

C-to-C scales are major and minor scales performed within one octave (C4 to C5 for women; C3 to C4 for men). In keys where C is

⁶Two of the authors use a combined fixed-Do/scale degrees system at their respective institutions, and one uses a combined moveable-Do and letter names system. Two of the authors would like to personally thank William Marvin from the Eastman School of Music for introducing them to this combined approach. For a more thorough discussion of solfège systems and the use of a combined phenomenal and contextual approach, see Marvin's "A Comparison of four Sight-Singing and Aural-Skills Textbooks," *JMTP* 22 (2008): 131-148 [see esp. pp. 137-9].

sharped or flatted, they are performed from C $\sharp$ to C $\sharp$ or C $\flat$ to C $\flat$. Minor scales are sung in the harmonic and melodic minor forms. Tonic is often sung following the scale itself for a sense of closure. See Example 1.⁷

B $\flat$ Major Dalcroze Scale, followed by tonic:

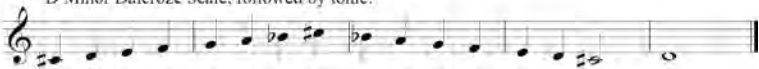


Fixed-Do:	Do	Re	Mi	Fa	Sol	La	Si	Do	Si	La	Sol	Fa	Mi	Re	Do	Si
Letter names:	C	D	E	F	G	A	B $\flat$	C	B $\flat$	A	G	F	E	D	C	B $\flat$

Moveable-Do: Re Mi Fa Sol La Ti Do Re Do Ti La Sol Fa Mi Re Do

Scale Degrees: 2 3 4 5 6 7 1 2 1 7 6 5 4 3 2 1

D Minor Dalcroze Scale, followed by tonic:



Fixed-Do:	Do	Re	Mi	Fa	Sol	La	Si	Do	Si	La	Sol	Fa	Mi	Re	Do	Re
Letter names:	C $\sharp$	D	E	F	G	A	B $\flat$	C $\sharp$	B $\flat$	A	G	F	E	D	C $\sharp$	D

Moveable-Do: Ti Do Re Mi Fa Sol Le Ti Le Sol Fa Mi Re Do Ti Do

Scale Degrees: 7 1 2 3 4 5 6 7 6 5 4 3 2 1 7 1

Example 1: B $\flat$ Major and D Minor Dalcroze Scales

At first glance, unaccompanied C-to-C scales look like modes (and certainly could be conceived that way); however, the purpose of C-to-C scales is to learn to perceive them not as modes, but rather as major and minor scales that begin and end on a scale degree other than tonic. This difference is highlighted by the way in which the scale is harmonized.

To demonstrate for yourself, sing a C Mixolydian scale on letter names or fixed-Do.



Example 2a: The Mixolydian Scale

⁷ As mentioned earlier, Dalcroze instructors traditionally use the fixed-Do system with no change of syllable for chromatic alterations in solfège exercises. However, these exercises can also be sung on letter names (without singing 'sharp' or 'flat'). In either system, instructors may ask the students to sing "sharp" or "flat" after a note, where the tempo permits, to aid in identification of the accidentals if they wish.

Now sing the same scale again with the following harmonization. Conclude the scale by singing F, its tonic.

Example 2b: F Major C-to-C Scale Harmonized

The harmonization transforms the dynamic structure of the scale, making it nearly impossible to hear it as anything but a diatonic F major tonality beginning and ending on scale degree $\hat{5}$. If heard as a mode, the ear accepts the lowest tone as the main tone. When heard as a major/minor diatonic scale, the ear searches for clues that will lead it to its tonic.

Now, play just the initial dominant seventh chord of the harmonization above, sing the scale again, and resolve by singing a tonic F at the end. The dominant seventh chord is enough to direct the ear into hearing this in the context of F Major. Finally, with no accompaniment from the piano, imagine the sound of that dominant seventh chord, and sing the scale and tonic one last time. Now the ear is providing its own harmonic support for the scalar melody. Practicing C-to-C scales increases one's sensitivity to melodic direction and tonal harmony, which, in turn, promotes more expressive performance.

Singing a C-to-C scale is like jumping midstream into a scale already in progress. This is one of many practical pedagogical advantages to learning C-to-C scales, given that scalar passages in music often do not start on tonic. Students learn to identify scales as they unfold in real compositions. The C-to-C octave also provides a fixed frame of reference to compare and internalize the dynamic makeup of all twelve major and minor tonalities. Dalcroze viewed modulation as a change of scale, and believed once students could immediately swap between any given scale and another, they could handle all modulations with ease.

PEDAGOGY OF C-TO-C SCALES: INTRODUCING NEW KEYS

The sequence outlined above for introducing the F Major Dalcroze scale provides a model of the classic approach used by Dalcroze instructors to introduce each C-to-C scale for the first time, and it is the sequence we recommend. Prompt the class by saying, "Let's sing an F Major scale from C-to-C," and play a C on the piano. Accompany the students' singing of the scale (perhaps in a strict chorale style as above, or in a freer classical or jazz style of your choosing; refer back to Example 2c). Have students resolve the scale by singing the tonic note (F) at the end. Repeat the process a second time, but this time play only the V7 harmony as support for the singing, and perhaps a closing I chord when the students sing tonic. Repeat the singing a third time, with no harmonic support from the piano, encouraging students to hold on to the memory of the sound of the V7 as they sing.

When you return to this same scale in a later class, instead of giving it harmonic support, you might test students' ability to summon a harmonic context for themselves by playing only the starting C and naming the scale. When only the starting note is played, students must think carefully about the half- and whole-steps as they sing the scale, until the ear orients itself and begins to supply a harmonic context for the key. As students gain familiarity with each key, it will take fewer and fewer notes for them to find this harmonic context, until eventually they can hear it from the starting C, C $\sharp$, or C $\flat$ alone.⁸

Once students have been introduced to the F major C-to-C scale, they are usually eager to move into other keys. We recommend G major, followed by other closely related keys. Continue to introduce scales throughout the semester until all have been introduced. Example 3 shows dominant seventh chords for supporting the major and minor C-to-C scales. For minor keys, we suggest using a V¹³ (the lowered scale degree $\hat{3}$ provides enough information to prompt the minor mode.) Note that middle C sits on the top of each chord; the dominant seventh chord transforms its function for each key.

⁸ Dalcroze wrote, "The first concern of the teacher must be to make the child appreciate the difference that exists between the *whole tone* and the *semi tone*. If the student grasps this difference only with hesitation, whether in singing or listening, there should be no thought of continuing to another subject." Emile Jaques-Dalcroze, *Les Gammes et Les Tonalités, Le Phrasé et Les Nuances*, 1.

F (C = 3) B $\flat$ (C = 2) E $\flat$ (C = 6) A $\flat$ (C = 3) D $\flat$ (C = 7) G $\flat$ (C = 4)

G (C = 4) D (C = 7) A (C# = 3) E (C# = 6) B (C# = 2) F# (C# = 5)

Example 3a: Dominant Seventh Chords for Supporting Major Dalcroze Scales

a (C = 3) d (C# = 7) g (C = 4) f (C = 5) b $\flat$ (C = 2)

e $\flat$ (C = 6) g# (C# = 4) c# (C# = 1) f# (C# = 5) b (C# = 2) e (C = 6)

Example 3b: Dominant Thirteenth Chords for Supporting Minor Dalcroze Scales (For the minor mode use a V^{b13}; the lowered scale degree 3 provides enough information to prompt the minor mode).

EXPANDING THE C-TO-C SCALE MODEL: THE PROMPT, THE SCALE, THE CLOSING

As students gain familiarity with several C-to-C scales, the model for singing these scales can be expanded to add variety and challenge, to reinforce harmonic concepts from theory class, and to build musicality and improvisation skills. We refer to the three parts of the basic model for singing a Dalcroze scale as 1) the prompt, 2) the scale and 3) the closing.

The *prompt* tells students what scale they will be singing. A prompt can be musical or verbal. Prompts challenge students to

identify scale degree function, which benefits dictation work. The *scale* refers to variants in how the C-to-C scale itself is performed. These mainly include the scale's rhythm and what harmonic support (if any) is given from the piano. The *closing* is how the harmonic tension is resolved following the singing of a scale. Typically, the closing requires students to translate harmonic and functional thinking into an absolute solfège system (such as fixed-Do or letter names). Closings build the skills necessary for sight singing. They also provide opportunities for improvisation and creativity.

PROMPTS

In the context of our discussion on introducing new keys, we have already mentioned two methods of prompting a scale: 1) give the students the name of the key and an initial V7 to orient their ears to the key or 2) name the key and play only the starting C/C#/C♭, so that students must find the scale by half- and whole-steps or recalling a harmonic context for themselves.

It is also possible to use purely musical prompts, in which the students are given enough musical information to determine the function of C (its relative position in the scale) and, by extension, determine the name of the key itself. These musical prompts reinforce the work on key signatures and scales that generally takes place in a first semester theory course.

Mastery of these prompts enables students to identify scale degree function and harmonic context quickly. Prompts model the kinds of subtle changes in collection and scale degree function that listeners encounter when a tonicization or modulation occurs in a musical context. The goal is for students to discern the tonic of any given musical context instantly and effortlessly.

"V7 Plus C" Prompt:

Play one of the V7 chords with C on top from example 3a or 3b. Ask students to hum C, and if need be, hum up and down the scale to determine C's relative position in the scale. When they know how C is functioning, they should discretely hold up the number of fingers of its scale degree (or show its Kodály / Curwen hand sign). Once a majority of the class has the solution, have the class sing the scale together followed by an ending on tonic. (If C is sharped or flatted in the key, you can let students know this. Or, if they are

experienced in Dalcroze scales and have sung several already that day, they should be able to recognize the alteration of C.)

For instance, upon hearing a D7 chord with C on top, students show 4 with their fingers. They then sing the G Major C-to-C scale followed by the tonic. Work on speed until students can identify the function of C and /or tonic instantly from any aural prompt you play for them.

Alternately, with the same prompt, you can have the class sing the scale (without identifying accidentals) before they have had a chance to analyze how C is functioning, and encourage them to discover which note feels like tonic as they sing the scale. For an ending, the class might sing the scale degree function of C and identify tonic. See Example 4:

Example 4: V7 + C Prompt, E_b Dalcroze Scale, Function & Key Identifying Closing

For any aural prompt, as with V7 + C, you can have the class identify the function of C and the tonic before or after singing the scale when using a phenomenological system such as fixed-Do or letter names without singing accidentals. When we want students to sing without naming accidentals, we tell them so, to ensure that nobody gives away the answer until everyone has had a chance to figure it out.

If students struggle to find tonic before singing the scale, let them sing the scale and discover which note feels like tonic within the context of the scale. Repeat the process in another key, but encourage them to imagine singing the scale silently (audiating it) to find which note feels like tonic. In an advanced class, as a speed drill, you might give an aural prompt, have the class immediately identify the function of C and the name of the key, and entirely skip singing the scale.

"Scale as Prompt":

Sing or play a C-to-C scale (harmonized or unharmonized), without giving tonic at the end, as a prompt. Students must listen very closely for (and remember!) the pattern of half- and whole-steps they hear.

"Whisk & Cluster" Prompts:

These are advanced versions of the scale prompt. For a Whisk, play the scale as quickly and dryly as possible before singing the scale. For a Cluster, play and sustain all eight tones of the scale at once before singing the scale.

The image shows two musical prompts on a single staff. The first is labeled 'Bb Major Whisk Prompt:' and consists of a rapid ascending scale starting on Bb, followed by a whole rest. The second is labeled 'F Minor Cluster Prompt:' and consists of a sustained chord containing all eight notes of the F minor scale (F, Ab, Bb, C, Db, Eb, F, G) followed by a whole rest.

Example 5: Whisk and Cluster Prompts

"Tritone Plus" Prompt:

This is the most challenging prompt. It should be played either in major or minor (tell the students which), since sometimes there will not be enough information for students to determine whether you intended a major or minor key.

Play only the tritone from $\hat{4}$ to $\hat{7}$ within the octave of C-to-C. Encourage students to imagine it resolving both inwards and outwards (since they won't yet have enough aural information to know how it will function in the key). Add C, and encourage the students to let the added note help them know which way the tritone resolves. Ask the students to identify the function of C and sing the scale.

The image contains instructional text and musical notation. The text reads: "Say: 'This is the tritone; try to hear it resolving both in and out.'" followed by "Now I'll add C. Let it help your ears know which way the tritone resolves, then show me the scale degree function of C with your fingers." (Long pause.) "Let's sing the scale." The musical notation shows a piano introduction of a tritone (F and C) in both hands, which then resolves into a C major scale starting on C.

Example 6a: "Tritone Plus" Prompt

When C is part of the tritone, it is obviously not possible to add C as the additional note. Instead, tell the students which note of the tritone is C, and give them any other note. If you give $\hat{2}$ or $\hat{5}$ this is much easier; $\hat{1}$, $\hat{3}$, and $\hat{6}$ are quite challenging:

Say: "This is the tritone; the top note is C $\sharp$. Try to hear it resolve both in and out."

"Now I'll add a new note. Let it help your ears know which way the tritone resolves, then show me the scale degree function of C $\sharp$ with your fingers." (Pause.) "Let's sing the scale."

Example 6b: "Tritone Plus" Prompt when C $\sharp$ is in the Tritone

Discussing why it is possible to identify the scale from such sparse information is an excellent method for teaching the key-defining properties of a tritone. Students can be led to discover aurally that keys sharing tritones on the keyboard share no other notes and are themselves a tritone apart (i.e., if enharmonicism is evoked). This is a wonderful challenge for students in any semester of theory, but especially useful for pushing first year students, and worth returning to as a concept when augmented sixth chords and jazz tritone substitutions are introduced.

"The Changing Faces of C" Prompt:

This prompt models musical contexts with rapidly changing tonics and requires some improvisatory keyboard skills on the part of the teacher. Improvise around a C pedal point—in the bass, a middle voice, or in the uppermost voice (See Example 7 for one of many possible renderings). As students determine the scale degree of C, they should show it with their fingers. Once they have, bring the improvisation to a fermata. Cue the students to sing the scale, and accompany it in the style of your improvisation. On finishing the scale, continue improvising around the C pedal point, but shift (gradually or directly) to a new key, repeating the process. In the hands of a good improviser, students are content to play this game for many minutes, providing a chance to teach and communicate through music instead of words. For a speed version of this game, skip the scale entirely.

Possible prompt for F Major:

Possible prompt for G Major:

legato

10

rit...

Example 7: "Changing Faces of C" Prompt

"Musical Context" Prompt:

Our final tonic finding prompt requires students to listen to a piece. Just after the piece has finished, play C on the keyboard. Dalcroze gives the following advice, "Without thinking of a particular scale, simply from the influence of the tune," sing the C-to-C scale. From this exercise, students learn to determine the key of a piece based on its relative relationship to C.⁹

⁹ Emile Jaques-Dalcroze, *Les Gammes et Les Tonalités, Le Phrasé et Les Nuances*, 106.

THE SCALE

As a teacher, you should decide how much harmonic support to give to the singing of the C-to-C scale proper: full accompaniment, a single chord, something in between, or nothing at all. Provide fuller accompaniment when students need harmonic support to understand a new or challenging scale, less when you want to challenge them to find their own harmonic context or focus closely on the half- and whole-steps. Although unaccompanied scales are in some ways more difficult, even advanced students benefit from and enjoy singing with a thoughtfully harmonized scale, and the harmonic choices you make will guide their expressivity and dynamic shaping of the scale.

It is usually best to choose a rhythm for the C-to-C scales, communicate it to students, and stick with it for a while. This can be a fixed rhythmic pattern, such as:



Example 8: Possible Rhythm for Singing C-to-C Scales

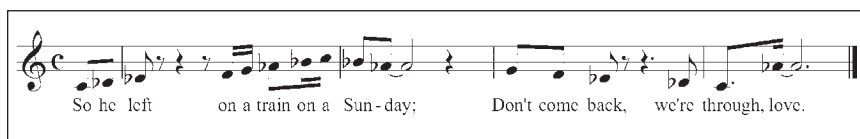
Or, you might choose a rhythm to highlight the arrangement of whole- and half-steps in the scale. For instance, ask students to sing whole-steps in quarter notes, and half-steps in eighth notes. See Example 9:



Example 9: Highlighting Half Steps with Eighth Notes in a B $\flat$ C-to-C Scale:

Try this yourself in any key; notice how far ahead you have to think to be able to do it. Dalcroze was particularly fond of games demanding this sort of mental attention.

You could also challenge students to write lyrics and a rhythm for each C-to-C scale, so that the scales become more memorable. The idea is to make the scale feel like a melody within the key, and the results can be quite musically satisfying. One possible solution for A $\flat$ Major is given in Example 10:



Example 10: A♭ Major Dalcroze Scale Melody

The exercise is challenging, and provides a creative approach to mastering the basic forms of the C-to-C scales. Adding rhythms and words enlivens the scales, fostering a connection between abstract scales and real music. As with many Dalcroze exercises, this draws on another branch of the method: improvisation. As stated previously, in an ideal Dalcrozian approach, all three elements—eurhythmics, solfège, and improvisation—coalesce and reinforce one another. We will introduce other improvisatory activities below.¹⁰

“Scale Degree Mimes”

An important goal of the C-to-C scales is for students to learn the unique tendencies and characteristics of each scale degree. A particularly Dalcrozian way of teaching this is to involve movement. Students could be asked to invent a gesture or posture that best expresses the feeling of each scale degree. The central principle of eurhythmics—embodying musical features—is invoked in this exercise. Here, students at Interlochen Arts Camp act out a major scale from tonic to tonic:



Example 11: Scale degree mimes

¹⁰ We would like to thank Anne Farber, who teaches at the Dalcroze School of Music, in New York, for this idea.

When singing a C-to-C scale, students can take up each of these postures (or postures of their own creation) as they sing the appropriate scale degree. Doing this within the C-to-C scales has the added benefit of teaching students to simultaneously track pitch names and scale degree function through all of the keys.

While always moving like this could be tiring, and somewhat over simplifies the functional relationship of scale degrees (how different scale degree $\hat{1}$ feels as part of a $ii^{\frac{4}{2}}$ chord!), it invites expressivity, nuance and musicality into the aural skills curriculum. Whether they are moving or not, students should always be encouraged to perform scales musically and with sensitivity to scale degree function. In Dalcroze's words, nuance is "the joy of the lessons that cloaks the aridity of certain exercises in a resplendent mantle of poetry and beauty."¹¹

THE CLOSING

Since most Dalcroze scales do not end on tonic, they invite a musical addition that resolves the lingering harmonic tension. In its simplest form, as suggested earlier, that could mean singing the tonic note immediately after the scale. But the closing can also be an opportunity to reinforce harmonic progressions and scale degree patterns related to students' work in theory and sight singing. Equally important, the closing can give students a chance to improvise and express themselves creatively.

"Up to tonic" Closing

Following the singing of a scale (in a rhythm and meter of the teacher's choosing), students have one measure to sing from C back up the scale to tonic. They can do so in any rhythm and can repeat notes at will, but should arrive on tonic (or an artful $\hat{7} - \hat{1}$ retardation) on the final downbeat.

"Wrap it up" Closing

Following the singing of a scale, students have one measure (two, three, etc...) to improvise a melody that cadences on tonic.

¹¹ Ibid, p. 3.

"Dominant-Tonic Improvisation" Closing

To reinforce the dominant-tonic relationships, and help students become more fluent at recognizing the notes of these chords in various keys, students can improvise melodic riffs on the dominant seventh for one bar, then on the tonic in the final bar. Depending on the student, improvisations can be simple or elaborate:

Example 12a: D $\flat$ Major C-to-C Scale with Improvised V7-I Closing

Students learn through trial and error which type of melodic endings will effectively (or not so effectively) establish the key.

If students struggle to solfège their improvisations, it is often because they cannot recall the notes of the chords quickly enough in that key. To help prepare for this, instead of improvising the two measures, first have students arpeggiate the V7 chord within the octave of C-to-C for one measure, and the tonic chord for a second measure, until they reach tonic descending:

Example 12b: D $\flat$ Major C-to-C Scale with Arpeggiated V7-I Closing

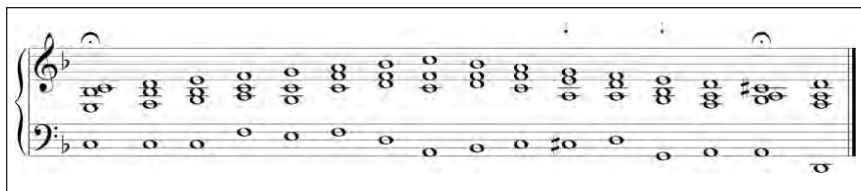
This exercise can be varied to reinforce different harmonies and complement learning from theory classes. Instead of V7-I, you might use ii $\frac{6}{5}$ -V7-I, $\frac{6}{4}$ Fr-V-I, or any other progression of your choosing.

“Fixed Pattern” Closing

Students sing a predetermined scale-degree pattern (such as $\hat{4}-\hat{3}-\hat{2}-\hat{5}-\hat{1}$) in note names or fixed-Do *within the C-to-C octave* following a scale. This exercise can reinforce scale degree patterns that are being introduced in sight singing, and helps students increase speed at translating scale degrees to pitch names. Because of the nature of the C-to-C scales, even relatively smooth patterns will result in large leaps in some keys as students leap up or down to keep the pattern within the octave of C-to-C. (Imagine, for instance, $\hat{4}-\hat{3}-\hat{2}-\hat{5}-\hat{1}$ within C# to C# in A Major.) Students generally enjoy these disjunct moments.

MODULATING C-TO-C SCALES

Once students have mastered singing and identifying C-to-C scales using the exercises above, the scales can be useful tools for teaching modulation. It is possible to harmonize a C-to-C scale in such a way that it convincingly modulates to another key. A class might be given a starting C7 chord and instructed to sing a C-to-C scale. (At this point in their studies, they should be able to quickly recognize what key they are in from a V7 prompt alone.) As they sing, this curve ball is thrown at them. See Example 13a:



Example 13a: Modulating C-to-C Scale (Relative Major to Minor)

The harmonization is clear enough that, nine out of the ten times we have tried this, the class automatically sings the C# at the end of the scale. The trick is to then isolate which note feels like it is shifting into a new key. Some students will argue for the G, but most think it is the E. For a greater challenge, have the class sing the scale again, but this time only give them the starting C7 harmony followed by the closing predominant and cadential $\frac{6}{4}$ in the new key. Finally, have students sing the scale without any harmonization, encouraging them to *remember* the harmonic support at the pivot.

These sorts of harmonizations are possible for all typical modulations although they take a bit of thought to work out. Here

are several possible harmonizations of modulations to closely related keys in C-to-C scales:



Example 13b: Modulating C-to-C Scale (Tonic to Dominant)



Example 13c: Modulating C-to-C Scale (Tonic to Subdominant)

"Mid-Scale Pivots"

In another exercise, students sing a C-to-C scale up to a given note; they put a fermata on that note, at which point a new scale degree is called out. The students complete the C-to-C scale and sing the new tonic. For a more challenging version, after the fermata, the students complete the C-to-C scale silently and everyone sings the tonic together. For an even greater challenge, students sing the new tonic immediately after the fermata. As a middle step leading to this, we often have students first learn to think of any tone as scale degree $\hat{5}$ in the new key. Students sing a Dalcroze scale to a given point, and then sing " $\hat{5}\text{-}\hat{4}\text{-}\hat{3}\text{-}\hat{2}\text{-}\hat{1}$." At that moment, we give them the harmonic support of a dominant pedal, and then encourage them to hear this harmony for themselves. To test whether students are hearing the dominant, we have them arpeggiate it: " $\hat{5}\text{-}\hat{7}\text{-}\hat{2}\text{-}\hat{4}\text{-}\hat{2}\text{-}\hat{7}\text{-}\hat{5}$ " before moving on.

Pedagogical Advantages of Singing C-to-C Scales vs. Traditional Tonic-to-Tonic Scales

C-to-C scales offer a number of significant pedagogical advantages worth considering. The most obvious is that all major

and minor scales are set in a range comfortable for most students to sing. However, there are deeper, more compelling reasons for incorporating them into the traditional aural skills curriculum. Let us begin by comparing them to traditional tonic-to-tonic scales, and ask: what do C-to-C scales require of students that traditional scales do not?

First, students have to be much more aware of the accidentals needed to sing a C-to-C scale. To sing a traditional tonic-to-tonic scale, the singer need only be concerned with where the scale begins and ends. By comparison, to sing a B $\flat$ Major C-to-C scale, for example, the singer must know which accidentals are needed, in this case, B $\flat$ and E $\flat$. She cannot simply sing the tonic-to-tonic major scale transposed. When Dalcroze scales are incorporated into aural training, students learn to automatically recall the accidentals required for all keys and scales.¹²

Second, C-to-C scales bring focus to the unique half- and whole-step patterning of each major and minor scale. These scales force students to concentrate on whether they are singing a whole- or half-step. For instance, singing the A $\flat$ Major Dalcroze scale for the first time often requires enormous attention—to start a scale with a half-step is typically quite difficult for a beginner. Soon, this becomes automatic, and half- and whole-step patterns become aural clues for the student. This knowledge has vast implications for the teaching of sight singing and dictation; students need only hear a tiny fragment of a scale in a composition to know what part of the scale they are in.

Third, C-to-C scales train students to become as familiar with starting a scale from *any* scale degree as they are from tonic, which models how scales are often experienced in real music.

Fourth, C-to-C scales train students to make any pitch feel like *any* scale degree, a critical skill for students to have acquired when they begin sight singing and hearing modulating passages. In the Dalcroze approach, this ability is hardwired from the beginning. Students are cognizant of and able to adapt instantly to the functional transformations that occur among tones when moving from one key to the next.

¹² We have found that singers, whose instrument does not specifically require an awareness of note names, especially benefit from learning to think about scales in this way, and that the work can greatly improve their intonation in sight singing and performance settings.

Fifth, C-to-C scales can help strengthen the functional hearing of students with absolute pitch. In most dictation contexts students with absolute pitch can still arrive at the correct answer without necessarily hearing function. (Even in harmonic dictations, as an example, many students with absolute pitch first hear the letter name and then use their knowledge of theory to give it a functional label.) But absolute pitch is not helpful in discovering the function of C. This fact levels the playing field, challenging those with absolute pitch and often enlivening those without it. Discovering the function of C is a game in which all students can participate equally. Although Dalcroze uses a "fixed" system, the fundamental goal of his method is to teach sensitivity to functional hearing.

Finally, C-to-C scales ground students in the absolute sound of C. We have found that many students who study Dalcroze scales and other related exercises are able to find middle C by the end of the first semester.¹³ Moreover, most highly experienced Dalcroze students are able immediately to identify how C is functioning within the scale of a piece of music, and from that, know what key the piece is in.

Conclusion to C-to-C scales

Singing, ear training, and improvising within C-to-C scales develop in students an acute sense of scale degree function and tonal context. Unlike other methods that use relative systems (scale degrees or moveable-Do), Dalcroze's solfège method, by its very use of absolute systems (fixed-Do or note names), intentionally postpones labeling function. These exercises encourage students, and indeed require them, to discover function for themselves. The main goal of every C-to-C exercise is to discover, by ear, *how* C is functioning. Once students have discovered the function of C, singing the scale with functional labels (scale degree numbers or in moveable-Do) confirms and names their discovery.

¹³ We recognize that developing the ability to recall middle C is not the same as developing absolute pitch, which research suggests can only be acquired during a critical-period in childhood. For an interesting discussion on this critical-period of absolute pitch acquisition, see E. W. Marvin, "Absolute Pitch Perception and the Pedagogy of Relative Pitch," *Journal of Music Theory Pedagogy* 21 (2007): 1-37 and L. J. Trainor, "Are There Critical Periods for Musical Development?" *Developmental Psychology* 46 (2005): 262-278.

Students who study C-to-C scales over an extended period of time learn to convert note names to scale degrees automatically; a Dalcroze student hearing C in the key of B♭ major, for example, knows instantly how C *feels* in that key and knows this in terms of the note names themselves. This allows students to transfer their trained knowledge into expressive performance, adjusting their playing accordingly; for they know just *how* any note they play feels.

II. SCALAR FRAGMENT EXERCISES

While C-to-C scales make up the heart of Dalcroze's solfège approach, he devotes the second and third volumes of his *Les Gammes et Les Tonalités, Le Phrasé et Les Nuances* to the study of scalar fragments. Whereas C-to-C scales train students to grasp scales as wholes, scalar fragments invite students to explore *within* the scale. Scalar fragments train students to hear, sing, and improvise a melody starting from any place within any scale. Knowing at all times where one is positioned in a tonal context is an essential skill for any performing musician. Like C-to-C scales, fragment exercises prepare students to hear, sight-sing, and improvise modulations. Scalar fragment exercises develop:

- The ability to recognize the internal make up of any major / minor mode
- The ability to start singing from any place within a major or minor scale
- Sensitivity to the dynamic and functional difference among same-named intervals

Exercises begin with two-note fragments and continue up to fragments of seven notes. For our purposes, we focus primarily on exercises that feature *dichords* (two adjacent notes of the scale) and *trichords* (three adjacent notes of the scale). The terms dichords and trichords are, of course, not to be confused with their use in set theory. While Dalcroze's own solfège texts focus equally on smaller and larger fragments, many Dalcroze practitioners today (including the authors) work mainly with the smaller fragments of the dichord and trichord.¹⁴

¹⁴ Dalcroze refers to scalar fragments as: Dichords—two-notes; Trichords—three-notes; Tetrachords—four-notes; Pentachords—five-notes; Hexachords—six-notes; and Heptachords—seven-notes.

In the Dalcroze approach, scalar fragments are the primary means by which students learn intervals. Intervals are taught as omitted steps within the context of a scale and a key. In other words, the interval of a third is not identified as a measured gap outside the scale, but rather as a skipped step *within* the scale; a third is one skipped step; a fourth is two skipped steps, and so on.¹⁵

We believe teaching intervals as skipped steps in the scale sensitizes students to the dynamic differences inherent in each of the same-named intervals. Take, for example, the four minor thirds that reside in the major mode. Each has a unique dynamic function based on its location within the scale. For instance, when we compare the minor third composed of the leading tone and scale degree $\hat{2}$ to that of the minor third composed of scale degrees $\hat{6}$ and $\hat{1}$, the former sounds more active, even “wider” than the latter, which sounds more passive, even “smaller.” Fragment exercises sensitize students to these subtle dynamic differences among same named intervals.¹⁶

Dichords

To begin, students sing the scale in dichords (Do-Re, Re-Mi, and so on...) in an eighth note rhythm. When they come to a half-step dichord, they are to sing a triplet figure (e.g., Mi-Fa-Mi in C Major). Again, solfège can be substituted with scale degrees or letter names. For instance, in E Major:



Example 14: E Major Dalcroze Scale with Triplet Half-Steps

¹⁵ Whether the reader agrees or not with a scale-based approach to teaching intervals, this method has its merits in illuminating an interval's scalar position and can be combined with other non-scalar based approaches to teaching intervals.

¹⁶ See Karpinski's discussion, which draws together several strands of research in support of a context based approach to teaching intervals in Gary S. Karpinski, *Aural Skills Acquisition: The Development of Listening, Reading, and Performing Skills in College-Level Musicians* (New York: Oxford University Press, 2000), 52-56.

This E major scale looks like a C# minor scale; however, from the work in C-to-C scales discussed previously students have learned to internalize a harmonization that makes this scale feel as if it is in E major. The teacher can help by providing an E major harmonization as the students sing. Highlighting half-steps with a triplet helps students distinguish between half- and whole-steps and to locate their position in each scale. For an added challenge, ask students to physicalize the eighth note rhythms by patting their laps on the downbeat and clapping their hands on the off-beat as they sing—resulting in several three against two rhythmic patterns.¹⁷

Trichords

Most American Dalcroze teachers today spend more time on trichords than any other scalar fragment. Trichords are grouped into five species. The first three occur in the major and minor modes, but the last two only occur in harmonic minor. Bob Abramson assigned numbers to each of the five trichords to clarify their identification. See Example 15:

Trichord:	#1	#2	#3	#4	#5

Example 15: Trichord Species 1-5

To ensure students know the position of each trichord in the scale, ask them to indicate its species by holding up the appropriate number of fingers, or singing words such as “trichord 1,” while singing up the scale. This exercise trains students to become aware of a trichord’s placement in the major and minor scales, which helps in understanding modal differentiation.

Trichord:	1 2 3 1 1 2 3 2 1 1 3 2 1 3

Example 16: Trichords within the Major Scale

¹⁷ Dalcroze presents several rhythmic solfège exercises in his writings. We encourage teachers to invent other exercises combining pitch and rhythm.

Choose other Dalcroze scales and do the same exercise. You will notice how acutely aware you become of the half- and whole-steps patterning for each scale. Once students are fluent with their analysis, ask them to sing trichords going down the scale. Identifying trichords while singing up the scale is comparatively easy, but it takes practice to sing and identify descending trichords given the analysis of species is from low to high. We recommend singing trichords in major and natural minor scales first. After having sung Trichord Species 1, 2, and 3 for some time, the sound of Species 4 and 5 is quite distinctive.¹⁸

"Scrambled Trichords"

For a greater challenge, students sing the three notes of each trichord out of order, for instance (Mi Do Re, Fa Re Mi, and so on...). Starting the trichord from any of its three pitches furthers one's familiarity with its internal make up.

"Rhythmic Trichords"

Ask students to sing different rhythmic patterns for each trichord, such as:



Example 17: Rhythmic Trichords

This particular rhythmic pattern reinforces the location of half-steps with a longer note value on the way up. You could reverse this pattern on the way down, or appreciate the "displaced dissonance"¹⁹ you experience when quarter notes no longer line up with the half steps.

¹⁸ Identifying the species of trichords adds another layer of understanding to the sequence drills Karpinski uses to develop fluency with syllables, see Karpinski, *Aural Skills Acquisition*, 149-151.

¹⁹ Dalcroze was particularly fond of these types of exercises, and includes several games in his method that teach this sort of "dissociation."

"Coded Melodies"

Pick a C-to-C scale and sing through it to establish the key and a harmonic context. Sing a note (on letter names or fixed-Do) for students, while showing three fingers either pointing upwards or downwards. Students sing the trichord (up or down) from the note you've sung. For added challenge, do not *sing* the first note, but simply *say* its name or fixed-Do solfege. (By changing the number of fingers, you can indicate dichords, tetrachords, and so on, for a more varied melody.)

Trichords do not reveal any new or unusual information, but singing them teaches students the internal makeup of the scale, which in turn trains them to know where they are positioned at all times within a tonal context. Harmonizing trichords while students sing helps them understand the harmonic implications associated with different parts of the scale.

"Coded Melodies 2"

In another variant of this game, the number of fingers you show can instead represent the species of trichord students are to sing. This highly challenging exercise is a great way to introduce elements of chromaticism, including modulation and mixture.

"Melodic Walks"

In these exercises a melodic pattern within a scalar fragment is given, and students take it for a "walk" up or down the scale.



Example 18: An Example of a Melodic Walk (*Marche Mélodique*) in D Major

Singing these patterns makes students highly aware of the functional makeup of smaller fragments contained within the scale; in fact, the second and third volumes of *Les Gammes et Les Tonalités*, *Le Phrasé et Les Nuances* are largely devoted to this type of exercise.

Fragments of various sizes can be used, and we encourage teachers to invent their own scalar patterns for students to “walk” up and down.

“Trichord ID”

Play a trichord for students; they should immediately sing it back on words that identify it by number, such as “Trichord 1” for two whole-steps. Alternately, if you are working within a key, students can sing it back first on its trichord name (“Trichord 2”) and then sing it on scale degrees (for example “ $\hat{6}$ - $\hat{7}$ - $\hat{1}$ ”).

“Trichord Hunt”

Play a scalar fragment, and tell students the starting note. Once students have identified its species (e.g. species 2/ whole-half) and the note names (e.g. D-E-F) they should “hunt” for it in all the major and minor scales in which the trichord functions, and sing those C-to-C scales. For instance, D-E-F is $\hat{2}$ - $\hat{3}$ - $\hat{4}$ in C major, $\hat{6}$ - $\hat{7}$ - $\hat{1}$ in F major, $\hat{1}$ - $\hat{2}$ - $\hat{3}$ in D minor, and $\hat{4}$ - $\hat{5}$ - $\hat{6}$ in A minor. This exercise is an excellent precursor to teaching modulation.

III. IMPROVISING HARMONIC PROOFS

Dalcroze taught modulation as a change of scale, and believed that if students could immediately swap between any two scales, they could handle all modulations. Harmonic proof improvisations develop the ability to:

- Establish a tonal context for oneself
- Sing and hear a modulation to any major or minor key
- Interpret all possible pivots of any set of notes
- Hear associations between recently heard melodic pitches and those recalled from earlier

The exercises that follow are largely drawn from the teaching of Anne Farber, and are clearly an extension of Dalcroze Scales.

Proving Tunes

Once students have gained experience singing and identifying trichords, they are ready for a more advanced game called Proving Tunes, which teaches the processes of modulation. Proving tunes require students to improvise melodies from a given trichord that ultimately must end in a key that proves the assigned function of the opening trichord. From this activity, students learn how the same trichord can serve as a “pivotal gateway” into all its possible keys.²⁰

To play the game, ask a student to sing (on solfège or letter names) a given trichord that starts on any pitch. For instance, the student could sing a species 2 trichord on Re-Mi-Fa (D-E-F). Assign one of the four possible scale-degree functions to the trichord: $\hat{2}-\hat{3}-\hat{4}$, $\hat{6}-\hat{7}-\hat{1}$, $\hat{1}-\hat{2}-\hat{3}$, or $\hat{4}-\hat{5}-\hat{6}$.

Ask the student to improvise a melody that ends on the “tonic” that will prove the function of the opening trichord. For instance, if Re-Mi-Fa is assigned to scale degrees $\hat{4}-\hat{5}-\hat{6}$, the student needs to improvise a melody that convincingly ends in the key of A minor. See Example 19b:

a: Species 2 Trichord as $\hat{2}-\hat{3}-\hat{4}$ in C Major



b: Species 2 Trichord as $\hat{4}-\hat{5}-\hat{6}$ in A Minor



c: Species 2 Trichord as $\hat{6}-\hat{7}-\hat{1}$ in F Major



d: Species 2 Trichord as $\hat{1}-\hat{2}-\hat{3}$ in D Minor



Example 19 a-d: Possible Proving Tunes for Trichord #2 on D

²⁰ We recognize that our game, “Proving Tunes” is a more elaborate version of the game, “One-Note Wonder,” presented in Deborah Rifkin and Diane Urista’s article, “Developing Aural Skills: It’s Not Just a Game,” 57-78.

Improvising Proving Tunes trains students:

- to determine ahead of time the tonic and function of the opening trichord, such as D-E-F as $\hat{4}\text{-}\hat{5}\text{-}\hat{6}$ in A minor.
- to insert the required accidental(s), such as a leading tone G $\sharp$ in A minor, which places a half-step between sol and la.
- to improvise a melody with enough key-defining properties to transform the opening trichord into its prescribed function.

Through the act of improvisational trial-and-error students learn the combination of musical elements (time / rhythm / pitch patterns) required to create a convincing key-defining melody, an activity that trains students to establish a tonal context for themselves. This game also helps develop the memory of non-adjacent pitch associations. Upon reaching the final tonic, the student has to have mentally retained the sound of the opening pitches to assure that they have been converted into their prescribed function. After the student finishes singing her melody, the rest of the class could sing it back. The teacher could harmonize the melody to solidify harmonic hearing (dominant and tonic chords often suffice).

Students can take turns improvising proving tunes from the same D-E-F trichord with the remaining functions, respectively, $\hat{2}\text{-}\hat{3}\text{-}\hat{4}$, $\hat{6}\text{-}\hat{7}\text{-}\hat{1}$, and $\hat{1}\text{-}\hat{2}\text{-}\hat{3}$ (refer back to Examples 19a-d). Improvising proving tunes teaches *pivotal fluency*: the ability to interpret instantly all possible pivots inherent in a given set of notes—an essential skill for becoming fluent in identifying and singing a modulation into any key.

Once students have mastered improvising melodies into different keys, they can take turns singing one continuous modulating melody that moves into several keys using the trichord as a pivotal gateway into each new key. This exercise is especially useful in teaching musical passages that contain rapidly changing tonal contexts, as in the case of development sections or late Romantic works.

A student or teacher can also improvise a proving tune as a C-to-C scale *prompt*. First play a trichord from C. Then improvise (or have a student improvise) a proving tune using that trichord. Once students determine how C is functioning, they should hold up that number of fingers. Following the tune, all students sing the C-to-C scale that has been “proven.”

Proving Tunes train students to seek out tonal cues as the melody unfolds, which helps them to verify the assigned function of the opening trichord. Increase the speed at which you play each new melody; the goal is for students to recognize instantly the key and

assigned function of the opening trichord. Or students can take turns improvising melodies beginning with Do-Re-Mi using all possible functions and keys for the class to identify. This activity engages the entire class in the improvisatory and ear training process.

Paths to C

In *Paths to C*, students improvise melodies from any given starting pitch that must end on C. The object is to create a melody that clarifies the final function of C as a scale degree in the chosen key. For instance, if F# is given as the starting pitch, one possible path from F# to C is in G minor. The improvised melody must convince the listener that the final C is scale degree $\hat{4}$, an unstable tone in the key of G minor. See Example 20a.

a. Path from F# to C in the key of G minor; C is scale degree $\hat{4}$



b. Path from F# to C in the key of E minor; C is scale degree $\hat{6}$



c. Path from F# to C, modulating from G Major to C Major; the final C is scale degree $\hat{1}$



Example 20 a-c: Paths to C

Alternatively, the student could improvise a path from F# to C in the key of E minor, in which case C is confirmed as scale degree $\hat{6}$. See example 20b. A longer modulatory path could take place from F# to C that begins in G major, but then modulates to C major, which confirms the final C as scale degree $\hat{1}$. See Example 20c. In advanced classes, students might also treat the starting note as a non-diatonic tone, freeing them to make C take on any scale degree function. *Paths-to-C* is a more advanced improvisatory exercise than *Proving Tunes*, in that students have to finesse a melody on-the-spot that converts the final C into a variety of different scale degrees.

CONCLUSION

In closing, we have found Dalcroze's exercises and games particularly useful in the first and second semesters of a traditional aural skills curriculum. When practiced over time, Dalcroze's approach to solfège and ear training greatly improves students' sensitivity to function and the harmonic meaning of tones. C-to-C scales are particularly beneficial for students who struggle with intonation or tend to "drift" from the key; the Dalcroze method makes it almost impossible for a student to accidentally sing a note outside the tonal context they are working in. The exercises are designed in the spirit of exploration, and help cultivate an engaging classroom dynamic. They require no special materials and can be used in the context of any aural skills curriculum. They can be endlessly varied, and we encourage teachers to invent exercises and games of their own following the principles of Dalcroze's method.

**SUMMARY OF
DALCROZE SOLFÈGE AND EAR TRAINING
PEDAGOGICAL BENEFITS**

I. C-to-C Scales develop:

- Sensitivity to scale degree function and functional transformation/modulation
- The ability to conceive of any tone as any scale degree function
- An acute awareness of whole- and half-step patterns for all keys
- Knowledge of one's position within a tonal context at all times
- A strong memory for C, and the ability to identify the key of a musical passage based on the function of C within the passage

II. Scalar Fragment Exercises develop:

- The ability to recognize the internal make up of any major/minor mode
- The ability to start singing from any place within a major or minor scale
- Sensitivity to the dynamic and functional difference among same-named intervals

III. Harmonic Proof Improvisations develop the ability to:

- Establish a tonal context for oneself
- Sing and hear a modulation to any major or minor key
- Interpret all possible pivots of any set of notes
- Hear associations between recently heard pitches and those recalled from earlier in a melody

APPENDIX A

AN ANNOTATED BIBLIOGRAPHY OF SELECT SOURCES ON DALCROZE EURHYTHMICS

Abramson, Robert M. "The Approaches of Emile Jaques-Dalcroze." In *Teaching Music in the Twentieth Century*. New Jersey: Prentice Hall, 1986.

An overview of Dalcroze's movement-to-music educational philosophy and approach for teaching rhythm, solfège, solfège-rythmique and improvisation to children in the classroom; some ideas are adaptable to the undergraduate music major.

———. *Feel It! Rhythm Games for All*. Warner Bros. Publications, 1998 and *Rhythm Games for Perception and Cognition* (Revised edition). New York: Volkwein Bros., 1997.

Both sources present a series of basic movement exercises and games for teaching rhythm to children that can be made more challenging for the undergraduate music major.

Abramson, Robert M. and Joseph Reiser. *Music as a Second Language*. New York: Music & Movement Press, 1994.

Numerous exercises and games for teaching basic ear-training, sight singing, dictation, and expressive performance through movement for children; many exercises are adaptable for a college-level fundamentals course.

Alperson, Ruth. "A Qualitative study of Dalcroze Eurhythmics Classes for Adults," PhD diss., New York University, 1995.

Detailed summaries of four eurhythmics classes for adults that demonstrate teaching various rhythmic subjects, phrase, and form through movement, followed by an interesting discussion on the pedagogical principles and benefits.

Bachmann, Marie-Laure. *Dalcroze Today: An Education through and into Music*. Translated by David Parlett. Edited by Ruth Stewart. New York: Oxford University Press, 1991.

An in depth study of Dalcroze's educational philosophy and practical ideas for teaching rhythm, pitch, and improvisation through movement for children; many of the ideas presented are appropriate for teaching adults.

Caldwell, J. Timothy. *Expressive Singing: Dalcroze Eurhythmics for Voice*. New Jersey: Prentice Hall, 1995.

A thoughtful overview of Dalcroze's philosophy, including introductory exercises for teaching eurhythmics, improvisation, and melody to the college level student with an introduction to Dalcroze's rules of nuance, phrasing, and accentuation to enhance expressive performance with an emphasis on the singer but applicable to any musician.

Findlay, Elsa. *Rhythm and Movement; Applications of Dalcroze Eurhythmics*. Evanston, Ill.: Summy-Birchard Co., 1971.

Imaginative movement activities, games, and music for teaching rhythm, pitch, and form to young children.

Graybill, Roger. "Towards a Pedagogy of Gestural Rhythm." *Journal of Music Theory Pedagogy* 4/1 (1990): 1-50.

A study on "gestural rhythm" and the benefits of integrating basic eurhythmics exercises into the college level aural skills classroom for teaching simple rhythmic patterns, meter, and melodic contour.

Jaques-Dalcroze. *Eurhythmics, Art and Education*. Translated by Fredrick Rothwell. Edited by Cynthia Cox. New York: A.S. Barnes and Co, 1930 and *Rhythm, Music, and Education*. Translated by Harold F. Rubenstein. 1921. Reprint, New York: G. P. Putnam's Sons, 1931.

Both sources by Dalcroze present in depth essays about his movement-to-music philosophy and pedagogical purpose for an education in eurhythmics for the child, dancer, composer, and actor; the principles of rhythmic movement, solfège, improvisation, and *plastique animée* are addressed.

———. *Exercices Pratiques d'Intonation*. Lausanne: Jobin et Cie, 1894.

Dalcroze's first publication of the C-to-C scales, including a brief preface enumerating what he saw as the primary benefits of this approach. This slender 41-page volume presents the scales and a variety of rhythmic patterns (some with French lyrics) for practicing the scales.

———. *Les Gammes et les Tonalités, le Phrasé et les Nuances*, in three volumes. Lausanne: Jobin et Cie, 1906.

Dalcroze's most comprehensive solfège manuals, in which he introduces his pedagogy of do-to-do scales, scalar fragments, and preliminary exercises for modulation.

- . *Music Movement and Ear-Training: Games and Exercises*. Translated by The Dalcroze School, London. Switzerland: Charles Huguenin, 1939.

A compilation of basic exercises and games by Dalcroze for teaching ear training, singing, and rhythmic movement, which are applicable for any level or age.

- . *Préparations pour une méthode de Solfège Rythmique Vocal*. Luasanne: Jobin et Cie, 1925.

Exercises and games by Dalcroze that teach pitch and rhythm movement concurrently. Musical subjects include melodic ornamentation, changing meter, polyrhythms, and unequal beats. Appropriate for any age or level.

- . *The Jaques-Dalcroze Method of Eurhythmics: Rhythmic Movement*. London: Novello and Co., 1920.

An analysis of the movement techniques and physical considerations (such as proper carriage, length of steps, etc.) for performing eurhythmics, and a collection of exercises for walking rhythms and beating time in duple, triple, quadruple, and quintuple meters. Diagrams of Dalcroze's full-body conducting patterns are included.

- Moore, Stephen Fred; Julia Schnebly-Black. *Rhythm Inside: One-on-One*. Van Nuys: Alfred Press Inc., 2004.

A compilation of eurhythmics exercises tailored for the private studio appropriate for adults and children.

- Pennington, Jo. *The Importance of Being Rhythmic*. New York: G. P. Putnam's Sons, 1925.

An overview of the principles of eurhythmics and an introduction to basic movement exercises addressed to children but appropriate for any age or level. The book is based on and adapted from "Rhythm, Music and Education," by Dalcroze.

- Rosenstrauch, Henrietta. *Essays on Rhythm, Music, Movement*. Pittsburgh: Volkwein Bros., Inc., 1973.

Interesting essays from a student of Dalcroze on his pedagogical philosophy and the study of rhythm and movement in general; the practical ideas are for teaching children but applicable to any age or level.

Schnebly-Black, Julia and Stephen F. Moore. *The Rhythm Inside – Connecting Body, Mind and Spirit Through Music*. Oregon: Rudra Press, 1997.

A worthwhile discussion on the many pedagogical benefits of eurhythmics, and fourteen basic exercises applicable for any age or level. Includes a CD with accompaniments for movement and exercise directives.

Spector, Irwin. *Rhythm and Life: The Work of Emile Jaques-Dalcroze*. Dance and Music Series No. 3. Stuyvesant, NY: Pendragon Press, 1990.

A thorough study of the historical development of Dalcroze's eurhythmics approach, his influences and pedagogical principles. It also includes practical movement exercises suitable for any age or level.

Steinitz, Toni. *Teaching Music in Rhythmic Lessons: Theory and Practice of the Dalcroze Method*. Edited by Rafi and Bruno Reinhardt. Tel-Aviv: Or-Tav Music Publications, 1988.

A compilation of practical Dalcroze eurhythmics exercises for teaching specific rhythmic subjects, such as, syncopation, cross rhythms, pathetic accents, etc. appropriate for any age or level.

Stevenson, John Robert. *Pursuing a Jaques-Dalcroze Education – Solfège Volume I*. Edited by Arthur E. Oestrander. iBooks, 2013.

A Dalcrozian approach to teaching solfège, sight singing, rhythm, and improvisation that is appropriate for the undergraduate music major or advanced high school student. (Volumes II and III are expected shortly.) Includes numerous music examples and audio files.

Urista, Diane J. "Beyond Words: The Moving Body as a Tool for Musical Understanding." *Music Theory Online* 9 (August 2003).

Eurhythmics inspired movement-to-music exercises and games for teaching rhythm, cadence, and form to the undergraduate music major that includes classroom video demonstrations.

APPENDIX B

SUGGESTIONS FOR TEACHING C-TO-C SCALES IN A MOVEABLE-DO CONTEXT

In my work at DePauw and Interlochen, where moveable-Do (with Do minor) is the institution-wide approach, I've had the chance to see the benefit that these exercises bring to students trained in moveable-Do. Here are some suggestions for teaching C-to-C scales within this context. -Gregory Ristow

1. When starting the C-to-C scales, start with moveable-Do first. Use all the prompts given in the article, but instead of singing letter names, first have the students identify the solfège of the starting C. Students from a moveable-Do background will often find that calling C by its moveable-Do solfege (for instance "mi") will bring to mind the rest of the key and help them sing the correct half-and-whole steps.

2. Once students have sung a scale well in moveable-Do, have them sing it on letter names. Especially in the early stages, pick a slow enough tempo for students to also sing the accidentals. Students find this very challenging at first, and it can really reveal how little students trained exclusively in a moveable solfège system are aware of the actual notes that they are singing.

3. Challenge students to show the Curwen/Kodály hand signs (if you use them) or to hold up fingers for scale degrees as they sing on letter names. This helps students learn to think about both pitch and function at the same time, and helps students connect the new world of pitch naming to their known world of functional solfège.

4. The reverse is also possible: When students sing on moveable-Do, consider having them use one hand as a staff (five fingers = five lines; imagine a treble, bass or C-clef) and point to the note they are singing with their other hand.

5. When giving a prompt for a C-to-C scale, have students name the key (in addition to, or instead of the solfège / scale-degree) before singing the scale. They can do this verbally, or they could show the number of sharps or flats in the key by pointing that number of fingers up or down. (e.g., point 3 fingers up for A Major, 6 fingers down for G♭ Major.)

6. As students gain mastery of singing the C-to-C scales, use a signal to have them change mid-exercise between moveable-Do solfège and letter names. For instance, “Let’s sing a B $\flat$ major scale from C. When I snap, switch between solfège and letter names. Let’s start on solfège.”

With these very few modifications, I have found that all of the Dalcroze exercises we’ve described work very well in a moveable-Do context.

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Bach, Beck, and Bjork Walk into a Bar: Reclassifying Harmonic Progressions to Accommodate Popular Music Repertoire in the Traditional Music Theory Class

BY NANCY ROSENBERG

INTRODUCTION

Based on the premise that popular music should and will play an increased role across the traditional music theory curriculum, this article proposes juxtaposing art and popular music repertoire within a single, integrated paradigm for teaching harmonic progressions. For the purposes of this discussion, *popular music* encompasses a variety of western vernacular music disseminated to the public through commercially and independently produced media, as well as through live venues such as concerts and clubs. This definition acknowledges stylistic differences between categories such as classic rock, reggae, hip hop, house, R & B, metal, alternative, and so on, while making little distinction between what some consider to be more serious, “authentic” genres and commercial pop music; I typically use the terms *rock* and *popular music* interchangeably. Jazz, musical theater, film music, and other genres are beyond this discussion’s scope.

A central challenge of integrating popular music into the traditional music theory core is determining to what extent this repertoire should be presented in relation to common practice music. Some textbooks make a point of examining popular music harmony on its own musical terms (e.g., Ralph Turek’s *Theory for Today’s Musician*¹), but more often, popular music progressions are only examined within the context of the traditional, established framework of common practice harmony. As popular music receives greater focus in the core theory curriculum, our implicit knowledge of common practice harmony risks subsuming our perceptions of popular music harmony. To best guide students towards an informed understanding of popular music theory, instructors require a basic knowledge of the harmonic language of

¹ Ralph Turek, *Theory for Today’s Musician* (New York: McGraw-Hill, 2007).

popular music on its own terms and as it may or may not relate to common practice harmony.

Music theory teachers must also grapple with the question of when to integrate popular music, and specifically its harmonic practices, into the traditional theory sequence. I advocate teaching popular music harmony alongside common practice harmony as opposed to separately, or from the primary perspective of one over the other. Thus, we must also seek new ways of presenting harmonic progressions that encompass and elucidate both traditional and popular music perspectives. Time constraints are always an issue in the core theory curriculum, and incorporating a significant amount of popular music will likely result in postponing, re-ordering, or even excluding other traditional topics. Authors of traditional core theory textbooks already vary considerably in their emphases, reflecting the need for continued debate about the content and ordering of the theory curriculum.² Additionally, integrating common practice and popular music repertoire may ultimately conserve classroom time if the discrete harmonic languages of classical tonal music and popular musics can be combined into a broader framework that accommodates both.

I have long used popular repertoire in teaching music theory, particularly as a tool for ear training, and like many theory instructors have found that familiar rock songs prove useful in helping students discern functional harmonic motion in the common practice repertoire. But harmonic progressions in popular music often work differently from those in common practice music, and the traditional graduated approach beginning with dominant-tonic motion or with the tonic-predominant-dominant-tonic phrase model put forth in many current textbooks does not reflect

² For example, respective authors' treatment of four-part writing illustrates varied levels of emphasis on this topic. Jane Piper Clendinning and Elizabeth Marvin's *The Musician's Guide to Theory and Analysis* (New York: Norton, 2011) devotes a fourteen-page chapter (out of 759 pages) to "Chorale Harmonization and Figured Bass," while Bruce Benward and Marilyn Saker's *Music in Theory and Practice* (Boston: McGraw-Hill, 2009) offers a 10-page chapter on "Voice Leading in Four Voices." In contrast, the subject of part writing underlies eleven of twenty-eight chapters that focus on "Diatonic Triads" and "Diatonic Seventh Chords" in Stefan Kostka, Dorothy Payne, and Byron Almén's widely-used *Tonal Harmony* (New York: McGraw-Hill, 2013), and remains the central focus of Thomas Benjamin, Michael Horvit, and Robert Nelson's *Techniques and Materials of Music* (Belmont, CA: Thomson-Schirmer, 2008).

the breadth of popular music practice. Intrigued by the question of how harmonic progressions might be organized to accommodate both repertoires, I conceived of four primary groupings, or units, delineated by the number of different chords involved, and in the case of Unit III and the subgroupings in Unit IV, according to specific harmonic interrelationships as well. I envision these four broad categories to be presented sequentially, two per semester in the first year of the theory curriculum.

Much rock music theory frames popular music harmonic practices in relation to common practice repertoire. In "Making Sense of Rock's Tonal Systems," Walter Everett divides rock harmonic practices into categories according to the extent to which each corresponds to or departs from common practice harmonic and voice-leading practices,³ while Ken Stephenson, in *What to Listen for in Rock*, elucidates many of rock music's salient features, stressing its independence from aspects of common practice.⁴ Unlike Everett or Stephenson, I avoid approaching harmony from the strict perspective of either common practice or rock music. Further, my rather broad classifications depart from the comprehensive rock harmonic inventories of Allan Moore,⁵ and David Temperley and Trevor de Clercq,⁶ as well as from the approach in Richard Scott's useful book, in which each chapter focuses on a single progression.⁷ While each author organizes myriad popular music progressions by type and frequency, I emphasize the number of different chords in a harmonic progression, while still acknowledging several common progression types. This approach supports teaching common practice and popular music progressions side by side, while exploring the distinct characteristics of each, and fosters harmonic aural skills across popular and classical styles so that

³Walter Everett, "Making Sense of Rock's Tonal Systems," *Music Theory Online* 10, no. 4 (December 2004), http://www.mtosmt.org/issues/mto.04.10.4/mto.04.10.4_w_everett.html.

⁴Ken Stephenson, *What to Listen for in Rock* (New Haven, CT: Yale University Press, 2002).

⁵Allan Moore, "Patterns of Harmony," *Popular Music* 11, no. 1 (January 1992): 73-106.

⁶Trevor de Clercq and David Temperley, "A Corpus Analysis of Rock Harmony," *Popular Music* 30, no. 1 (January 2011): 47-70.

⁷Richard J. Scott, *Chord Progressions for Songwriters* (New York: Writers Club Press, 2003).

students' aural recognition of harmonic progressions can more consistently accompany their intellectual understanding.

I propose that the study of harmonic progressions be divided into four major units:

I. Single-chord works and static harmony

II. Two- and three-chord progressions, including but not limited to progressions based solely on primary chords (i.e., I, IV, and V), and progressions using secondary dominants and mixture chords

III. Standard chord progressions of four or more chords, e.g., I-[iii]-vi-IV(or ii)-V-I in major; in minor, chord quality varies depending on the treatment of the 6th and 7th scale degrees

IV. Other progressions of four or more chords, including other functional diatonic progressions, stepwise progressions, and those involving $\flat$ VII, $\flat$ III, and/or $\flat$ VI borrowed chords

Unit III acknowledges both a clearly recognizable grouping of popular music harmonic progressions, as well as what arguably comprises the most significant point of intersection between rock and common practice harmonic progressions. In Unit IV, some of the progressions are further grouped by type as a practical aid to music theory teachers grappling with the vast variety of popular music progressions falling within that broad category.

The progressions comprising each of the four units may be represented in whole works, in sections of works, or at the phrase level. The reader will likely already be familiar with classical examples that fit each unit; for those new to the popular music repertoire, sample analyses of popular songs from each category examine harmonic progressions as well as a range of topics, including form, texture, instrumentation, and lyrics.⁸ The observations about extra-harmonic features demonstrate possible approaches to these and other important musical aspects of the featured popular works.

⁸The examples are the author's transcriptions of song excerpts from the indicated recordings.

RECLASSIFYING HARMONIC PROGRESSIONS

The proposed units cover harmony typically encountered during the first year of the theory core, as well as a few more advanced harmonic topics. Using familiar methods such as listening activities, aural and written analysis, harmonic dictation, composition projects, and in-class performances, the four units can be integrated into a traditional music theory curriculum, or serve as a conceptual framework for courses taking primarily a popular music approach. In the former case, Unit I's focus on a single or static harmony allows for emphasis on non-harmonic parameters such as rhythm, scales, mode, tonality, texture, and form—concepts that students may recognize and grasp more easily when presented through familiar popular music repertoire. While two- and three-chord diatonic progressions featuring pre-dominant–dominant–tonic motion are introduced in Unit II, equal focus is given to other two- and three-chord progressions typical of popular music harmony (e.g., $\flat$ VII–I, or i– $\flat$ VII–IV). Diatonic harmonic practices involving vi (or VI), iii (or III), and the leading tone seventh chord as part of four-chord or longer progressions can be introduced in Unit III.

Although I include only limited discussion of chromatic materials such as mode mixture and secondary dominants, the proposed units can easily be expanded to accommodate these topics. Secondary dominants may be introduced with two- and three-chord progressions in Unit II, or as a part of Unit III's standard progressions, providing a valuable link between relatively simple diatonic progressions and more complex harmonies. Other harmony-related topics—e.g., cadential practice, chord structures, and harmonic cross-relations⁹—can be examined across units. While static harmony, two- and three-chord progressions, and standard progressions are represented by countless popular music examples, the vast majority of rock and popular music falls into the

⁹Here “cross-relation” refers to contrasting modalities between the scalar content of a sung or played solo line and the underlying harmony. For example, a melody above a guitar playing an open-fifth “power chord” on A may suggest major mode through the use of C# in the melody line, while a subsequent progression to open fifths on C creates a destabilizing cross-relation. Chris McDonald explores the contradiction between the scalar content of the melody and the harmonic language of the accompaniment in “Exploring Modal Subversions in Alternative Music,” *Popular Music* 19, no. 3 (Oct, 2000): 355–363.

fourth, broad classification of “other progressions of four or more chords.” (See the appendices for examples from each unit.¹⁰)

Beginning music theory students should be encouraged to discover their own illustrative repertoire, whether popular or classical. The simple activity of hunting for three-chord rock songs is a valuable ear-training exercise, and doing so with specific progressions in mind (e.g., I-IV-V-I, I-♭VII-I, or I-vi-IV-V-I) is fun and challenging. Students can be asked to find popular songs with stepwise falling bass lines for comparison with lament bass lines from the early baroque. (A simple Google search for “falling bass lines” reveals scores of popular and classical examples.) This approach gives students agency in their individual learning processes, while contributing to a library of varied repertoire that might otherwise go unheard; in addition, analyzing new or unfamiliar repertoire as a class can enliven the music theory classroom. Numerous online sources provide the underlying chord progressions of countless songs (e.g., <http://www.guitarsongs.info>, <http://www.azchords.com>, <http://www.911tabs.com>), although it should be kept in mind that the progressions provided vary widely in accuracy.

Unit I: Single-chord works and static harmony

At first glance, beginning the study of harmonic progressions with single-chord works and other types of static harmony might seem curious. When analyzing single-chord popular songs, discerning mode, the tonic, and chord quality is relatively straightforward, even for listeners with undeveloped ears. Too often, however, music theory education neglects other musical domains in favor of harmony. While serving as an entry point into the study of harmonic progressions, single-chord popular songs and other works featuring static harmony can also provide an excellent context for examining extra-harmonic features such as rhythm, form, texture, instrumentation, vocal style, and solo instrumental riffs. When harmonic succession is removed from the musical equation, these parameters and their interactions become more readily discernable to the student listener. Instructors can thus utilize prolonged harmonic stasis to open students’ ears to the many other musical features that come into play to varying

¹⁰I am grateful to Parker Silzer for his help in selecting songs for the appendices.

degrees in all musics, and that in popular music may arguably be considered more significant determinants of musical style than harmonic practice.¹¹

There are three main types of harmonic stasis: (1) single chord stasis, achieved either through chord repetition (e.g., *ostinati*), or through variations in the surface-level presentation of the harmony (e.g., arpeggios or non-harmonic tones), instrumentation, or rhythmic treatment; (2) a repeated harmonic oscillation between a tonic and one or more embellishing chords, subject to the same variations mentioned above; and (3) a pronounced lack of tonal direction achieved through other means, such as variable textural layering over a prominently featured pedal point or drone. Static harmony can be found at the level of the phrase, section, or entire song. Moore and Scott offer many examples across phrases or sections,¹² but sufficient popular music examples of single-chord songs and extended harmonic stasis exist to provide students with the opportunity to observe these effects over the length of whole songs (see appendix A). Bjork's music offers many songs featuring extended harmonic stasis, often through the use of oscillating harmonies in which two chords continuously alternate, creating a rich texture that lacks harmonic motion.¹³

The study of harmonic stasis provides opportunities for several classroom activities. After examining several examples, students can be asked to draw from their personal music libraries to find works in a popular style of particular interest that contain a single chord or use prolonged static harmony. In the absence of harmonic movement, extra-harmonic parameters of songs can be analyzed and compared. Examples of harmonic stasis are useful sources for interval training as well. Both melodic and harmonic intervals can often be more easily identified in melodies constructed from

¹¹ One of Moore's stated goals in "Patterns of Harmony" is to debunk the claim that primary differences between rock, pop, and soul musical styles lie in their respective, characteristic harmonic progressions. Finding few differences in the harmonic practices between popular styles, he concludes that rhythm, texture, and production are more significant determinants of style than harmonic progression.

¹² Moore, "Patterns of Harmony," 82-83; Scott, "One-Chord Progressions," *Chord Progressions for Songwriters*, 342-349.

¹³ See Victoria Malawey, "Harmonic Stasis and Oscillation in Bjork's *Medulla*," *Music Theory Online* 16, no. 1 (January 2010), <http://www.mtosmt.org/issues/mto.10.16.1/mto.10.16.1.malawey.html>.

a single scale or mode. Aural class work might include copying instrumental or vocal passages from recordings by ear, or re-creating instrumental textures in a cappella arrangements; rhythmic and melodic dictation or more extensive transcription assignments provide valuable notation-based skills training.

Two examples featuring static harmony follow. In “Loser,” the eclectic and unpredictable indie-rock artist Beck, elevated to commercial fame with the song’s 1993 release, uses static harmony as a means to highlight the piece’s curious juxtaposition of stylistic elements.¹⁴ Through both lyrics and music Beck evinces slapstick-style humor. The song’s absurdist lyrics (it opens with Beck rapping, “In the time of chimpanzees, I was a monkey/Butane in my veins and I’m out to cut the junkie”) apparently grew out of Beck’s practice of improvising nonsensical verses while performing: “I’d make up these ridiculous songs just to see if people were listening. ‘Loser’ was an extension of that.”¹⁵ The music comprises a stylistic montage combining clearly discernable elements of Southern rock, blues, and hip-hop. Textural changes function as an aspect of form, and the single-chord stasis heightens the dramatic effect (especially given that the artist is otherwise known for his harmonic sophistication), in this case evoking a sense of wry apathy. A looped slide guitar riff introduces the song and later reappears, sometimes under the sitar part, echoing the slide guitar introduction to “Midnight Rider” by the Southern blues-rock band, The Allman Brothers Band.¹⁶ The drum track contains sampled loops from “I Walk on Guided Splinters” by blues musician Dr. John.¹⁷ Beck’s awkward, ironic, often nonsensical rapping, to which he attributes the song’s self-deprecating title and lyrics, imitates Public Enemy’s Chuck D.¹⁸

The conspicuous nature of the song’s disparate elements makes “Loser” an excellent subject for the analysis of various

¹⁴ Beck, “Loser,” *Mellow Gold*, DGC Records, 1994. (See <http://www.youtube.com/watch?v=YgSPaXgAdzE>.)

¹⁵ David Browne, “Beck in the high life: where it’s at—alternative rock’s funkiest wunderkind is Grammy’s newest golden boy,” *Entertainment Weekly*, February 14, 1997, 32.

¹⁶ The Allman Brothers Band, “Midnight Rider,” *Idlewild South*, Capricorn Records, 1970.

¹⁷ Dr. John, “I Walk on Guided Splinters,” *Gris-Gris*, Atco Records, 1968.

¹⁸ Mike Rubin, “Subterranean Homeboy Blues,” *SPIN*, July 8, 1994, 32.

extra-harmonic features. The combination of straightforward and syncopated rhythms carried by the individual parts create a simple yet dense rhythmic effect overall. Scalar content is limited to and clearly discernable as D Mixolydian. The chorus is structured as a simple period, with an ascending antecedent phrase and a descending consequent phrase, providing melodic interest to contrast the rapped verses (Example 1).

The musical score for the chorus of "Loser" by Beck is presented in three systems. The first system shows the vocal line (bass clef, D major key signature) with the lyrics "Soy un per - de - dor, I'm a". The second system shows the vocal line (bass clef, D major key signature) with the lyrics "los - er, ba - by, so why don't you kill me?". The third system shows the vocal line (bass clef, D major key signature) with the lyrics "los - er, ba - by, so why don't you kill me?". The accompaniment consists of a Sitar (treble clef, D major key signature) and a Slide guitar (bass clef, D major key signature). The Sitar and Slide guitar parts are written in D Mixolydian mode, featuring a lowered seventh (C natural) and a syncopated rhythm. The Sitar part is a continuous eighth-note pattern, while the Slide guitar part is a continuous eighth-note pattern with a syncopated rhythm.

Example 1. Chorus of "Loser," by Beck

Several rock cadential practices identified by Stephenson appear in this song.¹⁹ For example, the de-emphasis on leading tone motion noted by Stephenson is reflected by the use of the lowered seventh in "Loser." "Loser" also illustrates the prevalence of asynchronous melodic, harmonic, and rhythmic resolution in rock, another topic Stephenson explores. As shown in Example 1, in both the antecedent and consequent phrases the melodic resolution to the tonic pitch in the vocal part occurs on a weak beat (or part of the beat), and in the case of the antecedent phrase, is rhythmically offset from the accompaniment. The periodic phase structure of "Loser" typifies an overall lack of strong drive towards tonal closure that often distinguishes rock from classical styles.

Beck's use of instrumentation creates textural changes that align with formal aspects of the lyrics. "Loser" is structured in

¹⁹ Stephenson, "Cadences," chapter 3 in *What to Listen for in Rock*.

eight-measure formal blocks within which layers of individual instrumental parts loop in phrases of varying, even-numbered measure lengths. Every eight measures, Beck shifts the instrumentation to create different combinations of the looped drums, bass, slide guitar, and sitar. For example, dividing verse one into four eight-measure sections, the first section is carried by drums and sitar, the second by drums, sitar, and added bass, the third by drums, sitar, bass, and added slide guitar, and the fourth by drums and slide guitar only.²⁰

The voice and sitar parts are excellent sources for melodic ear training focusing on the song's D Mixolydian scalar and harmonic content. The rhythmic patterns carried by the accompanying instruments can easily be broken down for rhythmic training. Drawing from the vocal chorus, instructors can use the melodic rhythm of the two-measure slide guitar part, which contains a fairly simple eighth-note syncopation, as rhythmic dictation material. This would serve as a useful preliminary dictation exercise before moving on to rhythmic dictation of the sitar part, the first measure of which mirrors that of the slide guitar. A classroom exercise could explore the relationship between texture and form by providing students with a chart delineating four- or eight-measure sections, onto which the various appearances and disappearances of the instrumental parts could be mapped and subsequently analyzed in relationship to Beck's rapped and sung vocal parts.

A second example of static harmony draws from house music and features long sections of single-chord stasis as well as subtly introduced chord oscillations and drone effects.²¹ (This is characteristic of house music, making the style an excellent source of Unit I repertoire.) In Ane Brun's "Headphone Silence" (Henrik Schwartz remix/Dixon edit), vocal style, rhythmic usage, texture, form, and studio recording effects combine in an atmospheric

²⁰For an analysis of the textural changes in "Loser," see Trevor de Clercq, "Combinatoriality in 'Loser' by Beck," *The Science of Songwriting* (blog), December 27, 2007, <http://www.midside.com/2007/12/27/combinatoriality-in-loser-by-beck/>.

²¹Mark J. Butler has written extensively on the house genre. See "Turning the Beat Around: Reinterpretation, Metrical Dissonance, and Asymmetry in Electronic Dance Music," *Music Theory Online* 7, no. 6 (December 2001), <http://mto.societymusictheory.org/issues/mto.01.7.6/toc.7.6.html>, and *Unlocking the Groove: Rhythm, Meter, and Musical Design in Electronic Dance Music* (Bloomington, IN: Indiana University Press, 2006).

realization of the lyrics' subject: the experience of listening to music through headphones, when immersion in the sounds results in alienation from others and a changed relationship to the physical world, creating a new sonic universe—the “headphone silence” of the song's title.²² Brun's sinewy, plaintive vocal style is noteworthy for its relaxed, vibrato-less tone quality.

From the outset, the importance of rhythmic and textural elements to the overall effect of the song is established. Following the introductory drum loop, the synthesizer's entrance begins an extended section of single-chord stasis on G minor lasting almost two minutes (Example 2). A de-emphasis on the third of the tonic chord—it is present, but overshadowed by the louder-sounding tonic and fifth of the chord—results in a striking dichotomy between the archaic atmosphere created by the D–G open fourth and the modernistic effect of the driving rhythm and electronic instrumentation. Subtle changes in rhythm and texture very gradually occur in the sparse instrumentation over the 9'22" of the work, with fading techniques utilized to either highlight or hide various tracked layers, often obscuring the precise moment that new material enters.

Example 2. Opening of “Headphone Silence,” by Ane Brun, Henrik Schwartz Remix, Dixon Edit

Coupled with Brun's vocalizations, the continuous rhythmic density and slow-moving shifts in the accompaniment's texture create a trancelike effect, with specific musical events placed to shape the form. For example, at around 2'50", a repeated B $\flat$ –C–B $\flat$ melodic motion (within G minor) gains in prominence in the

²² Ane Brun, “Headphone Silence,” Henrik Schwartz remix/Dixon edit, *Headphone Silence*, Objektivity, 2008. (See <http://www.youtube.com/watch?v=s7j7kBN7OJk>.)

electric piano part, evolving into a repeating pattern of oscillating G minor and C minor chords over a G pedal point. At 4'46", the single strike of a bell marks the song's approximate halfway point (about ten seconds past the halfway point). Here a striking timbral effect occurs: on the sung lyric, "the headphone silence which fills my head," the bell sounds on the G above middle C right after Brun sings the words "fills my" on G an octave lower; it is unclear to the listener whether the anticipated word "head" coincides with the strike of the bell, or whether it is merely suggested, or even imagined, but for a full forty-six seconds an indistinguishable sung syllable on G is held, blending into the increasingly rich texture, and during which time no verses are sung.

Despite the absence of functional harmonic progressions in "Headphone Silence," this middle section marks new tonal territory, in which gradually introduced sonorities add color to the G minor key center, which remains steady over a G pedal point. These coloristic changes occur so subtly as to almost escape notice. Foreshadowed by both the aforementioned G minor–C minor chord oscillation, and Brun's previous vocal lines ending repeatedly on middle C, a crescendoing ostinato motive on $B\flat/D \rightarrow C/E\flat$ coupled with oscillations between the perfect fourth intervals G–C and D–G have the effect of heightening the presence of C minor. In effect, the ebb and flow of textural layers replaces harmonic function as a progressive device.

Like "Loser," "Headphone Silence" uses instrumentation as an important structural feature. The climax of the piece occurs in the central instrumental section when Brun has temporarily stopped singing following the bell strike discussed earlier. Dynamics, too, are used to dramatic effect here, with an incremental crescendo from the beginning of the song to this central climax. The most significant use of textural contrast begins at 5'33", when strings, embellished with heavy reverb, enter on a repeating stepwise $Gm-Fm-E\flat M-Gm/D$ progression moving in stately half-notes and lasting approximately a minute. Thirty seconds into this section, the drum tracks and keyboards suddenly drop out, leaving only the strings remaining as Brun reenters with a repeat of the third of the song's four loose "verses" with the lyrics, "I see a rainbow complete/resting its feet on the hill and the ground." During the last two lines of the verse, the drums and keyboards gradually re-emerge playing the opening material. An outro extends beyond the final lyrics during which parts drop out one by one.

The extensive syncopation in each part of the opening is repeated enough for students to learn the separate lines by ear, clap them in class, and break them down for rhythmic dictation. The long and unevenly-structured sung phrases render the G natural minor melody challenging as material for melodic dictation. Students might find it fun and interesting to attempt to imitate Brun's vocal style as accurately as possible, which can help illuminate salient vocal and melodic characteristics of the piece. The song's middle section contains some quartal harmonies as well as the previously-discussed interplay between G minor and C minor; while these might otherwise be considered second-year topics, the repetitive nature of the extended passage containing these elements renders them within beginning music students' ability to hear and to analyze.

As demonstrated by these two examples from Unit I, several core theory concepts such as rhythm, scales, modes, intervals, tonality, texture, and form find clear expression in single-chord or harmonically static passages and songs. Likewise, lyrics and vocal style may appear heightened in significance, and thus more accessible to analysis. As an introduction to the study of key and harmony, considering static harmony across multiple styles offers students a different perspective on tonality than that provided by the functional harmonic progressions they will also be studying.

While relatively few classical works offer extended passages of harmonic stasis (Ravel's *Bolero* as well as the more recent works of Arvo Pärt and minimalists such as Steve Reich and Phillip Glass come to mind), one-chord popular works can be juxtaposed with passages featuring harmonic stasis from the classical repertoire as an effective means of exploring how composers use extra-harmonic parameters for various musical effects. Single-chord works also offer an excellent starting point for composition projects. Students can be asked to create works or parts of works in different keys, using varied melodic and rhythmic treatments, chord qualities, and textural and structural features around a single harmonic base. An early awareness of these extra-harmonic aspects should carry through to students' subsequent study of expanded harmonic language.

Unit II: Two- and three-chord progressions

Popular music provides a plethora of examples of common practice harmonic features that may help to reinforce students' aural and intellectual understanding of the three-

chord pre-dominant–dominant–tonic progressions included in Unit II. At the same time, much popular music (especially repertoire that prioritizes modal relationships) exhibits diminished tonal momentum in comparison with common practice music, with dominant chords often holding no greater significance than other chords and lacking a tendency to resolve to the tonic. By encompassing all two- and three-chord progressions, Unit II acknowledges that popular music accesses more chord combinations on the road to the tonic, while affording ample opportunity to consider functional diatonic progressions. Further, while examples of two- and three-chord progressions over phrases or sections abound in both the classical and popular repertoire, many entire popular songs utilize two or three different chords in a variety of combinations, providing ample material for analysis and aural practice (see appendix B).

Defining Unit II by the number of different chords in a progression rather than by the type of progression has several advantages. Juxtaposing short progressions from classical and popular repertoires highlights differences and similarities between their harmonic usages, and also allows consideration of their respective harmonic practices independently. Grouping classical and popular music progressions by a limited number of chords can also facilitate aural recognition: just as melodic sight-reading and dictation involves balancing an awareness of underlying scale and key with aural knowledge of isolated intervals, so a dual approach in which common practice functional harmony is examined in conjunction with progressions that are free from strict functional constraints can greatly enhance ear-training. Limiting the number of chords to two or three at an early stage ensures that students will readily grasp the basic harmonic motion involved. Additionally, examining common practice contrapuntal idioms within a two- or three-chord progression (e.g., I–vii⁰⁶–I⁶) helps students to discern common practice voice-leading, and highlights within common practice and popular repertoires the difference between individual chords that function as a harmony and short progressions that should be heard as a single prolongation within the larger phrase.

Once students can construct triads on successive tones of the major and minor scales, I have found that understanding mode mixture is well within their grasp, even though the topic is typically encountered later in the theory sequence. The preponderance of

borrowed chords in popular music, even in the short two- and three-chord progressions included in Unit II (e.g., “Southern Cross,” by Crosby, Stills and Nash, which employs a repeated I–♭VII–IV progression throughout²³), suggests that mixture be introduced at a relatively early stage, before secondary dominants. My own experience has shown that popular music’s emphasis on vertical sonorities and on bass and often root movement can help students hear basic harmonic movement while developing the ability to recognize individual chord quality. Later, when approaching chromatic techniques such as secondary dominants and modulation, students may well benefit from this earlier introduction, more readily distinguishing between borrowed chords used for coloristic effect and the functional harmonic relationships underlying secondary dominants and common chord modulations.

Examining two- and three-chord harmonic progressions also allows for considering classical music that departs from the common practice stress on pre-dominant–dominant–tonic motion. In *Harmonic Practice in Tonal Music*, Robert Gauldin cites the main theme of Tchaikovsky’s “March” from *The Nutcracker* (featuring a I–vi–iii–I–vi progression in G major) as an example of works forgoing dominant and pre-dominant functions in major-key progressions in favor of submediant, mediant, and non-predominant-functioning supertonic chords.²⁴ Turek provides examples that combine mixture with a lack of dominant function altogether: an excerpt from the second movement of Brahms’s Symphony no. 3, op. 90 features a I–♭VI–iv–I progression; the opening of John Williams’s *Star Wars* main theme includes a I–VI–♭III–I motion over a C pedal point.²⁵ Examples of related progressions drawn from the popular repertoire can facilitate aural recognition of these less typical chromatic progressions. After a close listening to the I–♭VI–iv–I progressions occurring in the prechorus to Adele’s “Set Fire to the Rain” and the chorus of Nine Inch Nails’ “The Hand That Feeds,” students are likely to grasp more readily the I–♭VI–iv–I progression in the

²³ Crosby, Stills and Nash, “Southern Cross,” *Daylight Again*, Atlantic Records, 1982.

²⁴ Robert Gauldin, “The VI, III, and Other Diatonic Triads,” in *Harmonic Practice in Tonal Music*, 2nd ed. (New York: W.W. Norton, 2004), 290–306.

²⁵ Turek, “Mixing Modes,” in *Theory for Today’s Musician*, 423–450.

excerpt from Brahms's Symphony no. 3 discussed by Turek.²⁶

Drawing from popular and classical works, authentic, half, plagal, and deceptive cadences on vi or other chords can be introduced in Unit II, along with cadences employing mode mixture and those falling outside of traditional practice. Scott's chapter, "Endings," from *Chord Progressions for Songwriters* and Stephenson's discussion of cadences in *What to Listen for in Rock* are useful resources.²⁷ Pre-tonic chords in rock, commonly IV or $\flat$ VII, can be compared to classical cadences utilizing atypical pre-tonic chords,²⁸ such as the dramatic finish to Mussorsky's "The Great Gates of Kiev" from *Pictures at an Exhibition* (ii⁷–iii–I in Eb) and the final cadence of Edvard Grieg's "Morning" from *Peer Gynt* (I–vi–I in Eb). In contrast to the use of half cadences in the classical repertoire, cadences on V and other chords besides the tonic are often found at the ends of song sections in rock, as in "Twist and Shout" (originally recorded by the Top Notes, and later covered by the Isley Brothers and The Beatles), which cadences on V, and the Turtles' "Happy Together," in which the verse ends on V and the chorus on III.²⁹

Certain two- and three-chord progressions common to popular music warrant emphasis. The importance of the IV chord is universally acknowledged: tonic–subdominant motion is pervasive, especially in initiating chords, as are subdominant–tonic concluding harmonies.³⁰ The prevalence of the IV chord in many popular

²⁶ Adele, "Set Fire to the Rain," digital download, Columbia Records, 2011; Nine Inch Nails, "The Hand that Feeds," *With Teeth*, Interscope Records, 2005.

²⁷ On the subject of cadences, several compilations of classical symphony finales can be found on YouTube ("Epic Classical Music: Top 10 Most Dramatic Endings," <http://www.youtube.com/watch?v=Ci3uZ3zvNRM>; "10 Most Epic Symphony Finales, Volume 1," <http://www.youtube.com/watch?v=wGVAaVOyzEA>)

²⁸ I prefer the term *pre-tonic* to *dominant substitute* in order to reflect rock's lack of functional tonal drive relative to common practice music.

²⁹ The Top Notes, "Twist and Shout," Atlantic Records, 1961; The Turtles, "Happy Together," *Happy Together*, White Whale Records, 1967.

³⁰ De Clercq and Temperley, "A Corpus Analysis of Rock Harmony," offer some interesting data regarding the IV chord in rock. Not only does IV most frequently follow the tonic, but it also most frequently precedes the tonic (followed by V, $\flat$ VII, and VI respectively, as post- and pre-tonic chords). The authors further note that rock's symmetry around the tonic

styles may reflect in part the influence of blues-based harmonic patterns. Three-chord blues progressions, which remain the basis of countless past and current popular songs, typically feature a IV chord through the first half of the second phrase of the twelve-bar form (and often through the second measure of the first phrase as well), and a reversal of the traditional IV–V–I authentic cadence to the more common V–IV–I cadence at the pattern's end. Among other common two- and three-chord popular music progressions, I–^bVII–IV can be presented as a classic rock progression, encountered in Crosby, Stills and Nash's "Southern Cross" as previously noted, and in Lynyrd Skynyrd's "Sweet Home Alabama."

Michael Jackson's "Beat It" features several of the harmonic practices above, especially the use of "pre-tonic" instead of traditional dominant function (Example 3).³¹ Within the song's E♭ minor key, D♭ major (♭VII) appears in various contexts. It functions as a pre-tonic to E♭ minor, and also as part of a stepwise progression in seconds, first descending from E♭ minor to C♭ major, and then ascending back to the tonic. Additionally, both the verse and the chorus, which alternate every four beats between i (E♭ minor) and ♭VII (D♭ major), feature repeated cadences on ♭VII, illustrating the avoidance of harmonic closure emphasized by Stephenson, and reinforced further in the song's eventual fade out.

Bass

The bass line consists of two staves. The top staff is labeled 'Bass' and has a key signature of three flats (B-flat, E-flat, A-flat) and a common time signature. It contains four measures of music. Above the staff, the chords E-flat major (Ebm) and D-flat major (Db) are indicated for the first two measures, and E-flat major (Ebm) and D-flat major (Db) for the last two measures. The bottom staff continues the bass line with four measures, with chords C-flat major (Cb) and D-flat major (Db) indicated above the first two measures, and E-flat major (Ebm) and D-flat major (Db) for the last two measures. The notes are: Measure 1 (top): G2, A2, B2, C3; Measure 2 (top): D3, E3, F3, G3; Measure 3 (top): A3, B3, C4, D4; Measure 4 (top): E4, F4, G4, A4. Measure 1 (bottom): B1, C2, D2, E2; Measure 2 (bottom): F2, G2, A2, B2; Measure 3 (bottom): C3, D3, E3, F3; Measure 4 (bottom): G3, A3, B3, C4.

Example 3. Root movement in the verse of “Beat It,” by Michael Jackson

The bass line of the verse alone offers valuable melodic, harmonic, and rhythmic ear training material. Most students are already familiar with this iconic Jackson song, making it easy for them to

holds true for root movement as well: whereas common practice music favors ascending root motion by 4ths or descending motion by 5ths, ascending and descending motion by 4ths are equally preferred in rock; indeed, whatever the specific root movement interval, ascending and descending patterns occur with equal frequency.

³¹Michael Jackson, "Beat It," *Thriller*, Epic, 1982. (See <http://www.youtube.com/watch?v=oRdxUFD0Qe0>.)

sing the bass line or clap its rhythm, either silently, in preparation for dictation, or aloud. The three pitches of each successive triad can be sung in time with the music, following the steady harmonic rhythm of four beats per chord. As a group activity, after mastering each element of the verse, students can combine them in a vocalized and clapped realization of the passage, with one group clapping out the basic quadruple meter, accenting the last beat of each measure to mirror the strong drum backbeat on beat four, while a second group sings the syncopated bass line, and a third group, the arpeggiated triads of the underlying harmony. My own experience with this activity has led to riotous performances, complete with enthusiastic lead vocals and impressive dance moves.

As a complement to progressions falling outside standard diatonic procedures, functional I–IV(or ii)–V–I progressions comprise an equally important aspect of Unit II. Functional three-chord progressions are common to many popular music styles, including country, folk, early rock and roll, reggae, R & B, and hip-hop. The “old school” reggae classic “Rivers of Babylon,” recorded by The Melodians and made famous when it appeared in the soundtrack to the film *The Harder They Come* (1972), serves as an example.³² While not all current students are likely to be familiar with early reggae, its impact on genres from rock to hip hop remains far reaching, and “Rivers of Babylon” typifies the style’s early roots. Today’s students may be familiar with the song through the popular ska band Sublime, which released a cover of it on their 1992 album, *40 Oz. to Freedom*.³³

The song (in G major) features simple harmony and structure. It contains an eight-bar verse, with the first four measures remaining on the tonic and the second half containing an authentic cadence, with V–I harmony changing in two-measure units. The chorus (Example 4) is also constructed of two four-bar phrases (I–I–IV–I,

³² Brent Dowe and Trevor McNaughton, “Rivers of Babylon,” *The Harder They Come*, Island Records, 1972. (See http://www.youtube.com/watch?v=o-5E6_qtXAw.)

³³ Ska, considered reggae’s precursor, came out of Jamaica in the 1950s. Combining aspects of African, Caribbean, and American popular music, ska contained the familiar Jamaican rhythm guitar, and usually included organ, drums, bass, horns, and vocals. Ska evolved into its slower versions, first “rocksteady,” and later reggae, with its spiritual connection to Rastafari. Readers are referred to Chris Potash’s *Reggae, Rasta, Revolution: Jamaican Music from Ska to Dub* (New York: G. Schirmer, 1997).

and I–I–V–I respectively), moving in parallel harmonic rhythm.

The musical score is for the chorus of "Rivers of Babylon" by Brent Dowe and Trevor McNaughton. It is written in G major (one sharp) and 4/4 time. The score consists of two staves. The top staff is labeled "Vocals" and the bottom staff is the accompaniment. The lyrics are: "Cause the wick - ed car - ried us a - way, cap - ti - vi - ty re - quire from us a song. How can we sing King Al - pha's song in a strange land." The chords are indicated above the notes: G, G, G, C, G, G, G, D, G.

Example 4. Chorus from "Rivers of Babylon," by Brent Dowe and Trevor McNaughton

As with single-chord songs, other musical parameters are heightened by the song's harmonic simplicity, illustrating several stylistic features of Jamaican "rocksteady" and the early reggae that followed. The steady drumbeat, punctuated with heavy accents by simultaneous bass drum and snare hits on beats two and four of each measure, intensifies the effect of the syncopation in the vocals. Keyboard, bass, and tambourine accent the quarter note beat, answered by staccato guitar up-strums on the eighth-note backbeat; vocal harmonies move in parallel motion, and are almost solely triadic.

The simple harmony, structure, and rhythm of "Rivers of Babylon" make the chord quality of the three-part harmonies and the form easy to discern by ear, even in real time. Learning to play quarter-note triads along with chords in the recording can complement more traditional keyboard harmony exercises, perhaps with accompaniment by student guitarists and/or bassists. The syncopation, which heightens the challenge for beginning ear training students, can be discussed both as a stylistic feature and within the context of the interplay between melody and accompaniment: harmonic changes in the vocal part are as likely to precede changes in the accompaniment on the downbeat as they are to coincide with it (a common occurrence in popular music as observed previously in Beck's "Loser"). An invaluable classroom activity is to create an a cappella arrangement of "Rivers of Babylon" by ear. Those with collegiate a cappella experience can take leadership roles in a group effort to devise individual vocal parts to represent the instrumental accompaniment. The melody of the verse can be assigned to a soloist, or sung by several students in

unison; others can master the three-part harmony in the chorus. As ambitious as this may seem, I have learned from personal experience that it is well within students'—and instructors'—abilities.

In addition, students can be asked to learn a song that uses a three-chord progression on their primary instrument, or even on an instrument they don't normally play. Non-pianists can master simply-voiced three-chord progressions at the piano; those with little or no experience on guitar, bass, or drums can learn basic parts by ear from more experienced peers. Using familiar songs as a starting point, students can explore the effects of altering the meter, harmonic rhythm, and chord qualities and voicings. Classifying harmony into two- and three-chord progressions can provide a basis for active teaching and learning through listening, arranging, composition, and performance.

Unit III: Standard progressions of four or more chords

Unit III focuses on integrating “standard” progressions of four or more different chords into students’ aural and written vocabularies. In major, a standard progression is a diatonic progression in which the vi chord, possibly preceded by iii, leads to the pre-dominant IV or ii, which in turn leads to the dominant V (or dominant substitute) prior to resolving to the tonic. In some cases, the vi is optional. Standard progressions in minor mirror those in major, with some additional harmonic possibilities, depending on the scale’s treatment of the 6th and 7th scale degrees and the resulting triads. As with common practice progressions, standard popular progressions may include embellishing chromatic chords (such as secondary dominants) as well as altered pre-dominants (i.e., Neapolitan and augmented sixth chords) that are often reserved for second-year study in a two-year sequence. While focusing on standard diatonic progressions, Unit III can also offer early exposure to these basic chromatic materials. While theory pedagogues generally agree that music’s vertical characteristics should not be emphasized at the expense of horizontal analysis, the vertical dimension is central to popular music, with its characteristic homophonic texture and primacy of the rhythm section. Distilled into audible foreground events, popular music employing standard progressions can facilitate aural perception of similar progressions in the context of a faster harmonic rhythm, as in the case of Bach chorales, or amidst the diffusion of harmonic sonorities through motivic development

and other means of horizontal embellishment.

Standard harmonic progressions comprise a limited but significant body of the popular music repertoire (see appendix C). The doo-wop music of the 1940s, 50s, and 60s, known for its use of the I-vi-IV-V “50s progression” (which can also refer to I-vi-ii-V-I) is a useful resource. While no longer dominating commercial popular music, the style retains its influence and has seen some recent resurgence in collegiate a cappella and other post-doo-wop groups. Europe has seen a strong doo-wop revival, with male vocal groups such as England’s The Roommates and Spain’s The Earth Angels enjoying widespread popularity. The I-vi-ii-V progression associated with the jazz standards of the 30s and 40s, sometimes referred to as a turnaround progression, is less common in rock, though by no means absent; jazz fake books abound with examples (e.g., “Blue Moon,” “Heart and Soul,” and “Since I Fell”).

Popular songs using standard progressions retain elements encountered in two- and three-chord popular songs: the common use of the initiating tonic to begin multiple, if not all, phrases of a song (with exceptions, such as the vi-IV-I-V progression); asynchronous melodic, harmonic, and rhythmic resolution, especially at cadence points; and the avoidance of strong cadential resolutions. When examined alongside classical music, popular songs utilizing standard harmonic progressions underscore stark differences between the respective repertoires. Consider the harmonies used to articulate periodic structures. With some significant exceptions, common practice periodic structures often feature an antecedent phrase ending on a half cadence followed by a consequent phrase that resolves to the tonic, whereas popular music phrase structures built on standard progressions typically fail to resolve at all. I-vi-ii-V progressions repeat throughout the verses of doo-wop hits such as “Sherry”³⁴ and “Teenager In Love,”³⁵ and like countless other doo-wop numbers, both songs extend the lack of resolution with fadeouts at the end. The common popular music progression vi-IV-I-V similarly avoids resting on the tonic, and its initiating harmony on vi further weakens any feeling of resolution.

Classical works featuring continuous variation such as Baroque *passacaglia* and *chaconne* dance movements similarly contain

³⁴The Four Seasons, “Sherry,” *Sherry and 11 Others*, Vee Jay Records, 1962. (See <http://www.youtube.com/watch?v=AapxXRlswA>.)

³⁵Dion and the Belmonts, “Teenager In Love,” Laurie Records, 1959. (See <https://www.youtube.com/watch?v=0kw6w9CPTjw>.)

repeating cycles of chord progressions with momentum towards the dominant, offering interesting material to compare with open-ended popular progressions. Like many popular songs, the harmonic frameworks in passacaglias and chaconnes support extensive variation and solo improvisation, but as is clearly evidenced in doo-wop, repeated progressions in popular music do not necessarily function primarily as a vehicle for variation.³⁶

Many longtime artists known for their sophisticated, complex harmonic schemes—The Beatles, Stevie Wonder, Paul Simon, James Taylor, Joni Mitchell, Sting, and Tom Waits, to name a few—also offer works with standard harmonic progressions. Singer-songwriter Joni Mitchell's "Night Ride Home" is a case in point.³⁷ The *Night Ride Home* album was released in the 1991, following a period of musical experimentation during which Mitchell explored the use of synthesizers and other music technology, collaborating with artists ranging from Charles Mingus to Billy Idol. "Night Ride Home" and the album as a whole mark a return to simplicity in terms of composition, arrangement, performance style, and production.

The song includes numerous aspects that contrast common practice. The eight-bar period comprising the verse follows a standard harmonic pattern (I–vi–ii–V–I), but the end of the first phrase rests on the supertonic, rather than on the dominant chord on which the first phrase of a traditional period typically pauses (Example 5a). Each sung phrase in the verse introduces new rhythmic and melodic material, unfolding with little reference to preceding material. The steady guitar accompaniment and a cricket

³⁶ Several writers offer comparisons between Baroque dance forms and rock/pop songs. Alex Ross, classical music critic for *The New Yorker*, devotes a chapter in his book, *Listen to This*, to tracing the descending bass line 'lament' of the Baroque chaconne throughout music history, discovering its legacy in popular music from Robert Johnson's blues to the music of Led Zeppelin and Bob Dylan ("Chacona, Lamento, Walking Blues," chapter 2 in *Listen to This* (Paris: Farrar, Straus and Giroux, 2010), 22-54); David Thurmaier, in "Rock Music, Rock Progressions, and Theory Pedagogy" shows how the descending tetrachord in works such as Purcell's "Dido's Lament" is mirrored in Eric Clapton's guitar solo in the George Harrison song, "While My Guitar Gently Weeps" (*College Music Symposium* 43 (October 31, 2003), http://symposium.music.org/index.php?option=com_k2&view=item&id=3357:rock-music-rock-progressions-and-theory-pedagogy&Itemid=128).

³⁷ Joni Mitchell, "Night Ride Home," *Night Ride Home*, Geffen, 1991. (See <http://www.youtube.com/watch?v=kone5B87G2U>.)

chirp that marks the quarter note throughout the song support the free-flowing, conversational melodic rhythm in the vocal part in an interplay that draws the listener into the intimate car ride that the singer depicts.

Example 5a. First verse of “Night Ride Home,” by Joni Mitchell

The opening four measures of the arpeggiated guitar accompaniment reveal the importance of ninth chord sonorities throughout (Example 5b) and create a coloristic effect made familiar to Mitchell fans through her use of a wide range of altered guitar tunings, in this case, the rather low-pitched C–G–D–E–G–C replacing the normal E–A–D–G–B–E tuning. While ninth chords are typically introduced in second-year theory, their repeated appearance in “Night Ride Home” provides an early introduction to the concept.

Example 5b. Guitar opening of “Night Ride Home,” by Joni Mitchell

The harmonic independence of melody and accompaniment in “Night Ride Home,” evidenced in much popular music, is another subject worthy of exploration. The harmony implied by the melody sometimes contradicts the harmony of the accompaniment, as occurs in the second and third measures of Example 5a: while the chords of the accompaniment follow the initiating tonic with vi^9 and ii^9 respectively, the D–G melodic motion on the lyrics “big blue moon” draw from the dominant chord rather than vi . Likewise, the descending G–C motion on “there comes” in m. 3 more strongly suggests an A minor chord moving to $Fmaj^7$ in m. 4, or perhaps eight beats of $Fmaj^7$, rather than the Dm^9 (ii^9) chord in the accompaniment.

Unlike common practice music, in which non-chord tones are typically heard as melodic embellishments requiring specific resolutions, in “Night Ride Home” the harmonic clash between melody and accompaniment sounds neither dissonant nor unstable.

In addition to the ideas for classroom activities and assignments discussed in Units I and II, aural training for Unit III can include using periodic structure as a framework for determining and comparing where the respective chords of given common practice and rock progressions occur. Excerpts featuring standard progressions in common practice can also serve as the basis for group composition projects in popular styles. The opening four measures of the Bach chorale BWV 262, “Alle Menschen müssen sterben,” works well for this, with the following standard progression:

$$I-vi-I^6-IV-V-I \parallel I-ii-vii^{o6}-I^6-ii^{6/5}-ii^7-V-I.^{38}$$

Choosing from among familiar rock songs, students could arrange one or two consecutive phrases for four parts in collegiate a cappella style, for a comparison with four-part common practice excerpts featuring standard progressions. Alternatively, the class could create multiple arrangements of excerpts from a single work, whether in doo-wop or more current styles, and compare the creative results.

Asking students to create mash-ups of popular songs sharing the same harmonic patterns draws upon their technical, musical, and creative resources. The term “mash-up” refers to the common commercial practice of juxtaposing two or more previously released songs, usually above a continuous drum track either from one of the featured songs or from a different song. Examples of tongue-and-cheek mash-ups lampooning the overuse of certain progressions are included in appendix D. Individual students or groups could string together parts of different songs in a continuous stream over a chosen looped progression, or with songs sharing the same harmonic rhythm, in simultaneously-played layers. The result can be a live or recorded performance (and even be posted on YouTube). Offering students a degree of freedom in choosing the progression, the songs, and the format empowers students as their personal

³⁸ BWV 262 appears as no. 17 in 371 *Four-Part Chorales*, Vol. 1, ed. Kalmus (New York: Alfred Music, 1985); no. 153 in *Bach Chorales from the C.P.E. Bach Collection*, ed. Frieder Rempp (Kassel: Bärenreiter, 2002); and no. 5 in *101 Chorales Harmonized by Johann Sebastian Bach*, ed. Walter Buszin (Miami: Belwin-Mills, 1952).

taste and individual learning styles come into play in a project that both reinforces aural knowledge of the progression involved and is satisfying and fun to create.

Within Unit III instructors and students can find examples of the tonal techniques and materials that traditional music theory textbooks typically cover in the theory core, from first semester topics such as scales, triads, seventh chords and cadences, to second semester or later topics such as secondary functions and basic modulatory techniques. Popular music repertoire also contains a wealth of material illustrative of more advanced chromatic procedures, which, as preparation for later study, can be introduced within the framework of standard diatonic rock progressions. A brief look at Tom Waits's song "Dead and Lovely" illustrates how the topic of augmented sixth chords might be approached within the context of Unit III.³⁹

Like many popular songs featuring standard progressions, "Dead and Lovely" models this traditional music theory concept while illustrating possible expansions of these progressions within an alternative stylistic context. The haunting "Dead and Lovely" is an apt vehicle for Waits's dark and rambling storytelling. The sparse instrumentation—just electric and acoustic guitars, bass, and brushed snare drum—features a slow, steady "umpah" bass line, punctuated in the drums by quiet brushes on the offbeats. Although the excerpt below contains only three different chords and could fit within Unit II, the example is included in Unit III because the verse (not shown) and refrain together combine to create the four-chord progression i–iv–i–Gr6–V–i, including the subdominant chromatic embellishment of an augmented sixth chord. In addition, the slow tempo, harmonic rhythm, and spare texture help students follow the harmonic motion more easily, even through the entire verse and chorus, making the song an ideal introduction to this topic.

The augmented sixth chord in the refrain plays a central, coloristic role (Example 6). It delays resolution to the dominant twice, serving as an ominous and confounding afterthought—almost a response to the C minor "call" underlying the sung adjective, "dead." The harmonic rhythm doubles on the word "lovely" with the chord's final resolution, re-contextualizing the chord within a more prosaic, almost conventional authentic cadence at the conclusion of the refrain.

³⁹ Tom Waits and Kathleen Brennan, "Dead and Lovely," *Real Gone*, Epitaph, 2004. (See <http://www.youtube.com/watch?v=KHLvILDtCF8>.)

Example 6. Refrain of "Dead and Lovely," by Tom Waits and Kathleen Brennan

The $\hat{1}-\hat{5}-\flat\hat{6}$ motion in the bass sounds three times, making it easier for students to discern the augmented sixth chords. At the final cadence, the raised 4 (F#), rather than resolving upwards to the dominant, resolves downward to F (the seventh of V⁷), moving in parallel rather than contrary motion with the A $\flat$ -G descent in the bass. A comparison with common practice highlights Waits's relatively loose approach to voice leading: within the transparent, guitar-dominated texture, the unabashed parallel fifths go by without notice. While hardly a staple of rock harmony, the augmented sixth chord can be found in many songs using standard diatonic progressions. Waits uses them to poignant effect in several of his minor key songs (e.g., "Soldier's Things"⁴⁰), and examples can be found in other songs, ranging from The Beatles' "I Want You (She's So Heavy)"⁴¹ to Los Lonely Boys' "Love in My Veins."⁴²

⁴⁰ Tom Waits, "Soldier's Things," *Swordfishtrombones*, Island Records, 1983. (See http://www.youtube.com/watch?v=qwg3y_FnLmg.)

⁴¹ The Beatles, "I Want You (She's So Heavy)," *Abbey Road*, Apple Records, 1969. (See <http://www.youtube.com/watch?v=FnF91s2bBpg>.)

⁴² Los Lonely Boys, "Love in My Veins," *Rockpango*, Playing in Traffic Records, 2011. (See <http://www.youtube.com/watch?v=L9YLWckxpqg>.)

Unit IV: Other progressions of four or more chords

The broad scope of the final grouping reflects the wide variety in rock progressions. Songs featuring a single progression repeated within a relatively simple song form comprise only a fraction of popular music harmonic progressions. Much of the work of artists utilizing a sophisticated, complex, and often interesting harmonic language, from “old school” greats such as The Beatles and Steely Dan, to the current indie-pop of Animal Collective, Sufjan Stevens, and James Blake, defies categorization by harmonic progression; there is simply too much harmonic variety within and between individual songs and artists’ creative output. The unique harmonic vocabulary in a song like Steely Dan’s “Negative Girl,”⁴³ with its complex jazz voicings and roving, sleight-of-hand modulations, bears little resemblance to the meandering progressions that Sufjan Stevens uses in “From the Mouth of Gabriel.”⁴⁴ No simple system of chord classifications can encompass both. The loose description “other progressions involving four or more chords” reflects the author’s conviction that music theory education must avoid cramming the lived experience of music making, whether classical or popular, into explanations that are too rigid or too narrow.

Notwithstanding popular music’s vast variety of harmonic usage, within Unit IV there are several self-contained areas on which instructors can focus (see appendix D). The ubiquitous sequential progression underlying Pachelbel’s canon (I–V–vi–iii–IV–I–IV–V) is the basis for many songs and allows for easy comparisons. The I–V–vi–IV progression is another possible subunit, so commonplace, especially in commercial pop, that it is the subject of several funny YouTube mash-ups that students find both amusing and useful for aural training. The progression i–III–♭VII–IV in minor constitutes a third grouping. While less common than some other popular music progressions, the ♭VII–IV descending fourth root motion (first encountered in Unit II and noted by both Stephenson and by de Clercq and Temperley⁴⁵) is characteristic of many popular music

⁴³ Steely Dan, “Negative Girl,” *Two Against Nature*, Giant Records, 2000. (See <http://www.youtube.com/watch?v=eAnTph40pgE>.)

⁴⁴ Sufjan Stevens, “From the Mouth of Gabriel,” *All Delighted People*, Asthmatic Kitty Records, 2010. (See <http://www.youtube.com/watch?v=IrGMIdemDnQ>.)

⁴⁵ Stephenson, “Harmonic Succession,” chapter 5 in *What to Listen for in Rock*; de Clercq and Temperley, “A Corpus Analysis of Rock

styles, reflecting the high incidence of both $\flat$ VII and IV chords in popular music compared to common practice. Examples of each of these progressions are noted in the appendix.

A larger subunit comprises stepwise progressions of four or more chords. (Shorter stepwise progressions were first encountered in Unit II in Michael Jackson's "Beat It.") In common practice music, bass lines moving by step, whether diatonic or chromatic, typically employ alternating root position and inverted chords. Helping beginning music students focus on the preponderance of root position rock progressions with bass lines that move by step may help them more readily identify the progressions that underlie descending stepwise bass lines in common practice. Common ascending step-wise rock progressions include: I-ii-iii-IV[-V], and i-ii-III-IV[-V]; I-iii-IV-V; and i-ii-IV-V. Less common descending step-wise progressions include the so-called Andalusian or Flamenco progression (i- $\flat$ VII- $\flat$ VI-V), which can be found throughout the classical repertoire. A particularly good example is Scene 1, "The Kuru Field of Justice," from Philip Glass's opera *Satyagraha* (1979), which features the repeated progression throughout.

A four-measure ostinato drawn from The Roots' hip-hop song, "You Got Me" provides a descending progression suitable for ear training (Example 7).⁴⁶ The slow harmonic rhythm and sparse instrumentation (vocals, electric keyboard, acoustic guitar, and bass) at the opening of the song make the root position chords easier to hear and identify. The many repetitions of the ostinato throughout the song reinforce the sound of the progression even as instrumental and rapped or sung vocal parts are added or changed. As shown by the bracket in Example 7, the bass line also includes an exposed interval of a descending augmented second, which appears in the context of a descending harmonic minor scale. Students can be asked to sing back the repeated bass line to solidify their aural understanding of the augmented second. That this progression and the resulting augmented second melodic interval are typically avoided in common practice clarifies this important distinction between the respective repertoires.

Harmony," 63.

⁴⁶ Questlove, Tariq Trotter, Jill Scott, and Scott Storch, "You Got Me," *Things Fall Apart*, Geffen, 1999. (See <http://www.youtube.com/watch?v=MJCHeEQV454>.)

The image shows a musical score for the keyboard opening of the song "You Got Me." The score is for Electric Piano in 4/4 time. It consists of four measures. Above the staff, the chords Bm, A#dim, G, and F# are indicated. The melody in the right hand is a sequence of eighth notes: B4, C5, D5, E5, F#5, G5, A5, B5. The left hand plays octaves: B3, B3, C4, C4, D4, D4, E4, E4. A bracket under the first three measures indicates a single harmonic unit.

Example 7. Keyboard opening of "You Got Me," by Questlove, Tariq Trotter, Jill Scott, and Scott Storch

The final song to be considered, "Miss Misery," by Elliot Smith, falls outside of the previously mentioned subcategories of progressions within Unit IV.⁴⁷ The song may be familiar from its appearance in the soundtrack for the film *Good Will Hunting* (1997). The lyrics are rife with symbolism and double entendres, from the ambiguous, alliterative hook ("Do you miss me, Miss Misery, like you say you do?") to its urban imagery. Musical elements reflect the alienation and despair expressed in the lyrics. Smith's unforced and vibratoless tone quality is embellished with a subtle double-tracking effect, and noticeable intakes of breath punctuate the beginnings of musical phrases, adding to the vulnerability that he projects. The harmonic progressions avoid strong functional motion throughout the piece. The rhythmic treatment of the vocal melody is loose over the steady $\frac{3}{4}$ accompaniment, with notes at times subtly off the downbeats, and at other times noticeably anticipating or extending past the beat. The lack of melodic and harmonic repetition within the eight-bar periods of the verse and the inclusion of two musically independent bridges contribute to a meandering musical flow that underlines the sense of being lost and alone.

The song features a rondo form (ABACA), with two twelve-measure bridge sections (B and C), rather than the eight- or sixteen-measure periodic structures suggested by the verse (Example 8). The opening harmonies of both bridge sections are surprising—having established F major in the verse, the first bridge modulates abruptly to $\flat$ III (A $\flat$ major), and the second begins on a D major chord. In contrast, the transitions from bridge back to verse are subtler, particularly in the case of the first bridge, where the return from the A $\flat$ bridge to the F major verse is accomplished via a common chord modulation (C major functions as V/vi in A $\flat$, and as V in F), leading to the opening vi chord of the verse.

⁴⁷ Elliott Smith, "Miss Misery," *Good Will Hunting*, Capitol, 1997. (See <http://www.youtube.com/watch?v=zH8-lQ9CeyI>.)

Verse 1

3/4 Dm C B^b F B^b/F B^b Maj7/F Gm Gm

/// | /// | /// | /// | /// | /// | /// | /// |

F: vi V IV I IV⁶₄ IV⁴₃ ii ii

F Am C B^b F F A/E A⁷/E

/// | /// | /// | /// | /// | /// | /// | /// |

I iii V IV I I V⁶₄/vi V⁴₃/vi

Verse 2

Dm C B^b F B^b B^b Maj7 Gm Gm

/// | /// | /// | /// | /// | /// | /// | /// |

vi V IV I IV IV ii ii

F Am C F G B^b F F

/// | /// | /// | /// | /// | /// | /// | /// |

I iii V I II IV I I

Bridge 1

A^b A^b Cm/G Cm/G F F D^b Maj7 D^b Maj7

/// | /// | /// | /// | /// | /// | /// | /// |

^bIII ^bIII v⁶₄ v⁶₄ I I A^b: IV IV

A^b A^b C C

/// | /// | /// | /// || [return to double verse]

I I V/vi V/vi

F: V V [vi V IV I etc.]

Bridge 2

D D B^b B^b F F G G

/// | /// | /// | /// | /// | /// | /// | /// |

VI(♯) VI(♯) IV IV I I V/V V/V

B^b B^b C A⁷

/// | /// | /// | /// || [return to double verse & coda]

IV IV V V⁷/vi [vi iii IV I etc.]

Example 8. "Miss Misery," by Elliott Smith

Both bridges' respective progressions contrast with the verse as well as with each other. In the first bridge, an initiating A^b harmony in F major foreshadows the modulation to A^b major later in the bridge. While the second bridge does not convincingly modulate, its VI–IV–I (D major–B^b–F) motion is an interesting twist on the standard V–IV–I blues cadence. According to Stephenson's three systems of harmonic palette, this passage falls within the third, major system, which includes major and minor chords built on

the notes of the Mixolydian scale.⁴⁸ In common practice music, a major chord on the submediant would likely function outside of the key, as a secondary dominant of ii. Stephenson's concept of harmonic palette acknowledges that in rock, traditional functions do not necessarily apply, as is the case here. On the other hand, the song does include several examples of secondary dominants, most notably at the end of the first verse, where V/vi (A major) lingers for two measures in preparation for the D minor (vi) chord that begins the repeat of the verse.

The relationship between harmonic rhythm and periodic structure is intriguing. In both verses, rather than accelerating to the respective half and full cadences ending each phrase of the period, the harmonic rhythm slows from the dotted half note established in the four-measure antecedent phrase to two measures per chord in the consequent phrase. Smith seems to be putting on the brakes harmonically, stuck and slow moving as his depression suggests. In the song's two contrasting bridges, typically sections where increased harmonic activity is expected, the slower two-measure harmonic rhythm is maintained amidst relatively quick changes in key center.

Smith occasionally uses second inversion chords in the piano part. Unlike common practice usage, at times the inversions have little to do with smooth part writing. The second inversion chords lessen the sense of harmonic drive throughout the chord progression, which often moves by step and avoids strong cadences. The first second inversion chord appears in mm. 5-6, where a neighboring $\frac{4}{4}$ B $\flat$ major chord (IV) follows the tonic F major chord. Rather than resolving back to a tonic-functioning chord as is typical in common practice, the second inversion chord leads to a cadence on a root position G minor chord (ii). Furthermore, the inverted IV appears in a metrically strong position and lasts two measures. Later in the song, second inversions create smooth bass line voice-leading to connect chords with different harmonic functions. The final two measures of verse 1 contain inverted A chords and an A⁷ chord over E, functioning as secondary dominants of vi. Here, in a $\hat{1}\text{-}\hat{7}\text{-}\hat{6}$ motion, the E in the bass passes from the tonic of the preceding F chord to the D minor vi chord that opens the repeated verse. This use of second inversion also differs significantly from the common practice passing $\frac{4}{4}$ chord, typically occurring on V and connecting

⁴⁸ Stephenson, "Chord Type and Harmonic Palette," chapter 4 in *What to Listen for in Rock*.

a tonic chord and its inversion (or less frequently on the tonic, connecting a IV chord to its inversion).

A valuable classroom assignment, particularly for vocalists, involves memorizing sections of the solo vocal line by ear for solo performance, including vocal embellishments and lyrics.⁴⁹ Excerpts containing the intermittent instances of vocal harmony can be learned at this stage as well, with pairs of students working to master the solo and the harmony for in-class performance. In addition to learning and singing the vocal parts, more advanced students can further hone their aural skills by transcribing excerpts of the melody. Once mastered—even by reluctant non-vocalists—the solo can then be analyzed for elements such as melodic range, harmony, periodic structure, embellishments, and its relationship to the lyrics. Important features of the intermittent vocal harmony can likewise be identified, in particular its placement both musically and in relation to the text. Melodic and rhythmic dictation exercises can follow.

Tackling the vocal parts in “Miss Misery” can be undertaken alongside consideration of the accompaniment and the recording as a whole. Working towards the goal of in-class performance, instrumentalists can memorize separate parts of “Miss Misery,” attempting to recreate the performance on the recording as accurately as possible. The instrumentation (acoustic and electric guitar, drum set, piano, organ, solo voice, and vocal harmony) changes by formal section, with each section featuring individual instruments; students can concentrate on the details of the exposed parts, some of which can be simplified as necessary. For example, at the return to the verse following the first bridge, for a full sixteen measures the bass part of the piano accompaniment consists of three repeated quarter notes per $\frac{3}{4}$ measure, played on a single chord tone from each underlying harmony, which changes either every measure or every two measures. Non-keyboard players and accomplished pianists alike would benefit from mastering this simple bass part, noting its importance to the song’s meter, mood, and harmony.

⁴⁹ The author has had surprising success with this activity. Imitating even a small passage of a particular vocalist’s style draws upon different ear-training skills than do typical dictation or memorization exercises, heightening students’ awareness of stylistic performance practices. YouTube is a great resource for impressive and often hilarious mimicry of celebrity singers (e.g., Christina Bianco, <https://www.youtube.com/watch?v=C3DIDPeurRw>).

Attempting an accurate realization of a given musical work requires precise listening to performance styles and the inner workings of the piece. An alternative approach that could be used in tandem with the above activities has students learning the song on their chosen instrument, again by ear, retaining musically crucial elements such as the meter, chord progression, and basic melody line in order to create a new cover version. It would be interesting to compare attempts at an “accurate” rendition of the song with a newly-conceived cover version. This activity could introduce a secondary conversation about the musical and cultural significance of song covers, a practice at the core of much current popular music performance. Centering group learning projects around a single popular music work can greatly enrich students’ knowledge base, suggesting avenues through which a variety of music theory topics can be explored, and generating numerous opportunities for experientially-based learning.

CONCLUSION

This discussion offers a possible lens through which to examine both classical and popular music practices with a view towards developing a pedagogy that integrates popular music into the traditional, classical music-based music theory curriculum by reclassifying harmonic progressions by number and type rather than solely by harmonic function. Music educator Estelle Jorgensen has called for a renewed sense of purpose in the music education process, and notes the importance of choosing repertoire that fosters that sense:

A sense of reverence for this time and place, for these students and teachers, and for this subject matter or repertoire makes the tasks of music teaching and learning both precious and fragile since there may never again be such a moment or opportunity as this. The selection of repertoire for study is one of the crucial endeavors of such a reverent approach to music education.⁵⁰

⁵⁰ Estelle R. Jorgensen, *The Art of Teaching Music* (Bloomington, IN: Indiana University Press, 2008), 25.

As many of us strive to integrate popular music more fully into the traditional music theory curriculum, we too must approach this undertaking with a sense of reverence—for popular music practice, for the challenge educators face in devising effective and efficient ways for its inclusion, and for the goal of ensuring student engagement in the music educational process. As an essential component of a stylistically inclusive music theory education, popular music harmony can serve as an exciting focal point for student-centered teaching and learning, generating new ideas for experiential approaches that uphold creativity, spontaneity, and imagination as essential aspects of music theory knowledge.

APPENDIX A: SUGGESTED LISTENING, UNIT I

Single-chord songs and static harmony

Bob Dylan. "Hollis Brown." *The Times They Are A-Changin'*. Columbia Records, 1964.

<http://www.youtube.com/watch?v=fEouuxAatBs>

The Velvet Underground. "Venus In Furs." *The Velvet Underground & Nico*. Verve Records, 1967.

<http://www.youtube.com/watch?v=9nGsUbZpCKM>

Neu! "Hallogallo." *Neu!* Brain Records, 1972. [Part of the German "Krautrock" movement]

<http://www.youtube.com/watch?v=ubdHYhnersU>

Neu! "Für Immer (Forever)." *Neu! 2*. Brain Records, 1973.

http://www.youtube.com/watch?v=u3-86_Xq7fQ

Steely Dan. "Show Biz Kids." *Count Down to Ecstasy*. ABC Records, 1973.

<http://www.youtube.com/watch?v=-9QVNbUPzgM>

Brian Eno. "Discreet Music." *Discreet Music*. EG Records, 1975. [Ambient music genre]

<http://www.youtube.com/watch?v=7-Vq4pmzMaE>

AC/DC. "It's a Long Way to the Top (If Ya Want to Rock and Roll)." *High Voltage*. ATCO, 1976. [Intro, verse]

<http://www.youtube.com/watch?v=zFDhxJJMEIY>

Gang of Four. "Natural's Not In It." *Entertainment*. EMI Records, 1979. [Post-punk]

<http://www.youtube.com/watch?v=1vPonjXOfYo>

Hank Williams. "Honky Tonkin'." *High Notes*. Elektra Records, 1982.

http://www.youtube.com/watch?v=Dh_CQnhZ8cY&feature=results_video&playnext=1&list=PL313727266D67E0A4

ESG. "Come Away." *Come Away With ESG*. 99 Records, 1983.

<http://www.youtube.com/watch?v=GkZ1bC1FQBk>

Talking Heads. "Girlfriend is Better." *Speaking in Tongues*. Sire Records, 1983.

http://www.youtube.com/watch?v=t_WJgimzraM

Tom Waits. "Get Behind the Mule." *Mule Variations*. Anti- Records, 1991.

<http://www.youtube.com/watch?v=l7yuTR8r6QM>

- Stereolab. "Super-Electric." *Switched On*. Slumberland Records, 1992.
<http://www.youtube.com/watch?v=8WzHKo3uex8>
- John Lee Hooker. "Burnin' Hell." *Burning Hell*. Obc Records, 1993.
<http://www.youtube.com/watch?v=KMlC0qjP02g>
- Liz Phair. "Johnny Sunshine." *Exile in Guyville*. Matador Records, 1993.
<http://www.youtube.com/watch?v=Ou9r2RvSJok>
- Bjork. "You've Been Flirting Again." *Post*. One Little Indian Records, 1995. [Oscillating harmonies, Bb-C].
<http://www.youtube.com/watch?v=tPWfpgwU5c4>
- Bjork. "Possibly Maybe." *Post*. One Little Indian Records, 1995.
http://www.youtube.com/watch?v=tE11_5Spq1I
- Bjork. "I Miss You." *Post*. One Little Indian Records, 1995. [Verse]
<http://www.youtube.com/watch?v=IKSoBJ8WirE>
- Stevie Ray Vaughan. "Crossfire." *In Step*. Epic Records, 1999.
<http://www.youtube.com/watch?v=7cUrdvb1LaQ>
- Destiny's Child. "Bootylicious." *Survivor*. Columbia Records, 2001.
<http://www.youtube.com/watch?v=IyYnnUcgeMc>
- Cornershop. "Wogs Will Walk." *Handcream for a Generation*. Wiiiija Records, 2001.
<http://www.youtube.com/watch?v=MDSOQWyxwqc>
- Bjork. "Undo." *Vespertine*. One Little Indian Records, 2001.
<http://www.youtube.com/watch?v=Qg8bsVBLXjA>
- Keith Urban. "One Chord Song." *Golden Road*. Capitol Records, 2002.
<http://www.youtube.com/watch?v=bxCWxkB4oD4>
- Tinariwen. "Cler Achel." *Aman Iman: Water Is Life*. Outside Music Records, 2007. [Tuareg Musicians from northern Mali]
<http://www.youtube.com/watch?v=kjxzUeRXyq0>
- Beyoncé. "Single Ladies (Put a Ring on it)." *I Am...Sasha Fierce*. Columbia Records, 2008.
<http://www.youtube.com/watch?v=4m1EFMoRfVY>
- Animal Collective. "My Girls." *Merriweather Post Pavilion*. Domino Records, 2009. [First two minutes]
<http://www.youtube.com/watch?v=zol2MJf6XNE&feature=relmfu>

APPENDIX B: SUGGESTED LISTENING, UNIT II

2-chord songs

The Seeds. "(You're) Pushin' Too Hard." *The Seeds*. GNP Crescendo Records, 1965. [i, ♭VII]

<http://www.youtube.com/watch?v=IReb27tFqMg>

The Beatles. "Paperback Writer." EMI Records, 1966. [I, IV]

<http://www.youtube.com/watch?v=taADLPtYDb0>

The Beatles. "Eleanor Rigby." *Revolver*. Parlophone Records, 1966. [i, VI]

<http://www.youtube.com/watch?v=-LOgMWbDGPA>

Traffic. "Feelin' Alright." *Traffic*. Island Records, 1968. [I, IV]

http://www.youtube.com/watch?v=AIYLZOp_Bzc

The Beatles. "Don't Let Me Down." *Get Back/Let It Be Sessions*. Apple Records, 1969. [i, ii]

<http://www.youtube.com/watch?v=EB9tqgdCt5I>

Led Zeppelin. "Whole Lotta Love." *Led Zeppelin II*. Atlantic Records, 1969. [i, ♭VII]

<http://www.youtube.com/watch?v=bXKboDqiSbE>

The Modern Lovers. "Road Runner." *The Modern Lovers*. Beserkley Records, 1976. [IV, I]

<http://www.youtube.com/watch?v=BgRYncR1Nog&feature=related>

The Fall. "Eat Y'rself Fitter." *Perverted by Language*. Rough Trade Records, 1983. [♭III, I]

<http://www.youtube.com/watch?v=yFCOt6wbm80>

Bruce Springsteen. "Born in the U.S.A." *Born in the U.S.A.* Columbia Records, 1984. [I, IV]

<http://www.youtube.com/watch?v=lZD4ezDbbu4>

Jane's Addiction. "Jane Says." *Nothing's Shocking*. Warner Brothers Records, 1988. [♭VII, I]

<http://www.youtube.com/watch?v=xh-5FI21s6M>

Nirvana. "Something in the Way." *Nevermind*. DGC Records, 1991. [i, VI]

<http://www.youtube.com/watch?v=jDyvCIUsCJU>

Moldy Peaches. "Anyone Else But You." *The Moldy Peaches*. Sanctuary Records, 2001. [I, IV]

<http://www.youtube.com/watch?v=WtBMF0BqDrU>

Devendra Banhart. "State of Michigan." *Oh Me Oh My*. Young God Records, 2002. [I, ii]

<http://www.youtube.com/watch?v=-OwgqbsfwsM>

Coldplay. "Politik." *Rush of Blood to the Head*. Capitol Records, 2002. [I, iv]
<http://www.youtube.com/watch?v=FHzvjIvJbfE>

Ray Lamontagne. "How Come." *Trouble*. RCA Records, 2004. [I, IV]
<http://www.youtube.com/watch?v=8owsUoHiD20>

Weezer. "Troublemaker." *Weezer*. Geffen Records, 2008. [I, IV]
http://www.youtube.com/watch?v=R_u-6CPE74o

3-chord songs

Bob Dylan. "A Hard Rain's Gonna Fall." *The Freewheelin' Bob Dylan*. Columbia Records, 1963. [I, IV, V]

http://www.dailymotion.com/video/xq1q9k_bob-dylan-a-hard-rain-s-a-gonna-fall-

Bob Dylan. "Tambourine Man." *Bringin' It All Back Home*. Columbia Records, 1965. [I, IV, V]

<http://www.timsah.com/Bob-Dylan-Mr-Tambourine-Man/eTMQrP81n27>

Cream. "Strange Brew." *Disraeli Gears*. Atco Records, 1967. [i, iv, v, minor blues]

http://www.youtube.com/watch?v=oElnOb_ookE

Bob Dylan. "All Along the Watchtower." *John Wesley Harding*. Columbia Records, 1967. [i, ♭VII, VI]

<http://www.youtube.com/watch?v=YanjY9CsPDQ>

Van Morrison. "Brown Eyed Girl." *Blowin' Your Mind!* Bang Records, 1967. [I, IV, V]

<http://www.youtube.com/watch?v=kqXSBe-qMGo>

Creedence Clearwater. "Proud Mary." *Bayou Country*. Fantasy Records, 1969. [I, V, vi]

<http://www.youtube.com/watch?v=Gpqz3cdVPLM&feature=fvwrrel>

Pink Floyd. "Money." *The Dark Side of the Moon*. Harvest Records, 1973. [i, V, iv, blues]

<http://www.youtube.com/watch?v=i-j3xITvYQY>

Bob Dylan. "Knockin' On Heaven's Door." *Pat Garrett and Billy the Kid*. Columbia Records, 1973. [I, V, ii]

http://www.youtube.com/watch?v=cJpB_AEZf6U

Bob Dylan. "Isis." *Desire*. Columbia Records, 1976. [I, ♭VII, IV]

<http://www.youtube.com/watch?v=7SkrLadYCG4>

- The Ramones. "I Don't Care." *Rocket to Russia*. Sire Records, 1977. [i, VI, ♭VII]
<http://www.youtube.com/watch?v=QveJv7V4OZI>
- AC/DC. "Back in Black." *Back in Black*. Albert Records, 1980.
<http://www.youtube.com/watch?v=CwIvBNsSywQ>
- Tom Waits. "Jersey Girl." *Heart Attack and Vine*. Asylum Records, 1980. [I, IV, V]
<http://www.youtube.com/watch?v=aw5JkJQgYsM>
- Crosby, Stills and Nash. "Southern Cross." *Southern Cross*. Atlantic Records, 1981. [I, ♭VII, IV]
<http://www.youtube.com/watch?v=Bw9gLjEGJrw>
- John Mellencamp. "Authority Song." *Uh-Huh*. Riva Records, 1983. [I, IV, V]
<http://www.youtube.com/watch?v=wsEwK69LXjQ>
- U2. "I Still Haven't Found What I'm Looking For." *The Joshua Tree*. Island Records, 1987. [I, IV, V]
<http://www.youtube.com/watch?v=TRwoeuz5L80>
- Green Day. "She." *Dookie*. Reprise Records, 1995. [I, IV, V]
<http://www.youtube.com/watch?v=OnF0pkWD2Tc>
- Alanis Morissette. "Hand in My Pocket." *Jagged Little Pill*. Maverick Records, 1995. [I, ♭VII, IV]
<http://www.youtube.com/watch?v=LQ8D5Ihe4hg>
- Blink 182. "All The Small Things." Geffen Records, 2000. [I, V, IV]
<http://www.youtube.com/watch?v=9Ht5RZpzPqw>
- The Jayhawks. "I'm Gonna Make You Love Me." *Smile*. American Records, 2000. [I, ♭VII, IV]
- Oasis. "Songbird." *Heathen Chemistry*. Big Brother Records, 2003. [I, vi, V]
<http://www.youtube.com/watch?v=0KJgBkreAuw>
- Arcade Fire. "Wake Up." *Funeral*. Merge Records, 2004. [Verse: I, vi, IV]
http://www.youtube.com/watch?v=Z0IAHH_OFoU
- Snow Patrol. "Chasing Cars." *Eyes Open*. Interscope Records, 2006. [I, iii, IV]
<http://www.youtube.com/watch?v=GemKqzILV4w>
- Tom Waits. "Hold On." *Mule Variations*. Anti-Records, 2007. [I, IV, V]
<http://www.youtube.com/watch?v=WPnOEiehONQ>
- Caribou. "Odessa." *Swim*. City Slang Records, 2010. [VI, V, i]
<http://www.youtube.com/watch?v=aiSa7THgxrl>
- Amy McDonald. "Love Love." *A Curious Thing*. Mercury Records, 2010. [I, IV, I, V]
<http://www.youtube.com/watch?v=Xi557TMssE8>

APPENDIX C: SUGGESTED LISTENING, UNIT III

I-vi-IV-V

The Beatles. "Happiness Is a Warm Gun." *The White Album*. Apple Records, 1968. [Chorus]

<http://www.youtube.com/watch?v=xTU2Y0VFH0E>

The Beatles. "Octopus's Garden." *Abbey Road*. Apple Records, 1969.

<http://www.youtube.com/watch?v=YlKINmoR6vM>

Steely Dan. "My Old School." *Countdown to Ecstasy*. ABC Records, 1973. [Verse]

<http://www.youtube.com/watch?v=4ZZTojpxW0k>

Led Zeppelin. "D'yer Mak'er." *Houses of the Holy*. Atlantic Records, 1973. [Verse]

<http://www.youtube.com/watch?v=P5s9illHQ1c>

Nena. "99 Luftballons (99 Red Balloons)." *Nena*. CBS Schallplatten Records, 1983. [Intro: I-vi-IV-V; verse: I-ii-IV-V]

<http://www.youtube.com/watch?v=14IRDDnEPR4>

Red Hot Chili Peppers. "Someone." Warner Brothers Records, 2002.

<http://www.youtube.com/watch?v=i2s8MOXTVLo>

Green Day. "Jesus of Suburbia." *American Idiot*. Reprise Records, 2004. [Verse]

<http://www.youtube.com/watch?v=JMcNzjzw63I>

The Riverdales. "Werewolf One." *Invasion USA*. Asian Man Records, 2009. [Verse]

<http://www.youtube.com/watch?v=Vs7G-ju5J>

Justin Bieber. "Baby." *My World 2.0*. Island Records, 2010.

<http://www.youtube.com/watch?v=kffacxfA7G4>

Earth Angels. "This Is the Night." *Street Corner Style*. Rare Rockin' Records, 2010. [Verse]

<http://www.youtube.com/watch?v=IBGTrvy4b7w>

vi-IV-I-V

Boston. "Peace of Mind." Epic Records, 1976. [Intro and chorus]

<http://www.youtube.com/watch?v=WGRrOEBY3pI>

Joan Osborne. "One of Us." *Relish*. Blue Gorilla Records, 1995.

<http://www.youtube.com/watch?v=xZEO1Lug25s>

Jewel. "Hands." *Spirit*. Atlantic Records, 1998. [Verse]

<http://www.youtube.com/watch?v=AfsS3pIDBfw>

Madonna. "The Power of Goodbye." *Ray of Light*. Maverick/Warner Brothers, 1998.

<http://www.youtube.com/watch?v=xG-w52U6-x8>

Nina Gordon. "Tonight and the Rest of My Life." *Tonight and the Rest of My Life*. Warner Brothers, 2000. [Verse]

<http://www.youtube.com/watch?v=BiNf6uDhMac>

Bon Jovi. "It's My Life." *Crush*. Island, 2000. [Chorus]

<http://www.youtube.com/watch?v=jC67JzPqDG4>

Sarah McLachlan. "Building a Mystery." *Mirrorball: The Complete Concert*. Arista Records, 2004. [Verse]

http://www.youtube.com/watch?v=zWxzM9_gEo0

One Republic. "Apologize." *Dreaming Out Loud*. Mosley Music, 2006. [Verse]

<http://www.youtube.com/watch?v=fzq8c5pr-Ws>

Moby. "Every Day It's 1989." *Last Night*. Mute Records, 2007. [Verse]

<http://www.youtube.com/watch?v=gB4Y9jVo5sA>

Aimee Mann. "Borrowing Time." *@#%&*! Smilers*. Super Ego Records, 2008. [Verse]

<http://www.youtube.com/watch?v=CNiBazvemWk>

Beyoncé. "If I Were A Boy." *I Am...Sasha Fierce*. Columbia Records, 2008. [Alternates between I-IV-I-V and vi-IV-I-V]

<http://www.youtube.com/watch?v=AWpsOqh8q0M>

Other standard progressions

Frank Zappa & The Mothers of Invention. "Deseri." *Cruising with Ruben and the Jets*. Bizarre/Verve Records, 1968. [I-vi-ii-V-I]

<http://www.youtube.com/watch?v=i4KnMkM7ljk>

Marvin Gaye. "What's Going On." *What's Going On*. Tamla Records, 1971. [Verse: I-vi-ii-V-I]

<http://www.youtube.com/watch?v=H-ka3UtBj4M>

The Eagles. "Lyin' Eyes." *One of These Nights*. Asylum Records, 1975. [Verse: I-IV-ii-V-I]

<http://www.youtube.com/watch?v=5-NlR54PqLw>

Queen. "Spread Your Wings." *New of the World*. EMI Records, 1978. [Chorus: i-vi-ii-V-i]

<http://www.youtube.com/watch?v=uyd6OLyhPJ0>

James Taylor. "Up On The Roof." *Flag*. Columbia Records, 1979. [Verse: I-vi-IV-ii-V-I]

http://www.youtube.com/watch?v=15Qqn13_Qr

Tom Waits. "Whistle Down the Wind." *Bone Machine*. Island Records, 1992. [I-V-I-IV-ii-V-I]

<http://www.youtube.com/watch?v=YpnnMb1WtZM>

Lauren Hill. "I Used to Love Him." *The Miseducation of Lauren Hill*. Ruffhouse Records, 1998. [ii°-V-i-VI]

<http://www.youtube.com/watch?v=Wd3n4TjCaJY>

Weezer. "Island in the Sun." *Weezer*. Interscope Records, 2001. [vi-ii-V-I]

<http://www.youtube.com/watch?v=erG5rgNYSdk>

APPENDIX D: SUGGESTED LISTENING, UNIT IV

I-V-vi-iii-IV-I-IV-V [Pachelbel's *Canon*]

Mash-ups:

Denes Harmath [screenname]. "Pachelbel Canon Mashup."

<http://www.youtube.com/watch?v=AfBOBmxVsvc>

Monatee [screenname]. "Norwegian Recycling: Pachelbel Mashup."

<http://www.youtube.com/watch?v=ZSxyzXHM2hs>

Songs:

Coven. "One Tin Soldier." *Billy Jack*. Warner Brothers, 1971. [Verse: w/ii instead of IV; hook: I-iii-IV-V]

<http://www.youtube.com/watch?v=wxQUH7EVqH4>

Aerosmith. "Cryin'." *Get a Grip*. Geffen Records, 1993. [Verse: I-V-vi-iii-IV-I-V]

<http://www.youtube.com/watch?v=QyXQhdkmOWo>

Pet Shop Boys. "Go West." *Very*. Parlophone Records, 1993. [I-V-vi-iii-IV-I-ii-V]

<http://www.youtube.com/watch?v=qPtZNoUQXvg>

Blues Traveler. "The Hook." *Four*. A & M Records, 1994. [I-V-vi-III-IV-I-IV-V]

<http://www.youtube.com/watch?v=arUpcpRR568>

Green Day. "Basket Case." *Dookie*. 1994. [Verse: I-V-vi-III-IV-I-V]

<http://www.youtube.com/watch?v=NUTGr5t3MoY>

Coolio. "C U When U Get There." *My Soul*. Tommy Boy Records, 1997. [I-V-vi-III-IV-I-IV-V]

<http://www.youtube.com/watch?v=tP1PXRiVoJw>

Sweetbox. "Life is Cool." *Adagio*. Paramedia Records, 2004. [I-V-vi-III-IV-I-IV-V]

<http://www.youtube.com/watch?v=5vdn5sjwBY>

Creed. "One Last Breath." *Weathered*. Wind-up Records, 2002. [Verse: I-V-vi-iii]

<http://www.youtube.com/watch?v=qnkuBUAwe0>

I-V-vi-IV

Mash-ups:

The Axis of Awesome. "4 Chords (2011)."

<http://www.youtube.com/watch?v=oOIdewpCfZQ>.

RipTard [screenname]. "4 Chords, 19 Songs on Guitar."

<http://www.youtube.com/watch?v=DEkPC-6Ni8Y>.

Mathyou9 [screenname]. "4 Chords 65 Songs."

<http://www.youtube.com/watch?v=OdVurJFMDUI>.

Jimlapbap [screenname]. "One Chord Progression to Rule Them All."

<http://www.youtube.com/watch?v=yk8fB4CRse4>.

Songs:

The Police. "So Lonely." *Outlandos d'Amour*. A&M Records, 1978.

<http://www.youtube.com/watch?v=SaNt9-QkiHI>

Journey. "Don't Stop Believing." *Escape*. Columbia Records, 1981. [Verse]

<http://www.youtube.com/watch?v=VcjzHMhBtf0>

U2. "With or Without You." *The Joshua Tree*. Island Records, 1987.

<http://www.youtube.com/watch?v=XmSdTa9kaiQ>

Richard Marx. "Right Here Waiting." *Repeat Offender*. EMI, 1989. [Chorus]

http://www.youtube.com/watch?v=S_E2EHVxNAE

Bush. "Glycerine." *Sixteen Stone*. Trauma Records, 1995.

<http://www.youtube.com/watch?v=sD6T5kuC86s>

Blink 182. "Dammit." *Dude Ranch*. MCA Records, 1997.

<http://www.youtube.com/watch?v=jEqura5HgVc>

Savage Garden. "Crash and Burn." *Affirmation*. Columbia Records, 2000. [Verse]

<http://www.youtube.com/watch?v=qjGSXGCi4Fc>

Black Eyed Peas. "Where Is the Love." *Elephunk*. A&M Records, 2003.

<http://www.youtube.com/watch?v=WpYeekQkAdc>

Switchfoot. "On Fire." *The Beautiful Letdown*. Sony Records, 2003.

<http://www.youtube.com/watch?v=pskjyxykBiE>

Rihanna. "Take a Bow." *Good Girl Gone Bad*. Def Jam, 2007. [With occasional substituted chords]

<http://www.youtube.com/watch?v=JvVSjibRByo>

i (or I)-(b)III- $\flat$ VII-IV

Mash-up:

Party Ben. "Boulevard of Broken Songs." [Featuring songs by Green Day, Oasis, Travis, and Eminem]

<http://www.youtube.com/watch?v=0RCsledgOU4>.

Songs:

Tears for Fears. "Mad World." *The Hurting*. Phonogram Records, 1983. [Verse]

<http://www.youtube.com/watch?v=SFsHSHE-iJQ>

Oasis. "Wonderwall." (*What's the Story*) *Morning Glory?* Creation Records, 1995. [Verse]

<http://www.youtube.com/watch?v=6hzhDeceEKc>

Oasis. "D' You Know What I Mean?" *Be Here Now*. Creation Records, 1997.

<http://www.youtube.com/watch?v=UcmY49Dk10Y> [verse]

The Offspring. "Cool to Hate." *Ikxay on the Hombre*. Columbia Records, 1997. [Chorus]

<http://www.youtube.com/watch?v=PkJRjzErnRmY>

The Offspring. "Gone Away." *Ikxay on the Hombre*. Columbia Records, 1997.

<http://www.youtube.com/watch?v=numCZoBFcv4>

Travis. "Writing to Reach You." *The Man Who*. Independiente Records, 1999. [Verse]

<http://www.youtube.com/watch?v=UeCcuH-EsuM>

The Dandy Warhols. "Bohemian Like You." *Thirteen Tales from Urban Bohemia*. Capitol Records, 2000. [Verse: I- $\flat$ III- $\flat$ VII-IV]

<http://www.youtube.com/watch?v=W3m7Uz7hF-s>

Green Day. "Boulevard of Broken Dreams." *American Idiot*. Reprise Records, 2004. [Verse]

<http://www.youtube.com/watch?v=gWNRUVMboq4>

Foster the People. "Pumped Up Kicks." *Torches*. Columbia Records, 2010.

<http://www.youtube.com/watch?v=SDTZ7iX4vT>

Ascending Stepwise Progressions

I-ii-iii-IV [-V]

Bob Dylan. "Like A Rolling Stone." *Highway 61 Revisited*. Columbia Records, 1965. [Verse: I-ii-iii-IV-V]

<http://www.youtube.com/watch?v=hk3mAX5xdxo>

The Beatles. "Here, There & Everywhere." *Revolver*. Parlophone Records, 1966. [Opening of verse: I-ii-iii-IV]

<http://www.youtube.com/watch?v=VdCKdwxWGt4>

Allman Brothers. "Melissa." *Eat a Peach*. Capricorn Records, 1972. [I-ii-iii-ii, IV-v-vi-♭VII]

<http://www.youtube.com/watch?v=Pwbowi-8Yoo>

The Cure. "Boys Don't Cry." *Boys Don't Cry*. Fiction Records, 1979. [I-ii-iii-IV]

<http://www.youtube.com/watch?v=P9hOFOgqOds>

The Wipers. "Mystery." *Is This Real?* Park Ave Records, 1980. [I-ii-iii-IV-V]

http://www.youtube.com/watch?v=5_c8a6aySgE

Billy Joel. "Uptown Girl." *An Innocent Man*. Columbia Records, 1983. [Verse: I-ii-iii-IV-V]

<http://www.youtube.com/watch?v=hCuMWrfXG4E>

Tears for Fears. "Everybody Wants to Rule the World." *Songs from the Big Chair*. Phonogram Records, 1985. [Chorus: ii-iii-IV-V]

<http://www.youtube.com/watch?v=R-O3kYrDPbI>

I-ii-IV-V, I-iii-IV-V

David Bowie. "Young Americans." *Young Americans*. RCA Records, 1975. [Verse: I-ii-IV-V]

http://www.youtube.com/watch?v=ScVi_L817ec

Bonnie Tyler. "It's a Heartache." *Natural Force*. CBS Records, 1978. [Verse: I-iii-IV-I-V]

<http://www.youtube.com/watch?v=nPOy7TPjkfE>

Van Morrison. "Bright Side of the Road." *Into the Music*. Mercury Records, 1979. [Verse: I-iii-IV-V]

<http://www.youtube.com/watch?v=rCDZzf4ragg>

Michael Jackson. "Man in the Mirror." *Bad*. Epic Records, 1988. [Chorus: I-iii-IV-V]

<http://www.youtube.com/watch?v=PivWY9wn5ps>

Shania Twain. "You're Still the One." *Come On Over*. Mercury Nashville Records, 1998. [Verse: I-iii-IV-V]

<http://www.youtube.com/watch?v=KNZH-emehxA>

OK Go. "Invincible." *Oh No*. Capitol Records, 2006. [i- $\flat$ iii-iv-V]
<http://www.youtube.com/watch?v=mItuZ8i4wH8>

Descending Stepwise Progressions

i- $\flat$ VII- $\flat$ VI-V

[The Andalusian/Flamenco progression]

Del Shannon. "Runaway." *Runaway*. Big Top Records, 1961. [Verse]
http://www.youtube.com/watch?v=0S13mP_pfEc

The Beatles. "I'll Be Back." *A Hard Day's Night*. Parlophone Records, 1964. [Verse]
<http://www.youtube.com/watch?v=G9hO25z1Fu8>

The Animals. "Don't Let Me Be Misunderstood." Columbia Gramophone, 1965. [Verse]
<http://www.youtube.com/watch?v=vstNm5xzuKM>

The Beach Boys. "Good Vibrations." Capitol Records, 1966. [Verse]
http://www.youtube.com/watch?v=TCeD_6Y3GQc

Stevie Wonder. "Another Star." *Songs in the Key of Life*. Tamla Records, 1977. [i- $\flat$ VII- $\flat$ VI-v-iv]
<http://www.youtube.com/watch?v=vuHgs8aHFJ4>

Dire Straits. "Sultans of Swing." *Dire Straits*. Vertigo Records, 1978. [First half of verse]
<http://www.youtube.com/watch?v=xo-J1wf2KHc>

Mötley Crüe. "God Bless the Children of the Beast." *Shout at the Devil*. Elektra Records, 1983.
<http://www.youtube.com/watch?v=sCqc39USfPs>

Michael Jackson. "Smooth Criminal." *Bad*. Epic Records, 1987. [Chorus: i- $\flat$ VII- $\flat$ VI-V]
<http://www.youtube.com/watch?v=RWDgIbZKtmg>

Foo Fighters. "Tired of You." *One by One*. RCA Records, 2002. [Verse]
<http://www.youtube.com/watch?v=wVcqyB2Rbz8>

White Stripes. "Seven Nation Army." *Elephant*. XL Recordings, 2003. [Verse]
<http://www.youtube.com/watch?v=0J2QdDbelmY>

Muse. "Resistance." *The Resistance*. Mushroom Records, 2009. [Verse]
<http://www.youtube.com/watch?v=TPE9uSFFxrI>



A Comparative Review of Five Music Fundamentals Textbooks

BY CARLA R. COLLETTI

With so many fundamentals textbooks available right now, one would think that the market is already saturated; yet each year, we receive a few more complimentary copies of the latest (and supposedly greatest) fundamentals textbooks. When I receive these books I begin to wonder, how many ways are there to explain pitch notation or how to spell a triad? What does this textbook offer my students that others do not? And perhaps most importantly, how will this book help them understand how music works more deeply than some other text? Although the basic topics included in a fundamentals textbook are typically the same, textbook authors take a number of different approaches to these topics, and these approaches have become more varied in recent years. Some new textbooks emerge to address new types of students—such as millennials, who are often digital natives. Others may be linked to new teaching techniques, such as the current emphasis on the flipped classroom. Still other textbooks simply seek to tweak and improve existing practice. All of these changes represent an attempt to better engage our students.

We often think that students are the sole audience for a textbook, but the instructor is also an important part of that audience. After all, it is not necessarily the seasoned master instructor, expert in the field, who teaches music fundamentals. Fundamentals classes are frequently taught by an adjunct or full-time faculty member whose area is applied studies, or by a graduate assistant who is gaining valuable teaching experience. These instructors may not know every possible way to teach intervals, and they may not know which examples from the repertoire will illustrate a specific concept in the clearest way. These instructors rely, in part, on textbooks and supplemental materials to guide them through teaching the class. So textbooks and their coordinating materials not only have to engage the student through clear explanations and reinforcing exercises but also have to offer the instructor flexibility and pedagogical support. The textbooks selected for this review attempt to accomplish this in a variety of ways.

This review compares five of the more recently published fundamentals textbooks: *Elements of Music* by Joseph Straus; *From Sound to Symbol: Fundamentals of Music* by Mícheál Houlihan and Philip Tacka; *Music Fundamentals: A Balanced Approach* by Sumy Takesue; *Principles of Music* by Philip Lambert; and *Applied Music Fundamentals: Writing, Singing, and Listening* by Jena Root.¹ After providing a summary of each text's main pedagogical approach and features, I present perspectives from colleagues "in the field"—those who teach and/or coordinate lower-level undergraduate music theory—to contextualize the summaries. The final section of the review compares each text's approach to important topics in the fundamentals curriculum, specifically pitch notation, rhythmic notation and meter, major and minor scales, intervals, and triads.

TEXTBOOK SUMMARIES

Although all these textbooks feature the same core topics, each author's unique pedagogical philosophy underlies the presentation of material. Additionally, all of the texts feature some sort of supplemental interactive component. The differences among pedagogical philosophies and the inclusion of interactive materials seem aimed at addressing perceived changes in the level of interest, preparedness, and engagement of today's students. The relationship between these perceived changes and the approach of each textbook will be explored later in "Observations from the Field."

Straus's *Elements of Music* offers the most traditional approach of the five textbooks. The writing style is straightforward, clear, and concise, and there are plenty of exercises (both in-class activities and more formal written assignments) from which the instructor can choose. One of the main features of the text is an anthology of core musical works. The examples and exercises feature excerpts from this core set of works, so students are presented with excerpts from the music literature, rather than from a "manufactured" set of

¹Joseph N. Straus, *Elements of Music*, 3rd ed. (Upper Saddle River, NJ: Pearson, 2012), first published in 2003; Mícheál Houlihan and Philip Tacka, *From Sound to Symbol*, 2nd ed. (New York: Oxford University Press, 2012), first published in 2009; Sumy Takesue, *Music Fundamentals: A Balanced Approach*, 2nd ed. (New York: Routledge, 2014), first published in 2010; Philip Lambert, *Principles of Music* (New York: Oxford University Press, 2014); and Jena Root, *Applied Music Fundamentals: Writing, Singing, and Listening* (New York: Oxford University Press, 2014).

pieces. The inclusion of complete works also allows the instructor to delve into analysis and discuss how fundamental concepts relate to musical performance and composition in “real life.” The music in the anthology represents multiple styles, including common practice European composers (e.g., Mozart, Bach, Chopin, Schubert, and Robert Schumann) and American composers representing jazz or popular genres, as well as a nod to world music with the inclusion of a tango. Anthology recordings are included on a compact disc. The anthology does not include any post-tonal twentieth century or contemporary works, an omission that Michael Buchler notes in his review of a prior edition of the text.²

The text is organized into six main chapters, which are further divided into bite-sized lessons, most of which could be covered within one class period. The organization into discrete chapters allows for some flexibility in the order of presentation. For example, although rhythm is featured in the second chapter, an instructor could decide to begin with rhythm rather than pitch. Each chapter ends with a supplemental lesson on additional topics related to the chapter (e.g., C clefs, octave designation, modes, more advanced rhythmic concepts, seventh chords other than the dominant, and voice leading practices). Each lesson offers in-class activities that ask students to sing, take dictation, or perform. This helps the student internalize the featured concepts in a more tangible and direct way than practicing the concept only through written exercises. Many lessons include some sort of composition exercise, offering yet another way for students to engage with the material.

In comparison to the other texts, the online, interactive, and other supplemental materials are somewhat limited for Straus’s text. As noted earlier, an accompanying CD provides recordings of the works in the anthology. Additionally, Finale versions of written exercises are available on a supplemental website. The website also features brief, ten-question chapter quizzes, flashcards, and links to other resources that relate to writing and research.³ Although this website is basic, the writing and research tools could be helpful for a fundamentals class that includes a writing component, such

²Michael Buchler, “Joseph N. Straus: *Elements of Music* Reviewed,” *Journal of Music Theory Pedagogy* 17 (2003): 82. The post-tonal repertoire is not well represented in the other reviewed texts either.

³The publisher includes links to writing and research tools as part of the student resource package for all textbooks that include an online Pearson MySearchLab component.

as a non-major course offered as part of the general education curriculum. Other supplemental materials include a downloadable instructor's manual that features teaching tips and suggestions for additional topics, as well as an answer key for the textbook exercises.

Lambert's *Principles of Music* also offers a more traditional approach to the teaching of fundamentals. Its twenty-six lessons are each compact and succinct enough to give the student a sense of continuity when moving to the next topic. Each lesson includes study questions and written exercises that "reinforce concepts from that lesson and build upon previous lessons."⁴ But this textbook lacks singing exercises, which are found in every other text reviewed here. However, numerous rhythm performance exercises are included in rhythm lessons throughout the text. Because the topics are discrete within each lesson, topics can easily be covered out of the presented order, giving the instructor some flexibility in course design.

A unique pedagogical feature of Lambert's text is the central focus placed on the piano keyboard for learning pitch notation. The opening lessons guide the student through an orientation to the keyboard, while simultaneously introducing concepts such as octave equivalency, the C scale, chromatic scale, accidentals, enharmonic spellings, and half steps and whole steps, all using the keyboard as the tool of choice. Pitch notation using staves and clefs does not appear until the fifth lesson, fifty-one pages into the text, where the keys on the keyboard are directly linked to pitches on a staff using either the treble or bass clef. This initial focus on the keyboard would be suitable for students who are taking a beginning piano class simultaneously with fundamentals. After the staff is introduced, the use of the piano fades; instead, Lambert uses repertoire to introduce subsequent concepts. Given the initial emphasis placed on the keyboard, I expected it to be used as a tool for presenting new material throughout the text, but it is not.

However, the piano remains a primary tool in many of the CREATE! activities that conclude each chapter. Some CREATE! activities ask students to improvise using a given pitch collection or compose a melody at the piano using a particular concept. Other CREATE! activities ask students to compose a piece modeled on a representative set of works. Listening lists and a set of original character pieces by Lambert are available on a companion website; these resources

⁴Lambert, *Principles of Music*, v.

provide repertoire that both illustrates various concepts from the text and serves as model compositions. The character pieces are also suitable for performance by beginning piano students. Through the CREATE! activities, students not only interact with representative pieces through study and performance, but are also asked to apply what they have learned to their own compositions.

The materials on the companion website are limited to the listening lists, recordings of examples from the textbook, and the set of character pieces; thus, of all the texts reviewed here, this one offers the least online interactivity. However, instructors can bundle the textbook with access to Leigh Van Handel's "Music Theory Skill Builder," an online resource that features drills and self-exams related to music fundamentals concepts.⁵

In the preface to *Music Fundamentals: A Balanced Approach*, author Sumy Takesue sets out to answer the obvious question: what is a "balanced approach"? According to the author, the text offers balance between narrative information and drills, between the approach to the non-music major and the "fledging music major," between the textbook, workbook, and interactive website, and between global, classical, and popular musical examples.⁶ Indeed, Takesue attempts to engage all students in the fundamentals classroom through the use of varied activities. Musicianship-based activities include keyboard exercises, singing (with solfège and numbers), ear training exercises (including online drills), and rhythm exercises. In-text drills, interspersed throughout each module, allow students to gain fluency with each concept as they learn about it. Additionally, Takesue includes cultural and historical notes, a feature unique to this text, providing additional context to the theoretical concepts presented.

⁵Information about "Music Theory Skill Builder" (Oxford University Press, 2013) can be found at <http://global.oup.com/us/companion.websites/umbrella/mtsb/mtsb.html>. "Music Theory Skill Builder" can be bundled with any Oxford music fundamentals text for a small additional fee; students can also purchase access to the online tool separately. For a review of this web resource, see Anna Stephan-Robinson, "Review of Leigh Van Handel, *Music Theory Skill Builder* (Oxford University Press, 2013)," *Music Theory Online* 20, no. 3 (2014), <http://www.mtosmt.org/issues/mto.14.20.3/mto.14.20.3.stephan-robinson.php>.

⁶Takesue, *Music Fundamentals: A Balanced Approach*, xiii-xiv. The author claims the textbook features 45 percent classical repertoire, 20 percent American pop/jazz/folk tunes, and 35 percent global repertoire (such as Chinese folk melodies, Celtic session tunes, and Israeli folk songs).

Takesue's text is organized into sixteen modules, with each focusing on a single pitch or rhythm concept. This type of presentation allows for some flexibility in the ordering of the material. For example, a rhythm module could be assigned simultaneously with a pitch module. Portions of modules could even be rearranged if desired, because the in-text exercises offer practice opportunities as each concept is presented.

Takesue's module on form includes a basic introduction to the small forms typical of the musical repertoire included in the text (binary, ternary, AABA). One might expect a brief tutorial on how to compose using a particular form, but there are no composition exercises at this point in the text. Instead, some workbook exercises interspersed throughout the text ask students to compose a rhythm or use a particular pitch collection to compose a melody.

One of the most engaging features of Takesue's accompanying website is the "Music Theory Trainer." This tool offers typical nuts-and-bolts spelling and identification exercises, as well as listening and performing activities such as aurally identifying intervals and triads, and tapping rhythms. Within the text, students are prompted to visit the "Music Theory Trainer" to practice various drills. These drills mirror the in-text exercises and workbook pages at the end of each chapter. Furthermore, the online format offers a more interactive way for students to receive feedback. Student scores can be emailed to the instructor, making the online exercises useful homework or quiz assignments to help students gain fluency. Other, more typical features of the website include streaming audio for all musical examples in the text and flashcards focusing on vocabulary, pitch identification, and key signatures. The website also features downloadable appendices to the text. Some of the appendices are included in the textbook (the glossary and sections on acoustics, C clefs, modes, and non-dominant seventh chords). One online-only appendix contains keyboard exercises focusing on scales, triads, and chord progressions. Other online-only appendices feature analysis worksheets that introduce a musical work and ask pertinent questions about fundamental aspects of the piece (notation, keys, intervals, chords, cadences, and form); this is a succinct way of bringing together the topics in the text. These worksheets could also lead to an instructor-designed writing project or a more in-depth analytical project or presentation. The instructor manual includes some teaching tips, notes regarding the website, and an answer key for selected exercises from the textbook.

In *From Sound to Symbol*, Houlahan and Tacka reverse the traditional “symbol-to-sound” pedagogical approach to teaching fundamentals. In this textbook-workbook, students are guided through the experience of a particular concept or musical element before it is defined. The authors claim that “[b]y exploring rhythmic and melodic patterns through kinesthetic, aural, and visual activities before learning the traditional names and terms, students internalize musical knowledge rapidly—and we’ve found that it sticks with them.”⁷ This approach shares some characteristics with inquiry-based learning in the way it presents students with the problem to explore before explicitly defining related concepts.

The musical examples used to introduce concepts throughout the text are short, simple excerpts from folk and classical genres, allowing students to easily sing, play, and memorize the examples. After memorizing or internalizing the sound of an example, students are asked to analyze and draw a representation of what they have heard (helping them to process and better understand their experience), and finally describe what they have heard using musical terms. For example, when introducing the minor pentachord, students listen to, memorize, and sing the Hungarian folk song “Kis kece lányom.” They next analyze the phrase construction of the song, the placement of beats within each phrase, the location of the lowest and highest pitches, and the opening pitch. Students then draw the melodic contour of the song and use their representation to help sing the rhythms of the tune. Finally, the text illustrates how solfège syllables align with the melodic contour, leading to a representation of the song in written musical notation. The song’s pitches are then examined in greater detail in order to identify the half and whole steps; it is only at this point that the construction of the minor pentachord is articulated.

Although the concept of a “sound-first” approach as it is presented here is compelling, I am not convinced that the text goes far enough in helping the student make the leap between experiencing sound and, in this case, understanding how the construction of the minor pentachord maps onto the singing of specific intervals in the song. The analysis of the experience needs further development. Why not ask students to identify where they hear the smallest interval? Where is it within the pentachord? What is tonic, where is it heard, and how does the placement of the smallest interval relate to tonic? How does this pentachord compare to the major pentachord? This type of further inquiry depends on the instructor.

⁷Houlahan and Tacka, *From Sound to Symbol*, xviii.

Although Houlahan and Tacka's approach reverses the traditional symbol-to-sound presentation, the organization of the text is quite traditional. Each of the twelve chapters is divided into subsections and concludes with key terms, suggestions for further practice, notes for using the accompanying musical skills CD, and a musical score to which students can apply their newly-acquired knowledge in a more complex setting. Written exercises that can be easily torn out and turned in as homework assignments are also included at the end of each chapter. The practice suggestions incorporate performance (through singing and rhythm exercises related to the musical examples in the chapter), conducting, aural analysis and error detection, memorization tasks, and activities that incorporate improvisation and composition. However, most of the practice suggestions are very generic and do not offer much guidance to the student. This is especially noticeable in the suggestions for improvisation and composition, as the same basic wording appears every time: "First select a meter and length for the composition, then decide what form to use (for example, ABBA). Create an improvisation or composition using only known rhythms and scales."⁸ So, although the attempt is made to include improvisation and composition as an activity, the text does not provide guidance beyond merely reminding the student and instructor that this is a possibility. Because the goal of the final chapter is to compose a song, providing shorter composition exercises throughout the book would help guide the student toward this culminating project. However, the companion website does offer improvisation and composition exercises that feature specific instructions, such as using particular pitch collections, rhythmic constructions, and so on.

Supplemental materials include two CDs packaged with the textbook in addition to the companion website. One CD contains audio tracks for each musical example in the book; the other provides interactive tutorials, additional drill exercises, and dictation examples that students can access on their computers. The website offers flashcards and supplementary musicianship exercises (available as downloadable PDFs). The musicianship exercises include sight singing (solo melodies and duets), rhythm exercises (including duets), keyboard exercises, exercises to aid the development of musical memory, and improvisation and composition exercises. Clear instructions are provided before each set of sight singing exercises, reminding students how to independently tackle this

⁸Houlahan and Tacka, *From Sound to Symbol*, 164.

sometimes daunting and scary task. Instructor resources for this text include lesson plans, teaching strategies, additional aural skills and dictation exercises, and video clips from the authors' classrooms that demonstrate how to guide a class through a particular activity or concept from the text.

Root's *Applied Music Fundamentals: Writing, Singing, and Listening* begins by asking students to consider why they love music and why they repeatedly listen to their favorite song or movie soundtrack. As Root asks, "Why does music have the power to evoke such visceral and emotional responses in us?"⁹ On the surface, this might not be a terribly revolutionary question to ask; I am sure we have all asked a similar question of our students at some point. What intrigues me about this, though, is Root's attempt to have a conversation with students from the very beginning of the preface. This two-way inquiry sets the tone for the book. Furthermore, asking students to imagine the sound of their favorite song represents a different version of the sound-first approach. This sound-first approach is carried throughout the text as most chapters invite students to sing or listen to an example melody so that they can experience the concept before it is defined and explained in the text. *From Sound to Symbol* also shares this pedagogical approach, but Root's presentation flows more naturally.

The goal of mastery lies at the heart of *Applied Music Fundamentals*. While text explanations may be lengthier than some of the other textbooks reviewed here, Root's purpose is clear: she is intentionally guiding the student through the *how* and the *why* of learning fundamental concepts. For example, in the chapter on intervals, the author walks the student through six examples of identifying interval size and quality. She doesn't simply define what an interval is, give a bit of information about size and quality, and then leave it up to the students to figure the rest out for themselves. Each example presents a series of questions to ask and a way to think about the task of interval identification. By doing this, Root helps students develop their own method of efficient and accurate interval identification. The memorization strategies at the end of each chapter help students practice the techniques they have learned in the chapter. The text guides the student through making flashcards for each concept and teaches the student how to use the flashcards to master the concept before moving on to the next piece of the fundamentals puzzle. Some chapters offer strategies for

⁹Root, *Applied Music Fundamentals*, xv.

using the keyboard to practice a particular concept. Whatever the practice strategy, the aim is mastery of the concept.

Each of the nine chapters includes both a pitch and a rhythm component, which is unique to this text. This design ensures that students think about both aspects of music as they progress through the course. Additionally, there is no need for the instructor to rearrange materials in order to cover a rhythm and pitch concept simultaneously. In addition to the typical fundamentals topics, the last chapter (the “postlude”) presents more advanced topics including diatonic triads and Roman numerals in major and minor keys, an introduction to voice leading, secondary triads, and advanced rhythmic topics such as irregular meter and hemiola. Appendices introduce additional topics, including C clefs, chromatic solfège (movable *do* solfège is used throughout the text), modes, and seventh chords. Each chapter begins with a list of chapter goals, essentially the learning outcomes for the chapter. These goals are restated at the end of each chapter, and a statement reminds the student that they should be able to do each of the outcomes “with speed and accuracy” before moving on to the next chapter, placing the responsibility for learning the material on the student.

Besides written exercises, the exercises at the end of each chapter include singing and rhythm exercises, composition exercises, and a few activities unique to this text. “Drills to Go” are practice drills that can be done without the book or any other supplemental material or device. Examples include memorizing a particular exercise in the chapter and singing it “as you go about your day,” or speaking a chant designed to help students internalize interval qualities or sizes by using note names that represent each interval. Each chapter also includes classroom activities for students to lead. The description of the activity is addressed to the students, guiding them first to master a particular aspect of a concept before leading the class. This is an effective strategy because students tend to take ownership of and really learn material if they know they will lead the class. Listening and analysis activities, called “Informed Listening,” ask students to aurally analyze particular aspects of a piece, allowing them to study a piece in detail while reinforcing both the pitch and the rhythm concepts presented in the chapter. Because there are likely too many examples to assign in class, Root encourages instructors to devise their own playlists from the examples used for the Informed Listening activities.

One great feature of this text is the varied repertoire used for these activities. There is an impressive blend of traditional classical works (e.g., Bach, Chopin, and Haydn) and popular music spanning numerous decades, including songs written during the lifetime of today's student. Artists include Booker T. & the M.G.'s, The Eagles, The Beatles, Phish, Ben Folds Five, and Alicia Keys, among others. The use of tunes and artists that are more contemporaneous with today's students is an attempt to engage students by meeting them where they are.

As with the other textbooks, there is a supplemental website for *Applied Music Fundamentals*, but this is limited to Spotify playlists (with some recommended links) for the Informed Listening activities and listening examples from the text. Each example on the website is marked in the text with a special icon; some examples include interactive features such as hearing individual voices, notes, or related scales. The website for the textbook does not offer interactive quizzes or other materials; however, the online "Music Theory Skill Builder" is available to bundle with this text as it is with Lambert's *Principles of Music*.

In addition to the typical fundamentals topics, some texts introduce a variety of additional topics. Takesue, Lambert, Straus, and Houlahan and Tacka feature material on the dominant seventh chord in their textbooks. Takesue includes a module on small forms, while Straus addresses form through his discussion of cadences and the use of tonic and dominant within a phrase. Houlahan and Tacka's text also features chapters on form, while Lambert's and Root's books do not address this topic.

Table 1 compares some of the features included in each of the reviewed textbooks. In the next section, I highlight some of these features and how they relate to perceived changes in the student population in our classrooms.

Features	Houlahan and Tacka, <i>From Sound to Symbol: Fundamentals of Music</i>	Lambert, <i>Principles of Music</i>	Root, <i>Applied Music Fundamentals</i>	Straus, <i>Elements of Music</i>	Takesue, <i>Music Fundamentals: A Balanced Approach</i>
Singing Exercises	Exercises and melodies (on website)	No	Exercises	Exercises and melodies	Exercises and some melodies
Solfège (movable do)	Yes (<i>la</i> -based and <i>do</i> -based minor); also uses Takadimi	No	Yes (<i>do</i> -based minor)	No	Yes
Listening Exercises	Yes (guided exercises are used in-text only, not presented as assignments)	No	Yes (with and without questions)	No	Yes (on website)
Ear training or dictation exercises	Yes (on CD)	No	Yes	Yes	Yes
Composition Exercises	Yes (on website)	Yes	Yes	Yes	Yes
Keyboard Exercises	Yes (on website)	Limited to initial chapters on pitch	Yes	Yes	Yes (on website)
Repertoire	Folk tunes, classical	Classical, folk tunes, self-composed	Classical, popular, jazz (including post-1990)	Classical, some popular	Classical, global folk tunes, American popular/jazz
Additional Topics	Chord progression and harmonic function, cadences, embellishments, cadential $\frac{6}{4}$, 12-bar blues, composing a song	Swing eighths and syncopation in ragtime	Voice leading (very brief)	Harmonic function, melody harmonization, embellishment and prolongation, cadential $\frac{6}{4}$, phrase and cadence, voice leading	Phrase structure, cadences, binary form, ternary form, 32-bar form, 12-bar blues
Interactive software component	Yes, CD	Requires "Music Theory Skill Builder"	Limited, online, but more available through "Music Theory Skill Builder"	Limited, online	Yes, online ("Music Theory Trainer")

Table 1

OBSERVATIONS FROM THE FIELD

What is it like teaching lower-level music theory right now? Are the students really changing as much as we believe? To gain a sense of the changes that have occurred in the classroom over the past few years, I asked professionals in the field to respond to four questions about student interest levels, student preparedness, pedagogical changes they have made, and criteria for selecting course materials. Some responses to these questions correlate with the unique pedagogies and features described in the textbook summaries, as noted in the discussion below.

I am grateful to my colleagues who participated in this informal interview: Michael Ericson (Western Illinois University), Jaime Henke (University of Wisconsin-Madison), Julian Hook (Indiana University), Jennifer Iverson (University of Iowa), and Gene Trantham (Bowling Green State University).¹⁰ These professors represent a mix of faculty who teach music theory courses. Hook, Iverson, and Trantham are professional music theorists who teach mostly music majors. Henke is also a professional music theorist who teaches a range of courses, often to non-music majors. Ericson is the oboe professor at Western Illinois University and also teaches theory courses. The institutions at which they teach range from mid-size regional public universities to among the largest public universities.

Question 1: In comparison to 5, 10, or 20 years ago, how have student interest levels changed with respect to the topic of music theory and music fundamentals?

The general consensus is that student interest levels in the topic have not changed. This is not surprising, especially because the majority of students who take music theory courses are music majors. Although they may not be interested in the topic itself, they are interested in doing well in the class because it is part of their major. If the course is for non-music majors, the student is there because they do have an interest in the topic. As Jaime

¹⁰ Each professor was contacted first via email (sent on March 6, 2014) to ask for their participation. Then, the interview questions were either emailed to the professor or a phone interview was arranged. Email responses to the interview questions were received from Ericson (March 21), Henke (March 11), Hook (March 17), and Trantham (April 15). A phone interview was conducted with Iverson on March 27.

Henke (University of Wisconsin-Madison) puts it, "The music theory fundamentals course I teach is for non-music majors who take the class as an elective, so they are always very interested in the subject, and welcome the break from their required classes." Jennifer Iverson (University of Iowa) notes that non-music majors seem to be more interested in notation. They want to write their own music, so sometimes it is more difficult to get them to engage with all of the topics in a fundamentals class equally. Background experience also plays a role in a student's interest level, as Gene Trantham (Bowling Green State University) states:

Incoming students who have had some theory (aural skills) training as part of their private lessons usually have an interest in theory or, at least, some understanding of its importance in their basic musicianship training. Most of our music majors have had some theory training. Music minors and musical theater majors usually do not. Therefore, the minors and musical theater majors often do not have much interest in music theory.

Because the audience is so broad, a fundamentals textbook author has to find a middle ground between "good" classical examples and other repertoire, such as popular songs or international folk tunes, that may be more familiar to the student. While all five textbooks feature some combination of classical and folk or pop tunes, Takesue's *A Balanced Approach to Music Fundamentals* and Root's *Applied Music Fundamentals* make the most concerted effort to offer a wide variety of repertoire. Takesue presents music by American popular artists as well as examples of global music, and Root's varied selections include songs written during the student's lifetime.

Question 2: Have you noticed a change in student preparedness for music study at the undergraduate level as compared to 5, 10, or 20 years ago?

The interviewees have noticed changes in student preparedness. Michael Ericson (Western Illinois University) sums up the general trend found in the responses:

I think the best of our students are *better prepared* than they used to be. However, the middle and lower ends of the class (academically speaking) are seemingly *much weaker* than they were 20 years ago. After you get past the top 20-25% of the class, it seems that students have virtually *no* previous knowledge of music fundamentals.

Jay Hook's data, collected from results of Indiana University's Basic Musicianship Test given to incoming freshmen prior to the school's implementation of their summer online fundamentals course, seem to support Ericson's observation. Hook notes that "in general the pass rate seems to have crept upward over the years, from about 50 percent in the early 1990s to about 60 percent in the years 2005-10."

Despite the upward trend in preparedness, students seem to be less prepared in the area of aural skills, including general listening skills. Trantham relates this to student background:

Generally, the pianists and string players have stronger aural skills (again, reinforced as part of their private lessons or ensemble experience). In general, vocalists and instrumentalists have good "aural skills" where they can imitate what they hear (perhaps a result of rote learning). However, they do not connect the terminology with the sound. Twenty years ago, students tended to have a better understanding of theory AND aural skills (especially how they are related). Now, these items seem to be less connected.

Textbooks that use the sound-first approach or include listening and musicianship exercises attempt to address the aural skills deficiency Trantham outlines. Houlahan and Tacka take the sound-first approach as their main pedagogical approach, and all of the reviewed textbooks incorporate listening, playing and/or singing exercises. In the past, these materials may have been considered supplemental, but given the decline in a student's ability to connect theory with sound, exercises and other activities focused on sound and performance have become necessary.

Henke has also noticed "a large change over the years in the ability of students to learn and process aurally, which of course plays a role in both learning the concepts of music theory as well as aural skills." Henke points out that current students seem to rely on learning through visual methods (learning from a book or a computer), and as a result, "there just doesn't seem to be the same intensity to capture what is said in lecture, even to write down important things, like what will be on the upcoming exam, etc." I have noticed a similar trend in my own classroom, although I have also noticed more note taking during the past year than in

previous years. Henke's solution is "to emphasize and encourage the learning and processing of information via aural rather than just visual methods. This is a skill for any career." This solution immediately brings to mind the Informed Listening activities that are included in Root's *Applied Music Fundamentals*. Because these activities do not rely on a score, students must focus on processing and analyzing the aural stimulus that is presented to them.

Question 3: What pedagogical changes have you made as a result of changes in student population, student preparedness, and student engagement?

To address the lower-performing students in class, Ericson includes "two to three days per semester when [he] release[s] the top students from class, so that [he] can spend a bit of time reviewing material...with those who are struggling." One of Iverson's techniques to help struggling students is to present multiple approaches to the same topic. For example, she includes a variety of visual aids and kinesthetic reference points in addition to the piano. She also introduces a primary approach to a concept but then shows secondary and tertiary ways to approach the same material. Students can then select the method that works for them and use another method to check their answers. As will be discussed later in the comparison of each text's approaches to particular topics, a few texts in this group outline multiple methods for approaching a given concept.

Additionally, instructors and textbook authors alike are making efforts to include more technology in the classroom. Hook mentions "the increasing incorporation of online components and other technology in the classroom (we've experimented with clickers, videos, assignments submitted online, and so on)." Trantham notes, "I also try to use more technology (Blackboard/Canvas as well as the internet) so that students will have easy access to materials, information that can assist them with their skill development." Each textbook featured in this review includes some sort of online component, utilizing technology to help students access information. Straus even includes Finale worksheets so students can complete homework exercises on their computer and email the file to the instructor. Several texts with online quiz components make it possible for students to submit their quiz results online to the instructor. Textbook publishers seem well aware of this pedagogical change and incorporate it into their texts, some more effectively and with more interactivity than others.

Question 4: When selecting materials for a lower level theory class, such as fundamentals, what do you look for? Which criteria do you apply in choosing materials? Have these criteria changed from 5, 10, or 20 years ago?

Hook states, "The trick is finding something that combines what we think is an appropriately high intellectual level with good readability and 'friendliness.'" Iverson emphasizes the value of a simple writing style, with figures and terms clearly laid out. She also mentions the inclusion of "musically-connected exercises" and creative activity associated with real music. The CREATE! activities at the end of each lesson in Lambert's book address this need, since one goal of these activities is to study real music and apply specific observations related to the lesson's concepts to an improvisation or composition.

The incorporation of aural skills activities into fundamentals study is also mentioned in a number of responses. As Henke states, "The primary criteria that has changed over the years regarding materials is that the students must now be able to hear as well as read everything." Trantham also notes the need for "accessibility (easy to read, easy to understand, easy to access sound files, recognizable examples—both popular and classical) and application (lots of worksheets and examples)." While Trantham's call for accessibility certainly includes easy access to musical recordings, it can also apply to the availability of singing and ear training exercises. All of these texts feature easy access to musical examples, either through their websites or on a CD; the availability of streaming audio on the internet helps instructors tremendously. Root emphasizes this by including Spotify playlists on the website, thus facilitating access to some of her more recent listening examples.

While some of the elements we look for in textbook materials have changed, the basic desire for a readable, accessible text that explains concepts clearly yet succinctly remains. In the following section, I outline ways in which each textbook approaches specific topics, with an eye toward these basic criteria.

APPROACHES TO SPECIFIC TOPICS

This section compares the approach of each text to the following topics: pitch notation, rhythmic notation and meter, major scales, minor scales, intervals, and triads.

Pitch Notation

Four of the five texts reviewed begin with pitch notation. The exception to this is Houlahan and Tacka's *From Sound to Symbol*, which begins with rhythmic notation. Although each author presents notation topics in a particular order, instructors can easily rearrange the order of presentation according to their preferences. Three different pedagogical approaches for teaching pitch notation are presented in these texts.

One approach is to introduce pitch notation through the use of the keyboard. Lambert's *Principles of Music* and Houlahan and Tacka's *From Sound to Symbol* do this. This approach corresponds to Lambert's main pedagogical technique: using the keyboard to orient the student. Lambert begins with an introduction to the keyboard and the identification of middle C. All Cs are identified on the keyboard, and this is used to illustrate the definition of the octave. Lambert then zooms in and focuses on the space between the Cs. Through this, he introduces the musical alphabet, the C scale, and the chromatic scale. Lesson 1 concludes here, and study questions and exercises are dedicated to helping the student master what has been presented thus far. The presentation of the chromatic scale in lesson 1, described as adjacent piano keys within the octave, is expanded in lesson 2 with the introduction of accidentals. Through this, the topic of enharmonic equivalence is broached. Lambert gives a few examples of how the spelling of a pitch depends upon context and the direction of the melodic line. Lesson 3 illustrates half steps and whole steps through the use of the keyboard, the differences between chromatic and diatonic half steps, and the whole tone scale. The introduction of the whole tone scale at this point is driven by the focus on the keyboard; rather than focusing on its unique sound and typical uses, the whole tone scale is used to reinforce naming whole steps. The link between the keyboard and the staff is finally made in lesson 5, where the staff, clefs, ledger lines, the grand staff, and octave designations are introduced. The

typical mnemonic devices for naming notes on lines and spaces of the staff are presented, too. Study questions and written exercises help reinforce the concepts in all of the lessons pertaining to pitch notation. These exercises review concepts from prior lessons as well. CREATE! activities help to bring all of the concepts of pitch notation together.

Given Houlahan and Tacka's emphasis on sound-to-symbol pedagogy, it is surprising that their use of the keyboard does not exploit its aural capabilities. Instead of beginning with sound, the pitch chapter introduces the keyboard with letter name labels. Inserting the element of sound here would be easy to accomplish, but students are never asked to listen to an example or play the keyboard. Instead, students "look" at the keyboard and are told that higher sounds are to the right and lower sounds to the left. This could easily become a directed activity. For example: Play a string of adjacent keys on the piano. As you move right, what happens to the sound? As you move left, what do you notice?

Like Lambert's *Principles of Music*, Houlahan and Tacka illustrate whole steps, half steps, and accidentals on the keyboard. Then, the text proceeds to an introduction of the staff, clefs, ledger lines, octave signs, the grand staff, and octave designations. Although enharmonic spelling is defined, it is not thoroughly explained, which could confuse students. Enharmonic spellings are labeled on the keyboard but not shown in relation to staff notation. Written exercises call for locating pitches on the keyboard as well as identifying and drawing notes on a staff.

A second approach to pitch notation is to introduce the staff first, which is the technique used in Straus's *Elements of Music* and Root's *Applied Music Fundamentals*. The main difference between these two is when the keyboard is introduced. In the Straus, the keyboard is featured in the second lesson in the chapter dedicated to pitch, before he introduces clefs and the grand staff. Root saves the keyboard for chapter 2, after basic notation using clefs is covered. Straus uses the staff to illustrate ascending and descending musical contour and stepwise motion versus leaps. By showing staff notation before teaching note names, Straus helps the student focus on the notation's visual communication to a performer. Straus then introduces the musical alphabet as note names labeled on a keyboard illustration and continues his description of steps and leaps by showing these on the keyboard. The next three lessons in Straus's chapter focus on treble and bass

clefs and the grand staff; a supplemental lesson focuses on other clefs, the octave sign, octave designation, and double sharps and flats. Because they are introduced in a supplemental lesson, the impression is given that these topics are not necessary to the study of fundamentals. However, the octave sign and double sharps and flats probably belong in the main lessons. Exercises at the end of each lesson help students digest the smaller components that feed into pitch notation, and a variety of singing, note reading drills, and short dictation activities are included, giving the instructor plenty of reinforcing assignments to choose from.

While Root also begins with an introduction to the staff, she incorporates an element of the sound-first approach by asking students to hum or sing a tune they know, and then think about why their chosen tune might be written down. Here, the sound that is introduced is personal to the student, giving an opportunity to individualize the study of pitch notation. Root then proceeds to introduce the concept of “mapping” as a way to show the usefulness of the staff. The introduction of this concept helps the student to understand what the staff does, rather than simply showing what a staff is. This is followed by a clear description of how to write notes on the staff (this type of clarity in instructing students how to draw musical symbols can be found throughout Root’s text). Clefs are introduced next, and Root explains the reason for different clefs (a question that sometimes arises from the curiosity of our students).

The elements of pitch notation continue in chapter 2 by introducing the keyboard. Here Root appeals to the “digital native” by suggesting the use of a virtual piano or smartphone app while giving a rationale for developing keyboard skills. In this chapter, half steps, whole steps, accidentals, and enharmonic spellings are shown in relation to the keyboard. Root anticipates the student asking, “Why do we have different ways of spelling the same note?” She illustrates enharmonic spellings through a Scott Joplin piece, clearly showing just how messy the score would look if incorrect enharmonic spellings were used. This demonstrates one of the main differences between *Applied Music Fundamentals* and the other texts reviewed: Root’s text aims to show the reasons behind musical notation and theoretical concepts. Exercises at the end of chapters 1 and 2 include note labeling (using real musical examples rather than individual pitches on a staff), copying music from one clef or octave to another, sing and play activities, and informed listening with a variety of music examples. Because each chapter

includes both a pitch and a rhythm concept, a number of exercises incorporate both aspects as well. While this may be different from what some instructors are used to, it represents the intimate connection between pitch and rhythm in musical experience.

The third approach to pitch notation, taken in Takesue's *Music Fundamentals*, is to introduce the musical alphabet first. Takesue begins by comparing learning a language to learning to read music. After introducing the alphabet, students are asked to distinguish stepwise motion from leaps in a musical example and use in-text exercises to practice saying the alphabet with fluency. The keyboard is presented next to show the connection between note names and the layout of keys on the piano. Clefs are then shown, along with a description of how pitches are placed on lines and spaces. The treble clef, bass clef, and grand staff are all linked to the keyboard, and singing exercises are introduced along with movable *do* solfège. Pitch notation topics continue in module 4, beginning with an introduction to half steps demonstrated on the keyboard. Accidentals are defined, with small keyboard drawings illustrating the use of accidentals when naming notes. Enharmonic spellings are also shown in relation to the keyboard, although they are not linked to notation on the staff until a few sections later. The module continues by describing diatonic and chromatic half steps, the chromatic scale, whole steps, and double sharps and flats. Exercises are featured throughout each of these modules, both within the text, allowing students to practice concepts as they learn, and at the end of the modules in separate workbook pages.

Introduction to Rhythm and Meter

These five texts take two main approaches to the introduction of rhythmic notation and meter: a sound-first approach, with an emphasis on phrasing, pulse, and tempo, and a note values-first approach. The two more traditional texts, Straus's *Elements of Music* and Lambert's *Principles of Music*, begin their discussion of rhythm with a presentation of note values. Straus's chapter 2 is well organized and progresses in a logical manner, beginning with a lesson on quarter notes, half notes, and whole notes in $\frac{4}{4}$. Each subsequent lesson presents another bite-sized piece pertaining to rhythmic notation and time signature. Straus limits his presentation to $\frac{4}{4}$ for the first four lessons in this chapter; then duple meter ($\frac{2}{4}$ and $\frac{2}{2}$), $\frac{3}{4}$, and $\frac{6}{8}$ are each given one lesson. The limited focus on one

time signature per lesson (or over many lessons, in the case of $\frac{4}{4}$) allows students to focus on one thing at a time. They solidify their knowledge of basic rhythmic notation, including the use of dots, ties, and slurs while in the world of $\frac{4}{4}$; after gaining fluency in $\frac{4}{4}$, they move on to apply their knowledge to the other time signatures. This arrangement could allow the instructor to interweave individual rhythm lessons with lessons from the chapters on pitch. The chapter concludes with syncopation and a supplemental lesson on smaller rhythmic values and triplets. Other time signatures ($\frac{2}{8}$, $\frac{9}{8}$, etc.) are briefly summarized in a chart within the supplemental lesson but are not included in chapter exercises.

Straus's in-class activities (which could easily be assigned for out-of-class work) offer dictation, performance, and improvisation exercises. The written exercises include elements of composition, and at the end of each lesson, an exercise asks students to set a poem. Straus guides the student through this task clearly, and students are able to make stronger connections between the written notation and the rhythm when experienced through performance. Additionally, students are given the chance to consider textual meaning and how that might translate into musical reality.

Lambert's *Principles of Music* organizes rhythmic topics into modules that are interspersed throughout the text. Lesson 4 presents rhythmic notation and meter. Like Straus, Lambert begins by introducing the quarter note and half note, but unlike Straus, Lambert does not wait to introduce other note values. He also does not separate the introduction of simple quadruple meter from duple and triple simple meters. However, before describing the time signatures for simple meter, Lambert discusses patterning and grouping of beats into duple, triple, or quadruple groupings. He uses the number of syllables in names of fruits and vegetables to illustrate each meter type. Techniques such as this always bring laughter into the classroom, as students chant "ru-ta-ba-ga" or "pine-ap-ple"; this technique can effectively draw a memorable link between beat groupings and time signatures. Lambert also includes examples that have a beat value other than the quarter note, and there are exercises devoted to notating a rhythm in $\frac{4}{4}$ vs. $\frac{4}{2}$, for example. Later lessons introduce dotted notes, rests, and compound meter, and there are even lessons that focus on asymmetric meters and changing meters. Although these more advanced topics may be too much to include in a typical fundamentals class, this text offers students explanations, examples, and exercises for these more advanced rhythmic topics.

Music Fundamentals, *From Sound to Symbol*, and *Applied Music Fundamentals* all introduce rhythm through sound. Takesue's *Music Fundamentals* uses pulse and tempo as the entry points. After a bit of explanation, students are asked to clap the pulse and identify the tempo of five listening examples. Houlahan and Tacka take a different approach in *From Sound to Symbol* by having the student draw phrase marks to identify the phrasing of a listening example. Following that, the formal organization of the example is discussed. In both texts, the link between the initial listening activity and actual rhythmic notation is weak. Takesue immediately introduces a chart of rhythmic values and the mathematical relationships between those values. The discussion of pulse and tempo is never connected to notation until later in the same module when students determine the meter of given examples. Students do not use what they've experienced to derive rhythmic notation. They are, however, shown clearly how to count out a rhythmic exercise containing quarter notes and eighth notes in $\frac{4}{4}$, and counting illustrations are also given for examples of duple and triple simple meters. Takesue's counting approach continues in later rhythm modules that introduce other subdivisions in simple meter, additional beat values, and compound meter. Many written exercises reinforce the counting out of rhythms by asking students to write the counting syllables of an excerpt in addition to showing other musical elements such as motivic unity and accents. Students are asked to sing these excerpts as well, giving them the opportunity to link their understanding of the counting syllables to the sound and performance of the melody. A variety of ear training exercises, simple composition exercises, and some rhythmic dictation exercises are also included.

Houlahan and Tacka abandon their initial listening example while they introduce the concepts of beat, pulse, and rhythmic values (in words first, not sounds). The link between notation, pulse, and meter is made more clearly in the next section of their text when a second musical example is used, and students are asked to tap the pulse, identify the phrasing, determine the number of beats in each phrase, and determine the groupings of the beats. This process of aural analysis continues in the next section where the authors guide students in identifying which beats have one sound versus two and ask students to draw a representation of the rhythm. In addition to using a counting system based on numbers (1 & 2 &, etc.), Houlahan and Tacka also introduce the Takadimi system of rhythmic solfège as

a way to translate the musical experience into rhythmic notation.¹¹ The initial rhythm chapter in the Houlahan and Tacka also includes rests, ties, and repeat signs (with different endings). Another chapter on simple meter adds the sixteenth note, dotted rhythms, and syncopation and introduces meter signatures having a beat value other than the quarter note. Compound meter (including duple, triple, and quadruple) is covered in a separate chapter, along with triplets, duplets, changing meters, and asymmetric meters. For all of the rhythm chapters, Houlahan and Tacka use guided listening activities to introduce most of the concepts. Written exercises are included in the text, and performance and composition exercises can be found on the website.

Root's approach to rhythm also begins with sound, but this time, it is the sound of a metronome beating. Then a musical example is introduced, and students are asked to clap the pulse while singing. Root gives the student a list of characteristics to notice, which helps to link the idea of beat with the notation of the musical example. Students experience the sound of the beat provided by the metronome, clap the beat of the excerpt, and see the notation while clapping. This same example is then used to demonstrate the concept of time signatures, the organization of beats into measures, and metric accent. Root limits the initial discussion of rhythm to simple meter with a quarter note beat; however, she does define compound meter and irregular meter. The repeat sign and augmentation dot are also introduced in the first chapter. As noted earlier, Root's is the only text that includes rhythm topics in every chapter. Subsequent chapters present rests, ties, syncopation, smaller beat subdivisions, triplets, simple meter with beat values other than the quarter note, compound meter, asymmetric meter, hemiola, and more advanced rhythmic groupings. Because rhythm is not isolated in a few chapters, it infuses all the exercises at the end of every chapter.

Major Scales

All five texts begin their discussions of major scales with C major as the representative, followed by an analysis of the arrangement

¹¹ See Richard Hoffman, William Pelto, and John W. White, "Takadimi: A Beat-Oriented System of Rhythm Pedagogy," *Journal of Music Theory Pedagogy* 10 (1996): 7–30. See also <http://www.takadimi.net> for more information about the Takadimi system.

of whole steps and half steps within the scale. This eventually leads to the naming of scale degrees, a brief discussion of tendency tones, the transposition of the major scale formula, and the formation and use of key signatures. The differences between the texts include whether the topic is introduced beginning with sound rather than notation, and whether tetrachords (or pentachords or hexachords) are included as part of discussion of the construction of the scale.

Straus and Lambert do not use the tetrachord to describe the intervallic construction of the major scale. While both texts take the C major scale as their basis and proceed immediately into an illustration of the intervallic pattern of the scale, Lambert introduces the concept of scale by analyzing "America," choosing to take the sound-first approach. In his analysis of how to find the key of the piece, he states, "Unlike the citizens of the democracy the song exalts, the notes of the starting-on-C version of 'America' are not all created equal."¹² He then deduces a set of principles that can be used to determine the key of a piece. This analysis links back to Lambert's discussion of "white-key scales" from the first lesson on pitch because he considers all of the various orderings of white keys in his analysis of the tune. This leads to a brief discussion of diatonic modes that, while interesting, seems a bit out of place at this point in the text.

Houlahan and Tacka begin their introduction to major scales more slowly by focusing first on the major pentachord and hexachord. They continue to use listening activities as the way to introduce a concept, asking students to listen to and memorize an example, draw its contour, and then analyze what they have heard. The first example contains only stepwise motion, and therefore analyzing the contour and applying solfège syllables is easy. The authors then link solfège to the pentachord itself, identifying the arrangement of whole steps and half steps, and then finally define the major pentachord. This process is repeated for the major hexachord, and later, in the second major scale chapter, the full major scale. The process of moving students from the sound of the music to the notation is effective, and it helps students to think critically about what they are experiencing. However, it is not clear that an entire chapter focusing on the major pentachord and hexachord is really necessary. Although students become very familiar with the major mode sound by the time they encounter the full scale, the exercises and activities featured in the pentachord/hexachord chapter are

¹² Lambert, *Principles of Music*, 95.

repetitive and seem like busy work; this becomes increasingly apparent when students are asked to do more of the same in the next chapter on the full major scale. Instructors could probably skip over the pentachord/hexachord discussion, especially because the chapter on major scales includes the intervallic pattern of the major scale as well as the definition of the major tetrachord.

While both Takesue and Root use the major tetrachord to illustrate the construction of the major scale, they do so in different ways. Takesue notes the arrangement of whole and half steps within the C major scale, as the others do, but then divides this arrangement into two major tetrachords. This is immediately followed by an exercise on finding tetrachords using the keyboard and notating them on the staff. Takesue proceeds to building the entire scale by linking two major tetrachords together. The text continues, as the others do, by transposing the formula to various keys, introducing scale degree names and tendencies, and eventually moving to the next module on key signatures.

Root begins a bit differently. She uses a musical example to illustrate how to take a pitch inventory and arrange the inventory in a stepwise order. The first example uses the C major scale, and she repeats the process with an example in B $\flat$ major. Students compare the two pitch inventories, listening to the similarity between the two scales as well as the tendencies of the pitches in context. Solfège syllables are then linked to the scale, and the pattern of whole and half steps is defined. Root encourages students to repeat the pattern beginning with any note of the keyboard, offering an opportunity to link sound, notation, and the concept of major scale construction. After this introduction, Root illustrates the division of the major scale into two identical tetrachords. She uses this to derive other scales, and then highlights the role of half steps in the construction of the major scale. This connection helps students understand the formation of major scales in a deeper way and can also assist with the memorization of scales. A discussion of major key signatures follows, emphasizing the order of sharps and flats. Another difference between Root's and the other texts is that she limits the initial discussion of major scales to keys with up to four sharps or flats in the key signature. In the continuation of the chapter, the concept is expanded to include all keys, including the enharmonic spellings of the keys with five to seven sharps or flats. This presentation of keys reflects Root's pedagogical goal of mastery by encouraging students to fully master the concept of scales in a limited fashion before extending the concept to all scales.

Minor Scales

A few patterns emerge when comparing the presentation of minor scales. Texts begin either by focusing on the intervallic construction of the minor scale or by linking prior knowledge of major key signatures to the relative key relationship. Texts also differ in their presentation of the natural, harmonic, and melodic “forms” of the minor scale. In actual pieces, these forms blend together based on melodic and harmonic tendencies. A piece is not written “in harmonic minor,” for example. Yet when minor scales are taught, students get the idea that a piece in a minor key must consistently use natural, harmonic, or melodic minor. The presentation of these concepts in a textbook shapes how students perceive the minor mode. By separating minor into different forms of the scale, the alterations for each form are clearly associated with a label, allowing for easier assessment of the concept through written exercises. However, an understanding of how minor scale alterations behave in music can be lost as students compartmentalize each form rather than thinking about why a specific alteration is used within a specific context. There is, of course, no one “right way” to present this information, and ultimately it is up to the instructor to clarify any misunderstandings that may exist.

Straus and Lambert begin their discussions of minor scales with a comparison between C major and A minor, focusing on the intervallic construction of the minor scale and then transposing this intervallic pattern to build other minor scales. Lambert avoids any mention of harmonic or melodic minor forms at this stage, while Straus acknowledges the possibility of scale degree alterations. Rather than categorizing these alterations as harmonic or melodic, Straus relates them to the dynamic tendencies within the minor scale and focuses on the practical use of these alterations. Lambert eventually includes a section on harmonic and melodic alterations and why they might be used, and discusses converting natural minor to the altered forms; until that point, he limits exercises and examples to the natural minor form. Lambert also includes a CREATE! exercise in which the student uses harmonic or melodic minor alterations to alter a minor melody composed for a previous lesson. I would love to see an additional prompt in which the student compares each version of the composition and reflects on the effect of the alterations on the sound of the melody.

Straus first introduces examples that use a minor scale with alterations, including chromatic embellishments; only then does the following lesson define the harmonic and melodic forms of minor. This gives the instructor the opportunity to discuss how embellishments and alterations in minor function within the context of a musical excerpt. Straus's singing and dictation exercises at the end of each lesson also regularly feature the use of the leading tone. The composition exercises do not limit the form of minor to be used, allowing the student to experiment with chromatic alterations.

Lambert's introduction of minor scales becomes less clear when he discusses scale families (for example, the white-key family consists of scales containing various orderings of the white keys on the piano). He links modes and the relative scale relationship as a modal rotation. However, this section seems superfluous since the concept of relative keys is not introduced until the next lesson.

Takesue introduces minor keys with a comparison of C major and A minor (i.e., relative keys). After a set of listening examples in which students compare the sound of major and minor, Takesue briefly discusses the relative key relationship, showing where half steps occur in major and minor keys and identifying the distance between the tonics of relative keys. Parallel keys are defined after all minor key signatures are presented. However, no further comparisons between the sound or construction of major and minor scales are made until the end of the module. At this point, Takesue discusses scale degree names, solfège syllables, and how to determine whether a piece is in major or minor. Takesue also includes a section on the three forms of the minor scale. She discusses why each form might be used, but it is not made clear that minor scale alterations often blend together in a single piece. The separation between the forms is further emphasized through exercises that ask students to identify which of the three forms of the scale a particular musical example uses.

Like Takesue, Root chooses to begin with the introduction of relative keys rather than focusing on intervallic construction. The chapter begins with singing "Hatikvah," the Israeli national anthem, and discusses the musical qualities that suggest a minor key rather than its relative major. Root then defines and compares relative keys, using the two key possibilities for this excerpt. A very clear visual aid illustrates how to derive the relative minor from a given major key; the parallel key relationship is also shown using a similar illustration. Root uses the relative key relationship

as a starting point for the comparison between parallel keys. She then defines “parallel key” and gives students multiple methods for finding the parallel key of a major or minor key, including adding or subtracting accidentals from the scale, as well as using the circle of fifths. Finding the correct parallel scale can be tricky for students, and outlining various methods helps students find a way that works for them. In the memorization strategies presented at the end of this first chapter on minor scales, Root guides students to create flashcards with charts that show both the parallel and the relative key relationships. These flashcards are then used in the written exercises.

Minor keys are featured again in Root’s next chapter, where the harmonic and melodic minor scales are introduced. Although these scales are presented individually, Root is careful to emphasize that music is not written using only one form of minor by stating, “it is more helpful to think of a single minor scale with variable sixth and seventh degrees.”¹³

Like Straus and Lambert, Houlahan and Tacka focus on scale construction, but mirroring their earlier approach to major scales, they present the minor scale through the minor pentachord, minor hexachord, and the minor pentatonic scales. Houlahan and Tacka give two versions of the same material in the chapters on minor scales: one version presents the material using *la*-based minor, while the other uses *do*-based minor. Each scale in the minor scale chapters is introduced through the text’s typical listening activities. The approach is the same whether presenting the minor pentachord, hexachord, pentatonic, natural, harmonic, or melodic scales: memorize a representative tune, analyze various aspects of it, draw its contour, figure out the solfège and rhythms of the melody, and finally produce a notated version of the example. By presenting limited forms of the minor scale first, students are exposed to the sound of the minor scale and become very familiar with its sound. However, as with their presentation of the major scale, this could take up more class time than necessary.

Houlahan and Tacka’s second chapter on minor scales is more traditional in its presentation of the three forms of minor and the parallel and relative relationships. In discussing the three forms of minor, they acknowledge that several forms of minor can be used within one piece. When introducing a new form of minor, the authors discuss scale degree names, interval construction, and an

¹³Root, *Applied Music Fundamentals*, 244.

approach to writing the scale form with accidentals.¹⁴ One unique element in the section on relative and parallel key relationships is the use of musical examples that feature a parallel or relative key relationship within the same excerpt. This reinforces the idea that composers change mode or even change tonic in a single piece. Although the presentation of minor is longer than in the other texts, students are exposed to a number of different listening examples through the introductory listening activity as well as the suggested listening examples.

Intervals

The traditional method of introducing intervals is to define the concept and present the ideas of interval size and quality. Each of the five textbooks takes this approach, with some slight variations in how interval quality is taught. There are three common methods: using interval qualities within the major scale to aid in interval identification, memorizing the interval qualities of pairs of notes without accidentals, and counting half steps. Straus's book is the only one of the five that focuses on using natural note pairings as a basis for identifying interval quality. The text spends one lesson on interval size, and subsequent lessons focus on a different combination of interval sizes: seconds and thirds; sixths and sevenths; and fourths, fifths, octaves and unisons. In each lesson, the natural forms of the intervals are shown before demonstrating how the quality changes when adding accidentals. Through these demonstrations, students learn about simple and compound intervals and interval inversion. Straus does not skip over interval relationships within scales, though. Two lessons focus on intervals found in major and minor keys. The concepts of consonance and dissonance are introduced in these lessons, and students begin to learn about the function of the tritone in defining a key. Written exercises reinforce the concept of melodic and harmonic intervals in musical excerpts, and singing exercises focus on the interval sizes within each lesson. The downside of this is that some singing exercises can be particularly difficult for beginning singers since these melodies are included to demonstrate larger intervals.¹⁵

¹⁴Of the five textbooks reviewed here, Houlihan and Tacka's *From Sound to Symbol* is the only one to present minor scales after intervals.

¹⁵In his review article, Buchler mentions this as a weakness in this chapter and in chapter 3 on scales.

Lambert's presentation of intervals begins with an excerpt by Bach, featuring C as a pedal point. Lambert discusses not only motivic characteristics of the excerpt but also how other pitches in the melody relate to the C pedal point. This leads to a discussion of intervals as they relate to the C major scale. Lambert then combines half-step counting with intervals that occur in the major scale; this is then repeated with the minor scale. Although the focus appears to be on using the major scale to assist in interval identification, the inclusion of half steps gives students another, albeit less efficient, method for finding intervals. The exercises also emphasize counting half steps; however, this portion of the exercises could easily be omitted. The section in lesson 18 on using intervals to analyze musical characteristics and motives within a piece is an especially effective feature of Lambert's presentation of intervals. Students begin to think about how interval size and quality can unify a piece, and these concepts are reinforced through the lesson's CREATE! activities.

Takesue's presentation of intervals uses the keyboard to illustrate interval size. While Takesue also discusses two methods for interval identification—counting half steps and using major key signatures—she shows a definite preference for using major key signatures as a reference point. She then demonstrates how major and perfect intervals from a major scale can be altered to become augmented and diminished intervals. Takesue complicates interval writing by offering the technique of interval inversion as the sole way to write descending intervals. This method is beneficial when dealing with larger intervals, and I appreciate the attempt to guide students through the problem of writing descending intervals; however, using interval inversion for intervals such as a major third is cumbersome. Takesue's exercises give students ample practice in writing and identifying intervals, and like Straus, Takesue uses musical excerpts to reinforce the concept of melodic and harmonic intervals.

Houlahan and Tacka again choose not to begin a chapter with sound. Of all of the textbooks, Lambert comes the closest to using the sound-first approach with intervals. Like the others, Houlahan and Tacka discuss ways to identify interval quality, but their clear preference is to relate intervals to the major scale. Similar to their presentation of major and minor scales, intervals are shown as they relate to the first note of the major and minor pentachord and hexachord, and then to the full major scale. This information again seems redundant. Additionally, the relationship of intervals to the minor pentachord and hexachord doesn't really make sense at this

point, because this chapter on intervals (chapter 6) precedes the presentation of minor scales in chapter 8. Even in their exercises, they simply remind students to “imagine the first [note of the] interval is the tonic of a scale,” with no mention of pentachords and hexachords.¹⁶ The technique of changing major scale intervals into other qualities is then demonstrated, and the chapter concludes with a summary of four methods for determining interval size and quality. Although the authors state that counting half steps “is not the most effective way of naming intervals,” they do include a summary chart of all intervals and their number of half steps.¹⁷

Root's text again distinguishes itself as the text with the most student-centered guidance. A strength is the presentation of numerous interval construction and identification tasks throughout the chapter, along with detailed, step-by-step, descriptions of how to determine the answer.¹⁸ As with the majority of the other texts, she uses the major scale as the basis for identifying interval quality. Throughout the discussion of intervals, though, it is clear that Root is trying to provide students with many ways to think about interval construction. For example, she presents a visual technique to help the student imagine changes in interval size, using pencils to represent the ceiling and floor of a room. By raising the top pencil/ceiling, the room becomes bigger; therefore, raising the top note of an interval makes the interval larger. I have used a similar technique in class, asking students to use their hands to create a space, and as they raise and lower their hands, they change the size of the space. This kinesthetic technique often helps students figure out more difficult intervals. Although some might not consider visual techniques and step-by-step explanations to be essential elements of a textbook, these techniques and explanations can help students gain a deeper understanding of a concept and develop their own ways of consistently finding correct answers. The detailed explanations can also assist a student using the textbook independently of a class, or as part of an online class or flipped classroom approach. Of all of the texts, Root's written exercises

¹⁶Houlahan and Tacka, *From Sound to Symbol*, 191.

¹⁷Houlahan and Tacka, *From Sound to Symbol*, 197.

¹⁸My favorite example is an interval identification example with A $\flat$ 2 and G $\flat$ 3 as the pitches. The first step she lists is “Don’t panic.” She then goes on to explain the technique of finding the answer just as clearly as with the other, less complex examples.

for intervals seem the most complex, including many accidentals. If students don't work through the detailed solutions provided within the text, the written exercises will be more of a challenge than they already are.

Triads

Each textbook covers triad construction for major, minor, diminished, and augmented chord qualities, as well as inversions and Roman numerals in major and minor keys. The dominant seventh chord is also introduced in all textbooks except Root's, which relegates the discussion of seventh chords to an appendix. Straus offers a straightforward approach similar to the one in his interval chapter: memorize the qualities of the natural forms of triads (without accidentals). By doing this, however, he overlooks the augmented triad. Although its construction is described, the augmented triad is omitted from further discussion as well as from the exercises. The section on triad inversion includes a brief discussion of the arrangement of triads in actual music to show that triads are typically not seen in close position as pitches stacked in thirds. Lambert also includes a lesson on how triads are expressed in music, and Takesue begins with an example showing the difference between block chords and implied chords in a musical example. Root extends this topic and illustrates how to take an inventory of the pitches present in the music and how to analyze chord quality through a chord reduction technique.

Straus's coverage of triad inversions continues with a brief discussion of second inversion's relative instability compared to the other chord positions due to the harmonic interval of the fourth. Other texts do not highlight this important concept. In a later lesson, Straus omits the second inversion chord due to its specific usage requirements. In his presentation of Roman numerals, Straus does not distinguish between chord qualities built on pitches in the harmonic minor scale versus other forms of minor. He simply shows how the dominant and the subtonic triads can change quality due to the typical alterations that occur in a minor key.

Lambert takes a slower, more deliberate pace than Straus in his coverage of triads and the dominant seventh chord. Lambert's methods for identifying and constructing triads include constructing the triad out of intervals or relating the triad to the major scale. The prose-based approach is more conversational than in other texts,

although the steps required to build or identify a triad are slightly less clear. The discussion of Roman numerals and chord qualities includes a comparison of triads in major and minor keys that can help the student memorize the chord qualities for both. Lambert's coverage of the triadic variations resulting from using the leading tone in minor is clear, but he does not mention why these changes are effective or common. The alterations are described as if they are based purely on a composer's choice. Lambert introduces figured bass as the basis for identifying triad inversions. This is rather common in fundamentals texts; the one exception in this group of texts is Root's. Root introduces inversion symbols as symbols without associating them with figured bass, although she does explain that the symbols show intervals above the bass note. While all the texts introduce the dominant seventh chord, its inversions, and the accompanying inversion symbols in some fashion (Root includes this in an appendix), Straus and Lambert are the only two to discuss the added seventh as a dissonance that gives the chord extra momentum to resolve to tonic.¹⁹ Straus, Lambert, and Takesue also show how seventh chords other than the dominant seventh chord are spelled.

Like Lambert, Takesue approaches each triad type in a very deliberate way, offering multiple methods for constructing each type of triad. One interesting activity asks students to harmonize a melody using given chord symbols, Roman numerals, and inversions. This encourages students to write and think about triads within the context of music, and to link harmony with melody. As with the other texts, Takesue introduces Roman numerals and scale degree names for triads in major and minor keys. Triads built from the harmonic minor scale are used to present Roman numerals in minor, omitting the major III chord and including the not-so-common augmented III chord; a note explains that the use of this triad is rare and that using the III from the natural minor scale is more common. Instead of using familiar chord symbols or commonly-used lead sheet symbols to indicate triads in inversion (C/E, for example), Takesue uses a format that identifies the triad root with a 1st or 2nd next to it to indicate the inversion (e.g., D1st). These symbols appear in the place of lead sheet symbols in a number

¹⁹ Straus's discussion of dominant seventh chord resolution is reserved for his final chapter on functional harmony, where he also gives a brief introduction to melody harmonization, embellishment and prolongation, the cadential ♯ phrase and cadence, and voice leading.

of the exercises. This could be confusing to the student because this format is not one that is typically seen.

Houlahan and Tacka's discussion of triads begins with a listening example. Students are prompted to discuss the connection between the melody and the accompanying chords. This activity leads students to recognize that the chords are related to the melody, but there is no further elaboration of this offered within the text. The sound of each triad quality is then introduced to the student through a listening example using that type of triad. This is immediately followed by a description of how the triad is constructed using combinations of stacked major or minor thirds. As with the other texts, Roman numerals in both major and minor keys are presented. Similar to Takesue, the presentation of triads in minor is limited to harmonic minor. Thus the major III chord is not included as a typical triad in minor. And unlike Takesue, the authors do not mention that the augmented III chord in minor is relatively uncommon. Overlooking this important concept often results in student compositions that include this misunderstood chord.

Root also begins with a musical excerpt—a Bach chorale that features chords and passing tones. This fuels her discussion of how to take an inventory of pitches and arrange them in order to spell triads. The four qualities of triads are then introduced in two ways: they are constructed with the appropriate third and fifth above the root, and with stacked major and minor thirds. Roman numerals and triad types in major and minor are shown, but unlike the other texts, Root illustrates triads that result from all forms of the minor scale. She clearly notes those that occur most frequently. Although Root does not discuss the dominant seventh chord in the text, she does include a brief introduction to voice leading, which shows the role played by common tones in the smooth motion between certain triads. Straus presents aspects of voice leading as well, and Houlahan and Tacka discuss typical harmonic progressions such as those that move from predominant to dominant and then resolve to tonic. Although the treatment of voice leading and harmonic progressions is far from complete in any of these texts, it can offer the student a taste of what is to come if they continue to study theory.

CONCLUSION

Each textbook reviewed features unique pedagogical approaches that help to address perceived changes in student engagement, preparedness, and interest in the subject of music theory. While a unique approach is important, textbooks still need to be clear, readable, accessible to students, and include a variety of exercises that allow students to practice concepts on multiple levels. Of the five textbooks reviewed, three stand out as offering the most engaging features. None of them is perfect, and they each have their quirks, but they also include the broadest range of characteristics that meet the changing needs in today's classroom. Takesue's *Music Fundamentals: A Balanced Approach* features an outstanding array of interactive online components, including appendices that incorporate listening, basic analysis, and keyboard skills. The text also features numerous exercises (written and aural) that reinforce concepts at key moments. Straus's *Elements of Music* offers readability, succinctness, and clarity in its presentation of concepts, and the inclusion of singing, ear training, written, and composition exercises gives students the opportunity to connect theory with practice. Finally, Root's *Applied Music Fundamentals: Writing, Singing, and Listening* offers a student-centered and student-friendly approach. Root is always careful to explain the *why* and *how* behind theoretical topics, rather than simply showing the what. Furthermore, Root's inclusion of a variety of strategies in the text aims toward mastery through multiple modes of engagement. The text is well suited for the beginning instructor as well, given the variety of exercises, the use of diverse repertoire, and the step-by-step approach to teaching the basics.



Computer-Assisted Instruction and Remedial Music Fundamentals

BY MARK YEARY

Music theory instructors in the United States, like the war-room generals in Stanley Kubrick's *Dr. Strangelove*, have for some time noted a large imbalance in resources between two populations: this imbalance is the *fundamentals gap*. The music theory curricula in many post-secondary institutions assume that incoming students possess a set of musical skills and knowledge—what we loosely term the fundamentals of music—that many matriculating high-school students today simply do not have. Two informal surveys of music theory instructors, both appearing in this journal—one from over a decade ago,¹ one more recent²—note both an increased need in remedial fundamentals instruction for incoming freshman music majors and an urgent desire on the part of instructors to help students better prepare for Theory 1 (the first course in the theory sequence).

The impact of this gap is frustrating, and this frustration is felt by students and instructors alike. Students whose remedial needs are identified may be placed in a fundamentals course that is designed to bring them up to speed in preparation for first-year theory, but with this move comes a curricular delay of up to a full academic year, which further strains their typically rigorous four-year plan. On the instructor's side, remedial instruction places increased demand on a school's instructor resources—both in the teaching of fundamentals and in the possible restructuring of the music theory core to accommodate trailing sections or courses. And should a student's remedial needs *not* be detected, they become likely candidates for failing first-year theory—giving rise to the notion of music theory as a weeder course that thins out a cohort of music majors.

Accordingly, music theory instructors often attempt to reach out to their incoming students during the summer, so that they might address their remedial needs *before* they set foot in the theory classroom.

¹ Jeff Gillespie, "Welcome to Theory Camp! More Than Simple Remediation," *Journal of Music Theory Pedagogy* 14 (2000): 47–62.

² Elizabeth West Marvin, "The Core Curricula in Music Theory: Developments and Pedagogical Trends," *Journal of Music Theory Pedagogy* 26 (2012): 255–64.

The music theory “boot camp,” an intensive summer course with a specific focus on preparation for theory, has proven successful where implemented,³ but its demand for additional student and instructor availability will not be equally appealing to every school. Without the possibility of a pre-semester course, we might appeal to our students to prepare for the theory core on their own during the summer—such efforts range from samples of music-theory coursework to the less directed “read this textbook, chapters one through five”—and yet without any means of instructing students or assessing their progress, only the most optimistic among us would expect a significant increase in preparedness across the incoming class.

Thankfully, advances in computer-assisted instruction (CAI) for music learning have reached the point where instructors may begin to proactively address the fundamentals gap. The computer’s ability to combine verbal instruction, sound, notation, and student response in a self-paced learning environment makes it ideal for use in music learning, and CAI has been productively used in music schools since affordable workstations first appeared.⁴ The increasing availability and affordability of electronic devices such as laptops, tablets, and smartphones, coupled with the development of internet-enabled or browser-based applications, have resulted in a wealth of music-learning resources: music theory students of the current generation, conditioned to turn to the internet as a primary means of acquiring information or skills, may choose from a number of websites that offer exercises designed to test one’s music fundamentals. Many of today’s theory students have turned at some time to a website such as *musictheory.net*, *teoria.com*, or *emusictheory.com*—perhaps suggested by a friend or colleague, perhaps simply found online—to brush up on their skills in anticipation of an exam or assessment. And as these online applications have become increasingly accessible, stable, and practical over the years, many instructors now endorse or turn to them as a way to address the

³ Gillespie, “Welcome to Theory Camp! More Than Simple Remediation”; Melissa Hoag, “Seven Strategies for Enabling Student Success in the First-Year Music Theory Sequence,” *Music Theory Pedagogy E Journal* 1 (2013), <http://jmtpt.ou.edu/ejournal/seven-strategies-enabling-student-success-first-year-music-theory-sequence>.

⁴ Wolfgang Kuhn, “Computer-Assisted Instruction in Music: Drill-and-practice in Dictation,” *College Music Symposium* 14 (1974): 89–101; Dorothy Gross, “Computer Applications to Music Theory: A Retrospective,” *Computer Music Journal* 8, no. 4 (1984): 35–42.

fundamentals gap—to reach students in their native environments, and to give them the learning tools that have previously been restricted to the classroom or the lab.

This review examines several current CAI applications that specifically offer training in music fundamentals to the student preparing for post-secondary education. A preparatory section identifies the topics that are typically considered to be prerequisites for Theory 1, followed by a look at the effectiveness and requirements of CAI applications in teaching these topics; a concluding section lists the benefits and challenges that accompany their use. As with any written review of Internet-age technology, it is bound to be both incomplete and soon outdated, yet the concepts and issues addressed within should remain valid for as long as our current way of interacting with computers remains intact—in other words, until radically newer technologies render these applications obsolete.

SCOPE OF FUNDAMENTALS FOR CAI

Gillespie⁵ offers a concise list of topics that are covered in his fundamentals diagnostic exam, and we may use this list as a working definition of fundamentals: “the basics of rhythm and meter; pitch notation in treble, bass, alto, and tenor clefs; scales (major and all three forms of minor); key signatures; intervals; and triads.” We may choose to add or subtract a few elements from this list: some may leave topics such as C clefs or triads for Theory 1, whereas others may wish to include triadic inversions, chord symbols, and seventh chords. Each CAI application contains its own assortment of topics, of course, and in general they tend to include more than the topics listed above; the instructor wishing to omit one or more topics may customize the application to exclude them, or they may simply ask students to selectively complete topics from a given list.

Similarly, whereas the terminology and notation of fundamental concepts are not standardized, most CAI applications conform to commonly accepted practices. Because many CAI applications are developed in North America by, or with, music theory instructors, these practices are largely consistent with North American theory education: a stemmed, filled-in note without a flag is a quarter note, not a crotchet. Other topics are less standardized across institutions: scale degrees, for instance, may be identified functionally (tonic,

⁵ “Welcome to Theory Camp! More Than Simple Remediation,” 49.

supertonic, mediant), with moveable-*do* solfège syllables (*do, re, mi*), with scale-degree numbers ($\hat{1}$, $\hat{2}$, $\hat{3}$), or with some combination of these. Whereas some CAI applications allow the instructor to select one or more set of terms to be seen by the student, others are less flexible, and the instructor who adopts a fundamentals CAI may want to either offer a preemptive correction to students or give substitute concepts and terms once Theory 1 begins. For this reason, I recommend that the instructor adopting a CAI fundamentals application start with a small list of topics, with a concentration of widely agreed-upon fundamentals: pitch and rhythm reading, clefs, key signatures, scales, intervals, and triads.

Although this list of fundamentals topics is reasonably complete, it does not specify the role of sound in learning these topics. Even in institutions where there are separate sections for “written” and “aural” theory, many instructors would include basic sound identification tasks in a list of desired fundamentals: the ability to distinguish higher or lower pitches, the matching of basic pitch or rhythm patterns with given notation, and the recognition of common scales or intervals. Pairing sound and notation is a strength of CAI applications, and the opportunity for students to learn and develop sound-notation associations such as labeling, error detection, and transcription (“dictation”) permits instructors to require a greater facility in this domain than is commonly assessed in many placement-test environments.

Similarly, many instructors would also ask that students develop basic sound-*making* skills simultaneously: such tasks might range from tactile (i.e., pressing a key on the computer keyboard) production of a given rhythm pattern to sight-singing basic melodic patterns into a microphone. In this area as well, a CAI application offers a potentially great advantage over self-directed study and in-class diagnostic exams: the student is given the same opportunity to drill-and-practice these skills as the notation and aural skills described above, and the immediate feedback and progress-tracking capabilities of a computer—not to mention its infinite patience—promise a more intensive and self-directed learning method than those offered in a textbook or the classroom. Unfortunately, whereas rhythm-tapping exercises fare reasonably well—the CAI application interprets the user’s input within a quantization or “forgiveness” range of the notated rhythm pattern—sight-singing assessment is much more uneven, and assessing even the most basic pitch patterns is confounded by detection of noise or pitch wobble

as discrete note events. This lack of capability is not necessarily a limitation of computer technology, however—witness the recent advances in speech-recognition technology driven by the portable-device market—and we may hope that sight-singing assessment becomes more reliable in the near future.⁶

SUITABILITY OF CAI FOR FUNDAMENTALS

Michael Rogers's outline of fundamentals study offers the following pithy assessment of the three stages of learning: "(1) understanding the concept behind a topic [...]; (2), developing accuracy through practice; and (3) developing speed."⁷ Fortunately, these stages of learning are highly appropriate to the use of CAI, which has been proven effective in addressing the lower levels of Bloom's revised learning taxonomy—the "remember" and "understand" levels.⁸

Two common uses of CAI are the *tutorial* paradigm, in which new material is introduced and student response is used to measure comprehension, and the *drill-and-practice* paradigm, in which familiar (previously taught) material is rehearsed by the student to develop speed and accuracy.⁹ CAI offers tangible benefits in these uses: feedback is instantaneous, correct answers may be

⁶ One notable exception to this lack of capability is an iOS (Apple device) application called "Sing That Note!", developed by Gil De Benedetti for G Major Music Theory (<http://gmajormusictheory.org>), which asks users to listen to a musical excerpt and sing back the tonic; the application works with acceptable, if not perfect, accuracy. The greater accuracy of this approach is likely due to the elimination of the temporal dimension: whereas assessing sight-singing measures a series of timed pitches, "Sing That Note!" requires only a single held pitch.

⁷ Michael R. Rogers, *Teaching Approaches in Music Theory: An Overview of Pedagogical Philosophies*, 2nd ed. (Carbondale; Edwardsville: Southern Illinois Press, 2004), 35.

⁸ Lorin W. Anderson and David R. Krathwohl, *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives* (Boston: Pearson, 2001).

⁹ Chen-Lin C. Kulik and James A. Kulik, "Effectiveness of Computer-Based Instruction: An Updated Analysis," *Computers in Human Behavior* 7, no. 1–2 (1991): 75–94; Richard C. Forcier and Don E. Descy, *The Computer as an Educational Tool: Productivity and Problem Solving*, 3rd ed. (Boston: Pearson, 2008), chap. 2.

encouraged or rewarded using a game paradigm, and (perhaps most importantly) the computer can produce an endless stream of examples at any time of day. Using CAI in these paradigms has proven to be effective in augmenting lower-level learning, and a meta-analysis of CAI applications confirms its positive effect.¹⁰ Accordingly, an effective CAI for music fundamentals will include both a tutorial component, in which concepts are introduced through text, examples, and student feedback, and a drill-and-practice component, in which the student works to meet a threshold of speed and accuracy.

An additional component of CAI—threshold assessment—is essential to the college-prep scenario outlined earlier, in which instructors must assess student readiness without in-class feedback. Assessment in CAI includes record-keeping of times, scores, and completion percentages; it may occur at the level of an individual skill, such as note reading, or at an overall level across all exercises. For a music fundamentals CAI, we will want the ability to ensure that each major topic is sufficiently mastered; this may be accomplished by passing a number of units or lessons, or by above-threshold performance on each section of a larger diagnostic test.

Although basic assessment capabilities are found in many CAI environments—a web-based exercise will track the number of correct and incorrect responses, perhaps in conjunction with a threshold of success—the instructor wishing to ensure student readiness requires a reliable means of measuring student performance. Secure assessment and transmission of students' achievements is a significant difference between many theory-tutoring websites and the CAI applications discussed in this review. It is this capability that allows the fundamentals CAI to largely replace the typical in-class fundamentals assessment given during the initial meeting of a first-year theory course; instructors may use the results of the CAI to place students with those of similar skill levels.¹¹ And because the student

¹⁰ James A. Kulik, "Meta-Analytic Studies of Findings on Computer-Based Instruction," in *Technology Assessment in Education and Training*, ed. Eva L. Baker and Harold F. O'Neil (San Diego: Psychology Press, 1994), 9–34.

¹¹ One obvious difficulty with using CAI as a replacement for in-class testing is academic honesty: an unskilled but ambitious student may hire a "ringer" to take (and pass) the assessment in their place. For this reason, I recommend that instructors adopting a CAI platform as a diagnostic measure place a clause in their syllabi stating that students found lacking in skills in the Theory 1 classroom may be directed to enroll in the fundamentals course.

is privy to these results as well, they may repeat the CAI until they have reached their desired goal—placement in Theory 1.

MUSIC FUNDAMENTALS CAI APPLICATIONS REVIEWED

The three CAI platforms examined below are specifically designed to teach notation-based and sound-based music fundamentals; all include the tutorial, drill-and-practice, and secure assessment components. Each platform differs slightly in its design and origins: the first comes from a publisher of classroom music materials, the second from the designers of a well-known notation-and-ear-training CAI, and the third is a homegrown platform from a large music school. Instructors who already use CAI to supplement theory courses will likely find that their existing platform meets most of the criteria discussed above: long-standing applications such as *Practica Musica*¹², *MacGamut*¹³, and *Auralia/Musition*¹⁴ are known for their drill-and-practice application and secure recording of student performance, and whereas their included tutorial components may or may not be as robust as the platforms reviewed below, the ability to use a single platform from pre-theory to the later stages of the theory core may offset this shortcoming with both cost savings and interface consistency.

There are several computer-based learning platforms that are designed to address fundamentals, but do not meet both the content and component requirements listed above. Several well-known ear-training programs, such as *EarMaster*, offer some elements of tutorial, drill-and-practice, and secure assessment, but they deal

¹² *Practica Musica*, developed by Jeffrey C. Evans for Ars Nova Software (<http://ars-nova.com>), comes with an e-text, “Exploring Music Theory,” which may be used as a tutorial; within the text, students are directed to drill-and-practice exercises that pertain to the concept being tutored.

¹³ *MacGamut*, developed by Ann Blombach, lacks an integrated tutorial component; *MacGAMUT Music Software International*, the publisher (<http://macgamut.com>), has addressed this need with a separate platform, *MFun: Music Fundamentals*, that is included in this review.

¹⁴ *Rising Software’s Auralia/Musition platform* (<http://risingsoftware.com>) contains several courses—text-based tutorials linked with exercises—that cover topics found in placement tests such as the AP Music Theory exam.

only with sound-based skills. Preparatory online courses, such as Steven G. Laitz's "eTheory: Music Fundamentals in Four Weeks,"¹⁵ deliver self-directed, online study of fundamentals with tutorials and exercises; although the scope and pace of these courses is inline with the demands of the theory sequence in highly regarded music programs, they lack the drill-and-practice component that lies at the core of a CAI fundamentals platform. Similarly, Leigh VanHandel's Music Theory Skill Builder platform¹⁶ offers a robust suite of drill-and-practice exercises, but, because it was designed to supplement an existing music theory curriculum, it lacks an integrated tutorial component.

For each of the following applications I have described the following components:

- Scope: the included concepts
- Getting started: purchasing and installing the application
- Tutorial: the instruction component
- Assessment: the diagnostic component
- Reporting: the way diagnostic results are transmitted
- Summary

As all of the CAI platforms discussed here are available for instructor demo, I encourage interested instructors to try them for themselves; while I have in these reviews attempted to document the key aspects of student and instructor experiences, a text-only description is insufficient for making a decision for your institution or classroom.

¹⁵ "eTheory: Music Fundamentals in Four Weeks" is published by the Eastman School of Music; it is available at <http://www.esm.rochester.edu/iml/store/product/music-theory-fundamentals/>.

¹⁶ Music Theory Skill Builder is published by Oxford University Press; it is available at <http://mtsb.oup.com/>.

ALFRED'S ESSENTIALS OF MUSIC THEORY ON THE WEB

- Authors: Andrew Surmani, Karen Farnum Surmani, and Morton Manus
- Publisher: Alfred Music, <http://www.emtontheweb.com>
- Software requirements: Flash-enabled web browser
- Video tutorial: http://alfred-music.com/EMT/EMT_Web_Trailer.mov
- Seven-day trial period available upon request

This all-in-one fundamentals CAI platform (hereafter called EMTW) was first offered in 2013; it is derived from Alfred's *Essentials of Music Theory* textbook, written by the same authors, that was published in 2004. EMTW is designed to be used by an instructor in a full-length online or hybrid fundamentals course, and creating an instructor account is required before any student accounts may be registered. Accordingly, EMTW lacks a few of the features found in CAI platforms designed for self-directed, preparatory study: exercises are not timed, and there is no summative diagnostic exam. However, the design and structure of this platform is very appealing, and its usability is so remarkable that it merits consideration as a preparatory platform.

SCOPE

The topics included in EMTW extend beyond the common notation-based and sound-based exercises in a manner that reflects its pedigree: advanced topics include harmonizing and composing a melody, spelling a blues scale, applying lead-sheet chord symbols (such as Am for an A-minor triad), and recognizing form in popular music. For instructors who typically include concepts and notations derived from popular music, this emphasis may be a welcome addition, and although not everyone would agree with Alfred's use of the term "keynote" in place of the term "tonic," these minor differences are easily offset by the well-written and interactive tutorial component that underlies this effective and engaging online platform.

GETTING STARTED

The application is launched from a browser; it, like many web-based applications, requires Adobe Flash to run, and for this reason it may not be used on an iPad or other Apple iOS device. Once

the student logs on, they are taken to a main menu, from which individual units or sub-units may be selected. The display changes when taken to a lesson or practice module, but there are three buttons available at all times—Main Menu, Logout, and Help—and this consistent interface allows the student to navigate the application quite easily. Selecting the help button brings up a “how to use” document, with in-document bookmarks to common topics such as administrative tasks; this is a bit clunky by modern standards, but as it’s primarily intended for instructors/administrators, it does not hamper the student’s experience.

TUTORIAL

EMTW’s well-designed tutorial component is one of its strongest aspects; it alone makes this application worth a try, if only for a glimpse at the possibilities afforded in a multimedia environment. The application is structured in eighteen units, each focused on a single large topic such as clefs, scales, or meter; each unit comprises several subunits (treble clef, bass clef, alto clef, etc.), with aural identification (“ear training”) exercises at the end of most units. All text is spoken as well as displayed; a “mute” button allows the student to turn off narration, but the combination of text and speech may be welcome to users accustomed to instructional videos from online learning sources. New terms appearing in the text are linked to a glossary: the glossary entry for a given term includes not just a definition, but audio and video examples where appropriate, and an audio pronunciation of the term—helpful to the musical novice who struggles not only to recognize an *appoggiatura*, but to pronounce it as well. Navigating between individual lessons is less intuitive: the user who wishes to skip around must navigate a lengthy list that contains nested folders by volume, unit, and lesson.

Another promising aspect of the tutorial is the ability to change or customize its content. An existing lesson may be copied and edited, and new lesson plans may be created to introduce topics and exercises in a different order. A lesson editor allows the instructor to control the visual and text content of each lesson, and this same editing capability applies to the glossary of terms as well.

DRILL-AND-PRACTICE

Drill-and-practice exercises are located within each lesson; they include activities such as building a scale or triad, labeling musical events (pitch, key, etc.), and aural identification of rhythms or pitch combinations. Each drill-and-practice exercise is scored according to a simple threshold: the student must achieve a given percentage of correct answers, such as 8 out of 10, in order to pass the exercise, and exercises may be repeated as often as needed.

The user interface is responsive: drag-and-drop works well and without lag, buttons are intuitively labeled, and instructions are clearly presented. The application of accidentals to a note is simple: accidentals are clearly marked with buttons next to the staff, and they may be added before or after a note is placed. I've found that handling accidentals is one of the most variable aspects of CAI fundamentals platforms, and to some extent this functionality may be taken as a litmus test of usability; EMTW passes the test.

Although there are some customization options available for drill-and-practice activities; time is not one of them; for instructors who value a time-limited environment to for developing speed, this may be a significant drawback. Another notable shortcoming is the lack of constructive feedback for incorrect responses: the student hears an "uh-oh" sound, but the correct answer is not displayed, and there is no verbal component that explains how or why the student's answer is incorrect.

ASSESSMENT AND REPORTING

There is no separate summative assessment or overall threshold, so the instructor wishing to use EMTW as a preparatory course may devise their own system of determining overall success. Although each unit offers a "test" option, selecting this option generates a printable document with written questions—not the series of computer activities that one would expect from a CAI test.

The record-keeping found in EMTW is common to other CAI applications: each student is tracked according to scores achieved, time spent, and units completed. Because all student activity is recorded online, the instructor wishing to track or assess student activity has instantaneous access to activity reports; there are no files to be copied or sent. However, as these records are neither sortable nor exportable to a spreadsheet format, their utility is somewhat limited.

SUMMARY

The video introduction for EMTW makes clear that this platform is intended for use as an online component in a fundamentals course, either in hybrid format or fully online. In this regard, its ability to meet many of the demands of a preparatory CAI is a testament to its flexible design and remarkable usability. Although the instructor considering EMTW may be discouraged by its lack of advanced assessment means, its excellent user interface and robust content make it worthy of consideration—perhaps in conjunction with a separate diagnostic exam, or as a CAI component of a fundamentals boot camp.

MFUN: MUSIC FUNDAMENTALS

- Author: Elizabeth Sayrs
- Publisher: MacGamut Music Software, Inc., <http://www.macgamut.com/products/mfun/>
- Hardware requirements: Windows XP, NT, Vista, 7, 8; Macintosh OS 10.5–10.10
- Demo version available upon request

MFun is published by the makers of the venerable CAI platform MacGamut, and although the two platforms share their love of musically-engaged cartoon characters, MFun is a separate application that does not require MacGamut. MFun's accompanying brochure clearly announces it is designed with the underskilled incoming music major in mind, and its thoughtful combination of tutorial and drill exercises make it appropriate for use as either a stand-alone preparatory course or an e-textbook for an on-campus fundamentals course.

SCOPE

MFun is organized into eleven chapters (units) that cover the fundamentals and beyond: later chapters include concepts such as seventh chords, part-writing, and melodic and harmonic cadence types. Instructors looking for a battery of fundamentals similar to that described above—just the basics, up to building triads—

could ask students to skip the chapter on melody (listed as an “analytical interlude”) and conclude their study with chapter 8 (Triads I). Alternatively, the entire course could be assigned for a more robust introduction to fundamentals; students who have practiced the basics of part-writing and melodic analysis should be well-positioned to tackle these subjects more comprehensively when they arise in Theory 1.

GETTING STARTED

The MFun application must be installed on a Windows or Mac computer; although it is not a web-based application, it may be purchased and downloaded online. Launching the application is somewhat unintuitive: if one clicks on the MFun icon to launch it, they are asked to locate a “transcript file” and presented with a file directory, with no help button in sight. This is a rather archaic requirement in an era where application data and preferences are routinely shielded from user interaction; students expecting a click-and-go procedure may need additional instruction.

Once the transcript file is loaded, the student arrives at a main window, from which a row of menu buttons opens various aspects of the application: a table of contents, a glossary, an index, a report screen, and a virtual piano keyboard. From the table of contents, the student selects a chapter, and then either pages through the chapter or selectively skips around using the menu bar on the left. Whereas the contents and organization of each chapter are thoughtfully laid out—each chapter begins with a list of objectives and ends with a summary of the drills and quizzes within—navigating the content list requires the student to drag the scroll bar with the cursor (instead of using a scroll wheel or trackpad).

TUTORIAL

The text of the tutorial is well-written, and it is augmented with introductory concepts that go beyond the basics: the chapter on pitch, for instance, begins with an explanation of frequency using a vibrating string. The author takes an engaging tone throughout, and the text itself would be suitable as a paper-format textbook; accordingly, the amount of reading asked of the student is similar to that of a textbook, and students accustomed to multimedia tutorials that use smaller chunks of information may be less prepared to

digest the information within.

Text and notated examples flow together, and all notated examples come with “play” and “stop” buttons for audio. Musical examples are not animated, which strikes me as underutilizing technology: many students with low music-reading skills would benefit from a “follow the bouncing ball” approach or a similar means of highlighting musical passages as they are heard. Hyperlinks to earlier materials are included within the text, so that the student may return to a concept’s first introduction for a quick review; the student must then press the “back” button from the top menu to return to their lesson.

Within a lesson, periodic “test yourself” screens appear; these are simple, untimed exercises, often answered with pull-down menus or radio buttons, that provide a safe (i.e., not graded) environment to check one’s comprehension, so that the student may be prepared for the exercises that appear later in the lesson. Scored exercises appear at the end of a lesson: the chapter on intervals, for instance, offers exercises for interval quantity, perfect intervals, imperfect intervals, and dissonant intervals.

DRILL-AND-PRACTICE

The drill-and-practice component of MFun is one of its strongest aspects. A set of exercises is typically presented in three components: drill, written, and quiz. The drill and quiz share the same topic and methods; the drill allows the student to prepare at their own pace before they begin the timed quiz. The written exercise—a generated worksheet that may be printed for use—provides another opportunity to practice, and although it is more suitable for an on-campus course than a remote self-study course, many instructors will appreciate the option to ask that students create notation with a pencil as well as with a mouse or trackpad.

When launching a drill or quiz, the student may choose to either go to an instruction screen or proceed directly to the exercise. The instruction screen is extremely well-designed: it presents the upcoming drill or quiz exactly as it will appear, while an annotated walkthrough guides the students through the steps required to complete the exercise. The interface in this mode is fully functional, and students may answer questions and test out the interface as if they were taking the actual drill or quiz.

The quiz, which is the graded component of the exercise, may be

taken in practice or quiz mode; the two modes are identical in every regard except for record-keeping. This is yet another thoughtful feature of MFun's drill-and-practice component, and students will appreciate the opportunity to master both the response interface and the timed quiz environment before putting themselves to the test. Quiz performance is scored with a simple points mechanism (X out of Y correct), and time limits, if applicable, apply to the complete battery of questions, such that the student must complete all responses before the time limit is reached.

The administrative side of quizzes is equally appealing to instructors. For each quiz in the course, instructors may adjust several options: the option to exclude or include the quiz, the number of questions given, the time limit (a number of seconds, or unlimited), the number of attempts allowed, and the option for students to quit within a quiz. The options window also comes with two default settings that are appropriate for "music majors" and "non-majors"; for the instructor looking to fine-tune performance requirements, these settings offer a helpful baseline from which they may make adjustments as desired.

ASSESSMENT AND REPORTING

Student performance is available from the "my transcript" button found in the main window. Records are presented in an uncluttered format, arranged by chapter: for each drill or quiz, the student sees the activity dates, number of attempts, and best and average scores. Individual drill and quiz titles are hyperlinked, so that the student who sees a quiz score of 40 and wants to improve it can simply click the title and proceed directly to the quiz. As there are no built-in criteria for successfully completing a quiz, the instructor must communicate their performance expectations to the student before the course begins.

Reports of student performance are transmitted electronically: the student submits their transcript file via email or other electronic means to the instructor, who gathers and arranges the collection of transcripts using a separate application. Although this process feels somewhat outdated in the Web 2.0 era of instant data collection and retrieval, the instructor may use an online (cloud) file-sharing service to store and access students' transcript files; in this manner, the instructor may check on student progress as often as desired, without relying on students to send weekly email attachments.

This service may be a basic shared-directory application such as Dropbox or Google Drive, or it may exist as a component of a learning management system (LMS). Accordingly, as of July 2014 MFun has begun to offer an online solution using the Moodle LMS platform.

SUMMARY

MFun offers a lot to the instructor wishing to narrow the fundamentals gap: it works as both a standalone course and a component of a physical or hybrid course. Instructors will like its well-planned series of drills and the option to customize the quizzes as needed; students will appreciate the annotated instructions and detailed progress reports. Now that MFun has addressed its most notable issue—the need to send transcript files from student to instructor—with an LMS solution, it should serve well as a preparatory fundamentals course.

MUSIC FUNDAMENTALS ONLINE

- Author: a team of writers, designers, and developers led by Eric Isaacson
- Publisher: Indiana University, <http://mfo.music.indiana.edu/>
- Software requirements: Flash-enabled web browser
- Trial account available upon request

Music Fundamentals Online (MFO) is an in-house project that has been designed with a single goal in mind: reduce the number of incoming music students who must take Theory 109 (Fundamentals of Music) and delay their theory curriculum by one year. MFO was introduced at IU in 2012, at which time all incoming music students were required to either complete MFO during the summer or enroll in Theory 109 in the fall. In 2013, the completion rate for MFO was over 90%, and enrollment in Theory 109 has dropped drastically, such that the course has been repurposed as a hybrid course—using MFO in conjunction with a few in-class exams—for non-majors. The designers of MFO anticipate its general release for both individual and institutional use in the spring of 2015.

SCOPE

MFO offers six units that cover a fairly common gamut of fundamentals: pitch, rhythm, scales, key signatures, intervals, and chords. The unit on chords includes Roman numeral notation, seventh chords in all inversions, and continuo-style and chorale-style voicing, but does not include voice-leading. Most units contain a small aural-identification component; aural recognition of intervals is given more extensive coverage. The pitch and rhythm units contain modules on orthography, a topic that is often neglected in CAI music applications; students are tutored on the placement of staves, clefs, notes, rests, accidentals, and beams, and they are asked to identify orthographical errors within a notation example.

GETTING STARTED

Unlike other CAI applications that use lessons and drill to build to an exam, MFO begins with a diagnostic exam; upon a student's first login (using a Flash-enabled web browser), they are taken to an instruction screen, and one button later the exam begins. The diagnostic exam consists of approximately 90 exercises, with content taken from all six units of the course; once begun, it may not be resumed or retaken later. The results of the exam are then used to determine which of the 30 total lesson modules must then be completed; a student who aces pitch and rhythm but struggles with intervals, for example, will find that the pitch and rhythm modules are marked as completed, leaving the more challenging modules (intervals) for the student to complete. This diagnostic paradigm allows more skilled students to get right to the areas in which they need work; exceptionally skilled students may pass the entire course with a successful exam. Because the exam may only be taken once, instructors adopting MFO may wish to recommend a pre-diagnostic reference that allows students to acclimate to the terms and concepts used within; even skilled students may not have been exposed to scientific pitch notation or all five C-clefs, for example.

TUTORIAL

Each module begins with a brief overview of topics and outcomes before proceeding to one or more tutorial lessons. The layout of the lesson emphasizes the notation or sound-producing

component, which appears in a large frame in the center of the window. Displays are often animated and occasionally interactive; when learning interval inversion, for example, the student may click a button to invert an interval and see the results. The lesson text appears in a smaller, upper frame, alongside a navigation bar; the prose is straightforward and functional, with significant terms placed in a bold, red typeface. The tone of the text is review-like, and while the student wanting to work quickly may appreciate this direct approach, at times it eschews opportunities to use visual or mnemonic aids, such as those commonly used to learn lines and spaces in each clef. Audio is typically controlled with start/stop buttons, and repertory examples, while sparse, are effective and illustrative. Many lessons contain an interactive “test yourself” component, similar to that in MFun, that allows students to confirm their understanding of the lesson material.

DRILL-AND-PRACTICE

A lesson is followed by one or more activities, in which the student works toward a success threshold; there is no separate, ungraded practice component aside from the in-lesson “test yourself” mentioned above. Each activity contains one or more levels, in which the current topic is broken down into smaller components; for example, when learning notes on the alto-clef staff, the level-one activity is restricted to recognizing F3, C4, and G4 only, with other notes added in later levels. There is no penalty for quitting or repeating an activity, but the student must eventually pass all of a module’s activities for the module to be considered complete.

The student interface is responsive and clean. Notation-building exercises use drag-and-drop for notes, rests, clefs, and accidentals; it passes the CAI “add an accidental” test with high marks. Other interface components, such as labeling buttons and a small piano keyboard, always appear in the same place and offer the same functionality. Whereas this consistency allows the student to focus on content rather than mechanics, it does come at a slight cost in speed: a typical response may include one or two drag-and-drop operations and several clicked buttons, and some students may prefer keyboard input—such as typing “G4” instead of clicking buttons labelled G and 4.

Most activities combine speed and accuracy thresholds in an intuitive and somewhat forgiving format. A typical MFO activity assesses accuracy within a visually presented moving window

of assessment, and the student is required to correctly answer (for example) 7 of 8 consecutive questions; they may continue to work until this success threshold is reached. Similarly, time limits are imposed as average response time over the same moving window: were the above example a timed activity, the 7-of-8 correct responses would require an average response time of (for example) 5 seconds or less. Correct and incorrect responses are shown within the moving window using checks and X's, and the correct answer is always shown for comparison. Feedback is brief; there are no sounds of joy or anguish, and text responses to incorrect answers are terse. Completing a level or an activity is sometimes (not always) accompanied by a brief tone pattern; the lack of obvious visual indicators means that it's not always apparent when an activity has been successfully completed.

ASSESSMENT AND REPORTING

For the student, tracking progress is as simple as a visual scan of the modules remaining completion: a module is either exempted (because the student passed it in diagnostic exam), incomplete (empty checkbox), or complete (checkmark). Whereas a lack of sub-module progress indication may frustrate students who choose to hop from module to module, this approach may encourage working to completion on one module at a time. The student may continue to work on exempted or completed modules if they wish to do so.

Instructors visit a password-protected web page to view student performance. An individual student report lists the state (exempted, completed, incomplete) of each of the 30 modules; completed modules are date-stamped. A group report lists students alphabetically, showing the number of modules in each completion state, and a summary table groups students by their number of modules remaining. The reports appear as HTML tables, and instructors wishing to further manipulate the data—such as create an email list based on number of modules completed—could do so by copying the tables into a spreadsheet.

SUMMARY

MFO is equal parts diagnostic and fundamentals course, and instructors looking for a robust placement exam component will be well served by this platform. The student interface is excellent,

and modules are thoughtfully and economically designed; its purpose is to prepare students for Theory 1, not to explore the concepts behind these fundamentals, and in this regard it performs admirably. Instructors who want to narrow or change the topics covered may want to consider other platforms, as there are no options to customize or exclude modules at this time. But as a ready-to-go diagnostic exam and fundamentals course in one it makes an impressive package, and it's hard to argue with the results: more music majors are placing into Theory 1 thanks to MFO, and it has changed the nature and purpose of the remedial fundamentals course that it has replaced.

DISCUSSION AND CONCLUSION

As music fundamentals CAI applications continue to be developed over the coming years, one might ask if these applications might partially or completely remove the need for fundamentals instruction in a music-school setting—such that Theory 1 might begin with higher-level concepts from the start. Whereas CAI applications have been proven effective for use in conjunction with instructor interaction, the concept of a stand-alone CAI platform is relatively less mature, and any expansion beyond the rather limited role I have emphasized in this review—as a targeted, self-paced course in the basic concepts and tasks used in music theory—would be required to address the following three factors.

The first factor is what Rogers refers to as *fluency* in fundamentals. A student may use a CAI application to develop a high level of proficiency in a variety of tasks, but these proficiencies are procedural in nature: the student knows how to apply them, but not necessarily when or why. It is the role of the instructor to help students see the connections and interrelations among these concepts, and to situate them within real-world musical examples, so that students may apply them in a holistic manner—with an understanding that (for example) intervals, scales, and triads are all built of the same elements, and that musical context may dictate the most appropriate concept for use in a given situation. And whereas the rapid accuracy gained from CAI drill-and-practice is a necessary first step, it is only a step: the goal of learning fundamentals is not “speed as an end in itself but as an aid to continuity.”¹⁷

The second factor is the development of *strategies* for fundamental

¹⁷ Rogers, *Teaching Approaches in Music Theory*, 39.

concepts. At its core, a CAI application is similar to a collection of electronic flash cards: it may be used to develop a *retrieval* strategy for responses, so that (for example) the student no longer has to solve 3+3 with their fingers or look up *le chien* in their French dictionary. However, many fundamentals tasks involve a vast number of possible problems or situations, and it is impractical to ask that a student memorize all possibilities—just as it would be impractical to memorize multiplication tables beyond a relatively small number. To come up with the correct response, the student must draw from a collection of known strategies. Leigh VanHandel¹⁸ offers a fruitful example of strategy use in working with musical intervals: the student need not memorize that the interval C# up to G* is an augmented fifth in order to identify it as such. When we describe the idealized process for coming up with this correct response, we offer several complementary strategies which are themselves based on lower-level knowledge and procedures: C up to G is one of our known (memorized) white-key fifths; adding the same accidental to both pitch-classes (C# up to G#) preserves its interval; raising the accidental of the higher tone in a dyad increases the interval quality by one step on the quality ladder; one step above a perfect interval is an augmented interval. Without this emphasis on navigating strategies, a student may reflexively revert to less optimal solutions, such as counting each semitone between C# up to G*—the musical equivalent of doing addition on one's fingers—in response to this uncommon but musically conceivable event. For these reasons, I recommend that you select options (if available) in your CAI application to restrict pitch elements to those most commonly occurring: the student who knows by heart the qualities of all white-key seconds, thirds, and fourths is well positioned to learn how to quickly measure *all* intervals in the first weeks of Theory 1.

Lastly, a CAI application is unable to help students deal with conceptual roadblocks. To a large extent, the fundamentals applications described in this review go beyond the original intent of CAI, in which the computer *assists* instruction rather than replaces it. This statement is not a strike against the use of CAI, and many instructors and researchers have acknowledged that CAI applications are significantly superior to unassisted instruction in the main aspects highlighted in this review: they offer drill-and-practice with immediate feedback, they faithfully present

¹⁸ "What Can Music Theory Pedagogy Learn from Mathematics Pedagogy?" *Journal of Music Theory Pedagogy* 26 (2012): 191–214.

themselves for use whenever needed, and they can be counted on for a fair and instantaneous assessment of performance. However, CAI applications are currently unable to assess one of the most critical elements in learning—a student's learning capabilities and limitations—and this recognition must inform our use of CAI in two significant ways. First, student-instructor interaction, either in-person or electronic, must be made available to the fullest extent possible, particularly when introducing a new CAI application for use. Second, the concepts covered within the CAI application should be kept as low-level as possible: tasks that require a more conceptual or higher-level response are more susceptible to misinterpretation, confusion, and lack of student engagement.

Whereas these three factors afford a case for retaining the typical first-unit fundamentals review in Theory 1, the use of CAI for procedural learning helps to ensure that this unit actually serves as a review—not an introduction. In this regard, a combination of preparatory CAI and theory-course review is well equipped to replace the remedial fundamentals course as a prerequisite for Theory 1. As noted in the introduction, incoming music majors who do not place into first-year theory are perpetually behind their peers, and this trailing position complicates the music major's already full curriculum. Using a preparatory CAI fundamentals application allows students to work at their speed—not at the speed of a remedial course—so that the typically hard-working music student need not lose an entire semester or year because of a lack of rote fundamentals learning. Similarly, a CAI fundamentals application may be productively coupled with fundamentals boot camp; with procedural learning taking place in a CAI environment, student-instructor interaction may focus on the conceptual, higher-level elements of fundamentals described above. A CAI fundamentals application may similarly be used in a music theory course for non-majors: by offering a drill-and-practice fundamentals tool in the opening weeks of the course, the instructor frees up more course time for higher-level music-theory topics—the holistic concepts that are most rewarding for student and instructor alike.

The CAI platforms outlined above offer an effective and immediately available response that promises to narrow the fundamentals gap significantly, if not completely, and I strongly recommend that we as music theory instructors adopt this technology in its most useful roles—reaching and assisting students before they set foot in the theory classroom. And should we find one

or more shortcomings with otherwise serviceable CAI applications that we're considering for use, I suggest that we contact the developers of these applications; in many cases, they are current or former music instructors like ourselves, and their dedication to develop these tools may be partially repaid by our suggestions and case studies. As these platforms continue to develop, and as our understanding and implementation of them improves with experience, we may begin to create an environment in which incoming students can address their skills needs individually and fully participate in the music classroom.

Errata...

Due to production errors, the following changes should be made in Austin Gross' article "The Improvisation of Figuration Preludes and the Enduring Value of Bach Family Pedagogy":

I. Carets should be added above the following scale degree numbers:

3-4-4-3 (p. 24, bottom)

1-1-7-1 and 5-6-7-8 (p. 25, top)

"global 5" and "global 3" (p. 33)

II. Carets should be removed from the following integers:

5-6-7-8 strand (p. 26, bottom)

8-5 tetrachord (p. 27, top)

CONTRIBUTORS

David Beach is professor emeritus of music theory and former dean of the Faculty of Music, University of Toronto. Recent publications include *Advanced Schenkerian Analysis* and *Analysis of 18th- and 19th-century Music in the Classical Tradition* (co-authored with Ryan McClelland). He is currently co-editing two volumes of analytical essays, *Bach to Brahms: Essays on Musical Design and Structure* and *Explorations in Schenkerian Analysis*., and long range, he plans a volume on Schubert's Late Instrumental Music.

Guy Capuzzo is Associate Professor of Music Theory at the University of North Carolina (Greensboro) and the author of Elliott Carter's *What Next?: Communication, Cooperation, and Separation* (University of Rochester Press, 2012).

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Carla Colletti is Assistant Professor of Music and Director of the Bachelor of Arts program in Music at Webster University in Saint Louis, Missouri. She holds a Ph.D. from the University of Iowa, and her research interests include music theory and aural skills pedagogy, the music of Francis Poulenc, fin de siècle Europe, and connections between art, music, and poetry. She also performs in the Saint Louis area as an oboist.

Scott Dirkse is a doctoral student at the University of California, Santa Barbara. A Nationally Certified Teacher of Music, Dirkse holds degrees in performance, pedagogy, and musicology. He has taught theory courses for both majors and non-majors and has presented his research at the national conferences of MTNA, NCKP, and CMS.

Samuel Ng is Associate Professor of Music Theory at the College-Conservatory of Music, University of Cincinnati, where he regularly teaches courses on performance and analysis, rhythm and meter, and advanced musicianship. His research has appeared in *Music Theory Spectrum*, *Theory and Practice*, *Intégral*, *Indiana Theory Review*, and *Music Theory Online*.

Gregory Ristow is Assistant Professor and Director of Choral Activities at the DePauw University School of Music; he also directs the high school women's chorus and teaches Eurhythmics and music theory for voice majors at the Interlochen Arts Camp. Previously, he taught Eurhythmics and aural skills at the Eastman School of Music, and directed the choirs and taught ear training at Lone Star College-Montgomery, a community college.

Nancy Rosenberg received her A.B. in Music & Comparative Literature from Brown University, holds an M.A. in Musicology from Boston University, and a Doctorate in Music Education from Boston University. She has taught classes in Musicianship and Music Theory at Brown University, and has served as faculty in Brown's Applied Music program in Voice since 1995, specializing in jazz and popular music. Currently, Dr. Rosenberg teaches courses in Musical Theater and Aesthetics at Roger Williams University, where she serves as Music Director for the Musical Theater program. Her composing credits include five full-length musicals and thirteen musical plays for children, several of which are published by Anchorage Press/Dramatic Publishing. Dr. Rosenberg has also worked as composer, sound designer, arranger, and producer on numerous commercial projects for children, among them a book/CD set for *Kindermusik*, as well as various best-selling children's software titles for Sesame Workshop.

Kathy Thomsen is Associate Professor at Hamline University where she teaches piano, music fundamentals, and conducts the Women's Chorale. In the summer she teaches Dalcroze Eurhythmics in the Graduate Programs in Music Education at the University of St. Thomas, and also at the Wisconsin Center for Music Education. She is immediate past-president of the Dalcroze Society of America, and Secretary / Treasurer of the newly-formed American Eurhythmics Society.

Diane Urista teaches music theory, aural skills, and music analysis to undergraduate and graduate students at the Cleveland Institute of Music. She received her PhD in music theory from Columbia University, and is currently writing a book based on eurhythmics titled, "The Moving Body in the Aural Skills Classroom," under contract with Oxford University Press.

Mark Yeary is an Assistant Professor of Music Theory at the University of Louisville School of Music. He received his Ph.D. in 2011 from the University of Chicago; his dissertation, "Perception, Pitch, and Musical Chords," examines how our perception of pitch simultaneities shapes our musical concepts and experiences. He has presented his research at meetings of the Society for Music Theory, the Society for Music Perception and Cognition, Music Theory Midwest, and the International Conference for Music Perception and Cognition. His research interests include the analysis of unusual sonorities in the works of the 20th century, the empirical investigation of hearing and categorizing chords, the roles of timbre and context in the aural pedagogy of harmonic music, and the cultural and psychoacoustic exegesis of recorded popular and art musics of the late 20th century.

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.
2. Manuscripts should be sent electronically, in .pdf format, to: Dr. Alice Lanning at alanning@ou.edu. Submissions should be in 12-point type, double-spaced (including footnotes, references, and quotations), with at least one-inch margins. Footnotes, tables, figures, musical examples, and other material should be inline with the text. Long musical examples and complex diagrams or charts should be avoided when possible.
3. Upon agreement to publish, authors may be required to revise the article to fit the style guidelines of the journal (*Chicago Manual of Style*). Authors will provide a one-paragraph abstract summarizing the article's content.
4. The author is responsible for obtaining permission to reproduce copyrighted material and for paying permission fees, if necessary. Permissions must accompany the electronic submission of accepted manuscripts.
5. The author is responsible for providing camera-ready copy for all non-text items, and for insuring that all tables, figures, musical examples, and other material are legible when reduced to 4-1/2" x 7" dimensions. This material should also be submitted electronically if possible. (PDF format preferred)
6. Manuscripts are accepted on the condition that they are unpublished and are not presently being submitted for publication elsewhere. Since all submissions are reviewed anonymously, please include the author's name and address only in the cover letter and eliminate identifying references (such as names of schools) from the article.
7. Other correspondence may be addressed to:

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