

Beyond Chord-Scale Theory: Realizing a Species Approach to Jazz Improvisation

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Collegiate instruction in jazz improvisation is typically given in two places: the jazz theory classroom and private lessons. In both contexts, one of the first concepts taught is the relationship between chord and scale.¹ I distinguish the term “scale” in the classical sense from the term “chord scale.” The former refers to a stepwise collection of pitches that expresses a tonal center. The latter refers to a stepwise collection of pitches that melodically expresses a chord. A harmonic progression such as I→ii→V7→I contains all of the pitches in a major scale, and the progression could easily support a melody that expresses all of the pitches of that scale. Classical theory holds that one scale accounts for the harmonic and melodic organization of the whole progression. By contrast, jazz pedagogy recognizes a succession of “chord scales,” one for each chord. Chord-scale theory teaches students to make harmonically informed melodic improvisations by enforcing one-to-one relationships between chords and scales.

Chord-scale theory is the cornerstone of instruction in jazz improvisation. It begins by associating seventh chords, such as the ii7 and V7, with corresponding diatonic modes (in this case, Dorian and Mixolydian). When improvising over progressions of diatonic seventh chords, students are advised to use the appropriate chord scales, switching them as the chords change. After students became proficient at this, they learn to apply altered and non-diatonic scales to altered and non-diatonic harmonies. At every level of skill the approach is the same: students must change scales—thereby changing their melodic orientations—along with the changing chords.

My use of the term “chord-scale theory” might imply that there is a definitive approach to teaching jazz improvisation, or that chord-scale theory is clearly and indisputably defined in some work by a single author. In truth, there are many different works on the subject

¹ In this article, the terms “scale” and “chord scale” refer to both scales and modes.

by authors from different generations.² My criticisms of chord-scale theory pertain to its limitations as a conceptual approach for teaching improvisation. These criticisms address the pedagogy on a very general level, and are broad enough to apply to all works on the subject.

This article should be helpful to any instructor of jazz theory who has noticed the surprising number of students who understand chord-scale relationships perfectly well but still cannot begin to improvise the types of lines that occur in bebop performances. I believe there is a disconnect between the prevailing theory of improvisation pedagogy and the practice of jazz performance. It is a disconnect that becomes evident once a student has memorized a number of chord scales but cannot connect one to another in real time. Barry Velleman's "Speaking of Jazz: Teaching Jazz Improvisation through Linguistic Methods" describes the problem succinctly: "current materials for teaching jazz improvisation rarely succeed at bridging the gap between executing learned patterns and creating spontaneous variations."³ Bridging Velleman's gap requires knowledge of chord *connections*, and proficiency in this area does not come directly from studying chord-scale theory.

Part one of this article discusses two ways in which this teaching approach fails to prepare musicians for jazz improvisation. The first involves the discrepancy between the upper extensions of 9th, 11th, and 13th chords and the melodic pitches that soloists use to improvise

² For a representative sampling, see David Baker, *How to Play Bebop*, vol. 1, and *The Bebop Scales and Other Scales in Common Use* (Bloomington, IN: Frangipani Press, 1985), and *Jazz Improvisation: A Comprehensive Method for All Musicians*, Revised ed. (Van Nuys, CA: Alfred Publishing, 1988); Jerry Coker, *Jerry Coker's Complete Method for Improvisation: For All Instruments*, rev. ed. (Miami, FL: Warner Bros. Publications, 1997); Dan Hearle, *The Jazz Language* (Miami, FL: Warner Bros. Publications, 1980); Richard Lawn and Jeff Hellmer, *Jazz Theory and Practice*, 2nd ed. (Van Nuys, CA: Alfred Publishing, 1996); Mark Levine, *The Jazz Theory Book* (Petaluma, CA: Sher Music Co., 1996); John Mehegan, *Jazz Improvisation 1: Tonal and Rhythmic Principles* (New York: Watson-Guption Publications, Inc., 1959); Scott D. Reeves, *Creative Jazz Improvisation*, 4th ed. (New Jersey: Prentice Hall, 2006) and *Creative Beginnings: An Introduction to Jazz Improvisation* (New Jersey: Prentice Hall, 1997); and George Allan Russell, *The Lydian-Chromatic Concept of Tonal Organization for Improvisation, All Instruments* (New York: Concept Publishing Corp., 1959).

³ Barry Velleman, "Speaking of Jazz: Teaching Jazz Improvisation through Linguistic Methods," *Music Educators Journal* 65 (1978): 28-31.

upon them. The second involves the failure of chord-scale theory to distinguish between a melody whose pitch content relates to the *sounding* chord, and one whose pitches relate to a chord that is *about* to sound. I provide some analyses that illustrate relationships between jazz melody and jazz harmony that should enable jazz theory students to create more idiomatic bebop melodies.

The second part of this article goes beyond chord-scale theory and offers a pedagogy for jazz improvisation in six species, informed by the analyses in part one. It draws from several conceptual approaches to jazz analysis and pedagogy including guide-tone lines, Shelly Berg's "goal-note Method," and criteria gleaned from Richard Hermann's "Charlie Parker's Solo on Ornithology: Facets of Counterpoint, Analysis, and Pedagogy," offering an alternative methodology that addresses deficiencies of chord-scale theory.⁴ My method focuses on chord connections by gradually introducing rules for melodic motion over typical bebop harmonic progressions as rhythmic and melodic textures become more complex. The progression of species helps students to understand how the essential tones of sounding harmonies relate to those of approaching harmonies. It also helps them to see how less essential tones may be used in embellishing contexts.

Part I

Chord-scale theories often mislead students into thinking that there is a chord for every scale and a scale for every chord, or what is worse, that at some level of abstraction, it is practical to regard a fully extended chord (root through 13th) and a scale as the same thing.⁵ Such theories often graft Mixolydian and Ionian modes onto V chords and I chords, respectively. But chords with major thirds usually take augmented 11ths as extensions, as P11ths create unpleasant dissonances against major thirds. Example 1 shows how the generally accepted arrays of extensions for dominant seventh and major seventh chords actually correspond to the Lydian

⁴ Shelly Berg, *Jazz improvisation: The Goal-Note Method: A Comprehensive, Programmed Guide to Jazz Theory and Improvisation*, 2nd ed. (New York: Kendor Publishing, 1998); Richard Hermann, "Charlie Parker's Solo to 'Ornithology': Facets of Counterpoint, Analysis, and Pedagogy," *Perspectives of New Music* 42, no. 2 (2004): 222-262.

⁵ See, for example, Levine, *Jazz Theory*, 33.

dominant and Lydian modes, respectively.⁶ However, Ionian and Mixolydian remain acceptable options for soloists, as their P11ths can resolve over the course of a melodic line without conflicting with the voice-leading function of any structural chord tones. The tertian structures of chords naturally restrict upper extensions, but jazz improvisors exercise considerable latitude in the melodic expression of underlying harmonies. Such license is analogous to the melodic insertion of non-chord tones in traditional harmony.

The image shows two staves of music. The top staff is labeled 'G13' and shows a G13 chord voicing (G, B, D, F, A, C) followed by a melodic line: G, A, B, C#, D, E, F. The bottom staff is labeled 'CMaj13' and shows a CMaj13 chord voicing (C, E, G, B, D, F, A) followed by a melodic line: C, D, E, F, G, A, B. The label 'C Lydian scale' is placed above the second staff.

Example 1 - G Lydian Dominant scale.

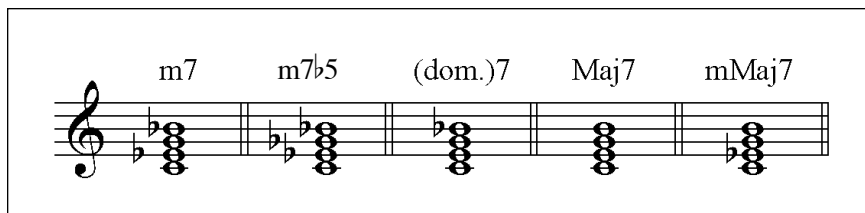
Some chord-scale theories seem to account for differences between allowable melodic tones and allowable chord tones.⁷ However, certain of these authors maintain that the one-to-one correspondence exists and simply treat problematic tones as exceptions. For example, Mark Levine's *Jazz Theory Book* insists that scales are horizontalized chords, but points out that one should avoid tones of scales that should not occur in chord voicings, such as P11th in major seventh and dominant chords.⁸ The assertion that scales somehow generate fully extended chords (or vice-versa) leads to cumbersome taxonomies of scale types and overly specified chord categories. I propose a conceptually neutral space where a

⁶ The Lydian dominant scale is the fourth mode of the jazz minor scale. The jazz minor scale is equivalent to the ascending form of the melodic minor scale (sometimes referred to as "the acoustic collection"). A Lydian dominant scale on G would consist of the pitches G, A, B, C#, D, E and F.

⁷ Lawn and Hellmer, *Jazz in Concept and Practice* is especially sensitive to this difference, as the authors deal with allowable extensions and chord-scale relationships in different chapters. See also Baker, *How to Play Bebop*; Levine, *Jazz Theory*; and Reeves, *Creative Jazz Improvisation*.

⁸ See Levine, *Jazz Theory*, 34-37 and Reeves, *Creative Jazz Improvisation*, 37-38.

chord symbol's core arpeggio of root, third, fifth, and seventh is a suitable anchor for pitch-class correspondence between harmony and melody. Example 2 shows core arpeggios of the five basic chord types that constitute the harmonic language of bebop: minor seventh, half-diminished, dominant seventh, major seventh, and minor major seventh.⁹



Example 2 - Core arpeggios of the five basic chord types.

Example 3a, a passage by Charlie Parker, demonstrates the utility of core arpeggios.¹⁰ Example 3b represents the pitch-class content of the passage as a linear collection of pitches. The core arpeggio tones of the sounding D7 chord are hollow note heads, while intervening tones are darkened. This representation helps illustrate how less structural pitches relate to core arpeggio tones.

Example 3 - Charlie Parker, "Red Cross," 1st solo chorus, mm. 17-18.

Steve Larson's "Schenkerian Analysis of Modern Jazz: Questions About Method" and Steven Strunk's "Bebop Melodic Lines: Tonal

⁹ Readers may wonder why the diminished seventh chord is not listed here, as p. 20 of Mehegan's, *Jazz Improvisation* cites it as a basic chord type. The reason is that the chord commonly functions as a rootless dominant ninth chord. In most other contexts, it functions as a common-tone diminished chord.

¹⁰ *The Charlie Parker Omnibook* (Atlantic Music Corp., 1978), 67.

Characteristics" argue that the upper extensions of chords in modern jazz are best understood as stepwise displacements of more structural tones.¹¹ Henry Martin's "Charlie Parker and Thematic Improvisation" makes a similar argument for the interpretation of jazz melody: "In bebop melodic lines, passing and neighbor tones, as the most familiar non-chord tones from standard tonal theory, are ubiquitous and should be understood as structurally dependent on the chord tones they connect."¹² Some readers may find it helpful to conceptualize passages like that of Example 3a in terms of Schenkerian diminution and structural levels, with the core arpeggio existing in the background, and the melodic pitches of the foreground creating paths between them. We should not view the array of notes in Example 3b as a scale. Example 3b maps the pitch content of the passage onto two levels of pitch-class space, and it shows the relationship between these levels in a convenient, linear fashion. Example 3b illuminates the function of the upper neighbor E $\flat$ major arpeggio (see the black notes) in a way that the nonetheless accurate chord-scale designation "harmonic minor, mode V" does not.

Example 4a presents a passage by tenor saxophonist Harold Land.¹³ Example 4b (next page) illustrates how the pitch-class content of Land's melodic line relates to the sounding harmonies, but it models this relationship differently than Example 3b. Example 4b attempts to arrange the pitch classes that occur over each chord into chord scales. To make complete chord scales with members on every scale degree, it interpolates pitches that do not actually occur in the passage. Given the viability of both perfect 11ths and raised 11ths in chord scales for dominant seventh chord types, it allows either C or C $\flat$ in the pitch-class collection that sounds over the G $\flat$ 7 chord. It allows G $\sharp$ in the B7 chord scale. This is a more likely choice given the two most popular chord scales for this chord type, Mixolydian and Lydian dominant. The abundance of pitches

¹¹ Steve Larson, "Schenkerian Analysis of Modern Jazz: Questions About Method," *Music Theory Spectrum*, 20, no. 2 (1998): 212; Steven Strunk, "Bebop Melodic Lines: Tonal Characteristics," *Annual Review of Jazz Studies* 3 (1987): 97-98.

¹² Henry John Martin, *Charlie Parker and Thematic Improvisation* (Lanham, MD: Scarecrow Press, 1996).

¹³ Example 4 is transcribed from The Clifford Brown and Max Roach Quintet, *Brown and Roach Inc.*, EmArcy 814 644-2, © 1954 PolyGram Records, Inc.

The image contains four staves of musical notation, labeled 4a, 4b, 4c, and 4d. Staff 4a shows a melodic line in G-flat major (three flats) with a G-flat 7 chord indicated above the first measure and a B 7 chord indicated above the fifth measure. The melody includes a triplet of eighth notes in the fifth measure. Staff 4b shows a collection of pitches, some with accidentals, including a double-sharp sign. Staff 4c shows a melodic line with a long slur over several notes. Staff 4d shows a melodic line with a long slur over several notes, including a double-sharp sign.

Example 4 - Harold Land, "Stompin' at the Savoy," 1st solo chorus, mm. 17-20

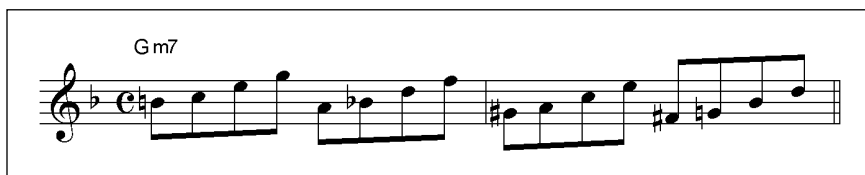
in both of the collections illustrated in Example 4b suggests that the pitch content of either measure should not be considered in terms of scales. Although both collections occur over chords of the same type, and contribute equally to a line of surprising continuity, when viewed as scales, the differences between these collections are striking. It seems unnecessarily complicated to describe Land's approach to inventing this phrase as marked by a dramatic change of chord scales at its halfway point.

The pitches in these collections do not even follow some of the rules of chord-scale theory. In measure 17, for instance, G $\flat$ occurs over a G $\flat$ 7 harmony, a juxtaposition that conflicts with the true chord seventh, F $\flat$. Notice (in Example 4a) that the G $\flat$ is even followed by a leap. The pitch presents no conflict to the listener, however, as it is part of a larger enclosure of F $\flat$. Example 4c illustrates. Since all of the pitches that occur over the G $\flat$ 7 chord do not function at the same structural level, it is not necessary to consider them as some alternative chord scale or as the linearization of some ultra-chromatic chord. Similarly, over mm. 19 and 20 of Example 4a, we see that when the pitches C $\sharp$, E, and F occur, they are not alterations *per se*; that is, they do not function within the overall voice-leading scheme of the B7 chord. Example 4d shows how they form local embellishments that resolve within the sounding chord to D $\sharp$, a tone of the core arpeggio. For this reason, it is of little pedagogical or analytic value to consider these pitches part of some altered dominant scale on B.

Other infractions occur in Examples 5 and 6, excerpts from a Charlie Parker solo.¹⁴ At Example 5, B $\flat$ clashes with a Gm7 chord. At Example 6, B $\flat$ sounds against the same chord as an incomplete lower neighbor to the first of a descending sequence of arpeggios. While chord-scale theorists across the board proscribe playing tones that create such dissonances against sounding chord structures, these very dissonances characterize the bebop style by implying chromatic lines that lie just beneath the surface.



Example 5 - Charlie Parker, "Ah-Leu-Cha," 1st solo chorus, mm. 25-6

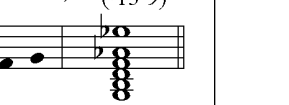


Example 6 - Charlie Parker, "Ah-Leu-Cha," 2nd solo chorus, mm. 9-10

There is no distinction between regular and altered dominant chords at the level of the core arpeggio. Chord-scale theories often distinguish between these, assigning modes such as Mixolydian or Lydian dominant to the unaltered type, and jazz minor mode VII to the altered. Some authors recognize more types of altered dominants that correspond directly to scales or modes, such as harmonic minor mode V, and the whole-tone and octatonic collections.¹⁵ See Example 7 (next page). But players often create lines over dominant chords that are not adequately accounted for by any of these types. It is sufficient to recognize that 9^{ths}, 11^{ths} and 13^{ths} are elastic; altered or not, we hear them as neighbors to core arpeggios tones and not necessarily as parts of a scale.

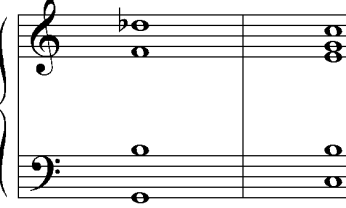
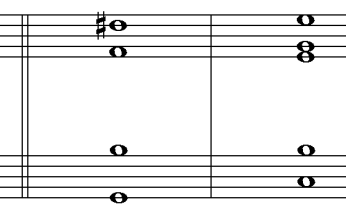
¹⁴ *Omnibook*, 87-88.

¹⁵ See, for example, Levine, *Jazz Theory*, 70-72, 81-94, or Reeves, *Creative Jazz Improvisation*, 209-216, 225-229.

G Super Locrian (jazz minor mode VII)	G7 $\flat 5^{\sharp 9}$ $\sharp 11^{\flat 13}$	G Phrygian Dominant (harmonic minor mode V)	G7 ($\flat 13^{\flat 9}$)
   			
G Whole Tone	G7 ($\sharp 5^{\sharp 11}$ $\flat 13$)	G Octatonic, or diminished	G7 ($\flat 9$ $\sharp 9^{\sharp 11}$)
   			

Example 7 - Altered dominant scales and their corresponding chords

Dominant seventh chord symbols often tell improvisors to alter fifths by raising or lowering them one semitone. However, the functions of lowered fifths are usually better understood as raised 11ths. Similarly, raised fifths are usually better understood as lowered 13ths. In other words, if we do hear the pitches that occur in improvised lines above a sounding chord in relation to the nearest tone of that chord's core arpeggio, we should usually hear the pitches a semitone away from the fifth above a chord root as tendency tones against this more structural tone. When the fifth of a dominant chord is truly altered, its function is best understood in light of the chord that is about to sound. The D $\flat$ in Example 8a is a true lowered fifth that resolves to the root of the subsequent tonic chord. Similarly, the D $\sharp$ in Example 8b is a true raised fifth that resolves upward to the third of the subsequent chord.

8a	G7($\flat 5$)	C Maj7	8b	G7($\sharp 5$)	C Maj7
 					

Example 8 - The functions of true altered fifths

This brings us to my second problem with chord-scale theory, which is that it does not encourage analysts to differentiate between pitches in a line that relate to a *sounding* chord and those that relate to a chord that is *about* to sound. I refer to the former relationship as an “immediate context,” and the latter as a “target context.” This problem also requires us to consider structural levels. See Example 9, a passage from Charlie Parker’s solo on “Thriving from a Riff.”¹⁶

Example 9 shows a melodic line in C minor over three chords: C m7, F7, and B $\flat$ Maj7. The melody consists of the notes E, F, G, and A. The F7 chord is marked with a natural sign over the F note.

Example 9 - Charlie Parker, “Thriving From a Riff,” 2nd solo chorus, mm. 10-11

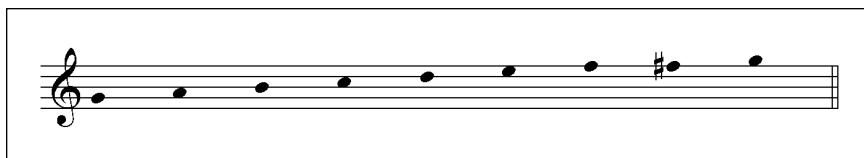
In this ii-V-I progression, Parker plays an E that conflicts with both pre-dominant and dominant chords. By leaping away from the dissonance, Parker heightens our awareness of the conflict it creates in an immediate context. But in a target context, this tension is part of a larger enclosure of F $\sharp$. When F $\sharp$ sounds, it does so as the fifth of the tonic chord. In Example 10, an excerpt from another Charlie Parker solo, the sequence of pitches A $\flat$, F, F $\sharp$ in the last three eighths of bar 24 forecasts a resolution that listeners expect to hear over a tonic harmony.¹⁷ Example 10b shows how these pitches serve a clear voice-leading purpose as part of an enclosure of the fifth of the following chord, C major. It makes little sense to fit the cluster of pitches A $\flat$, G, F $\sharp$ and F into a dominant chord scale on G.

Example 10a shows a melodic line in D minor over three chords: D m7, G7, and C Maj7. The melody consists of the notes D, E, F, G, A, and B. Example 10b shows a close-up of the final three eighths of bar 24, highlighting the sequence of pitches A $\flat$, F, and F $\sharp$.

Example 10 - Charlie Parker, “Yardbird Suite,” 1st solo chorus, mm. 24-25

¹⁶ *Omnibook*, 61.

¹⁷ *Omnibook*, 9.



Example 11 - The bebop scale, on G

The F# at the end of the first measure of Example 10 would not normally occur in a G7 chord scale for fear of it conflicting with the V7 against which it is set. However, some chord-scale theorists allow the pitch in a collection known as the bebop scale. Example 11 shows its most popular form. Chord-scale theorists often mention this scale, stipulating that players must treat the raised seventh in passing.¹⁸ This stipulation does hint at a perspective of jazz melody that admits more than one structural level, but even this broadened perspective cannot account for the present example, where the melodic goal of this short gesture is a single pitch over another chord. Furthermore, the bebop scale does not account for the A $\flat$, which is clearly part of the same gesture that contains F and F# and not a member of another chord scale that was abandoned in mid-phrase.

Example 12 - Clifford Brown, "Stompin' at the Savoy." 1st solo chorus, mm. 4-8

¹⁸ Levine, *Jazz Theory*, 171-179 takes a general approach to the concept, defining a bebop scale as any "traditional scale [or mode] with an added chromatic passing note" (171). Reeves, *Creative Jazz Improvisation*, 52-66, discusses the "bebop 7th" scale, which corresponds exactly to Example 11. He observes the practice of using the scale to enclose pitches in immediate contexts (55). Baker, *How to Play Bebop* vol. 1 is the most comprehensive work on the topic. His approach is as general as Levine's; like Reeves, he discusses enclosures. None of the authors, however, discuss the function of the bebop scale in target contexts.

Example 12 is a passage from Clifford Brown's solo to "Stompin' at the Savoy."¹⁹ Although certain pitches in his line violate rules of chord-scale theory, the melody is still sensible and harmonically unambiguous. While B $\flat$ 7 sounds, the A $\sharp$ resolves upward to the fifth of the E $\flat$ m7 chord in m. 5. Likewise, the G $\sharp$ (m. 5) that sounds over E $\flat$ m7 is a leading tone to the dominant chord that follows. Chord-scale theories would proscribe such pitches, causing some to conclude that they create harmonic conflicts. But throughout Example 12, chromatic melodic tones between seventh chords create reasonable amounts of melodic tension, and melodic tension can be different from harmonic tension. Brown's approach to constructing bebop lines is sensitive to this difference, and this sensitivity allows him to improvise in a style that experienced listeners of jazz recognize as harmonically informed, but melodically driven. Although Brown developed his style well before the advent of any codified chord-scale pedagogy, his lines demonstrate how one can bridge the gap between current jazz pedagogy and musical practice.²⁰ Part II of this study offers an instructional method for jazz improvisation that introduces rules of voice leading and dissonance treatment in a way that develops within each student an understanding of the difference between incidental dissonance at the melodic level and essential dissonance at the harmonic level.

Situations that involve this failure to distinguish between immediate and target contexts are not limited to singular "wrong notes" like major 3rds on minor chords and major 7^{ths} on dominant and minor seventh chords. Example 13a shows mm. 2-7 of Cannonball Adderly's solo on Thelonious Monk's "Straight, No Chaser,"²¹ illustrates a relatively expansive target context. Several pitches in measure 4 are heard entirely in anticipation of the B $\flat$ 7 chord at bar 5. These pitches do not necessarily constitute a viable chord scale for F7. The tension created by the initial pitch, C $\sharp$, creates an expectation for D $\flat$, the third of the approaching B $\flat$ chord. This expectation is not satisfied until m. 6, after every other pitch in the aggregate has sounded. The pitch content of mm. 4 and 5

¹⁹ Brown and Roach, *Brown and Roach Incorporated*, 1954.

²⁰ The first published work on chord-scale theory is generally recognized as George Allan Russell's *Lydian-Chromatic Concept*, published in 1959. However, John Mehegan's *Jazz Improvisation*, 84-98, of the same year, addresses the topic on a more rudimentary level.

²¹ The Miles Davis Sextet, *Miles and Monk at Newport*, Columbia, CL 2178, © 1964 Columbia Records.

sets up an expectation for the third of the approaching chord by passing toward this goal in two directions at two levels of structure. Example 13c illustrates. A line of tones extends downward from C#5 to Eb4, spanning an augmented sixth. The resolution of Eb4 to D4 implies a resolution of C#5 to D5, and this allows a continuation of the ascending chromatic line that passes from C5 (m. 2) through C#5 (m. 4) to an implied D5 (m. 6) at a higher level of structure.

Example 13 - J. "Cannonball" Adderly, "Straight, No Chaser," 1st solo chorus, mm. 2-7

Part II

I have discussed the problems above mainly in terms of the challenges they present for analyses informed solely by chord-scale theories. If chord-scale theory is inadequate to the task of explaining typical bebop lines, then surely it is not up to teaching students how to play them. This section of the article confronts the larger problem of instruction in improvisation. When chord-scale theories verticalize scales or modes, they isolate tones from the contexts that define them. This is why the novice will not understand how to resolve the "altered" pitches of an altered dominant chord scale by simply practicing the scale. But we can teach students to be aware of the tension any melodic tone would create against the core arpeggios of sounding and approaching chords.

Henry Martin's "Charlie Parker and Thematic Improvisation," Steve Larson's "Schenkerian Analysis of Modern Jazz," Steven Strunk's "Bebop Melodic Lines: Tonal Characteristics" and Richard

Hermann’s “Charlie Parker’s Solo to Ornithology” argue for the analytical value of considering bebop lines in terms of structural levels.²² I would add that there is also great *pedagogical* value. A species model for improvisation with various levels of rhythmic and voice-leading activity helps musicians to conceptualize the structural hierarchy of bebop lines. Example 14 gives a model for instruction in jazz improvisation in six species. Before progressing through the species, students should know the major and minor scales in every key. While all of the species in the model except the first use chromatic rather than diatonic space, one should still be aware of the differences in tension that chromatic tones create. Equally important are the core arpeggios of all chord types, such as those listed in Example 2. Students should also be sensitive to the hierarchy of functions in the jazz cycle, a term that refers to the ii-V-I progression that pervades bop harmony, as well as the half-cycle, which refers to the ii-V harmonic pattern with no following tonic.

Description	
1	conjunct motion, core arpeggio tones only
2	conjunct motion, leaps of a third, passing and neighbor tones
3	conjunct motion and small leaps, enclosures
4	compound melody, leaps between structural or non-structural tones
5	conjunct motion and small leaps, alterations of chord fifths in special cases
6	compound melody, alterations of chord fifths, eighth-note triplets

Example 14 - Model for Instruction in Jazz Improvisation

“Cantus firmi” are cycles in major and minor, and they can range from solitary jazz cycles to chains of half cycles that ultimately lead to a full cycle. In all but the last species, students must begin on core arpeggio tones and must resolve to core arpeggio tones of tonic chords by the final pitch. As the sounding chord’s core arpeggio

²² Henry Martin, *Charlie Parker and Thematic Improvisation* (New Jersey: Scarecrow Press, 1996). To an extent, Hermann proposes some didactic application of his own species model for instruction in jazz performance (pp. 248-249).

is always structurally superior in an immediate context, all other pitches can be said to create a type of dissonance. There is therefore no difference between chromatic and diatonic dissonances, although the familiarity with diatonicism that comes from listening to and playing tonal music (and from the inescapable influence of the modern use of Greek modes in typical jazz pedagogical resources) will undoubtedly influence students' intuitions. By eliminating the terminological distinction between diatonic and chromatic, students will gain a more realistic understanding of harmonic conflicts (an inevitability in jazz at all skill levels) and they will develop a more practical sensitivity to them. They will learn to conceptualize their improvised lines in terms of both immediate and target contexts, as defined above.

Let's consider some sample exercises. Example 15 is a first species exercise. In this species, the player must use whole notes in stepwise motion. (Outside of a specific diatonic framework, "stepwise" refers to melodic movement by whole tone or semitone). The purpose of this species is to develop an awareness of structural voice leading. For this reason, only tones of core arpeggios may sound at this level of rhythmic activity. Exercises in first species can produce the types of linear intervallic patterns we often hear in tonal music, such as 10-7-10 (a progression of intervals between an upper voice and a bass voice that consistently alternates between 10^{ths} and 7^{ths}) and 5-8-5.

Example 15 - species one

In second species, two notes sound over each harmony, only one of which must be a member of the sounding chord's core arpeggio. This species, along with all subsequent species, allows passing and neighbor tones. Second species also allows leaps between adjacent core arpeggio tones. The improviser must follow leaps by stepwise movement in the opposite direction. Changes in direction at this level of rhythmic activity begin to produce the kinds of contours we hear in bebop melodic lines. Example 16 is in a minor key, so

pre-dominant chords are half-diminished and the tonic is a minor major seventh. Notice that the diminished 11th (A $\flat$) that sounds over Em7 $\flat$ 5 produces no aural conflict, since it resolves to G in the following bar.

Example 16 - species two

Third species features quarter notes. See Example 17a (next page). Here students should favor conjunct motion. Leaps of a third are allowed between pitches, provided they are followed by stepwise motion in the opposite direction. As this pitch space is not specifically diatonic, instructors should specify that thirds may be diminished, but not augmented. Leaps of a diminished third must only enclose core arpeggio tones, and motion following this leap should proceed in the opposite direction. When such leaps occur on beats three and four of a measure, they should enclose core arpeggio tones of the approaching chord. This rule facilitates enclosures like those depicted in Examples 9 and 10. As students get increasingly comfortable with the idea of enclosing pitches, they will begin to sense where to put tendency tones in their lines without being constrained by chord scales. For example, in the 4th measure of Example 17a, a student has enclosed the root of the G7 chord with A and F. This enclosure will come across somewhat weakly, and sensitive musicians will learn through experience that enclosures are stronger when at least one of the pitches is a minor second from the targeted note.

There are dangers of mistreating tension in this species. See Example 17b. Here, a student has reached a troublesome dissonance over the first chord. Hopefully, the first two species will develop sensitivity to core arpeggio tones to such a degree that situations like this would be rare. Still, this kind of conflict often happens in real jazz, as when a soloist substitutes a dominant seventh chord type for a minor seventh without telling the accompanist, or vice-versa. In this species, we can avoid conflicts like that in Example

17a

17b ...?

17c ...?

Example 17 - species three

17b by making this simple rule: core arpeggio tones may not be altered. Enforcing this rule, we see that the G# must really be an A $\flat$. As such, the student must treat the diminished third F# $\rightarrow$ A $\flat$ like an enclosure and resolve to the G natural. A line like that in Example 17c must be heard as a stepwise approach to the third of the sounding chord. Cases such as these require another rule: a melodic tone that approaches a core arpeggio tone to within a half step of it must resolve immediately. Therefore, the student cannot change direction on the A $\flat$, and must play a G on beat four. This rule applies to species three through six. There are two allowable exceptions to this rule. The first exception involves cases where the chord changes before the resolution can occur. In such a case, the melodic line should still resolve if the core arpeggio tone is common

to both chords. The second involves cases where a tone sounds as the first part of an enclosure. In such a case, the resolution must happen by the end of the next beat.

In fourth species, quarter notes occur in compound melody. See Example 18. Leaps larger than a third are allowed, but no leaps should exceed an octave in size. Leaps do not need to be balanced by opposite stepwise motion, but leaps to non-structural tones must resolve to the nearest structural tone. The melody at m. 2 observes this rule. Here, the leap from C#5 to F4 over A7 is followed by a resolution to E4. In the event that the non-structural tone is equidistant from two core arpeggio tones, the rule of opposite stepwise motion should prevail. Leaps larger than a third from non-structural tones may only happen on the downbeat of a measure, and the melody must return to the register of the non-structural tone before the end of the measure and resolve the dissonance. The melody at m. 4 observes this rule. Here, the leap from C5 over G7 creates tension against the B $\flat$ in the core arpeggio. The leap to B4 at the end of the measure resolves this tension. The rule against altering core arpeggio tones still holds. In this species, students create lines that derive meaning from target contexts. As a result, students begin to create lines that sound quite idiomatic.

Example 18 - species four

Species five features eighth notes. See Example 19 on the next page. Leaps of a third may occur between tones regardless of their inclusion in the sounding core arpeggio, provided such leaps are balanced by stepwise motion in the opposite direction. Here, augmented seconds may occur melodically when the first pitch is a core arpeggio tone and the second is a half step away from another core arpeggio tone. As augmented seconds are perceived as leaps, resolutions to the nearest core arpeggio tone must immediately follow them. The melody at m. 2 follows this rule. Here, a resolution

to C $\sharp$ follows the ascending augmented second A-B $\sharp$. These may occur anywhere on the first three beats of a measure. When an augmented second occurs on beat 4, the interval should prepare a resolution by semitone to a core arpeggio tone of the chord in the approaching measure. Students may alter core arpeggio tones in two cases. One case occurs in a target context, and involves the last beat of a measure. Here, such an alteration may sound provided it resolves in the direction in which it was altered to a structural tone of the approaching chord. In observance of this rule, the D $\flat$ in m. 4 resolves to the C in m. 5. The second exception involves an immediate context, and applies when a student approaches a chord root by way of an altered seventh, or vice-versa. The second measure of Example 15 shows the enclosure of the chord root A with the tones B $\flat$ and G $\sharp$.

Example 19 - species five

Example 20 - species six

Finally, sixth species features eighth notes in compound melody. See Example 20. In sixth species, students may begin after an eighth rest, omitting the core arpeggio tone. License is given to leap from any type of note to any other, provided that, within two eighth notes, the nearest member of the sounding chord's core arpeggio follows it. By permitting an additional eighth note to sound before resolution, sixth species allows more prolonged enclosures. See, for example, the sequence of pitches G-B $\flat$ -G $\sharp$ -A at m. 2. Another type of exception should be made when such a leap occurs on beat four of a measure, in which case a student may resolve one beat later to the nearest member of the approaching chord's core arpeggio. The melody across mm. 1-2 observes this rule, where the leap

from C to G# over Em7 is followed by a resolution to A over A7. Rules regarding alteration of core arpeggio tones are the same as they are in fifth species. Having become proficient in sixth species, students may employ eighth-note triplets, provided they outline core arpeggios and use but one triplet per measure.

As of yet, no species in this model deals with suspensions or retardations. The embellishment of suspensions and retardations involve additional layers of structure. Such complications bring the topic somewhat outside the scope of the present study. To understand the nature of suspensions and retardations in bebop improvisation in the spirit of this species model, one would have to start with something at the rhythmic level of species 1 with the melody delayed by one or two beats. A whole series of species would necessarily follow; gradually increasing in rhythmic activity while allowing more freedom in embellishing delayed resolutions.

Depending on the student, the progression of species proposed in Examples 15-20 may be fast-paced. All students, regardless of skill, will need time to assimilate the later species. As students become more sensitive to how the more structural chord tones relate from chord to chord in typical bebop progressions, the rules for leaping become less strict. In the more rhythmically active species, computer transcriptions or recorded playbacks will enable students to assess what they liked, and what they did not like. Students should be challenged to explore each species thoroughly before proceeding to the next one. They should also be encouraged to notate examples in a new species before attempting to improvise in them. Doing so will allow them to realize possibilities that they might not have played off the cuff. The next step would be for them to play what they have written in real time.

The private lesson is the optimal setting for implementing a species approach to jazz improvisation. Students would progress through the species, playing through stock progressions such as the $\text{iii} \rightarrow \text{V} / \text{ii} \rightarrow \text{ii} \rightarrow \text{V} \rightarrow \text{I}$ cycles given above. After gaining proficiency, they may apply the species method to jazz standards, choosing tunes whose harmonic progressions differ progressively by degree from the cycles given in Examples 15-19. However, as students grasp (and inescapably, transgress) new rules of voice leading and dissonance treatment, their own melodic styles will develop. For this reason, peer review is recommended, and master class or seminar settings could provide invaluable feedback. The analytical discussions in the first part of this article offer a unique analytical

perspective that can be used in the jazz theory classroom. Teachers can begin to explain transcriptions of master improvisors in terms of how they create tension around core arpeggio tones.

While these sample exercises consisted only of cycles and half cycles, students could take a species approach to parts of tunes or entire tunes from standard repertoire that are comprised of predominantly jazz-cyclic harmonic motion. And, with an extended vocabulary of core arpeggios, possibilities abound for species approaches to tunes of more recent vintage (i.e. modal tunes, such as Miles Davis's "Flamenco Sketches," tunes that combine modal harmony with more traditional jazz harmony, such as Wayne Shorter's "Ana Maria," or even more modern works by Pat Metheny, Dave Holland, or Dave Douglas). Because such studies require modification of the species model, they would be appropriate for advanced private teaching. Fortunately, the idea of mastering improvisation at levels of increasing rhythmic complexity where rules of contrapuntal engagement gradually allow freedoms is really quite elastic. It exists independently of the specific model offered here, and can be applied to a large number of "cantus firmus" types. It is also possible to use this model to embellish normative or idealized middleground structures in first species examples (such as 5-lines or 3-lines, various linear intervallic progressions) with the aim of developing lines with more formal integrity in a Schenkerian sense. Again, this option is best reserved for advanced private study.

In bebop, the voice leading that takes place melodic lines is far less restricted than the voice leading that takes place in harmonic accompaniment. The melodic resources used in improvisation are not derived from the pitches that typically occur in fully extended harmonies. Furthermore, the meaning of any tone in a line may be derived by the context of the sounding chord or by the context of the chord that is about to sound. Numerous melodic notes may occur over one harmony. And when they do, a complex of at least two structural levels usually develops. A certain degree of elasticity with regard to the rules of chord-connections-via-melody obtains in these situations (as evidenced by modern jazz practice). As teachers and players, we need to be sensitive to these situations, as they often comprise the very basis and essence of the bebop style. We cannot teach jazz improvisation with a method that recognizes the standard melodic fare of such masters as Charlie Parker, Clifford Brown, and Cannonball Adderly as anomalous. We cannot teach

jazz improvisation without taking into account the differences between structural levels, sounding and approaching chords, and also between harmony and melody. The instructional model offered here enables students to make these distinctions in real time. By developing sensitivity to the more structural harmonic tones in bebop, and understanding how they connect, more students will bridge the gap between theory and practice.

