"Giant Steps" and the ic4 Legacy

Keith Waters

John Coltrane's composition "Giant Steps," Lewis Porter reminds us, "knocked the jazz world on its ear."[1] Recorded in May 1959, it represented the summation of Coltrane's explorations in chromatic third relations, specifically harmonic progressions that quickly connected keys a major third (four semitones or ic4) apart. David Demsey, Brian Priestley, Lewis Porter, and others have teased out the many precedents for Coltrane's use of ic4 harmonic cycles, as well as their use in other Coltrane works.[2] Example 1 includes three of these, the first two of which include asterisks to show the ic4-connected arrival points. 1a includes a lead sheet to the bridge to "Have You Met Miss Jones" (which tonicizes B♭, G♭, D, and G♭). 1b includes mm. 1-4 of Coltrane's "Countdown" (a reworking of Vinson's composition "Tune Up"). It employs Coltrane's harmonic substitution formula that replaces a ii-V-I progression in a single key (in the case of "Tune Up," Em7-A7-DM7). Occurring instead is a progression that sets up rapid tonicizations of ic4-related key centers (B♭, G♭, and D), delaying the arrival of D until the final measure of the four-bar phrase. 1c comes from Nicholas Slonimsky's 1947 *Thesaurus of Scales and*

I would like to thank Henry Martin and Steve Strunk for offering suggestions on an earlier draft of this essay. I would also like to acknowledge Robert Wason's help, support, and guidance during my years as a doctoral student at Eastman and later. As this article suggests, legacies are sometimes difficult to track, but some of the lessons I tried to learn from Bob include his sensitivity to historical context, a preference for clear uncluttered prose over jargon, and an eagerness to step outside narrowly drawn disciplinary boundaries and ideas. These are only a few of his legacies that I've now tried to pass along to my students.

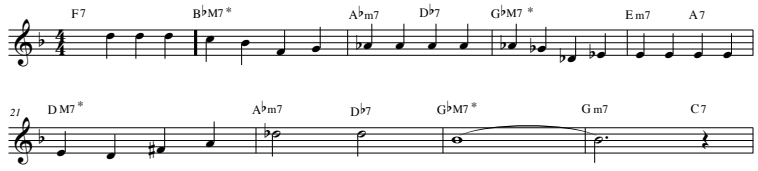
[1] Lewis Porter, *John Coltrane: His Life and Music* (Ann Arbor: University of Michigan, 1999), 145.

[2] Porter, *Coltrane*; Brian Priestley, *John Coltrane* (London: Apollo Press, 1987); David Demsey, "Chromatic Third Relations in the Music of John Coltrane," *Annual Review of Jazz Studies* 5 (1991): 145-80. See also Matthew Santa, "Nonatonic Progressions in the Music of John Coltrane," *Annual Review of Jazz Studies* 13 (2003): 13-25.

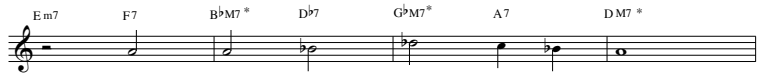
Melodic Patterns, a book from which Coltrane practiced and worked. Demsey, with the help of Robert Wason, has shown that the introduction to Slonimsky's book supplies an ic4 melodic and harmonic pattern that is the likely source of the melodic and harmonic progression in the second half of "Giant Steps."[3]

Example 1. Antecedents for (and Coltrane's uses of) ic4 progressions.

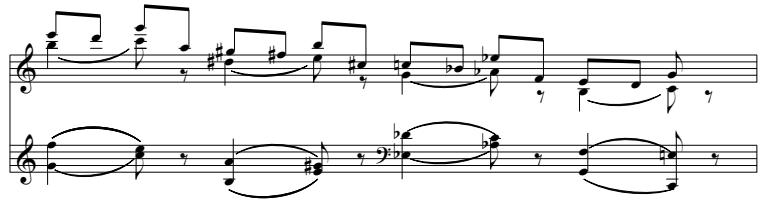
a) bridge of "Have You Met Miss Jones" (Rodgers and Hart)



b) mm. 1-4 of "Countdown" (Coltrane)



c) ic4 pattern from Slonimsky's Thesaurus



That the ic4 harmonic progressions are so systematic in "Giant Steps" even caused its composer some concern. "I'm worried," stated Coltrane in the liner notes to the album *Giant Steps*, "that sometimes what I'm doing sounds just like academic exercises…"[4] David Baker suggests that "Giant Steps" was "written in the manner of an etude;" Lewis Porter refers to it as a "thorough

[3] Nicolas Slonimsky, *Thesaurus of Scales and Melodic Patterns* (New York: Charles Scribner's Sons, 1947), vi.

[4] *Giant Steps*, Atlantic 1311.

study, an etude" on major-third relationships.[5] And by all accounts Coltrane's tour de force improvisation emerged out of the result of seemingly countless hours of practicing, providing a repository of melodic formulas that allowed the tenor saxophonist to skillfully negotiate the rigors of the harmonic progression.

Coltrane had been consistently practicing and working on ic4 harmonic cycles from 1957, and continued to use them after the "Giant Steps" recording, in 1959-60 compositions such as "Exotica," "Satellite" (based on "How High the Moon"), "26-2" (based on "Confirmation") as well as in his arrangements of "But Not for Me," and "Body and Soul."[6] Yet most jazz narratives regard "Giant Steps" as more glorious sunset than rosy dawn, the culmination and essential ending point of Coltrane's hard bop harmonic thinking. *Giant Steps*, one writer suggests, "seemed to put an end at the time to the possibilities of chord changes."[7] Thus the compositional concerns of "Giant Steps" would soon be replaced by the slower-moving or static harmonic underpinnings of his classic quartet recordings of 1961-65, including "My Favorite Things," "Acknowledgement," "India," and "Impressions," in a body of work regarded as exemplary of modal jazz.[8] For Coltrane, whatever later solutions "Giant Steps" offered were improvisational, such as the superimposition of ic4-related material over the slow-moving or static harmonies of his quartet compositions.[9] But "Giant Steps" seemed not to offer Coltrane

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[5] David Baker, *The Jazz Style of John Coltrane* (Lebanon, IN: Studio P/R, 1980): 37; Porter, *Coltrane*, 146.

[6] Masaya Yamaguchi and David Demsey include detailed descriptions of these and other compositions in *John Coltrane Plays "Coltrane Changes"* (Milwaukee: Hal Leonard, 2003), 4-7; Demsey's Appendix C (in "Chromatic Third Relations") includes other ic4 Coltrane compositions, including "Like Sonny," "Naima," and "Nita."

[7] Peter Watrous, "John Coltrane: A Life Supreme," essay contained in Carl Woideck, ed., *The John Coltrane Companion: Five Decades of Commentary* (New York: Schirmer, 1998), 61.

[8] For a detailed discussion of the term "modal jazz," see Keith Waters, *The Studio Recordings of the Miles Davis Quintet 1965-68* (New York: Oxford University Press, 2011), ch. 2.

[9] Porter describes this transition with pre-quartet compositions such as "Fifth House," during which Coltrane superimposes ic4-related harmonic progressions

ongoing compositional dividends, particularly after the formation of his quartet. Continuing to duplicate the systematic ic4-related harmonic progressions in later compositions must have seemed an artistic cul de sac.

So then *did* "Giant Steps" offer a compositional legacy of any sort? I argue here that it did, if not for Coltrane then for others, particularly in compositions recorded and released between 1961-1967, in the relatively immediate aftermath of the original 1959 "Giant Steps" recording. The compositions "El Toro" (Wayne Shorter), "34 Skidoo" (Bill Evans), "Dolphin Dance" (Herbie Hancock), and "Pinocchio" (Wayne Shorter) all—in different manners—rely on the ic4 design heard in "Giant Steps." When the first two compositions ("El Toro" and "34 Skidoo") follow the "Giant Steps" model, they do so in evident fashion. When the final two compositions ("Dolphin Dance" and "Pinocchio") follow the model, they do so more covertly and less perceptibly. None of the four compositions rely on ic4 sequences as exclusively as "Giant Steps," and in those later compositions the ic4 design operates in tandem with others. In order to assess the ways in which these four compositions draw from "Giant Steps," it is first necessary to examine "Giant Steps" in further detail.

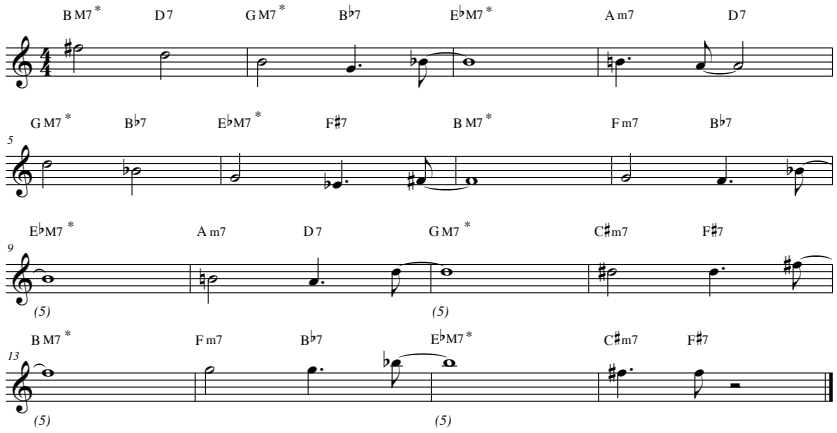
"Giant Steps": ic4 Harmonic Contour, Melodic Design, and Metric Structure

"Giant Steps" did rigorously investigate ic4 relationships. Further, it investigated those relationships in explicitly distinct ways. A lead sheet to "Giant Steps" appears as Example 2. As most jazz performers know, the 16-bar composition is a single-section

over the static pedal point of the A sections in his solo. Coltrane himself said about using sequential cycles in his improvisations above the freer and more open harmonic underpinnings with the quartet: "At first I wasn't sure, because I was delving into sequences, and I felt that I should have the rhythm play the sequences right along with me, and we all go down this winding road. But after several tries and failures and failures at this, it seemed better to have them free to go—as free as possible. And then you superimpose whatever sequences you want to over them." See Porter, *Coltrane*, 166.

composition (i.e., without a bridge or repeated internal sections) in two halves. Measures 1-8 tonicize the ic4 nodes downward in two passes. The first pass at mm. 1-4 tonicizes B, G, and E♭, the second pass at mm. 5-8 is a sequence of the opening four measures and

Example 2. "Giant Steps" (Coltrane).



tonicizes G, E♭, and B. (Asterisks indicate these ic4 nodes.) And these tonicizations appear quickly—each pass tonicizes its keys one per measure via an intervening dominant chord. In contrast, the second half of the composition tonicizes its keys upwards. Initiated by the ii-V progression at m. 8, the keys progress E♭, G, B, E♭. The m. 16 turnaround then reverses direction, impelling the motion back to B again at the top of the form. In contrast to the first half of the composition, these tonicizations in the second half appear every two bars via an intervening ii-V progression. Here the ii-V progressions appear on weak measures (mm. 8, 10, 12, 14) and the major seventh harmonies of the ic4 nodes occur on strong measures.

Thus with the downward ic4 progressions of mm. 1-8 and the upward progressions of mm. 9-16 the harmonic contour of the two halves contrasts decidedly. Each half completes the octave begun by its first chord. Measure 7 returns to B, which began the downward progressions at m. 1, and m. 15 returns to E♭, which

began the upward progressions at m. 9. As many authors have noted, the fleeting ic4 harmonic sequences make the determination of a global key difficult, but the completed ic4 cycles of B and E♭ in either half provide a type of tonal priority that outweighs G; most concur with Henry Martin, who states "since the E♭M7 chord concludes the piece, it outweighs BM7 in structural significance."[10]

Melodically, the two halves of the composition differ. The melodic sequence of mm. 9-16 (begun in m. 8), corresponding to the Slonimsky's melody in his *Thesaurus* (see Example 1c), shadows the harmonic sequence closely. The initial three-note idea (mm. 8-9) states scale degrees 3-2-5 in the key of E♭, and this pattern becomes duplicated up a major third. (This melodic sequence is foreshadowed in mm. 4-5.) The melody becomes transformed slightly to 3-3-5 for the keys of B and E♭ (mm. 12-13 and 14-15). Thus the two-bar harmonic sequences support the two-bar melodic sequences.

It is possible to consider the overall melodic motion at mm. 9-15 more simply, relative to each of the tonicized ic4 nodes. The major seventh harmonies at mm. 9, 11, 13, and 15 host the fifth of the chord and key, composing out an augmented triad (B♭-D-F♯-B♭) in lockstep with the ic4 nodes. This resultant augmented triad may be considered as a melodic paradigm, a linear intervallic pattern of consecutive fifths—5 5 5 5—in relation to the chordal roots. As we will see, this paradigm recurs in several of the later compositions under discussion.

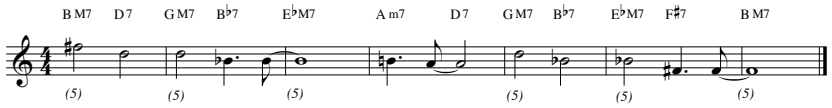
However, the melody of the first half of "Giant Steps" is not as evidently sequential as the second half. The melody in mm. 1-4 is sequenced down by ic4 mm. 5-8. Yet the consecutive ic4 nodes, supporting major seventh harmonies at mm. 1, 2, and 3 (as well as mm. 5, 6, and 7), do not support a sequential melody that

[10] Henry Martin, "Jazz Harmony: A Syntactic Background," *Annual Review of Jazz Studies* 4 (1986): 25; see also Martin's comments in *Charlie Parker and Thematic Improvisation* (Lanham, Maryland: Scarecrow Press, 1996), 10-13. David Demsey likewise proposes E♭ as the key of the piece. Goldstein, Jaffe, and Levine, in contrast, suggest B major ; Andrew Jaffe, *Jazz Theory* (Dubuque: Wm. C. Brown, 1983), 170, Gil Goldstein, *Jazz Composer's Companion* (Rottenburg: Advance Music, 1993), 19; Mark Levine, *Jazz Theory Book* (Petaluma, California: Sher Music, 1995), 353 .

obviously shadows the downward progression in this half of the composition. Example 3 provides a model for a more systematically sequential melody, one based on the 5-5-5 paradigm discussed above. In comparison with Coltrane's more elegant melodic solution, Example 3 sounds impoverished.

This also invites re-examining the melodies to the antecedents for "Giant Steps" as well as to Coltrane's kindred ic4 compositions presented in Example 1, in order to evaluate whether those melodies appear as sequential or not. The melody to the bridge of "Have You Met Miss Jones" (Example 1a) initially is sequential, with the two-bar melodic sequence corresponding to the downward harmonic contour of the two-bar harmonic sequence at mm. 17-20 (establishing the ic4 nodes of B♭, G♭, and D).[11] Yet at the arrival of DM7, marking the point where the harmonic contour reverses, the sequence ceases. The melody to Coltrane's "Countdown" is less sequential. As the harmonic contour descends, the melody ascends by ic4 at the downbeats of mm. 2-3. The melody to mm. 3-4 shadows the harmonic progression somewhat more closely, with the M7 harmonies at the downbeats of mm. 3-4 elaborating consecutive fifths. (The melody to mm. 10-12, not given here, elaborates the 5-5-5 paradigm in those three consecutive measures.)

Example 3. mm. 1-7 of "Giant Steps" transformed to include 5-5-5 paradigm.



All the above suggests that "Giant Steps" works out its ic4 routines in a number of different manners: 1) through descending and ascending harmonic contours; 2) through length of harmonic sequence (appearing every bar, every two bars, or—by comparing mm. 1-4 and 5-8—every four bars); and 3) melodic structure

[11] Further, the ii-V progressions appear on weak hypermeasures and the tonicized ic4 nodes on strong ones, like mm. 7-16 of "Giant Steps."

(which does not shadow the consecutive ic4 sequences during the first half of the composition, but does during the second half). One manner in which the ic4 sequences of "Giant Steps" are completely consistent involves chord quality: *each* of the ic4 harmonic arrival points supports major seventh harmonies. As we will see, Shorter, Evans, and Hancock adopt an underlying ic4 organization in their compositions. Yet they adapt it in distinctive ways, and these adaptations provide a window into some emerging compositional concerns of the 1960s.

"El Toro" (Wayne Shorter) and "34 Skidoo" (Bill Evans)

Shorter recorded "El Toro" with Art Blakey and the Jazz Messengers in May 1961, on the album *Freedom Rider*, with the acclaimed Messengers lineup that included Shorter, trumpeter Freddie Hubbard, and pianist Cedar Walton. Like "Giant Steps" it is a 16-bar composition, and—characteristic of many Shorter compositions—it is a single-section composition (without repeated internal sections or a bridge).[12]

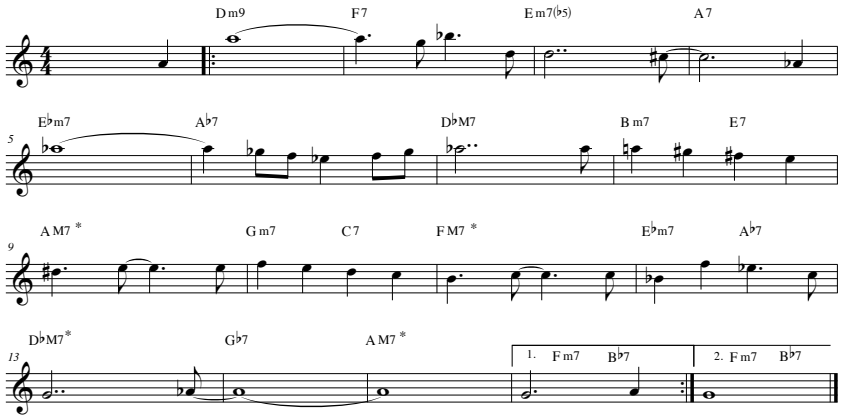
Example 4 contains a lead sheet to "El Toro."[13] The opening four-bar phrase in D minor is answered by a harmonic shift to D♭ major in mm. 5-7. The second half of the composition tonicizes a series of ic4-related major seventh chords (shown with asterisks), moving from A (m. 9), F (m. 11), and D♭ (m. 13). A returns at m. 15, but it is not explicitly tonicized with the same ii-V harmonies that tonicized the previous ic4 nodes. Like mm. 8-15 of "Giant Steps," the mm. 8-15 harmonic sequences of "El Toro" appear every two bars, the tonicized ic4 nodes occur on strong measures, and the intervening ii-V progressions on weak measures. Unlike

[12] For more on Shorter and single-section compositions, see Waters, *Miles Davis Quintet, 1965-68*, pp. 27-28.

[13] Patricia Julien discusses "El Toro" in her dissertation "The Structural Function of Harmonic Relations in Wayne Shorter's Early Compositions: 1959-63," Ph.D diss, University of Maryland, 2003, pp. 175-86. The lead sheet and some of my points are indebted to her very fine analysis.

mm. 8-15 of "Giant Steps," the harmonic contour of the two-bar sequences descends rather than ascends.[14]

Example 4. "El Toro" (Wayne Shorter).



The melodic structure of mm. 8-15 of "El Toro" begins sequentially. Measures 8-9, tonicizing A, repeat downward by ic4 at mm. 10-11, tonicizing F. The sequence becomes less exact in the following two bars that move to D♭. The melodic structure at m. 12 departs from the earlier sequence. Further, while m. 13 advances the ♯4-5 motion heard in mm. 9 and 11, it does so more leisurely, as the A♭/G♯ holds across mm. 14-15, becoming the common tone to the Amaj7 harmony at m. 15. Thus we may hear the initial ic4 nodes, with their ♯4-5 motion, as an elaboration of the 5-5-5 paradigm at mm. 9, 11, and 13. With the retained melodic common

[14] Further, the final turnaround is one that appears in a number of Shorter compositions, with a ii-V progression appearing a half-step higher than a typical turnaround. The final harmony here, a ♭VI7 (B♭7), operates as an augmented sixth harmony leading directly (without an intervening structural dominant chord) to the opening D-minor harmony at the top of the composition. Henry Martin has also suggested that the previous harmonies of G♭7 and AM7 (mm. 14-15) help establish the Fmin7-B♭7 turnaround, with G♭7 leading to Fmin7 and AM7 leading to B♭7. Private communication, March 28, 2011.

tone of A♭/G♯ at m. 15, however, that linear intervallic pattern ceases.

By foreclosing the melodic sequence at mm. 14-15, Shorter abandons the patent 8+8 measure design of "Giant Steps" in those measures. Further, this points to an interesting wrinkle, one that projects a decided degree of harmonic and formal ambiguity. The role of harmonic priority in "Giant Steps," particularly in its second half, is determined by the E♭ tonality that appears m. 9 and returns m. 15. An analogous reading of "El Toro" would establish A as taking priority in the second half of the composition: that harmony begins the second half and returns at m. 15. Such a reading might suggest this harmony to be operating as a structural dominant that ultimately points to the opening D minor of the composition.[15]

Yet there are factors that challenge the notion of A priority. The melody at mm. 14-15 does not continue the previous sequence, nor is the harmonic arrival of A at m. 15 confirmed with a ii-V progression at m. 14. In fact, the harmony at m. 14 is, as Patricia Julien states, a subdominant suffix to the m. 13 D♭M7.[16] Its function is therefore back-relating rather than forward-relating. Additionally, there are factors that undermine hearing A at m. 9 as a harmonic starting point. In fact, it is the D♭M7 at m. 7 that initiates the downward ic4 harmonic activity. In addition, the melody at m. 7 launches the 5-5-5 melodic paradigm, which continues through to the return of D♭ at m. 13, eight bars later. Example 5 is meant to show how the ic4 design is not unequivocally aligned with the 8+8 structure in the manner it is with "Giant Steps." Although the evidently sequential melodic activity begins with the pickup to m. 9, it nevertheless continues the ic4 motion already begun two bars earlier.

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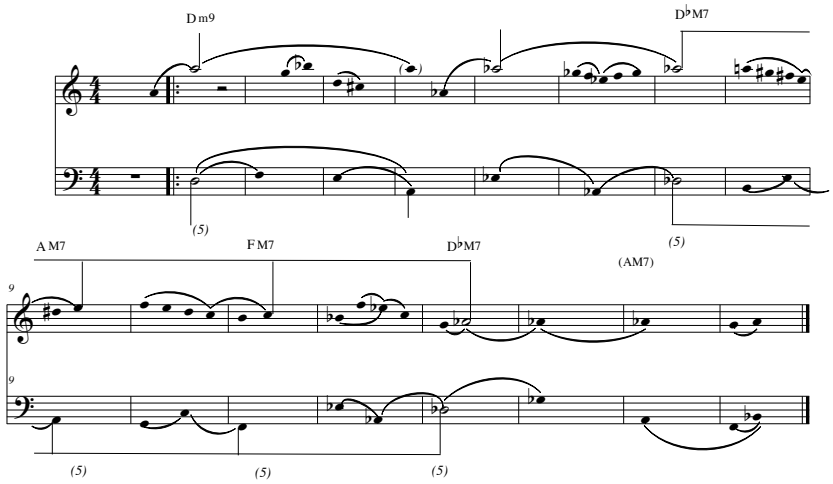
[15] That this dominant harmony houses a major seventh chord (rather than a lowered seventh) is unusual. However, in describing Shorter's later compositional practice, Steven Strunk notes that "one of Shorter's basic techniques for the violation of harmonic expectancy is to use the 'wrong' structure over the right root, particularly in circle-of-fifths bass situations." See "Notes on Harmony in Wayne Shorter's Compositions, 1964-67," *Journal of Music Theory* 49/2 (Fall 2005): 303. With "El Toro," this A major seventh sonority is followed by the ii-V Fm7 B♭7 progression before the return to D minor at the top of the form.

[16] Julien, "The Structural Function of Harmonic Relations," 182.

This provides much of the intrigue and ambiguity of the composition, particularly in its second half. While the composition's 8+8 design might suggest the harmonic priority of A, the ic4 processes in the harmony and melody crosscut the 8+8 formal design by beginning at m. 7. Gone is the systematic etude-like 8+8 regularity of "Giant Steps." With "El Toro" the harmony ultimately moves five giant steps downward (D♭-A-F-D♭-A) while the melody moves four (A♭-E-C-A♭). Hearing the composition this way highlights the manner in which Shorter weaves formal asymmetry into the regular 16-bar form. As a result, the final two bars sound somehow formally and harmonically extraneous to the eight-bar processes that take place mm. 7-14, and the result accords more tonal priority to D♭ than to A.[17]

Example 5. Ic4 processes out of phase with 8+8 design in "El Toro."



The relationship to the "Giant Steps" model is unmistakable. Shorter himself described visits to Coltrane in late 1958 or early 1959 and hearing Coltrane practice the "Giant Steps"

[17] This view of D♭ has having tonal priority over the other ic4 nodes provides a different reading than Patricia Julien's, which suggests that all three ic4 nodes have equal structural weight. See "The Structural Function of Harmonic Relations," 183.

progressions.[18] In "El Toro," however, the ic4 processes operate alongside others, particularly those at mm. 1-4 that establish D minor, and set up a large-scale tonal motion from D minor (prolonged with a functional harmonic progression) to D♭ major (maintained through downward ic4 motion).[19] The presence of those two primary keys, alongside the salient melodic pitches of A (mm. 1-4) and A♭ (mm. 5-16), themselves articulate a 5-5 linear intervallic pattern that operates across the span of the composition.

Bill Evans's "34 Skidoo" initially appeared on Evans's 1962 trio recording "How My Heart Sings." Like "El Toro," it uses ic4 sequences alongside other compositional designs.[20] These include eight-bar pedal point sections and metric shifts. The following diagram indicates the overall form of "34 Skidoo."[21]

Figure 1. Form of "34 Skidoo."

Section 1 (12 bars in 3/4)
D minor-----A minor
B♭ minor-----F minor
F♯ minor-----C♯ minor

Section 2 (16 bars in 4/4)
B pedal

Section 3 (12 bars in 3/4)
A minor-----E minor
C minor-----G minor
E♭ minor----B♭ minor

Section 4 (16 bars in 4/4)
E pedal

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[18] Quoted in Porter, *Coltrane*, 151.

[19] Following Tovey, Margaret Notley refers to this type of harmonic relationship as an "inverse Neapolitan" in her essay "Brahms's Cello Sonata in F Major and its Genesis: A Study in Half-Step Relations," contained in *Brahms Studies I*, ed. David Brodbeck (Lincoln: University of Nebraska Press, 1994), 141.

[20] Thanks to Robert Wason, who brought this composition and its relationship to "Giant Steps" to my attention.

[21] This is the form played on the initial 1962 recording. Later versions, such as the one heard on *Re: Person I Knew*, begin the form with the section that is listed here as Section 4.

The composition is in four sections. Section 1 consists of descending ic4 sequences in triple meter. These sequences appear every four bars, and each supports a characteristic Evans harmonic progression of an ascending fifth modulation: the first of the sequences modulates from D minor to A minor.[22] Sections 2 and 4 use shifting harmonies over bass pedal points in 4/4 meter, with Section 2 supporting a B pedal point, and Section 4 an E pedal point. The third section, in contrast to the first, now establishes ascending ic3 sequences. Section 3 recalls the melody, the overall ascending fifth modulations, and the triple meter of Section 1 in each of its four-bar sequences.

Since the composition systematically explores ic4 and ic3 harmonic/melodic sequences and alternates 3/4 and 4/4 meter, it works out 3 and 4 relationships in both the harmonic and metric dimensions. Certainly the title itself, a transformation of the early twentieth-century slang phrase "23 Skidoo," calls attention to this.[23] Yet the locations of the metric shifts do not correspond to the location of the ic4 and ic3 sequences: Sections 1 and 3 (hosting the ic4 and ic3 sequences) are consistently in triple meter, while Sections 2 and 4 (hosting the pedal point sections) are in quadruple. Where the composition does explore 3 and 4 shifts in tandem occurs in the metric and the hypermetric dimensions: triple meter supports 3 four-bar phrases (Sections 1 and 3), while quadruple meter supports 4 four-bar phrases (Sections 2 and 4). As Figure 2 indicates, it is the proportional relationships between Sections 1 and 2 (relative to the number of bars), as well as

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[22] Other Evans compositions that use such tonicized ascending fifth sequences include mm. 1-3 and 7-9 of "Blue in Green" (the first moving from G minor to D minor, the second from D minor to A minor), mm. 27-29 of "Waltz for Debby" (moving from G minor to D minor), mm. 17-31 of "Bill's Hit Tune" (moving through A minor, E minor, B minor, to F♯ major). In all these ascending fifth sequences, including that of "34 Skidoo," we may retrospectively hear the initial harmony as a iv chord proceeding (directly or indirectly) through a dominant (V) harmony en route to the goal harmony.

[23] The slang phrase, originating before WWI, is roughly akin to "scram" or "beat it." It appears in the Betty Smith novel *A Tree Grows in Brooklyn*: "He dispersed the crowd very simply by telling them he'd send for the pie wagon and take them all down to the station house if they didn't twenty-three skidoo." Betty Smith, *A Tree Grows in Brooklyn* (New York: Harper & Brothers, 1943), 90.

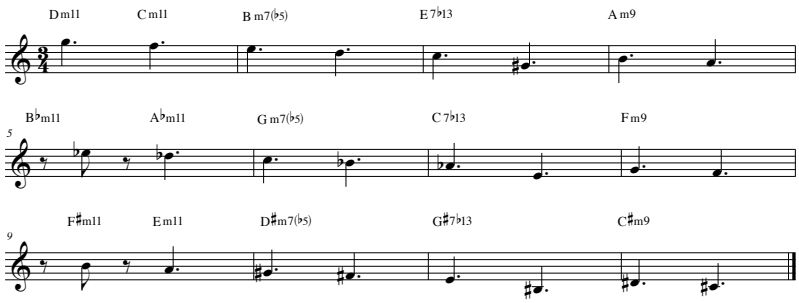
between Sections 3 and 4 that mirror their changes in time signature.

Figure 2. Proportional relationships of sections from "34 Skidoo."

Section	Number of four-bar phrases	Meter
1	3	3/4
2	4	4/4
3	3	3/4
4	4	4/4

Example 6 provides the melody and harmony for Section 1, the portion indebted to "Giant Steps" in its ic4 organization. The three phrases are systematically transposed by ic4, both in the harmonic and melodic dimensions. Yet the relationship to "Giant Steps" seems to end there. No longer do the ic4 nodes appear only with intervening V (or ii-V) tonicizing motions. They instead work out a more extended harmonic progression. Moreover, the major seventh harmonies that appear at the ic4 nodes of "Giant Steps" are now replaced with minor harmonies, both at the beginning and end of each four-bar sequence.[24]

Example 6. Mm. 1-12 of "34 Skidoo" (Evans).



[24] The use of downward ic4 cycles articulated by minor harmonies more closely resembles the B section to Coltrane's "Like Sonny." That composition also uses both ic4 and ic3 cycles.

Like "El Toro," the descending ic4 harmonic and melodic sequences exert a structural pull over only a portion of the composition. With "34 Skidoo" the ic4 processes appear in only one of the four sections and appear in balance with the static pedal points and the ic3 harmonic/melodic sequences. Evans biographer Peter Pettinger has suggested the influence of composer Earl Zindars on Evans's "34 Skidoo," particularly through the metric shifts and the alternation of pedal point sections with more regularly occurring root motion in the bass.[25] These features appear on Zindars's "How My Heart Sings," the title track to the album on which "34 Skidoo" originally appeared. Yet the symmetrical sequences of "34 Skidoo"—particularly the ic4 ones—share more in common with Coltrane's 1959-60 compositions and arrangements. Despite the relation to "Giant Steps," however, the proportional asymmetries of the sections in "34 Skidoo"—alluded to by its title—show a marked departure from Coltrane's model.

"Dolphin Dance" and "Pinocchio"

With "Dolphin Dance" and "Pinocchio," the relationship to "Giant Steps" recedes further. Neither composition articulates ic4 harmonic and melodic sequences as systematically as "El Toro" and "34 Skidoo," and the structural ic4 underpinnings—while present—are attenuated.

"Dolphin Dance" appeared on Herbie Hancock's 1965 recording *Maiden Voyage*, and has enjoyed an extended shelf life due in part to its inclusion in a number of different jazz fake books such as *The Real Book*.[26] "Dolphin Dance" is a 34-bar composition, excluding a four-bar turnaround that is exceptional because it wraps around not to the top, but to the fifth measure of the form. This turnaround, then, *replaces* the opening four bars of "Dolphin Dance" in subsequent choruses.

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[25] Peter Pettinger, *Bill Evans: How My Heart Sings* (New Haven: Yale University Press, 1998), 129.

[26] *The Real Book*, 6th ed. (Milwaukee: Hal Leonard), 119.

Like a number of compositions written in the 1960s, "Dolphin Dance" is a circular tune. [27] Its circularity arises from several factors. It includes a six-bar phrase at mm. 29-34, which cuts across the grain of the typical four-bar phrases of most jazz standard compositions. In addition the unusual closing four-bar turnaround replaces and suppresses the harmonies of mm. 1-4 once the first chorus is stated. The following discussion will consider the opening seventeen bars of "Dolphin Dance."

In order to show its relationship to "Giant Steps," it is now necessary to speak not only of tonicized ic4 harmonies, but also of ic4 harmonic regions. To do so suggests that a number of harmonies may support (or substitute for) a harmonic region, and these harmonic regions appear variously in mm. 1-17 of "Dolphin Dance." Some—but not all—of the ic4 harmonic regions appear with their tonic harmony and/or follow functional harmonic progressions. When they do not, relative minor harmonies (which stand as substitutes) or ancillary decorative harmonies articulate the ic4-related harmonic regions.[28] The harmonic progressions, often with the support of the melody, establish these ic4 areas in a remarkable manner.

A lead sheet to mm. 1-17 of Dolphin Dance appears as Example 7. This entire section, as we will see, moves among ascending ic4-related harmonic regions, from E♭ to G, to B,

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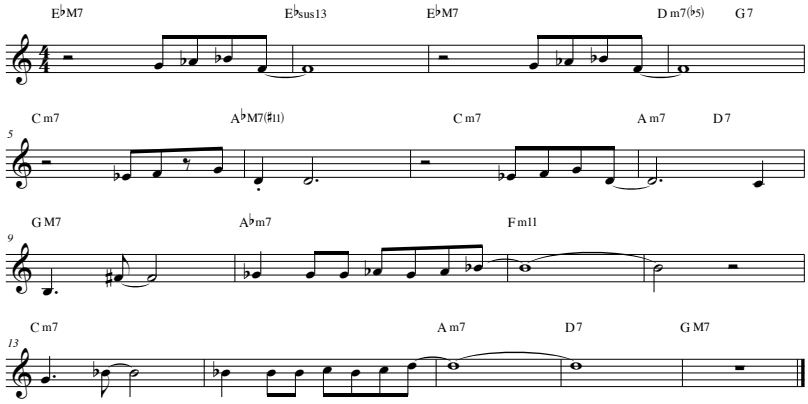
[27] For more on circularity, see Waters, Miles Davis Quintet, 1965-68, pp. 74-76. Many of those ideas on circularity arose from a joint paper with Keith Waters, Steve Larson, Henry Martin, and Steve Strunk, presented at the National Conference of the Society for Music Theory in Montreal, November 2009, entitled "Circular Thinking: A Roundtable on 'Blue in Green' and 'Nefertiti.'" The session was chaired by Robert Wason. These writings define circular compositions as works composed in such a manner that, following the initial statement of the head, the top of the repeating chorus structure no longer sounds like the beginning of the form. Circular compositions thus contain a formal overlap that disguises the top of the form. There are three general criteria for circularity in jazz tunes: 1) melody: the opening phrase of the composition sounds as a continuation of the previous phrase(s); 2) harmony: the opening harmonic progression continues a sequence begun at the end of the form; and 3) hypermeter: irregular metric groupings suggest a continuation into the top of the form.

[28] For a thorough consideration of substitution sets of harmonies in a bop context, see Steven Strunk, "The Harmony of Early Bop: A Layered Approach," *Journal of Jazz Studies* 6/1 (1979): 4-53.

returning to E♭, and further to G. The opening three measures embellish the tonic harmony of E♭, using D♭maj7/E♭ (or E♭sus13) m. 2 as an intermediate decorative harmony. The composition then tonicizes the relative minor at m. 5, with the C-minor harmony operating as a substitute harmony for E♭. An embellishing harmony at m. 6 (A♭maj7♯11) decorates this C-minor harmony before a return to C minor at m. 7. The move to the next ic4-related harmonic region of G occurs at m. 9, through a tonicizing ii-V progression in m. 8.

Example 7. Mm. 1-17 of "Dolphin Dance" (Hancock).



This move to G is fleeting, however, as the following chord (A♭min7) now operates as a substitute harmony for B (or C♭) major. And this region again operates only momentarily before ceding to the following harmony, which returns to the harmonic region of E♭ via substitute harmonies of Fm11 (mm. 11-12) and C minor, the relative minor of E♭ (mm. 13-14).[29] The final ic4 node of G appears via the ii-V-I progression at mm. 15-17. The following itemizes the harmonic motions described:

[29] More specifically, we may think of the C-minor harmony as substituting for the harmonic region of E♭, and the F-minor harmony as a predominant prefix of C minor.

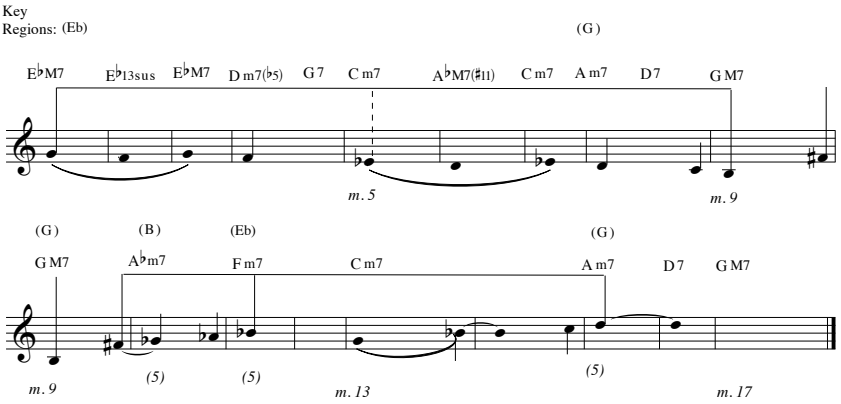
Figure 2. Key regions of mm. 1-17 of "Dolphin Dance."

Mm. 1-7	E♭
8-9	G
10	B/C♭ (via A♭ minor)
11-14	E♭ (via F minor and C minor)
15-17	G

Gone are the regularly occurring harmonic sequences from "Giant Steps," and in "Dolphin Dance" the key regions appear irregularly. Further, these key areas (such as B in m. 10 and E♭ mm. 11-14) appear only with harmonic surrogates rather than ic4-related harmonies. These substitute harmonies can make the relationship to the proposed keys nebulous. However, Example 8 is meant to suggest how the melodic structure enhances the ic4 organization, particularly at those locations.

The melody to mm. 1-17 of "Dolphin Dance" relies on two primary rhythmic motives. The first motive (a two-bar rhythmic motive) occurs four times in mm. 1-8, the second (a four-bar motive) occurs twice in mm. 9-17. A melodic overlap (mm. 8-9) connects the two. The motive during the opening nine measures forms an elaborated stepwise descent, melodically descending from G to B. Those two melodic pitches of G and B (mm. 1 and 9) appear as $\hat{3}$ of the opening two key regions of E♭ and G. Thus the ascending ic4 harmonic contour of those two regions coincides with the descending melodic sixth. (Example 8 also suggests that, at the four-measure level, the overall melodic structure further supports descending ic4 motion, moving from G (m. 1), through E♭ (m. 5), to B (m. 9). Despite this aspect of the ic4 melodic design, however, the harmonic region does not move similarly by ic4 at m. 5. Instead it remains within the key region of E♭ with the substitute vi chord.

Example 8. Ic4 relations in "Dolphin Dance," mm. 1-17.



The harmonic shift to G major (and its $\hat{3}$, B) occurs mm. 8-9. Here the melody leaps to F♯/G♭, which is retained as a common tone the following measure. With the A♭m7 substituting for B/C♭ major, this F♯/G♭ appears as $\hat{5}$, before stepping upward to A♯/B♭ moving into m. 10. The process repeats, with B♭ ($\hat{5}$) in the new key region of E♭. An ascent to D occurs moving into m. 15, heard as $\hat{5}$ in the new key region of G. Thus in mm. 9-17, the overall melodic structure reinforces the ic4 harmonic regions, moving from F♯/G♭ (mm. 9-10), through A♯/B♭ (mm. 11-14), to D (mm. 14-16), shown by beams in Example 8. The resultant augmented triad with those melodic pitches forms the 5-5-5 paradigm discussed earlier in relation to "Giant Steps" and "El Toro."[30]

We can appreciate the subtlety of the melodic design in the opening bars here. The melody to mm. 1-9 proceeds downward, linking G to B (via E♭ at m. 5). The following eight bars proceed upwards, linking F♯-B♭-D. Each of the two melodic strands progress equidistantly through contrasting contours, while the harmonic regions progress consistently upwards.

[30] Note that here the intervals do not form a 5-5-5 linear intervallic pattern with the bass. Instead, because of the use of substitute harmonies, the 5-5-5 paradigm represents the relationship of the pitches to the underlying key region.

The second half of the composition (not shown here) considers alternate designs. Like Evans's "34 Skidoo," the following measures include pedal point sections. The bass in the following four-bar segments (mm. 17-25) progresses downward by whole step, moving from G to F, to E♭. We may hear this as providing a contrast to the ascending ic4 regions of mm. 1-17 through descending ic2 motion. We may also hear the bass motion of mm. 17-25 composing out the opening melodic third (G-F-E♭) heard in mm. 1-5.[31]

The ic4 harmonic and melodic processes in "Dolphin Dance" are not as precisely systematic as they are in "Giant Steps." The relationship to the earlier model is at times veiled since the ic4 regions appear irregularly, often with substitute harmonies. Yet when those substitute harmonies appear, the melodic structure itself projects the ascending ic4 motion more evidently. Further, the ic4 processes, and the circularity of "Dolphin Dance" (a result of the six-bar phrase mm. 29-34, as well as the four-bar tag that then bypasses mm. 1-4), show the further commitment to harmonic and formal ambiguity brewing mid-decade, and the 34-bar form reflects a move away from the regular symmetries of 16- and 32-bar chorus structures.

Wayne Shorter's "Pinocchio," like "El Toro" and "Dolphin Dance," is a single-section composition. It initially appeared on the 1967 Miles Davis Quintet recording *Nefertiti*. Its head comprises an 18-bar form, with a six-bar phrase at the end of the form (mm. 13-18). This aspect of the design makes "Pinocchio" circular, since the six-bar phrase cuts against the four-bar hypermetric regularity of many jazz compositions. The expectation set up by an "absent" two measures at the end of the form allows the return to the top of the form to sound as a continuation. This irregularity of hypermetric design may have been one of the catalysts for the two horn soloists (trumpeter Davis and saxophonist Shorter) to abandon the underlying 18-bar form during their solos, moving instead to a "time, no changes" format, during which the rhythm

[31] This idea was originally presented in Keith Waters, "Modes, Scales, Functional Harmony, and Nonfunctional Harmony in the Compositions of Herbie Hancock," *Journal of Music Theory* 49/2 (2005): 333-57.

section maintains a walking bass and swing time feel without preserving an underlying repeated chorus structure.[32] The circularity of "Pinocchio" may also have been a catalyst for the quintet's alternate take strategy, during which the group plays "Pinocchio" merely as repeated statements of the melody, without standard improvisations by horns and piano.[33]

Example 9 provides a lead sheet for "Pinocchio." (A lead sheet for "Pinocchio" appears in the *Real Book*, although the harmonies there differ drastically from the ones used by the quintet during head statements.) The opening harmony of E♭ minor reappears at mm. 11-12, prior to the six-bar closing phrase. That six-bar phrase ends with B13(♯11) (mm. 17-18), and this ♭VI7 harmony—like the final harmony of "El Toro"—acts as an augmented sixth harmony that links back to the opening harmony without an intervening dominant chord.

The motivic structure of the melody of "Pinocchio" is remarkable. It marks something of an advance for Shorter, many of whose earlier compositions relied on motives that appear more regularly, often at two-bar intervals.[34] The opening one-bar motive appears expanded in mm. 2-3, and is expanded further in mm. 4-8, creating a 1+2+5 bar motivic design. Mm. 9-12 create a 1+3 design, before the appearance of the final six-bar phrase. The expanding motives at mm. 1-8 frequently crosscut an underlying 2- and 4-bar hypermeter, for example at m. 3 (2-bar hypermeter) and m. 5 (4-bar hypermeter).

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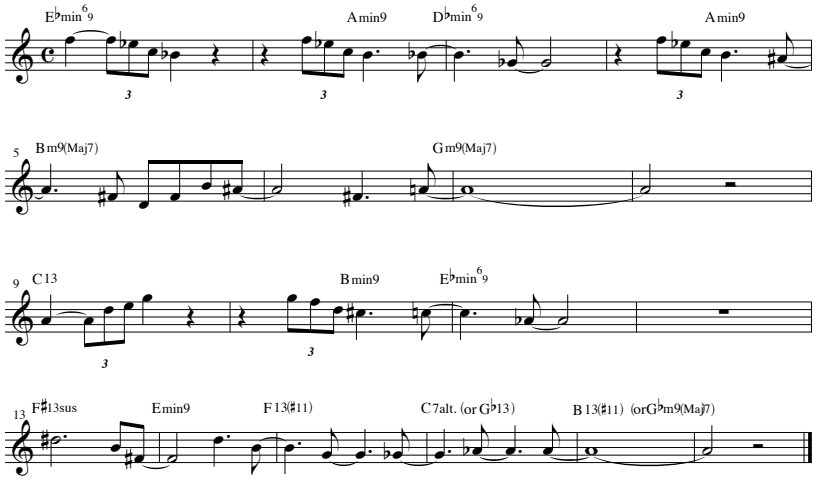
[32] Hancock, in contrast, does preserve the form of the composition, although the horn players may have been unaware of this: the horns' return to the final head statements creates a clash as they begin the melody three bars into Hancock's third chorus.

[33] This technique duplicates the one that takes place with the quintet's celebrated performance of "Nefertiti," another circular tune which the group likewise plays only as repeated melody statements, without standard horn and piano improvisations. For more on "Pinocchio" and "Nefertiti," see chapter 6 of Waters, *Miles Davis Quintet, 1965-68*.

[34] Shorter's "Infant Eyes," for example, relies exclusively on a single two-bar rhythmic motive. As in "Pinocchio," Shorter also uses expandable and collapsible motives in "Nefertiti," released on the same album as "Pinocchio."

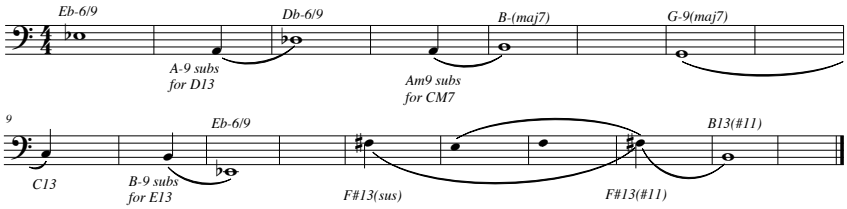
Example 9. "Pinocchio" (Shorter).



Unlike the melodic design of Hancock's "Dolphin Dance," that of "Pinocchio" does not participate in or support an underlying ic4 design; it is the harmonic structure that loosely alludes to "Giant Steps." "Pinocchio" expressly states the ic4 nodes, and there appear intervening harmonies that embellish those nodes. Example 10 summarizes the overall motion. The harmonies about the staff indicate the motion from E♭ (m. 1) through D♭ to B (m. 5), to G (m. 7), and returning to E♭ (mm. 10-11). The final six measures return to B (mm. 17-18) via its elaborated dominant that occurs at mm. 13-16. The move from the first ic4 node (E♭) to the second (B) is attained by stepwise motion, with D♭ (m. 3) filling in the space between E♭ and B.

The composition, like many of Shorter's other compositions written during the mid-1960s, avoids expressly functional progressions nearly entirely. The only dominant harmony that operates in a generally functional sense is the G♭13 at m. 16 that

Example 10. Overall ic4 organization in "Pinocchio."



then moves to B13(♯11) mm. 17-18. Yet it is possible to consider some of the other harmonies as operating functionally, but in a way in which their function is attenuated. For example, the harmonies that appear mid-bar at mm. 2 and 10 operate analogously. A-9 is followed by D♭-6/9 (mm. 2-3), and B-9 is followed by E♭-6/9 (mm. 10-11). To consider these progressions in a functional sense requires two levels of substitution. The first level of substitution is shown in Example 11, which regards the chords as substitute ii chords replacing the V chord of a ii-V pair. Thus, the A-9 of m. 2 substitutes for D13, and the B-9 of m. 10 substitutes for E13. The second level of substitution is the more common one of tritone substitution, with the D13 replacing an A♭ dominant harmony, impelling the move to D♭ (m. 3-4), and the E13 replacing a B♭ dominant harmony, impelling the return to E♭ (m. 11-12).[35] The substitution of a ii chord for a V chord may be considered as arising from a "sus chord" imperative that emerged during the 1960s, one that suppressed the active and directed chordal thirds or sevenths of harmonies. Such substitutions retain functional vestiges but curtail the tonal direction.[36]

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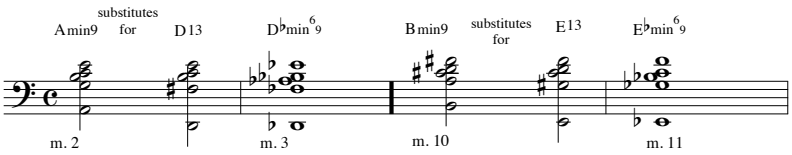
[35] These sorts of harmonic substitutions, such as the ii replacing the V of a ii-V pair, suppress some aspects of the functional progressions by omitting the third or seventh normally heard in the V harmony. Such weakly functional progressions appear in any number of compositions performed by the Miles Davis Quintet of 1965-68. The incorrect harmonies supplied by *The Real Book* suggest a more-functional progression at mm. 1-3, progressing from A♭13 (rather than E♭6/9, m. 1) through G13 (rather than Amin9, m. 2) to G♭13 (rather than D♭6/9, m. 3)

[36] We might understand the absence of the leading tone in these progressions as suppressing unqualified dominant function and invoking subdominant function. See Daniel Harrison, *Harmonic Function in Tonal Music* (Chicago: University of

Example 11. Harmonies at mm. 2-3 and 10-11 that substitute for more functional harmonic progressions.



The A-9 harmony (second half of m. 4, see Example 10) recalls the same chord at m. 2, but now with a different resolution, to Bmaj7. Similar to the harmonies discussed above, it may be possible to hear this A-9 harmony as substituting for a more functional one. To do so first considers A-9 as substitute for the third-related Cmaj7. This Cmaj7 operates as a tritone substitution (♭II) harmony leading to the Bmaj7. Yet the leading tone to B minor (A♯/B♭) is suppressed at that harmony, appearing only with the arrival to B minor. And the C13 harmony introduced at m. 9 acts as an embellishment of the previous Gmin9(maj7) harmony, creating a ii-V pair that does not effect a traditional resolution (to F).[37] All of these features show how the progression derives from, yet makes significantly more ambiguous, a more familiar sounding tonal context.

The final six bars of Example 10 is meant to suggest that the last chord (B13♯11, which the quintet occasionally plays as the cognate G♭min9(maj7)) arrives through the embellishment of its dominant, which appears as a G♭13(sus4) chord m. 13, suppressing the chordal third which then arrives m. 16, with the G♭13 harmony. The intervening harmonies at mm. 14-15 arise through linear

Chicago, 1994), and James McGowan, "Dynamic Consonance in Selected Piano Performances of Tonal Jazz," (Ph.D. Diss., University of Rochester, 2005), esp. Chs. 4 and 5.

[37] Arguably, the Gm7-C7 pair does affect a resolution to the following B-minor harmony through the principle of tritone substitution.

chromatic motion, moving from E through F before returning to G♭.[38]

The overall ic4 harmonic motion of "Pinocchio" (E♭-B-G-E♭-B) is similar to that in "El Toro" (which moved D♭-A-F-D♭-A): it completes the octave and moves one node further. Yet the ic4 nodes of "El Toro," appearing regularly every two bars, appear in "Pinocchio" irregularly and unsupported by the melody.

As in "Giant Steps," the ic4 nodes operate across the entire span of "Pinocchio." The presence of "Giant Steps" in "Pinocchio" is veiled, given the means by which those ic4 nodes become established, the systematic use of minor (rather than major) harmonies on all but one of those nodes (only the final node has a major third above the B), and the absence of melodic activity that corroborates those nodes. All show the earlier model disappearing further into the background.

"Pinocchio" shows just how far jazz composition had moved since 1959. In particular, it illustrates an ongoing commitment to harmonic and formal ambiguity in the hands of particular composers. Rather than the hard bop routines of local functional harmonic progressions, "Pinocchio" relies on more-veiled functional progressions, some of which arise from harmonic substitutions that suppress the more directed and active chordal thirds or sevenths (mm. 2-3, 4-5, 10-11) or through retrogressions (mm. 14-16). Further, its formal circularity undermines the formal orientation provided by compositions of consistent 4-, 8-, and 16 bar hypermeter.

Yet ambiguity is not absent from "Giant Steps." Its symmetries imply a type of harmonic circularity, projecting harmonic cycles whose beginning and ending points may sound indeterminate. With "Giant Steps" it is the formal placement of tonal regions within the regular 8+8 design that helps provide some level of orientation. We may or may not agree with Henry Martin, who suggests that "Giant Steps" is not tonal because no chord is prolonged throughout the

[38] These upward-moving chromatic harmonies, retrogressive in comparison with more typical downward-moving chromatic harmonies, appear elsewhere in Shorter's compositions, such as in mm. 9-12 of "E.S.P."

entire work.[39] Nevertheless his comments highlight the ways in which harmonic ambiguity is a central feature. And it seems that that feature was of critical interest to Shorter, Evans, and Hancock. Their compositions discussed above establish ic4 nodes locally, undermining a sense of global tonality. Further, they do so in ways that transcend the etude-like aspects of the original model, explore formal asymmetries, and set up conditions for enhanced circularity.

Many of the principles that appeared in the pieces discussed above remain as significant features of contemporary jazz composition. There appeared extended possibilities for creating or suppressing tonal motion, transformations of functional progressions, characteristic post-bop harmonies such as pedal point (slash chord) harmonies and sus chord harmonies, and more-traditional harmonies that progress in ways that do not clearly articulate a central tonality.[40] Further, these features appeared in works that departed from traditional formal and hypermetric designs. All of this continues to make Steven Strunk's 1988 challenge relevant: "The study of the expansion of tonality in jazz is one of the unfinished tasks facing jazz theorists."[41] Certainly the ic4 legacy suggests one paradigm that participated in this expansion. While it is possible to read "Giant Steps" as an *Abschiedsbrief*, Coltrane's goodbye letter to the hard bop aesthetics mastered during the 1950s, it is also possible to consider it as a promissory note, one redeemed by the next generation of composers.[42]

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[39] Martin, "Jazz Harmony," 23; see also Martin, *Charlie Parker*, 10. Gregory Proctor instead refers to such processes via the transposition operation, in which literal transposition provides an underlying tonal organization; see "Technical Bases of Nineteenth-Century Chromatic Tonality: A Study in Chromaticism," Ph.D. Diss, Princeton University, 1978.

[40] For more on harmony in postbop composition, see Ron Miller, *Modal Jazz: Composition and Harmony* (Rottenburg, Germany: Advance Music, 1994).

[41] Steven Strunk, "Harmony," entry in *The New Grove Dictionary of Jazz*, ed. by Barry Kernfeld (New York: MacMillan, 1994), 492. Orig. published in two vols. 1988.

[42] Masaya Yamaguchi discusses his own and Joe Lovano's compositions that use "Giant Steps" as a model in Yamaguchi, "A Creative Approach to Multi-Tonic Changes: Beyond Coltrane's Harmonic Formula" in *Annual Review of Jazz Studies* 12 (2002): 147-167.

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