MODES, SCALES, FUNCTIONAL HARMONY, AND NONFUNCTIONAL HARMONY IN THE COMPOSITIONS OF HERBIE HANCOCK

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The decade of the 1960s witnessed a vast expansion of the harmonic resources available to the jazz composer. The compositions of jazz pianist Herbie Hancock played an important role in shaping this emerging harmonic language. The innovations that arose affected both harmonic structure (chord type) and harmonic progression (chord-to-chord succession). These newer harmonic developments—often referred to as "modal harmony" or "modal jazz"—remain today as a significant cornerstone of the harmonic vocabulary of jazz.

In this article I examine several of Hancock's compositions written and recorded during the 1960s, pointing out Hancock's compositional approaches and innovations against the backdrop of standard functional harmony and modal harmony. I address three general questions: (1) How is compositional structure created when harmonic function is weakened or absent? (2) How did Hancock further extend the modal innovations pioneered by Miles Davis and others? (3) In what ways was Hancock

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able to merge functional harmonic procedures with modal harmonic procedures?

Hancock attained national prominence as a member of the Miles Davis Quintet, playing piano with Davis between 1963 and 1968. With his tenure with Davis, his recordings as a sideman on numerous albums, and his own series of albums for the Blue Note label under his own name, Hancock was considered one of the most innovative, versatile, and accomplished jazz pianists of the decade. Bill Dobbins writes that "Herbie Hancock is certainly one of the most influential jazz pianists of the second half of the twentieth century" (Hancock 1992, 6). Hancock studied piano and composition at Grinnell College until 1960, and he became a prolific and significant jazz composer, writing virtually all of the compositions on his seven Blue Note albums between 1963 and 1969.[1]

In order to set Hancock's compositional practice in historical perspective, it is important to distinguish between functional harmonic progression on the one hand, and the harmonic procedures of modal jazz on the other. After providing this brief background discussion of functional harmony and modal harmony, I turn to Hancock's compositions.

Functional Harmonic Progression

Through the late 1950s, functional harmonic relationships have provided the foundation for harmonic progression in jazz composition. Tonality is typically articulated by functional cadential paradigms such as V–I or ii–V–I. Within a composition interior harmonic regions are similarly articulated. Schenkerian analysts of jazz composition show how these interior harmonic regions reflect the prolongation of scale steps that are ultimately subservient to a global tonic: this operates in direct analogy to the tonal processes of the common practice period (see Strunk 1979, 1985, 1996; Larson 1987, 1998; Forte 1995). Structural harmonic progressions may be enhanced or embellished through techniques of harmonic substitution, insertion, and elaboration.

In the postbop era, cyclic transpositional operations may attenuate the sense of a global tonic (see Proctor 1978 for more on transposition). Example 1 shows a segment of the chord progression from the second half of John Coltrane's "Giant Steps." In Example 1, notice that the ii–V–I cadential paradigm cycles at a distance of four semitones (interval class 4), creating brief tonicizations of E♭, G, B, and E♭. This technique demonstrates functional harmonic progression on a fleeting local level. While there are numerous ways of developing and elaborating the notion of functional harmony in jazz, for this discussion I will be considering functional harmonic progression as equivalent with these cadential paradigms of V–I and ii–V–I.

Modal Harmony

Jazz historians have used the term "modal jazz" as a general term to describe many of the changes in compositional, accompanimental, and improvisational strategies that emerged during the 1960s.[2] Informal descriptions of modal jazz use terms such as ambiguous harmony, static harmony, or coloristic harmony; more analytical discussions typically indicate four techniques characteristic of modal jazz: (1) the use of extended pedal points, (2) the suppression or absence of standard functional harmonic progressions, (3) slow harmonic rhythm, and (4) the association of a seven-note scalar collection with each harmony: this collection—the mode—provides a repository of pitch classes for improvisation and accompaniment.[3]

Examples 2 and 3 are taken from Miles Davis's recording *Kind of Blue*, recorded in 1959 and one of the important points of departure for modal jazz. Example 2 shows the organizational plan for "Flamenco Sketches": notice that each harmony uses a single diatonic mode as the pitch source for improvisation and for accompaniment. As Example 2 indicates, "Flamenco Sketches" uses C ionian, A♭ mixolydian, B♭ ionian, D phrygian,[4] and G dorian, using four of the seven possible diatonic modes. Example 3a shows the harmonic plan for the entire thirty-two–bar form of Davis's "So What"—the D-minor harmony and D-dorian collection ascend by half-step to E♭ dorian in the B section before returning to D dorian for the final eight measures of the composition. Example 3b provides the accompanimental chords played by the pianist during the statements of the A-section melody: the two successive chords assert the entire D-dorian

F-7	B♭7 /	E♭maj7 /	A-7	D7 /	Gmaj7 /	C♯-7	F♯7 /	Bmaj7 /	F-7	B♭7 /	Ebmaj7
(ii	V	I)	(ii	V	I)	(ii	V	I)	(ii	V	I)
E♭ major			G major			B major			E♭ major		

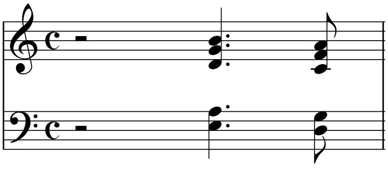
Example 1. Functional harmony. Coltrane, "Giant Steps," mm. 8–15: ii–V–I cadential paradigms and interval-class-4 transpositional cycles

1. C Ionian
2. A♭ Mixolydian
3. B♭ Ionian
4. D Phrygian
5. G Dorian

Example 2. Modal harmony. Davis, "Flamenco Sketches" (*Kind of Blue*; Columbia CK-64935)

A section (Mm. 1–8): D Dorian
A section (Mm. 9–16): D Dorian
B section (Mm. 17–24): Eb Dorian
A section (Mm. 25–32: D Dorian

Example 3a. Davis, “So What” (*Kind of Blue*)



Example 3b. Davis, “So What,” accompanimental chords

collection. (In accompaniment, the possibility exists for articulating the entire modal collection either simultaneously or successively. Example 3b shows that the pianist articulates the entire collection successively.)

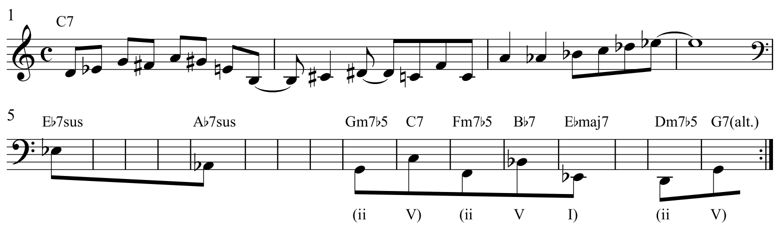
Compositional Organization: Interval Cycles

In some of Hancock’s compositions, interval cycles provide an organizational device to structure both the harmonic and melodic dimensions.[5] Example 4 provides an annotated lead sheet to Hancock’s composition “One Finger Snap.” The composition has a number of unusual features: it is twenty bars long, and thus its five four-bar groups deviate from the hypermetric structure of most standard jazz compositions. Its written melody occurs only in the first four bars and uses all twelve pitch classes of the aggregate. As the beaming within mm. 5–20 suggests, the interval-class-5 cyclic processes in the bass are largely consistent with standard functional harmonic moves. This is particularly true between mm. 13 and 20 (contained in the lowest system): the first interval-class-5 chain between mm. 13 and 17 moves to a cadence on E♭; the second interval-class-5 chain of D-7(♭5) to G7 links around to the C back to the return of m. 1. In jazz parlance, this lowest system includes a series of local ii–V and ii–V–I moves. In this case, the ii chords are half-diminished sonorities (the G-7♭5, the F-7♭5, and the D-7♭5), which then connect to the dominant sonorities of C7, B♭7, and G7. These interval-class-5 connections between mm. 13 and 20 are synonymous with functional harmonic progression.

While these harmonic moves are relatively standard, the harmonic motion between mm. 5 and 9 (in the second system) is somewhat more idiosyncratic, but exhibits a characteristic feature of Hancock's compositions. Measures 5–9 also show an interval-class-5 progression in the bass, connecting E♭ to A♭. However, here the harmonies use a dominant with a suspended fourth, rather than with a third. (The chord labels are E♭7sus and A♭7sus.) While these chords operate as local dominant sonorities, their tendency for forward propulsion is held in check by use of the suspended fourth replacing the third of the harmony. It may be possible to distinguish the cyclic processes of mm. 5–9 from the cyclic processes between mm. 13 and 20 and to consider the progression between mm. 5 and 9 as "weakly functional," in contrast to the "strongly functional" progression between mm. 13 and 20.

Hancock's "Jessica" develops interval-class-5 relationships throughout the composition, beginning with the two-measure repeated introduction.[6] As Example 5 indicates, the first measure of the introduction begins with an arpeggiated triad in the first beat; this then yields to an interval-class-5 chord (pitch-class set [027]) arpeggiated on the second beat. This pitch-class set [027] is transposed by T_5 on the final beat of the measure. This first measure of the introduction is then *itself* transposed by T_5 in the second measure of the introduction. Thus, Hancock here pursues the interval-class-5 relation on several levels: first in the opening introductory measure with the [027] interval-class-5 chord and its T_5 operation, then with the T_5 operation of the entire measure in the succeeding measure.

The melodic structure of the entire composition further explores these cyclic processes. Moreover, the interval cycle organization provides a structural foundation in the absence of functional harmonic progressions. As the beaming in Example 5 suggests, the melody of the composition consists of the embellishment of an interval-class-5 cycle progression. This occurs in two linear strands. Each member of the cyclic line appears in each successive measure. The first linear strand, occurring between mm. 1 and 4, connects C♭, F♭, A, and D, all in tenths with the bass. (All of these pitches begin on the downbeat with the exception of the first pitch C♭.) The second linear strand occupies the second half of the com-



Example 4. Hancock, "One Finger Snap," interval-class-5 bass motion

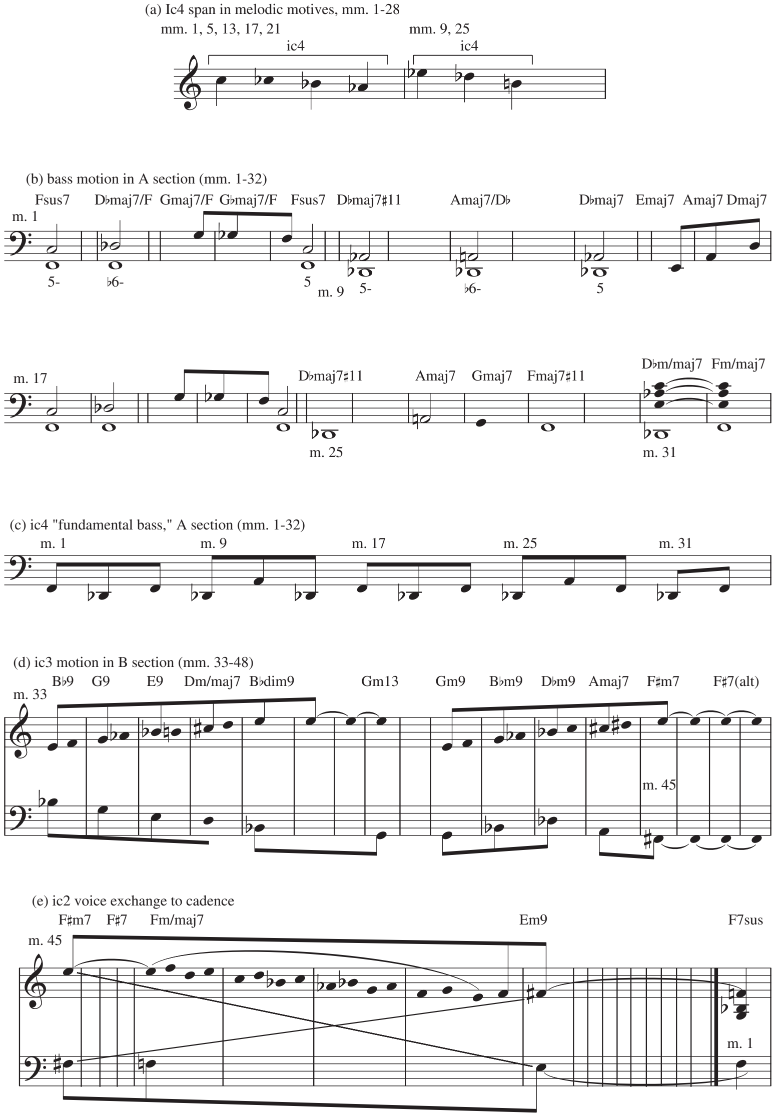
Example 5. Hancock, “Jessica,” interval-class-5 voice leading

position (mm. 5–8) and connects G♭, B, E, and A. The midpoint of the composition, between mm. 4 and 5, breaks the melodic interval-class-5 cycle progression. Here, however, the bass itself continues its own interval-class-5 cycle progression that began in m. 3 and continues until m. 5, linking F, B♭, and E♭. For “Jessica,” interval-class-5 cycle motion consistently motivates the melodic structure, while the bass participates occasionally: these cyclic moves structure the work in the absence of functional harmonic progression.[7]

More complex cyclic processes take place in an early work of Hancock’s titled “King Cobra.” Describing the 1963 composition, Hancock stated, “The chords in most jazz tunes flow in a certain way. I wanted to expand the flow so that it would go in directions beyond the usual.”[8] This early composition of Hancock, written prior to Hancock’s tenure in the Miles Davis Quintet, thus deliberately rejects many of the paradigmatic harmonic moves of standard jazz compositions and exhibits many features associated with Hancock's later modal compositions, features such as extended pedal points, suspended chords, and aeolian harmonies.[9] In the virtual absence of functional harmonic progressions, compositional structure is created through interval cycle organization in both the melodic and the harmonic domain. The melodic motives in the opening twenty-eight bars of the sixty-bar composition assert a boundary interval of interval class 4, alternating the span of C–A♭ with E♭–B. This is shown in Example 6a. In addition, the bass is similarly organized through interval-class-4 activity. As Example 6b indicates, the hypermetric downbeats at mm. 1, 9, 17, and 25 alternate F and D♭. Within each eight-measure section, these bass pitches of F and D♭ establish pedal points, over which the harmonies shift. Between mm. 1 and 8, above the F pedal in the bass, the harmonies progress from Fsus7 to D♭maj7/F before returning to Fsus7 at m. 7; between mm. 9 and 16, above the D♭ pedal point, the harmonies move from D♭maj7♯11 to Amaj7/D♭. In both instances these harmonic progressions create 5–♭6–5 contrapuntal motion in the bass. This 5–♭6–5 contrapuntal motion is indicated in Example 6b below the staff between mm. 1 and 8 and again between mm. 9 and 13. Measures 17–24 repeat the opening eight measures. In the final eight measures of the A section, from m. 25 to m. 32, the bass reiterates these F–D♭ moves, progressing from D♭ (m. 25) to F (m. 29) and then telescoping this D♭–F progression at mm. 31–32.[10]

Example 6b also suggests that the large-scale interval-class-4 bass organization is embellished through other local competing interval cycle motions. These embellishing interval cycles are shown by the eighth-note brackets. Measures 5–9 elaborate the overall progression with a local interval-class-1 progression over the F pedal point, and the upper structure harmony moves chromatically from Gmaj7/F (m. 5) to G♭maj7/F (m. 6) before resolving to Fsus7 the following measure. In the ensuing eight measure section that occurs after m. 9, the eighth-note brackets between mm. 14 and 16 show an interior interval-class-5 cycle motion, stating the progression Emaj7–Amaj7–Dmaj7. Thus, to summarize, Example 6b shows that within the A section two levels of structure are created: the larger-scale interval-class-4 bass organization consisting primarily of F and D♭, indicated by whole notes, and the local embellishments indicated by eighth-note beams, consisting of interval-class-1 motion (mm. 5–7) and interval-class-5 motion (mm. 15–16).

Furthermore, Example 6c considers the upper structure harmonies as participating in the large-scale interval-class-4 organization. This is labeled as the "fundamental bass." Example 6c reinterprets the 5–♭6–5 decoration of F and D♭ by detaching from the pedal point the upper structure harmonies of D♭maj7(♯11) (mm. 3 and 19) and Amaj7/D♭, indicating *their* interval-class-4 relation to the principal harmonies.[11] Example 6c



Example 6. Interval cycles in Hancock, "King Cobra":
(a) interval-class-4 span in melodic motives (mm. 1–28);
(b) bass motion in A section (mm. 1–32);
(c) interval-class-4 "fundamental bass," A section;
(d) interval-class-3 motion in B section (mm. 33–48);
(e) interval-class-2 voice exchange to cadence

then shows the complete interval-class-4 cycle as governing the large-scale harmonic organization of mm. 1–32.

In contrast, the B section, beginning at m. 33, is governed by a competing cycle, that of interval class 3. In Example 6d, the beaming in the melody shows that downbeat pitches of the two octave ascents articulate a completed interval-class-3 cycle. The first octave ascent occurs between mm. 33 and 40, and the second between mm. 41 and 50. (The first of these ascents, at mm. 33–40, states the octatonic collection.)

Similarly, the bass participates in the interval-class-3 motion: against the first octave ascent in the melody, the bass descends in an interval-class-3 cycle, broken once by a move to D rather than to D♭, shown by the break in the beam at mm. 36. Against the second octave ascent in the melody, the bass moves in parallel sixths for the first three measures before it reverses direction and descends to F♯ at m. 45. Thus, just as in the A section of the composition, a primary interval cycle organizes both the melodic and the harmonic dimensions of the B section.

There is yet one other interval class to be exploited at the end of the composition. The move to F♯ in the bass at m. 45 initiates a final maneuver. Example 6e begins with m. 45 and continues through to the final measures of the composition, showing the cadence back to the opening first measure of the composition. This cadence is established through an interval-class-2 voice exchange. The melody descends an octave from E to E between mm. 49 and 52[12] before progressing through F to F♯. This motion is reversed in the bass, and the bass begins with F♯ before passing from F to E. The resultant interval-class-2 voice exchange is indicated in Example 6e. Both these voices then converge on the F at the beginning of the composition, establishing the large-scale arrival on F.

In sum, Hancock uses three different interval cycles to articulate the three different sections of "King Cobra," and he uses these interval cycles in both the harmonic and melodic dimensions: the A section makes use of interval class 4, the B section uses interval class 3, and the final section articulates an interval-class-2 voice exchange. Interval cycles provide a formal organizational frame in the absence of traditional functional harmonic progression.

Modal Foundations

Hancock's compositions also expanded the modal harmonic language pioneered by Davis and Coltrane. Whereas Davis's modally derived compositions and harmonies were derived from modes of the diatonic collection,[13] Hancock's modal compositions used primarily two seven-note collections: the diatonic collection and the acoustic collection, the acoustic collection being another ordering of the ascending melodic minor scale.[14] An example of both of these collections appears in Example 7a.

1/7 distinct members between D0 and A5: Distance Value is 1

Distance Value = # of distinct members between 2 collections
Distance value between/among all D and A collections is between 1 and 5

Example 7. (a) diatonic (D) and acoustic (A) collections; (b) harmonies derived from D_0 collection; (c) harmonies derived from A_0 collection; (d) move from D_0 to A_5 collection

The example labels the diatonic collection from C to C (the C major scale) as D_0, with D referring to the diatonic collection and 0 referring to the pitch-class C. Therefore, the pitches consistent with C♯ or D♭ major are labeled as D_1, with D major as D_2, with B♭ major as D_A, and with B major as D_B. Similarly, the acoustic collection shown in the right-hand side of Example 7a is labeled as A_0, and the designation operates analogously: the acoustic collection from C to C is labeled A_0, and so forth. These two collections, the diatonic and the acoustic, provide the primary source for Hancock's harmonic choices, and in his accompaniment Hancock is often consistent in completing these collections, either successively or simultaneously.[15] Example 7b shows the harmonies derived from the D_0 collection. These include, but are not limited to, Cmaj9, D-9, E phrygian, Fmaj7(♯11), G7sus, A-9, and B half-diminished. Example 7c shows the harmonies derived from the A_0 collection. These include but are not limited to C13(♯11), Em11(♭5), F♯7alt, G-9(♯7), B♭maj7(♯5)/A, and B♭maj7(♯5).[16] The relationships of collections to harmonic structure are considered here in two ways: first, as providing the pitches available in accompaniment and second, as providing a repository of pitches for improvisation.

We may hear harmonic progression in the modal jazz repertory as progressing between and among D and A collections. Example 7d shows one possibility, which moves from D_0 to A_5. Both collections are completed: D_0 is completed in two successive harmonic moves, while A_5 is completed with the individual harmony of F13(♯11). Between these two collections, there is one distinct member: E shifts to E♭. The number of distinct elements between collections is labeled as the *distance value*; thus, the distance value between D_0 and A_5 is 1. The distance value between D collections may range between 0 and 5 (the circle of fifths diagram provides a common visual model for distance value relations between diatonic collections). The distance value between D and A collections may range between 1 and 5, and between A collections between 2 and 5.

Figure 1 contains the networks that show the pathways for the distance value of 1 for both D and A collections. The traditional circle of diatonic fifths pathway is shown by the outer edge of the upper network. D_0 progresses to D_7, then to D_2, D_9, D_4, and so on. The right side of the upper network also provides the accidentals within each collection; for example, F♯ occurs within the D_7 collection, F♯ and C♯ within the D_2 collection, and so forth. While the distance value of D_0 and D_7 is 1, similarly there is a distance value of 1 between D_0 and A_7. Thus, the numerical designations remain consistent whether moving from a D to D collection or from a D to A collection at this distance value. (Straight lines indicate the distance value 1 paths along the network for all D and A collections.) Figure 1 visually indicates that the distance value will always be 1

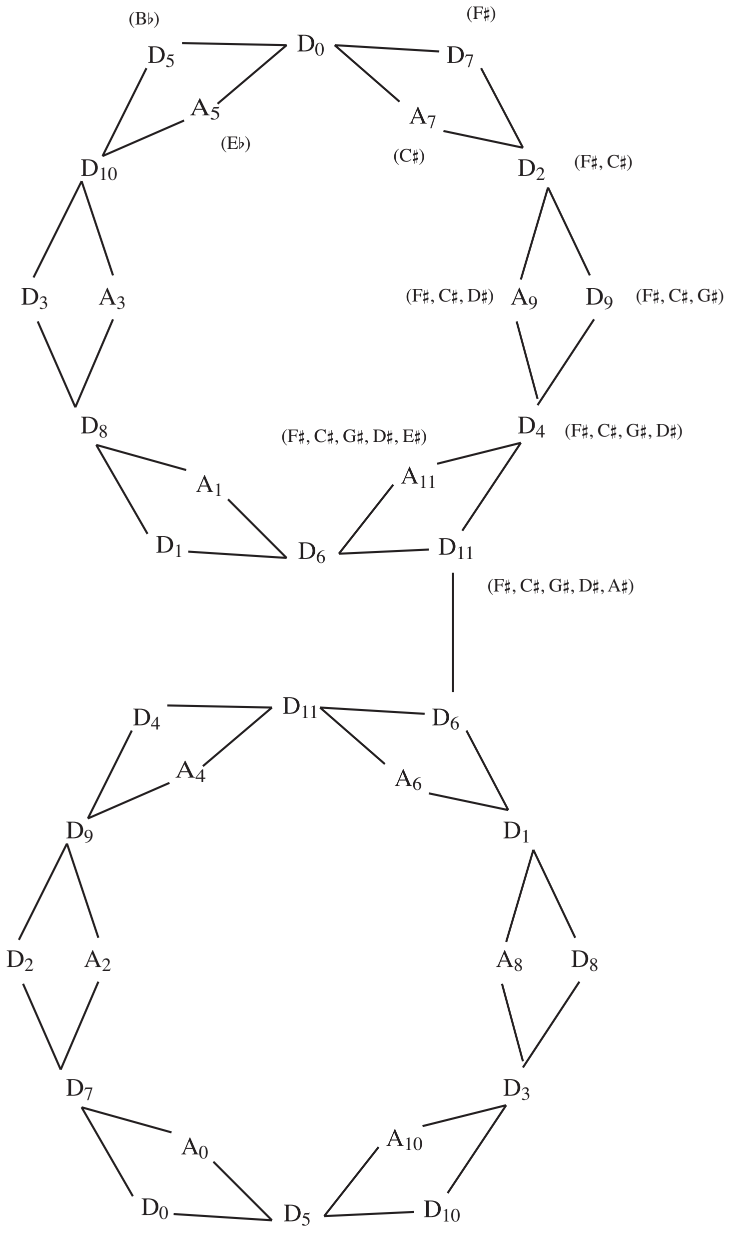


Figure 1. Diatonic and acoustic collections: distance value of 1

between any D collection and between a D or A collection when their numerical designation differs by ±5, mod 12. Thus:

For all D_x, all $D_{(x\pm5)}$ have a distance value of 1
For all D_x, all $A_{(x\pm5)}$ have a distance value of 1
(mod 12)

No two A collections may have a distance value relationship of 1. Therefore, two networks are required here, since while the twelve D collections are completed in each network, only half (or six) of the A collections appear in each network. The upper network contains the A collections with odd numbers; the lower network contains the A collections with even numbers. Figure 1 shows one path that connects the two networks; this provides only one possibility for proceeding from one network to another.

Figure 2 shows the possible networks for D/A interactions at a distance value of 2. The straight lines show paths that the collections may take for this distance value. Here, in contrast to Figure 1, there are more paths that may be taken. Either constituent of a rectangle may map into the other at this distance value, and either member of any rectangle may map into either member of an adjacent rectangle. Note that the cyclic properties for this distance value require two independent networks: it is not possible to move from the upper network into the lower network at this distance value. Thus, for a distance value of 2:

For any D_x, all $D_{(x\pm2)}$ have a distance value of 2
For any D_x, all $A_{(x\pm2)}$ and all A_x have a distance value of 2
For any A_x, all $A_{(x\pm2)}$ have a distance value of 2
(mod 12)

Figure 3 shows that, at a distance value of 3, A collections map into one another much more freely. Any A collection may map into one of seven other A collections. Either member of a rectangle may map into either member of an adjacent rectangle. However, the constituents of any single rectangle are *not* in a distance value 3 relationship: this is indicated by the slash between each member of the rectangle in Figure 3. Thus, for a distance value of 3:

For any D_x, all $D_{(x\pm3)}$ have a distance value of 3
For any D_x, all $A_{(x\pm3)}$ have a distance value of 3
For any A_x, all $A_{(x\pm3,4,5,6)}$ have a distance value of 3
(mod 12)

Figures 4 and 5 show the networks at the distance values of 4 and 5. For a distance value of 4:

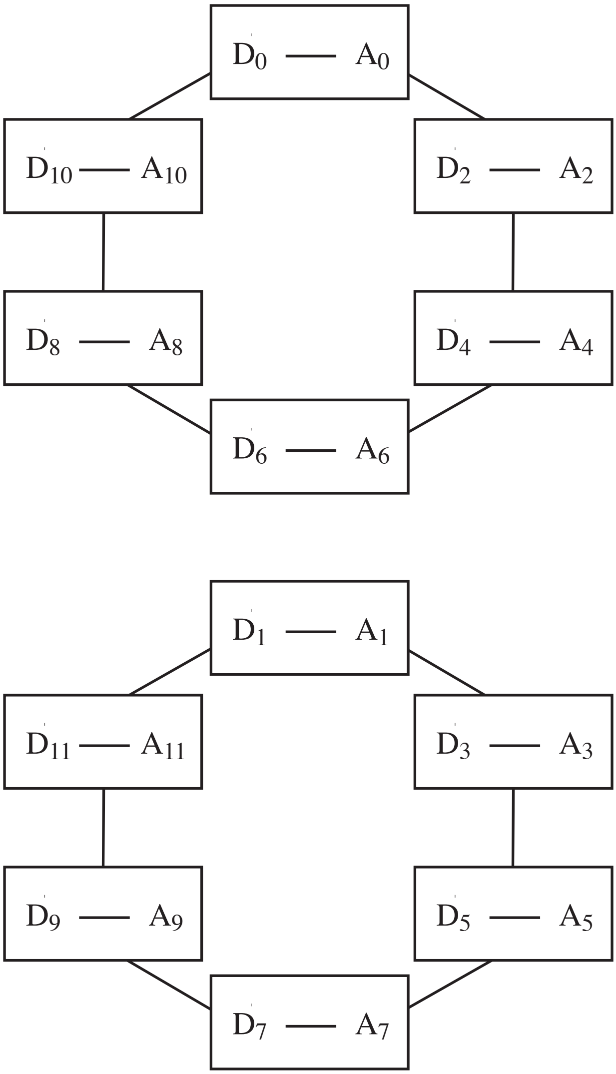


Figure 2. Diatonic and acoustic collections: distance value of 2

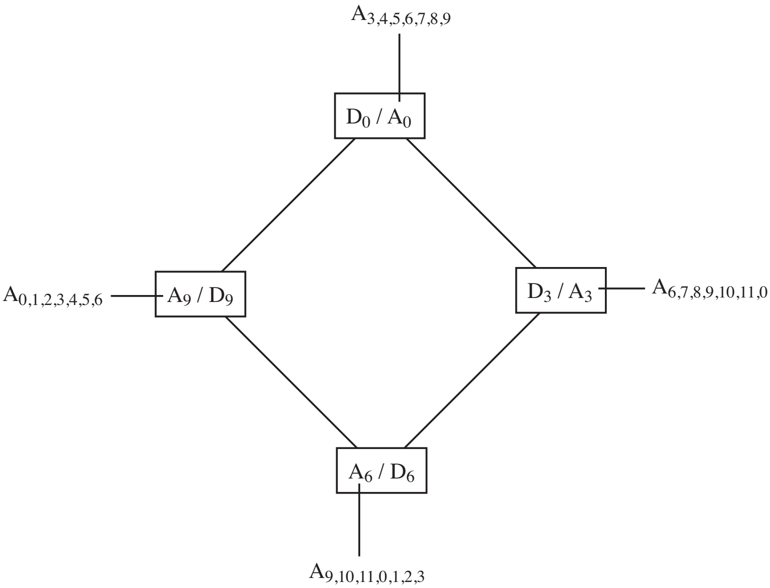


Figure 3. Diatonic and acoustic collections: distance value of 3

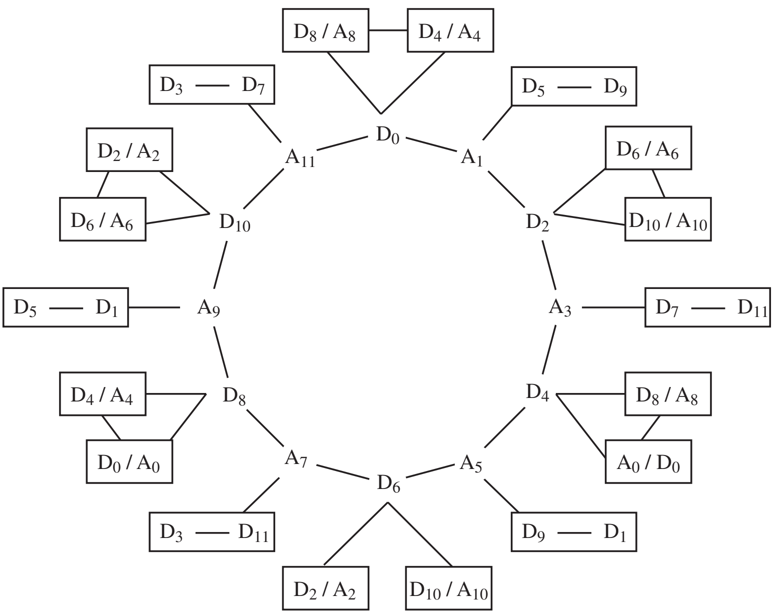


Figure 4. Diatonic and acoustic collections: distance value of 4

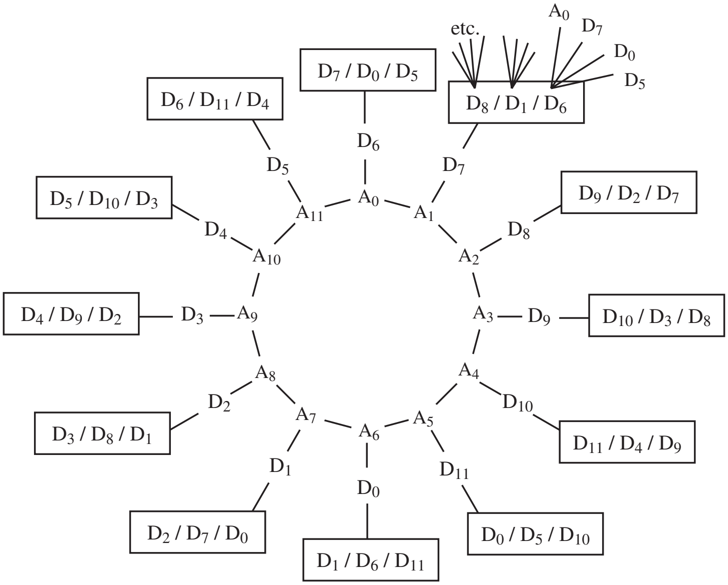


Figure 5. Diatonic and acoustic collections: distance value of 5

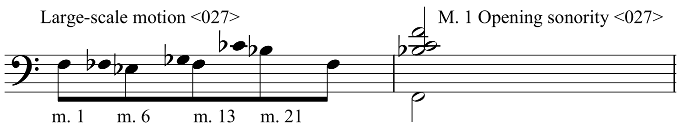
For any D_x, all $D_{(x\pm4)}$ have a distance value of 4
For any D_x, all $A_{(x\pm1)}$ and all $A_{(x\pm4)}$ have a distance value of 4
(mod 12)

For a distance value of 5:

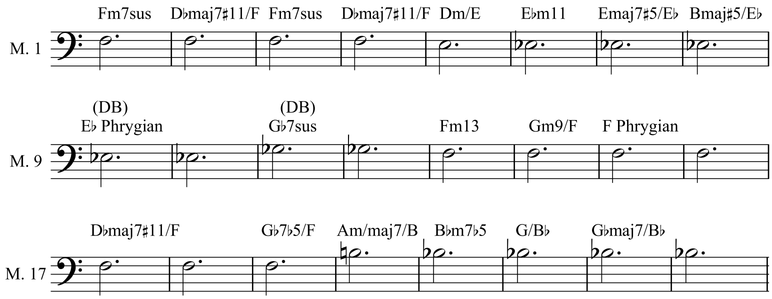
For any D_x, all $D_{(x\pm1)}$ and all $D_{(x\pm6)}$ have a distance value of 5
For any D_x, all $A_{(x\pm6)}$ have a distance value of 5
For any A_x, all $A_{(x\pm1)}$ have a distance value of 5
(mod 12)

Distance Values in "Little One"

How do these distance value relationships operate in Hancock's compositions? Example 8a shows the complete large-scale harmonic motion in Hancock's composition "Little One." The harmonic arrival points are beamed together, showing F (m. 1), E♭ (m. 6), F (m. 13), B♭ (m. 21), and returning back to F to repeat the composition. These harmonic arrival points comprise an [027] pitch-class set. Interior arrival points at E♭, F, and B♭ are each approached from a half-step above, indicated in Example 8a by the unstemmed noteheads preceding the beamed notes: F♭ precedes a



b



c

M. 1–4: F pedal: Distance Value of 1
F-7sus **(D3)/** D♭maj7(♯11) **(D8)/** F-7sus **(D3)/** D♭maj7(♯11) **(D8)**
Distance Value D3/D8 = 1

M. 6–10: E♭ Pedal: Distance Value of 1
E♭-11 **(D1)**/ Emaj7♯5/E♭ **(A6)**/ /E♭ Phrygian **(DB)**
Distance value D1/A6/DB = 1

Ic1 cadences (see 7a above)
Mm. 5–6: D-/E **(A7)/** Eb-11 **(D1)**: Distance value A7/D1 = 5
Mm. 12–13: G♭7sus **(DB)**/ F-11 **(D3)**. Distance value DB/D3= 4
Mm. 20–21: A-(maj7)/B **(A2)/** B♭-7(b5) **(A6).** Distance value A2/A6= 3

Example 8. Hancock, “Little One”: (a) (027) motives; (b) harmonic progression for improvisation; (c) distance-value relations

E♭ (m. 6), G♭ precedes F (m. 13), C♭ precedes B♭ (m. 21). The right-hand side of Example 8a shows the opening sonority to the composition, an [027] pitch-class set, and we may consider the large-scale motion of “Little One” to be a composing out of this pitch-class set.

Example 8b provides the individual harmonies that appear above the bass progression of Example 8a. The harmonies shift above the rather static bass motion. The first four measures of Example 8b show that the chords over the F pedal oscillate between an F-7sus chord and a D♭maj7♯11/F;

first between mm. 1 and 2, and then repeating at mm. 3–4. The first part of Example 8c, labeled mm. 1–4, shows that the distance value consistently shifts only by 1, systematically establishing close relations.

The next extended pedal point is E♭ and occurs between mm. 6 and 10. As Example 8c also indicates, the distance value between the first, second, and fourth harmonies (E♭-11, Emaj7♯5/E♭, E♭ phrygian) also remains consistently at 1, moving from the D_1 collection through A_6 to D_{11}.[17] As in mm. 1–4, the distance value systematically establishes close relations.

While until now the composition supports shifting collections over a static bass, between mm. 9 and 11 the opposite and quite startling effect occurs: the bass shifts from E♭ to G♭ while the D_{11} collection remains invariant.

Finally, recall the interior interval-class-1 cadences shown in Example 7a: F♭ (or E) moves to E♭ (m. 6), G♭ moves to F (m. 13), and C♭ (or B) moves to B♭ (m. 21). For each of these interval-class-1 cadences, the harmonic progression establishes more remote distance values than those heard between mm. 1–4 and 6–12. This is shown at the bottom of Example 8c. At mm. 5–6 the E-to-E♭ move establishes a distance value of 5; the G♭-to-F move at mm. 12–13 establishes a distance value of 4; and the B-to-B♭ shift between mm. 20 and 21, a distance value of 3. Thus, while all three cadences share interval-class-1 motion in the bass, each is distinct and offers differing distance values.

In its entirety Example 8c shows how distance value relations are used systematically. At mm. 1–4 and 6–10, these collections unfold over a pedal point in the bass, proceeding at the close distance relation of 1. The cadences at mm. 6, 13, and 21 are each similarly structured via interval-class-1 bass motion, but each consists of distinctive distance relations. These more remote distance relations of 3, 4, 5 focus and clarify the points of harmonic arrival in the composition.

Further Innovations: “Dolphin Dance”

One of Hancock’s most celebrated compositions is “Dolphin Dance.” This composition has remained a jazz standard, due in part to its inclusion in the Real Book collection.[18] “Dolphin Dance” combines a number of features discussed in the preceding compositions with other innovative techniques.

A skeletal version of “Dolphin Dance” appears in Example 9. The thirty-eight–bar composition has three major sections: mm. 1–16, mm. 17–24, and mm. 25–38. The central section, between mm. 17 and 25, includes two pedal points in the bass. The overall bass activity is bracketed between mm. 17 and 25, and the bass remains on G for four measures (mm. 17–20), and then moves to F for three measures (mm. 21–23) before

Example 9. Hancock, "Dolphin Dance"

passing through to E♭ at m. 25. We may hear this descending third motive in the bass between mm. 17 and 25 as motivated by the descending third motive that appears in the opening melody between mm. 1 and 5, again linking G–F–E♭ and bracketed in the treble clef at mm. 1–5.[19] Thus, this motivic association takes on a formal role by importing the opening melodic material into the bass, providing the underpinning for the second formal section between mm. 17 and 25.

In addition, the brackets above the first two systems show the large-scale progression of keys between mm. 1 and 17. There is a progression of diatonic regions, beginning first with E♭ major (D_3), moving to G major (D_7), touching very briefly on B major (D_B) in the second system at m. 10, returning to D_3, and then progressing to D_7. In this section we hear diatonic regions controlling longer spans of music than merely at the chord-to-chord level. The beamed bass notes at mm. 8–9 (A–D–G) and the same pitches at mm. 15–17 show how the move to G major (D_7) is articulated through a standard functional ii–V–I progression of A-7 to D dominant to Gmaj7. We might note that the progression of keys—E♭, G, B, E♭, and so on—is the very same progression presented in Example 1 from Coltrane's "Giant Steps," and it may be that Coltrane's composition provided a middleground model for the first seventeen measures of "Dolphin Dance."[20]

Within these interval-class-4–related harmonic regions between mm. 1 and 17, we can hear how distance relations create a local embellishment at mm. 1–3. Note that the E♭7sus chord at m. 2 embellishes the E♭maj7 chords that surround it at mm. 1 and 3. This m. 2 chord articulates the D_8 collection, and this collection establishes a distance value of 1 to the surrounding D_3 harmonies. Thus, in these first three measures the overarching D_3 collection is embellished by a collection in a distance value 1 relationship.[21]

A similar method of embellishment takes place in the second section between mm. 17 and 24. As the collections between the staves indicate, all of the successive harmonies over the G pedal unfold in a distance value relationship of 1. Similarly, all the harmonies that unfold over the F pedal likewise unfold in a distance value 1 relationship.[22] These close distance-value relationships show a systematic treatment of harmonies that are stated over pedal points within this section of the composition.

In sum, the preceding analysis has highlighted the harmonic organization of the first two sections of the composition. Measures 1–17 articulate a series of interval-class-4–related harmonic areas, linking D_3, D_7, D_B, D_3, and D_7. Furthermore, the bass activity between mm. 17 and 24 may be heard as a motivic enlargement of the skeletal melodic structure of mm. 1–5. And in both sections, Hancock makes use of local progressions that embellish at a distance value of 1.

Hancock's compositions shaped significantly the expanding harmonic resources available to jazz composers and improvisers in the 1960s and after. In the absence or suppression of functional harmonic progressions, Hancock's compositions offered different compositional strategies. Among these strategies are melodic and harmonic organization through interval cycles ("One Finger Snap," "Jessica," and "King Cobra"), systematic methods to link modal harmonies derived from diatonic and acoustic collections ("Little One" and "Dolphin Dance"), and motivic enlargement that associates a referential harmony with large-scale bass motion ("Little One") or associates melodic motion with bass motion ("Dolphin Dance"). Hancock's compositions offered consistent, innovative, and influential approaches to harmonic structure and progression. Later jazz composers, such as Richard Beirach, Jim McNeeley, Maria Schneider, and others, adopted many of the compositional approaches forged in the 1960s by Hancock (and such contemporaries as Chick Corea and Wayne Shorter). These ideas form an important core of contemporary jazz composition.

NOTES

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1. These seven albums have been released together as *Herbie Hancock: The Complete Blue Note Sixties Sessions* (Blue Note 95569).
2. For presentations of modal jazz, see Kernfeld 1981; Gridley 1994; Tirro 1993; and Porter, Ullman, and Hazell 1993. In Waters 2000 I argue that problems and inconsistencies with the term "modal jazz" arise from the conflation of three related, yet distinct, ideas: modal improvisation, modal accompaniment, and modal composition.
3. Jazz performers sometimes refer to the harmonic vocabulary under discussion here as "slash-chord" harmony, since the chord symbols often involve two designations (upper structure and bass note) separated by a slash (e.g., Dmaj7/E).
4. Some commentators instead describe this fourth scale as the "Spanish phrygian," an eight-note collection (in this instance consisting of the pitches D, E♭, F, F♯, G, A, B♭, C). More recent evidence shows that the scale provided at the recording session was a mode of G harmonic minor. See the photo in Kahn 2000, 70.
5. The notion of interval cycle is discussed in Antokoletz 1977, 1984, 1986; Lambert 1990; McNamee 1985; Porter 1989–90; and Headlam 1996. A number of George Perle's treatments of this topic have been collected in *The Right Notes* (1995).
6. "Jessica" is from Hancock's recording *Fat Albert Rotunda* (Warner Bros. 1834).
7. Hancock often makes a substitution in the final measure, turning the E♭-7(♭5) harmony into an E♭ dominant sonority. This shift to E♭ dominant then articulates the large-scale harmonic arrival of the A♭ minor tonic at the return to the top of the form.
8. From the liner notes to the original album *My Point of View*, also contained in the liner notes to the 1998 Hancock box set *The Complete Blue Note Sixties Sessions* (Blue Note 7243-4-95569).
9. These aeolian harmonies are labeled as in the subsequent examples as D♭maj7/F and its transposition Amaj7/D♭.
10. The chord qualities shift between each statement of D♭ to F, however. At both mm. 25 and 29 the chord quality is maj7(♯11) for D♭ and F; at mm. 31–32, however, D♭-(maj7) and F-(maj7) are used.
11. While the notion of this kind of "fundamental bass" analysis that regards the upper structures as separate from the pedal point may be problematic, it is interesting that Hancock's copyright deposit to "King Cobra" (held at the Library of Congress) provides only the upper-structure harmonies, omitting the pedal point. This provides some evidence that Hancock considered the upper-structure harmonies as somewhat independent of the pedal point.
12. This E-to-E descent reverses the direction of the two E-to-E octave ascents that take place between mm. 33 and 48.
13. See "Flamenco Sketches" and "So What" from Examples 1–3.

14. Jay Rahn (1991) has shown that of all possible seven-note collections, these two collections (the diatonic and the ascending melodic minor) are privileged in that they contain the fewest "ambiguities" and "differences." An ambiguity refers to a single scale in which intervals with the same specific sizes—the identical interval class—may have a different generic size. An example of an ambiguity in the diatonic collection is B–F and F–B: both have the same specific size (interval class 6), but each has a different generic size (B–F is a fifth in the scale, while F–B is a fourth). Conversely, a difference refers to a single scale in which the generic interval is the same while the specific interval is different. An example of a difference in the diatonic collection is the third: while the third always has the same generic identity of two scale steps, its specific identity may be either major or minor (interval class 4 or 3).

    The notion of scale/chord relationships in jazz has dominated the jazz pedagogy literature for several decades, probably beginning with Russell 1953. See also Pressing 1984 and Miller 1996. Several studies are devoted to the notion of six-to-eight–note collections in an extended tonal (or "neocentric") context; see Wile 1995 and Tymoczko 1997, 2004.
15. Hancock also uses the octatonic collection as another harmonic/improvisational source; the use of this collection is not examined in this article. I examine the interaction of diatonic, acoustic, octatonic, and hexatonic collections in Waters 2004.
16. Following typical jazz nomenclature, dashes (-) indicate minor quality triads (therefore G-7 refers to a G-minor seventh chord); "alt." refers to an altered dominant chord, including upper structure alterations such as flatted ninth, raised ninth, raised eleventh, and flatted thirteenth.
17. This analysis considers the m. 8 harmony as subsidiary to the harmonic progression at mm. 6–7 and 9–10.
18. The *Real Book* is an unauthorized fake book and is the most popular and widely used by jazz players.
19. This type of motivic association between the melodic and bass dimensions seems not to be typical of most jazz compositional practice. Another of these motivic associations appears in the following measures, between mm. 25 and 30. The melodic motive, labeled X, appears in the melody at mm. 25–26, is duplicated with the same pitch classes in the bass (mm. 26–27), transposed up a whole step (mm. 27–29, indicated as T_{2x}), and inverted and transposed (mm. 29–31, indicated as $T_{3I(x)}$).
20. This large-scale interval-class-4 harmonic motion is corroborated by the melodic motion shown by the treble clef beams between mm. 1 and 14: the melody progresses at interval class 4 in three moves: G–B (mm. 1–8), F♯–B♭ (mm. 9–12), and B♭–D (mm. 13–16). The focal melody pitches at mm. 9–16 (F♯–B♭, B♭–D) also bear some relation to the melody of Coltrane's "Giant Steps." I consider here the C-7 (mm. 5 and 7) as a harmonic substitute for E♭maj7 and operating within the D_3 region, and the G♯-7 (m. 10) as a harmonic substitute for Bmaj7 and operating within the D_B region.
21. Some players substitute at m. 6 A♭7(♯11) for the A♭maj7(♯11). This similarly embellishes the mm. 1–7 D_3 collection with a collection in a distance value 1 relation (in this case, A♭7♯11 supports the A_8 collection).

22. Hancock at times uses other harmonies in this passage that do not support this distance value 1 relation: he sometimes uses C-(maj7)/G at m. 20 (the A_5 collection), and uses $F_{13}(\flat 9)$ at m. 22. This latter harmony relies on the octatonic collection.

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