Circle Progressions and the Power of the Half Step

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Fundamental harmonic motion by descending fifth or ascending fourth is likely the most recognizable feature in common practice period musical compositions, making macro analysis a facile tool in the hands of music instructors, students and analysts. Melodic half step motion is also a consistently evident and integral part of tonality, and inextricably tied to the circle progression. Just as the strongest harmonic motion is that of the descending fifth/ascending fourth, so the strongest melodic motion is that of the half step. half step motion from leading tone to tonic provides great impetus toward the tonal center.

The tonic and dominant scale tones are the most stable of the seven diatonic scale tones, and are the framework upon which most tonal melodies are built. It is apparent that the functions of some scale tones are of greater importance than other scale tones. So also the dominant chord to tonic chord circle progression has more aural momentum and significance in harmonic motion toward a tonal center than other circle progressions. Perhaps it would be useful, within macro analysis, to employ a symbol that would differentiate these more powerful circle progressions from other circle progressions. In the last two musical examples in this paper, the ">" symbol found on the period key of the common computer keyboard, is employed to show where half step motion is significantly involved in the circle motion.

Another important feature of tonality is found between the subdominant scale tone to the leading tone in any given key. This interval is uniquely tied to the partnership between circle motion and half step motion in that it is a part of the dominant seventh chord, and leads by two half step motions to the root and third of the tonic chord.

These three features of tonality—descending fifth harmonic motion, melodic resolution of the leading tone, and resolution of the interval of the tritone—operating together, provide the practical experience of the dimensions of tonality.

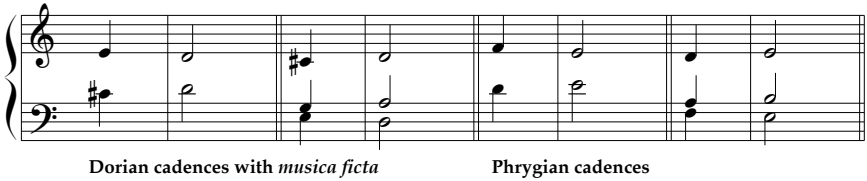
Nondiatonic tones, such as chromatic neighbor or passing tones, have long been recognized as a means of creating directed motion toward their following diatonic tones. From the thirteenth through the sixteenth centuries *musica ficta* (chromatic accidentals outside the modal gamut) was often used to give impetus toward a given tone—that most often being the final of the mode. The use of the raised seventh modal scale

tone and other half step motion outside the modal gamut became more prominent as polyphony developed. It is unlikely that the concurrency of these developments, polyphony and leading tone motion, was coincidental. Over the centuries, as the incidence of triadic structures and circle motion in modal music increased, so the use of incidental (outside the given mode) half step motion increased—especially that of the raised seventh modal degree, the function of which is that of the tonal leading tone.

In the early centuries of *musica ficta,* use of chromatic alterations seldom appeared in the written music but were rather added by performers according to accepted guidelines. As polyphony developed, composers became more concerned with having artistic control over the addition of accidentals and were more likely to notate desired accidentals in the score. Guidelines for the use of *musica ficta* were not unanimously agreed upon and both theorists of the time and contemporary musicologists are not in complete agreement on a definitive list. The following abbreviated list is gleaned from guidelines commonly accepted by past and present modal theorists and musicians.

1. Sharp lower neighbor tones and other melodic leading ones.
2. Avoid a melodic tritone between F and B especially when the melodic line descends from B.
3. Make all fourths, fifths and octaves perfect.
4. Avoid cross relations.
5. When a piece ends on a sonority including a third above the bass, that third should be a major third.
6. Approach a perfect consonance from the nearest imperfect consonance, i.e., make a sixth moving by contrary motion outward to an octave, a major sixth. Make a third moving outward to a fifth, a major third; and make a third moving inward to a unison, a minor third. This results is the *clausula vera* cadence when occurring at the end of a phrase.

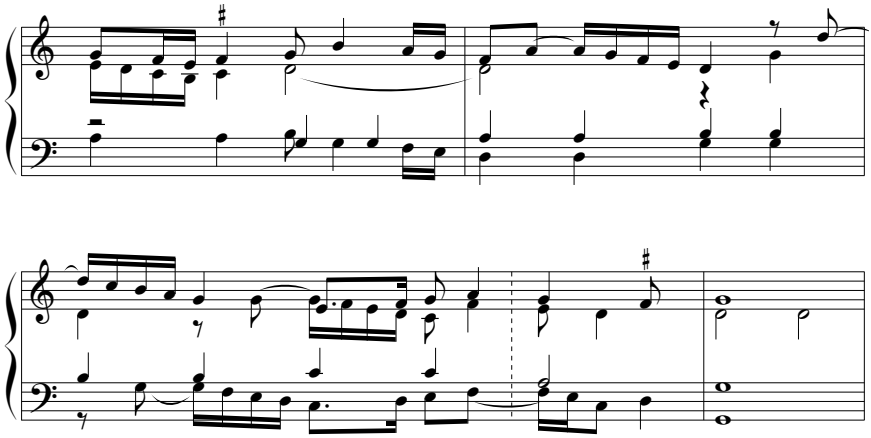
Any one of these guidelines could produce additional directed half step motion in modal melodies and their incidental harmonies. The sixth guideline may be further clarified by the following examples of modal cadences.



Example 1. Modal Cadences.

The only modal cadence not requiring a raised seventh before ascending to its final is the Phrygian cadence. Yet it is important to note the half step impetus is still present in the Phrygian cadence. However, it is now found between the second modal degree descending to the final of the Phrygian mode. The function of the leading tone, i.e., half step motion toward the tonic, now occurs in the descending voice.

An example of incidental circle progressions and leading tone motion in modal composition is found in the following passage from an instrumental canzona by Jacob Obrecht (c. 1430–1505). This short passage abounds with full triads, circle progressions, and melodic imitation highlighting the dominant and the final of the mode. In addition, there are two "leading tones" added by virtue of *musica ficta*—one in mid-phrase and one at a definitive cadence, both providing directed motion to the final of the mode.

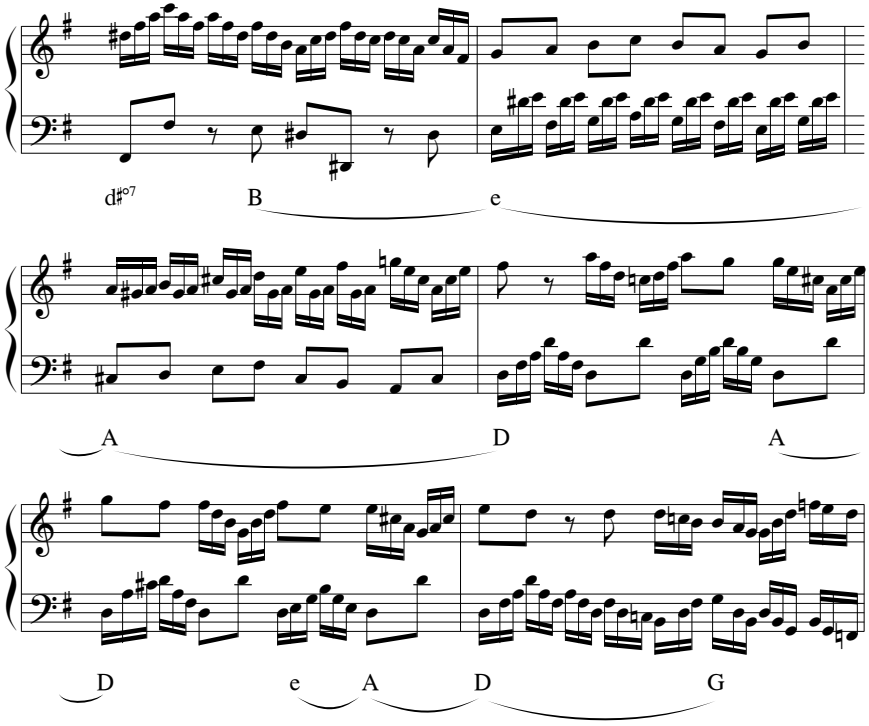


Example 2. Obrecht, Instrumental Canzona, mm. 27–31.

When melodic tension, whether by diatonic or chromatic half step, is combined with harmonic circle progressions, structural pull toward the tonic is heightened, i.e., the strength of tonality is heightened. The horizontal and vertical aspects of the music work together to produce progressive aural motion. Where there are harmonic circles in motion, it follows that there will be a kind of musical "centrifugal force." Musical centrifugal force, pulling inward toward a tonal center, is heightened by the power of melodic half step motion. It follows then, that centrifugal force in tonality results from the fundamentally strong harmonic root movement of descending fifth/ascending fourth in a circle progression leading toward the tonic chord, and additionally from the strong key

defining melodic half step movement of the subdominant and leading tones.

J.S. Bach, perhaps the greatest integrator of the melodic and harmonic dimensions of tonality, is a logical source for a musical example portraying the interworkings of circle progressions and the power of the leading tone function. The following excerpt is taken from Prelude XV in *The Well-Tempered Clavier,* Book I, BWV 860, mm. 8–13.

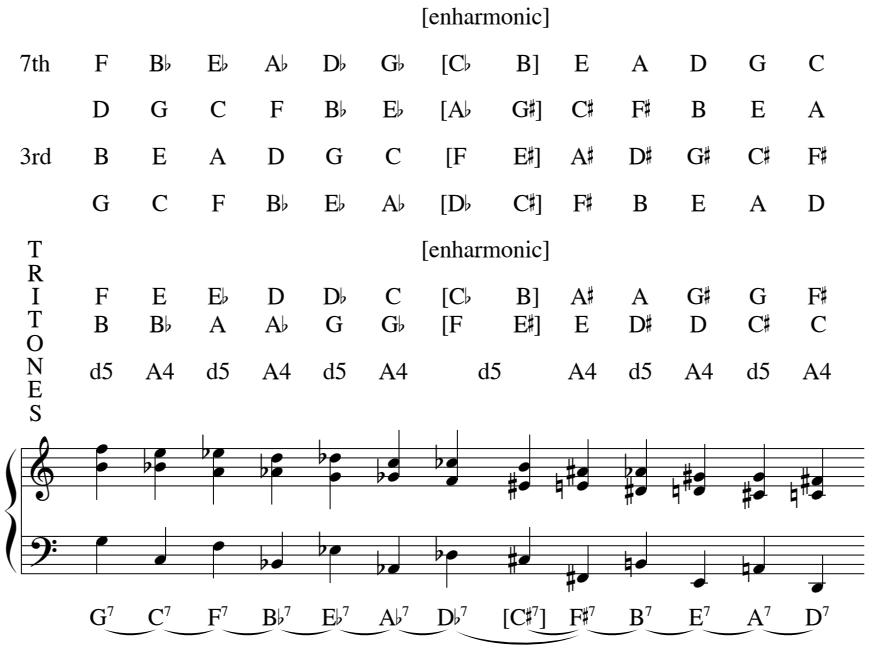


Example 3. J. S. Bach, Prelude XV, mm. 8–13, from *The Well-Tempered Clavier,* Volume I, BWV 860.

In measures eight and nine tonicization of vi (E minor) in the home key of G major is in progress. Both the D♯ fully-diminished seventh chord and the B major sonorities in the measure, provide harmonic motion toward the submediant (vi) chord in measure nine. The secondary leading tone, D♯, continues on as part of a repeating melodic embellishment figure in measure nine, even though the harmonic goal of the submediant has been reached. Bach maintains the tonal momentum with the use of repeated leading tone to tonic motion. The vi chord then moves in to V/V

(A major) by circle motion in measure ten. Now G♯ appears in a repeating melodic embellishment figure, keeping the half step momentum into the pitch "A" effective. In the same measure the A major triad's third, C♯, prepares to move by half step to the root of the D major dominant chord in measure 11 (most evident in the bass clef). An active prolongation of the D major dominant occurs through use of a measure-long bass dominant pedal tone, concurrent with the initial occurrence of the dominant followed by the tonic six-four chord (beats four and five). This, in turn is followed by the reappearance of the secondary dominant, A major (beats seven and eight). The dominant pedal tone is extended into measure twelve with the repetition of the dominant to tonic six-four progression. Halfway through the twelfth measure a circle chain leading back to the tonal center begins, reaching its goal on beats six and seven of measure thirteen. This six measure passage is a *tour-de-force* of interaction between circle progressions and the function of the leading tone.

The integral relationship between the harmonic force in circle progressions and the power of melodic half step motion may be observed in the following diagram and musical example. The diagram shows a progression of dominant seventh chords arranged in a circle of fifths. As the bass line moves by descending fifth/ascending fourth motion, the tritone in each dominant seventh chord simultaneously moves by half step to the tritone contained in the next chord. In addition, the two pitches of each tritone are resolving by half step motion to the root and third of the succeeding chord in the circle progression. After extracting the third and seventh of each of these dominant seventh chords, the resulting tritones can be arranged in descending minor second order by alternating diminished fifths with augmented fourths. In the chart on the following page, this chromatic series of tritones is aligned underneath the dominant seventh chords from which they are extracted.

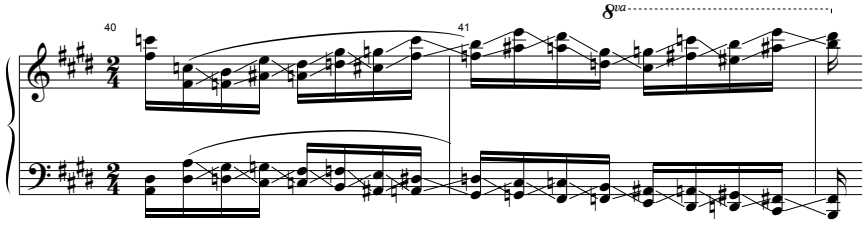


Example 4. Circle of Dominant Seventh Chords Highlighting half step Motion.

If the musical example is played on the piano, the pianist will hear the impetus created by the series of tritones moving in half step motion partnered with tritone resolution and the circle progression. Both chromatic and diatonic half step motion add force to the melodic progression. The sound is that of perpetual integrated melodic and harmonic momentum—tonal momentum.

A passage very closely related to the above diagram and musical example is evident in Chopin's Etude, op. 10, no. 3. Here again we see tritones moving in half step motion, and again alternating between augmented fourths and diminished fifths. The chords are fully diminished seventh chords—containing two interlocking tritones, rather than the dominant seventh chords—containing only one tritone, as in the musical diagram and example. Chopin's tritones never resolve, but retain momentum by moving in half step motion to tritones in the next chord. However, the harmonic circle progressions can still be aurally and visually discerned. Within each clef, the lowest tone of the diminished fifth's pitch class is always a perfect fifth from the pitch class on the top of the succeeding diminished fourth. Thereby an interwoven chain of perfect fifths appears in each clef, and the listener can hear tonal momentum

moving towards a goal—not the sound of a string of symmetrical sonorities lost in aural space.

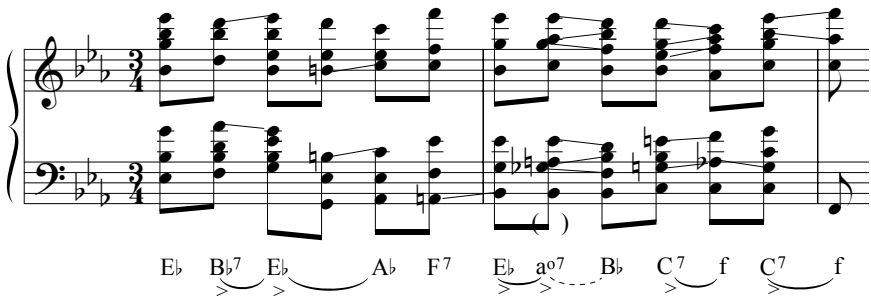


Example 5. Chopin, Etude, op. 10, no. 3, mm. 40–42.

Another piece from Chopin's op. 10 Etudes with interesting aspects of harmonic circle motion and melodic half step motion is Etude no. 11, in E♭. Within the third and fourth measures of the Etude there are two brief circle chains and many instances of tritone resolution by half step. The third measure starts with the tonic E♭ triad moving to the B♭ dominant seventh chord. The seventh resolves down by half step into the third of the following tonic chord as the leading tone resolves by half step upward to the tonic tone, as expected. Chopin then raises the fifth of the E♭ tonic triad by half step, creating an E♭ augmented chord, and providing half step motion into the third of the following A♭ chord. Notice that this alteration to the fifth of the tonic triad appears simultaneously in both clefs, doubling the altered tone and its half step resolution. A "pre-dominant buildup,"[1] begins with the following F dominant-seventh chord which is ultimately moving to the B♭ dominant chord on the second beat of the next measure. The F^7 chord is followed by a tonic six-four chord in which the secondary leading tone, "A-natural," resolves by half step and the seventh of the F^7 is suspended, delaying its resolution until the harmonic goal of the dominant is reached. This tonic six-four chord is followed by a secondary fully-diminished seventh chord of the dominant—the third of this inverted tonic chord moves down by another half step to the seventh of an A fully-diminished seventh chord which in turn resolves downward, by half step, to the fifth of the dominant chord. This melodic half step motion is again doubled—appearing in both clefs, as is the seventh's resolution to the third of the dominant. After the harmonic goal is reached the melodic momentum continues as the D moves by half step to become the flatted ninth, D♭, in the following C dominant-seventh chord.

1. Bruce Benward, *In Search of Musical Logic,* Madison, Wisconsin, 1996, p. 20.

The D♭ then continues downward by half step to the fifth of the following tonicized F minor triad. The leading tone and seventh of the C dominant sonority again follow their expected half step resolutions reinforced by doubling in the other clef. This C^7 to F minor progression repeats itself, in order to end the phrase on a root position f minor sonority.

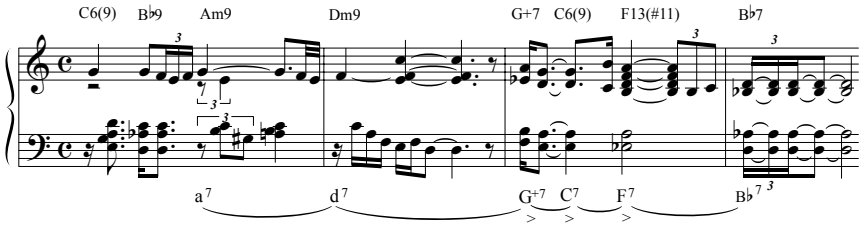


Example 6. Chopin, Etude, op. 10, no. 11, mm. 3–5.

As stated previously, the "gravitational pull" from a dominant chord to its tonic is uniquely strong because of the cooperation of descending fifth harmonic motion with melodic half step motion from the leading tone to the tonic tone. If the dominant chord is a seventh chord, both fourth and seventh scale degrees are present, resulting in the energy of both scalar minor seconds pulling simultaneously—the subdominant tone attracted toward the mediant tone while the leading tone is attracted toward the tonic. The result is that any chord in a circle progression that is a primary or secondary dominant seventh chord will employ two half steps propelled by contrary motion into the next chord, by virtue of the ascending resolution of the chord's third and the descending resolution of the seventh.

The energy of jazz is to a great extent a result of this interaction between circles and applied dominants. Jazz improvisers and performers have long analyzed and constructed phrases and forms in terms of circle progressions—especially the supertonic to dominant to tonic series. This circle series may be found in a single jazz standard in any number of different keys. An excerpt from a transcription of the late Bill Evans interpretation of the popular song, "Alfie," exemplifies this phenomenon. The excerpt begins in the fourteenth measure where the familiar opening melody returns. There is a circle chain beginning with the Am9, moving through Dm9, G+7, C6(9), F13(♯11), and ending with the B♭7 three measures later. The chromatic alterations and tertian extensions in the chain of secondary dominants produce still more melodic minor second attrac-

tion to successive chords. This integral interaction between circle progressions and diatonic and chromatic half step motion creates constantly varying degrees of attraction toward tonal goals.



Example 7. Bill Evans, "Alfie," mm. 14–17.

Also exemplified in this piece is the jazz musician's common practice of replacing a dominant functioning seventh chord with the dominant seventh chord that has its root a tritone away from that of the original chord. For example, the B♭7 in measure 14, replaces an E dominant-seventh chord. An E7 would proceed in circle motion to the following Am9 or A7. The B♭ dominant chord has an important relationship to the E dominant chord it replaces in that they share the same tritone interval between their thirds and sevenths. For example, the third and seventh in the B♭7 chord are the pitches D and A♭, while the third and seventh in the E7 chord are the pitches G♯ and D—the same tritone spelled enharmonically in respect to each other. Jazz artists call this mechanism of replacing one dominant seventh with another, "tritone substitution." When a tritone substitution occurs, emphasis on the harmonic momentum of a descending fifth/ascending fourth root relationship is exchanged for emphasis on the melodic momentum of a half step root relationship. The energy of the minor second movement is substituted for the energy of the descending fifth/ascending fourth harmonic progression.

Harmonic circles and half step motion work together as an integrated phenomenon. This interlocking of the vertical and horizontal parameters of tonality provides a "three-dimensional" aural experience. Circles become spirals that funnel the listener's attention into new dimensions of aural consciousness held inside each tonal composition's musical heights and depths.

Selected Bibliography

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