Chapter Two

Easley Blackwood's *24 Notes: Moderato*

When Easley Blackwood composed his *Twelve Microtonal Etudes* (1980), one of his goals was to explore the properties of a variety of equal-tempered microtonal systems. Each of the twelve etudes exploits a single equal-tempered system ranging from 13 to 24 equal divisions of the octave. In this chapter, I begin by examining how Blackwood notates three of his equal-tempered etudes—*19 notes, 16 notes,* and *15 notes*—in order to demonstrate the care with which Blackwood chooses notational systems that reflect the acoustic properties of a given tuning. I then look at the specific compositional strategies that Blackwood employs in *24 notes: Moderato,* the etude set in 24-note equal temperament.

As a composer, Easley Blackwood is firmly rooted in the traditions of common-practice tonal harmony. Relatively recent works such as his *Piano Sonata in F♯–minor,* op. 40 and *Nocturne in C–major,* op. 41, no. 1 (both composed in 1997), are written in a neo-Romantic style, making use of chromaticism that would not be out of place in the late piano music of Chopin; in 1991, he describes one of his symphonic works in progress as "the radical piece that Sibelius didn't write in 1916."[1] We know that Blackwood's microtonal music is influenced by his interest in traditonal harmony because he says that he is intrigued by "finding conventional harmonic progressions" in unfamiliar tunings.[2] Blackwood composes *24 notes* in a strict contrapuntal style. The familiar rules of counterpoint divide the intervals into two types: consonances and dissonances. To these two categories, Blackwood adds a third interval type called the "discord" to account for the new quarter-tone intervals.

In general, Blackwood uses the term "discord" to describe any microtonal sonority that sounds substantially out of tune with respect to the familiar diatonic and chromatic consonances and dissonances; discords are "rough sounds."[3] Both consonances and dissonances can be discordant. He characterizes discordant intervals, triads, and seventh chords with negative, judgemental adjectives such as "disagreeable," "undesirable," "unacceptable," and even "unusable," although he considers discordant dissonances to be less offensive in character than discordant consonances. Blackwood refers to the quarter-tone intervals available in 24-note equal

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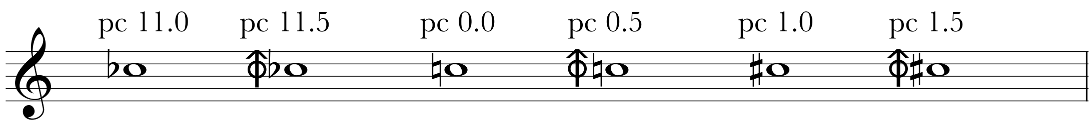
[1] Douglas Keislar, "Six American Composers on Non-Standard Tunings," *Perspectives of New Music* 29/1 (1991), 209.
[2] Ibid., 184.
[3] Ibid., 201.

temperament as "extreme discords," and he believes that there are few satisfactory harmonies that make use of these discords.[4]



Example 2.1: The pitch C with Blackwood's 'up' symbol and conventional accidentals

Blackwood's Notation	Interpretation	Accidental
⇑♭	one quarter-tone flat	𝄳
⇑ or ⇑♮	one quarter-tone sharp	𝄲
⇑♯	three quarter-tones sharp	𝄰

Table 2.1: Blackwood's accidentals and their equivalents

To notate quarter-tone pitches Blackwood employs an arrow symbol (⇑), which he refers to as an "up," in addition to the traditional sharps, flats, and naturals; there are neither double sharps nor double flats in *24 notes.*

[4] Easley Blackwood, *Twelve Microtonal Etudes for Electronic Music Media,* liner notes by the author, Sound 80, Minneapolis, 1980.

Although Blackwood uses what he calls a "down" accidental (⇟) in some tunings, he does not use one in 24 notes. As Example 2.1 shows, Blackwood places his up symbol to the left of a conventional accidental applied to any pitch. According to Blackwood, the second pitch in Example 2.1 is interpreted as "C–flat up" and sounds one quarter-tone higher than C♭. When Blackwood applies a letter name to "C–flat up," he names it "C♭⇞" to reflect his interpretation. The use of the "⇞" symbol makes clear that a pitch belongs to one of two twelve-note fields: pitches in the quarter-tone field are indicated with the up arrow, while pitches in the conventional field receive no arrow. Blackwood's strategy of dividing the 24-note pitch field into two distinct 12-note fields is similar to Ives's strategy of distributing the notes of the 24-note field between two keyboards—one at regular pitch and the other tuned a quarter tone sharp. Example 2.1 shows the valid combinations of traditional accidentals and up symbols applied to the pitch C. In Table 2.1, I have listed Blackwood's idiosyncratic quarter-tone accidentals along with their equivalents in what I refer to as my standard system. For Blackwood, there is no way to notate a pitch that is three-quarter-tones flat. It is worth remembering that *24 notes* was intended for electronic realization and not meant to be played by an organist, and synthesizers programmed to play in equal temperaments are indifferent to enharmonically distinct spellings.

However, as I demonstrate in some of the examples that follow, *24 notes* is a piece based on strict counterpoint, and the occasional change of enharmonic spelling can be helpful analytically.

At first glance, Blackwood's down symbol (𝄳) might appear to be redundant because it is possible to notate all twenty-four pitch classes using only naturals, sharps, flats, and up symbols. Far from being redundant, however, the down accidental would provide additional enharmonic equivalents which are needed to clarify voice-leading and the functions of non-chord tones; in order to demonstrate why the absence of certain enharmonic equivalents is a notational weakness, it will be helpful to consider how Blackwood notates three of his other equal-tempered etudes: *19 notes, 16 notes,* and *15 notes.* Each of these equal temperaments exhibits its own set of characteristic intervals, each of which requires a unique notational scheme.

Selected Issues of Notation in *Twelve Microtonal Etudes*

To understand the characteristics of a particular equal-tempered system, Blackwood must study in turn the acoustic properties and subjective character of each new interval. That is, he must compare the unfamiliar microtonal intervals to the more familiar ones—the just (pure) intervals of the harmonic series and the intervals of the twelve-note equal-tempered scale. Blackwood uses the word "recognizable" to characterize those intervals that sound similar to familiar ones; he uses the word "discord" to characterize the remaining intervals that sound more substantially out of tune. When inventing a notation for each tuning, Blackwood appears to rely on a simple criterion: if an interval sounds like a familiar interval, it should be spelled like one.

Interval Name	Size (in cents)
pure 6:5 minor third	315.641
$int_{19}5$ (minor third)	315.789
$int_{19}6$ (major third)	378.947
pure 5:4 major third	386.314
$int_{19}11$ (perfect fifth)	694.737
pure 3:2 perfect fifth	701.955

Table 2.2: Interval sizes in *19 notes*

When the octave is divided into nineteen equal parts, the smallest available interval measures one-nineteenth of an octave, or approximately 63.158 cents. I call this interval $int_{19}1$—the subscripted "19" indicates that the interval belongs to the 19-note equal-tempered scale. Blackwood is interested primarily in recognizable diatonic intervals, and in particular, consonant triads. Consequently, it is not surprising that the intervals which interest him most are major thirds, minor thirds, and perfect fifths. The 19-note scale has been discussed since the Renaissance; Francisco de Salinas's *De Musica* (1577) describes a 19-note scale in mean-tone tuning that contains good approximations of pure thirds and fifths.[5] Salinas's 19-note scale closely approximates the 19-note equal tempered scale that Blackwood uses.[6] The thirds in *19 notes* are close to pure; five-nineteenths of an octave, int$_{19}$5 (315.641 cents) is close enough to the pure minor third (315.789 cents) that most musicians would not hear the difference. In addition, even though it is approximately 7 cents flat with respect to the pure major third, int$_{19}$6 (378.947 cents) is much closer to pure than the major third of twelve-note equal temperament (400 cents), which is approximately 14 cents sharp. The nearest equivalent to the perfect fifth, int$_{19}$11 (694.737), is roughly 7 cents smaller than the pure perfect fifth and thus sounds slightly flat. I have summarized the consonances in *19 notes* in Table 2.2.

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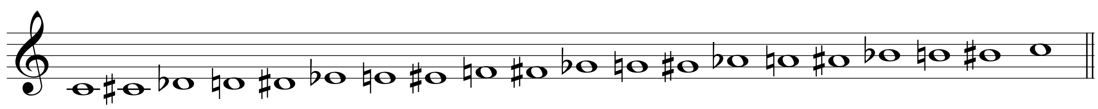
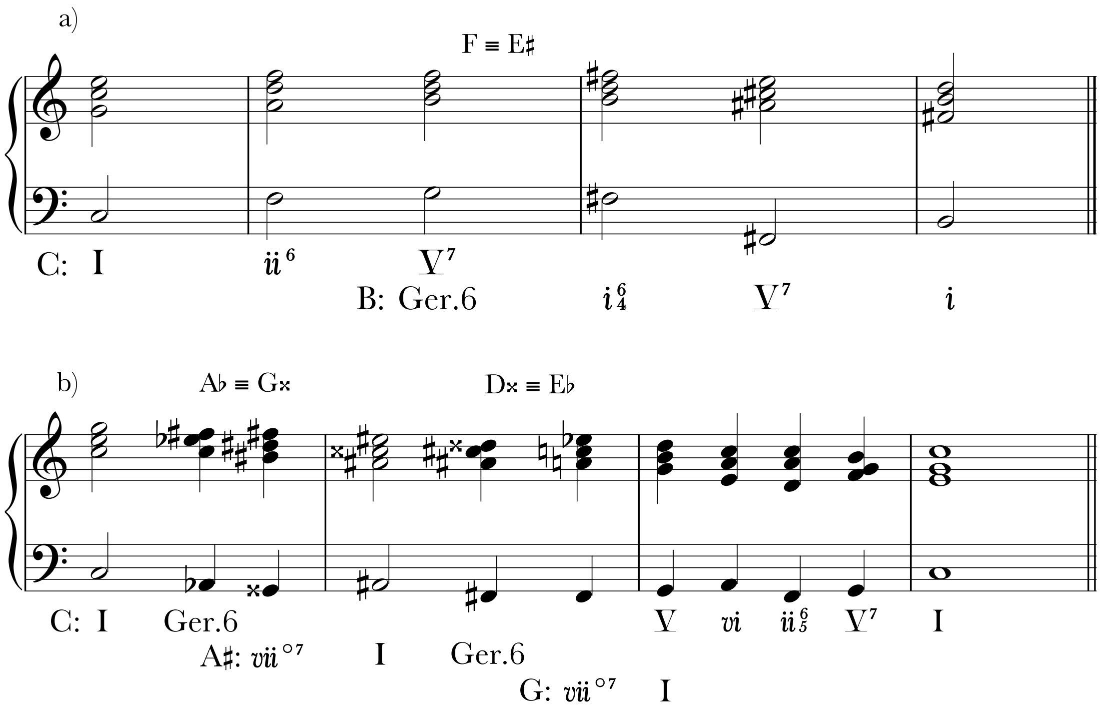
[5] Francisco de Salinas, *De musica libri septem,* ed. Macario Santiago Kastner (Kassel: Barenreiter, 1958).

[6] Douglas Leedy, "A Venerable Temperament Rediscovered," *Perspectives of New Music* 29/2 (1991), 205. Well-known microtonal composers such as Joseph Yasser and Joel Mandelbaum have experimented with the 19-note equal-tempered scale.



Example 2.2: Blackwood's 19-note chromatic scale



Example 2.3: a) conventional enharmonic relationship; b) enharmonic relationships in *19 notes*

The available consonances in 19-note equal temperament make it possible to write major and minor triads that sound well in tune. Example 2.2 shows Blackwood's 19-note chromatic scale. Especially important is how Blackwood's use of familiar pitch notation allows for a strong connection between how chords are written and how they sound. A triad that is notated with the pitches C–E–G not only looks like a C–major triad, but it sounds like one as well. One interesting feature revealed by Example 2.2 is that pitches that are normally considered enharmonically equivalent, such as F♯ and G♭, are now distinct, with F♯ sounding $\mathrm{int}_{19}1$ lower than G♭. There are new enharmonic equivalences in *19 notes.* Consider the minor third A♭–C♭: if one counts up a minor third ($\mathrm{int}_{19}5$) from A♭, one arrives not at the expected C♭, but at B♯; thus, C♭ and B♯ are enharmonically equivalent pitches. These unfamiliar enharmonic equivalences allow for some startling new chromatic chord progressions such as one suggested by Blackwood, which I have reconstructed in Example 2.3.[7] The chord progression in Example 2.3a exploits a familiar enharmonic equivalence in conventional tuning. Reinterpreting the minor seventh G–F as the enharmonically equivalent augmented sixth G–E♯ allows for a modulation from C major to B minor. In *19 notes,* the augmented sixth is enharmonically equivalent to the diminished seventh. Blackwood demonstrates how the augmented sixth A♭–F♯ (part of the German 6th in C) can be enharmonically reinterpreted as the diminished seventh G𝄪–F♯ that forms part of *vii*$^{\circ 7}$ in the key of A♯. Blackwood then

[7] Easley Blackwood, "Modes and Chord Progressions in Equal Tunings," *Perspectives of New Music* 29/2 (1991), 172. Here Blackwood mentions some new progressional and modulatory possibilities, but does not attempt to explore the full potential of chromatic harmony in the 19-note equal-tempered system.

repeats this process sequentially, reinterpreting the augmented sixth F♯–D𝄪 (part of the German 6th in A♯) as the diminished seventh F♯–E♭ (*vii*°7 of G). Blackwood describes the effect of this unusual chromatic sequence leading from tonic to dominant as "strikingly pleasant, but very strange indeed."[8] The bewildering array of new chromatic chord-progressions that take advantage of such alien enharmonic relationships would make a fascinating topic for future study.

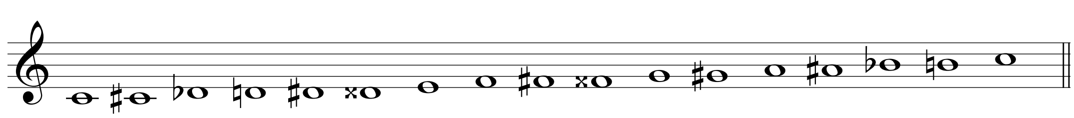
Interval Name	Size (in cents)
$int_{16}4$	300
equal-tempered minor third	300
$int_{16}5$	375
Pure 5:4 major third	386
equal-tempered major third	400
$int_{16}6$	450
$int_{16}9$	675
equal-tempered perfect fifth	700
Pure 3:2 perfect fifth	702
$int_{16}10$	750

Table 2.3: Interval sizes in *16 notes*

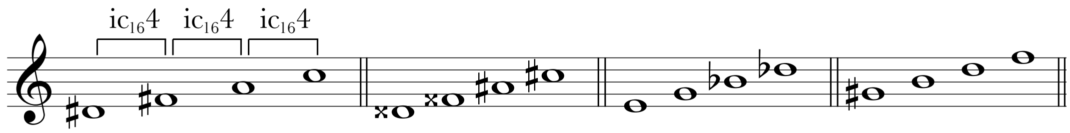
In *19 notes,* the presence of consonant triads provides Blackwood with an elegant solution to the problem of notation, but in many of the other equal-

[8] Ibid.,172.

tempered etudes compromises must be made to accommodate intervals that sound out of tune or discordant. When the octave is divided into 16 equal parts, the smallest available interval, $int_{16}1$, is exactly 75 cents. Table 2.3 compares the thirds and fifths of *16 notes* with their pure and equal-tempered counterparts. There is no interval in *16 notes* which is close enough to a major third to sound consonant—$int_{16}5$ measures 375 cents, which sounds flat and discordant with respect to the pure major third; the next largest interval, $int_{16}6$, measures 450 cents, which sounds too sharp to be a major third. The nearest equivalents to a perfect fifth are $int_{16}9$ (675 cents), which is flat, and $int_{16}10$ (750 cents), which is excessively sharp and highly discordant. Without recognizable perfect fifths and major thirds, there can be no recognizable major triads in *16 notes.* However, $int_{16}4$ is 300 cents wide, which is exactly the same size as the familiar equal-tempered minor third.



Example 2.4: Blackwood's 16-note chromatic scale



Example 2.5: Representative diminished-seventh chords in *16 notes*

Because the minor third represents the only familiar consonance, Blackwood chooses the diminished seventh chord—a chord composed of minor thirds—as the primary sonority in *16 notes.* Blackwood's premise that "if it sounds like a diminished seventh chord, it should be spelled like one"[9] dictates that his notation for 16-note equal temperament must ensure that each diminished seventh chord, regardless of its inversion, can be spelled as some appropriate combination of minor thirds and augmented seconds. After a process that he describes as "trial and error," Blackwood selects a 16-note chromatic scale whose notation appears in Example 2.4.[10] Example 2.5 shows how the four diminished seventh chords available in this tuning can be spelled using the pitches of Blackwood's chromatic scale. Unfortunately, some intervals that look as though they ought to be equivalent turn out not to be. For example, the apparent major third C–E spans six steps while F–A spans only five. Because Blackwood's notational philosophy leads one to

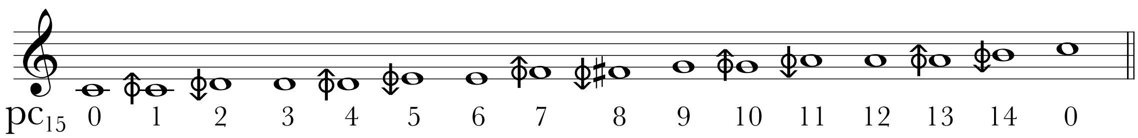
[9] Keislar, 189.
[10] Blackwood, "Modes and Chord Progressions in Equal Tunings," 181.

expect that any two intervals that look the same (such as two apparently conventional major thirds) should sound the same, this inconsistency is a weakness in the notation of the scale in Example 2.4.

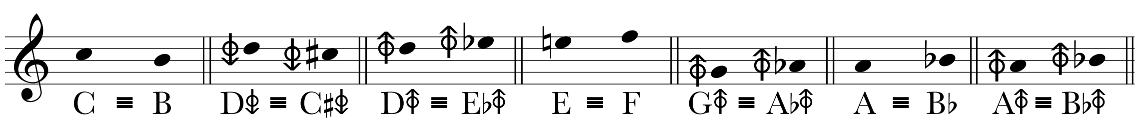
Interval Name	Size (in cents)
pure 6:5 minor third	316
$int_{15}4$	320
$int_{15}5$	400
equal-tempered major third	400
equal-tempered perfect fifth	700
pure 3:2 perfect fifth	702
$int_{15}9$	720

Table 2.4: Interval sizes in *15 notes*

In 15-note equal temperament there is yet another set of consonances and discords that requires a new notational scheme. When the octave is divided into 15 equal parts, the smallest available interval, $int_{15}1$, measures 80 cents. This tuning does produce a recognizable major third; $int_{15}5$ measures 400 cents, which is the same size as the familiar equal-tempered major third. The nearest equivalent to the minor third, $int_{15}4$, measures 320 cents, which closely approximates a pure minor third. With recognizable major and minor thirds, Blackwood can use major triads in *15 notes.* However, writing a triad by combining the five-step major third with the four-step minor third yields an interval of nine steps. Spanning 720 cents, this interval ($\mathrm{int}_{15}9$) poorly approximates a perfect fifth. Because $\mathrm{int}_{15}9$ sounds greatly out of tune, the major triads in *15 notes* are themselves somewhat discordant, especially when voiced in root position, which requires a perfect fifth sounding above the bass.[11]



Example 2.6: Blackwood's 15-note chromatic scale

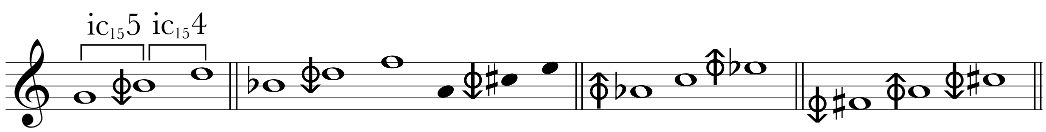


Example 2.7: Selected enharmonic equivalences in *15 notes*

Example 2.6 shows Blackwood's 15-note chromatic scale and Example 2.7 shows some of Blackwood's enharmonic equivalents. In this tuning, Blackwood makes use of both "up" and "down" symbols, which raise or

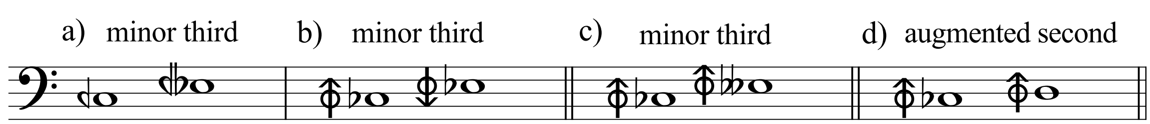
[11] Interestingly enough, Blackwood's major triad corresponds to Cohn's "parsimonious trichord" in 15-note equal temperament, which suggests that Blackwood's 15-note music may be studied from the perspective of neo-Riemannian transformational theory. See Richard Cohn, "Neo-Riemannian Operations, Parsimonious Trichords, and Their *Tonnetz* Representations," *Journal of Music Theory* 41/1 (1997).

lower a pitch $int_{15}1$. This chromatic scale possesses several unusual features; for example, the major second G–A and the minor third G–B♭ both span three steps, making the major second and minor third enharmonically equivalent. Equally odd is that the major third C–E is enharmonically equivalent to the perfect fourth C–F; both intervals are instances of $int_{15}6$. A further notational complication is that there are two distinct major thirds in this tuning—the six-step major third that is equivalent to the perfect fourth is a larger interval than the five-step major third used to build major triads. For a musician familiar with the enharmonic pitches of the standard piano keyboard, the unusual enharmonic equivalences of Blackwood's 15-note notation are difficult to accommodate.



Example 2.8: A sample of major triads as notated in Blackwood's 15-note notation

Blackwood's general rule in *15 notes* is that "a close-position [major] triad should appear as a major third plus a minor third, with a perfect fifth between the outer two pitches."[12] Blackwood's notation of 15-note equal temperament allows for major triads that can be written as stacked thirds, some of which are shown in Example 2.8. The G–major triad is the most straightforward triad in this example, consisting of a major third, $int_{15}5$, plus a minor third, $int_{15}4$. Spelled with the pitches {G, B↓, D}, this triad looks like a conventional G–major triad with a lowered third. The B♭–major triad vindicates Blackwood's strange enharmonic equivalences, since it would be impossible to write this collection of pitches as a stack of thirds using only the pitches of Example 2.6. The B♭–major triad is enharmonically equivalent to the A–major triad because both are composed of the pitch-classes {12, 3, 6}. The A♭↑–major triad looks like a conventional A♭–major triad with a raised root and raised fifth, while the F♯↓–major triad resembles a conventional F♯–minor triad with lowered root and fifth and raised third.



Example 2.9: Enharmonic spellings of the int 3.0 between pc 6.5 and pc 9.5

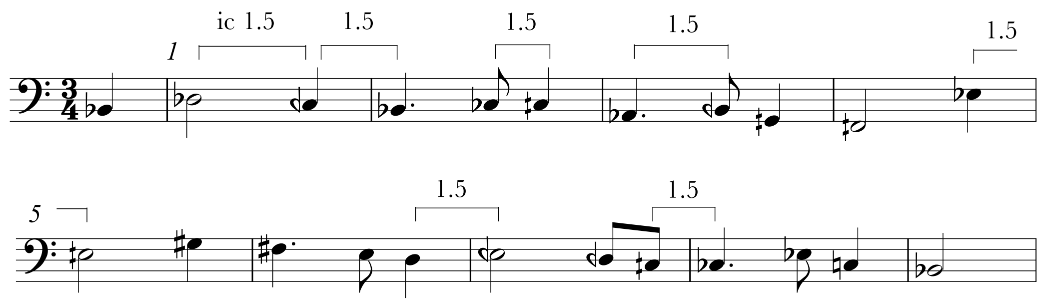
[12] Blackwood, "Modes and Chord Progressions in Equal Tunings," 188.

Many equal-tempered systems require compromises to strike a balance between how a chord is notated and how it sounds. Spelling a chord or interval so that its notation on the staff reflects how it sounds is a reasonable general rule. I would extend this rule to say that if an interval exhibits the contrapuntal characteristics of a consonance, then it should be spelled as a consonance. In *24 notes,* without the enharmonic equivalents that Blackwood's special down symbol would provide, it is not always possible to spell intervals as they in fact sound. For example, there is an int 3.0 in m. 11 that behaves like a consonant minor third in note-against-note counterpoint even though it is spelled as the augmented second C𝄳–D𝄲 (see Example 2.12 below). The alternative spelling replaces the augmented second C𝄳–D𝄲 with the minor third C𝄳–E𝄳♭, shown in Example 2.9a. With a down symbol, Blackwood could spell the minor third as C♭⇑–E♭⇓ (Example 2.9b). Even without the down symbol, Blackwood could spell this minor third as C♭⇑–E𝄫⇑ (Example 2.9c) if he allowed for double flats. But neither of these options is valid within Blackwood's notational scheme, and consequently the int 3.0 between the pitch C♭⇑ and pc 9.5 can only be spelled as the augmented second C♭⇑ to D♯⇑ (Example 2.9d). In *24 notes*, Blackwood makes use of traditional strict contrapuntal models that posit a structural difference between enharmonically equivalent intervals, such as a consonant minor third and a dissonant augmented second. Choosing the correct enharmonic spelling of a pitch-class or interval can make it easier to interpret voice-leading and dissonance treatment correctly.

In traditional counterpoint, dissonance is subordinate to consonance; the rules of counterpoint specify that dissonances must resolve by proceeding to consonances in carefully controlled ways. Blackwood extends the usual model of counterpoint by creating a hierarchy in which dissonances are subordinate to consonances and discords are subordinate to dissonances. I now examine *24 notes* in terms of its dissonance and discord treatment in order to demonstrate how Blackwood creates new contrapuntal relationships that incorporate quarter-tone intervals.

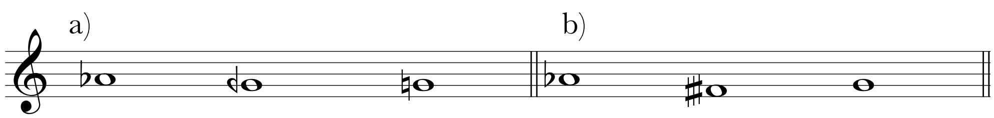
Dissonance and Discord Treatment in *24 notes*

The form of *24 notes* derives from a 6-voice passacaglia that opens with a subject that serves as a ground bass (Example 2.10). There are eight statements of the subject; the first five statements occur in the bass voice, which supports a new upper voice in counterpoint for each successive statement of the subject. With the arrival of the sixth voice, the subject appears in successively higher registers; the subject's sixth and seventh statements appear in the tenor and alto registers respectively, with the eighth and final statement presented by the soprano.



Example 2.10: *24 notes,* mm. 1–9, subject

The subject itself suggests two potentially interesting compositional ideas that Blackwood chooses not to exploit. The first compositional idea is suggested by the subject, in which B♭ appears to serve as a tonic. The piece, while not necessarily in the key of B♭ minor, could be centered around B♭ in some way. The subject begins and ends with the pitch B♭ while outlining the pitch space between B♭$_2$ and B♭$_1$. Although the piece ends with a B♭–minor triad that lasts for 5 complete measures, there is little else in the passacaglia to support the interpretation of B♭ as tonic. The second compositional idea is found in the opening four pitches B♭–D♭–C𝄳–B♭, where the pitch C𝄳 divides the minor third B♭–D♭ into two equal intervals.[13] In spite of the seeming importance of this interval (the subject opens with this motive and there is a preponderance of int 1.5 in the subject), int 1.5 appears to have little motivic significance in *24 notes.*

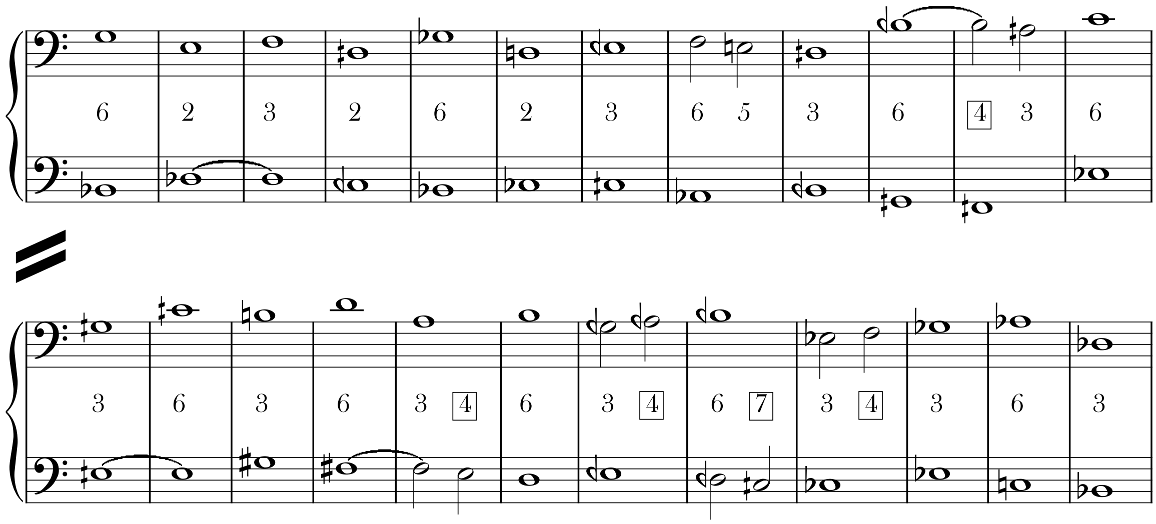


Example 2.11: a) Blackwood's spelling; b) enharmonic respelling clearly showing neighbour motion

There are many instances in *24 notes* where the spellings do not reflect the voice leading, such as the line B♭–C♭–C‡ in m. 2. If we replace the fifth note of the subject (C♭) with the enharmonically equivalent B♮, the new spelling B♭–B♮–C‡ is easier to read and better reflects the upward passing motion from B♭ to C‡. Another example of the conflict between spelling and apparent voice-leading is evident in the line A♭–G𝄳–G♮ in m. 78 (Example 2.11a). The G𝄳 sounds lower than the G♮; if the G𝄳 were respelled as F♯ as in

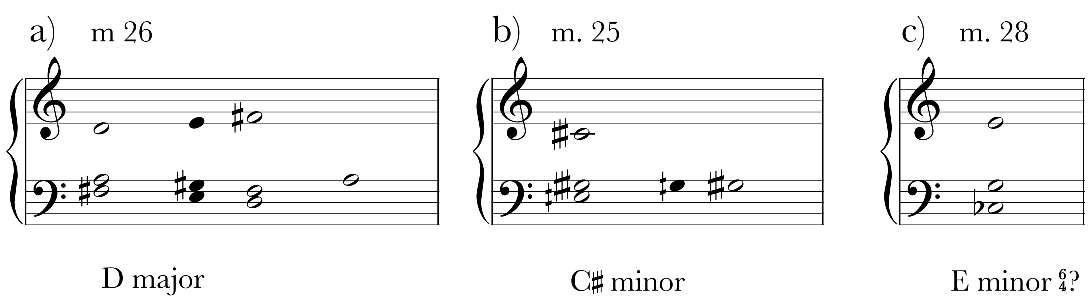
[13] Henceforth, I substitute my "standard" accidentals for Blackwood's up symbol. See Table 2.1.

Example 2.11b, it would be easier to see that the F♯ sounds as though it is a lower neighbour to G.



Example 2.12: *24 notes*, mm. 10–19, represented as species counterpoint

The entry of the second voice allows us to observe Blackwood's use of strict contrapuntal models. In Example 2.12, I have sketched mm. 10–19 in the manner of a species counterpoint exercise with the subject in the lower staff acting as a *cantus firmus.* The numbers between the staves represent the generic intervals between the two voices; numbers in boxes represent dissonant intervals. (Example 2.12 assumes that intervals have the same meaning in *24 notes* that they do in conventional species counterpoint.) The upper voice is set against the subject in first-species note-against-note counterpoint with the dissonances treated as second-species passing notes and fourth-species suspensions. All of the dissonances in Example 2.12 are treated in strict contrapuntal style with the exception of the three augmented seconds D♭–E, C𝄲–D𝄲, and C♭–D. These three augmented seconds behave as though they are first-species consonances, which supports the idea that these are not augmented seconds, but in fact minor thirds. While the first of these intervals could be spelled as a minor third (D♭–F♭), the second cannot be respelled as a minor third without E𝄳, a note that lies outside of Blackwood's system. The third augmented second would require E𝄫 (also outside of Blackwood's system) to be spelled as the minor third C♭–E𝄫, but it also could be respelled as B–D, which further reinforces the notion that C♭, the fifth pitch in the subject, should be spelled as a B♮ to better reflect its contrapuntal function.



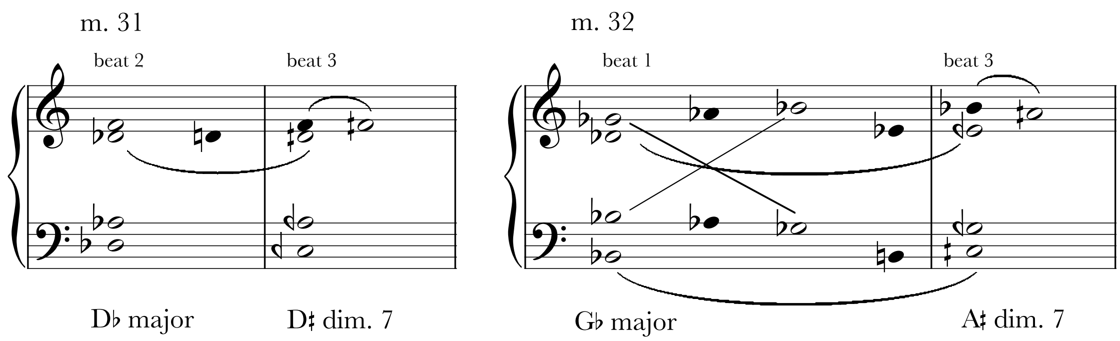
Example 2.13: Selected triads in *24 notes:* a) voice-exchange; b) lower neighbour; c) misspelled triad

The harmony produced by the three-voice counterpoint consists of major and minor triads in all inversions, as well as diminished triads in $^{6}_{3}$ inversions. These triadic configurations are all considered consonant in strict counterpoint, except for the $^{6}_{4}$ triads, which Blackwood does not treat as dissonant. Blackwood elaborates the triads by conventional contrapuntal techniques, such as the voice exchange in m. 26 (Example 2.13a), and the lower-neighbour non-chord tone in m. 25 (Example 2.13b). Because the G𝄲 sounds one semitone lower than G♯, the tenor line actually unfolds a lower-neighbour figure even though the spelling obscures this function. There is at least one misspelled triad—the C♭ of the theme in m. 28 is harmonized with the pitches E and G, resulting in an enharmonically misspelled E minor triad.[14]

No discords appear in *24 notes* until the entry of the fourth voice; Blackwood reserves the discord, considered harsher than dissonance, for the thicker multi-voiced texture. He may have felt that the discordant clash would be too severe to be used in two- and three-voice textures. The examples that follow illustrate only those instances in which discords appear; there are surprisingly few discords in this piece, and until the entry of the

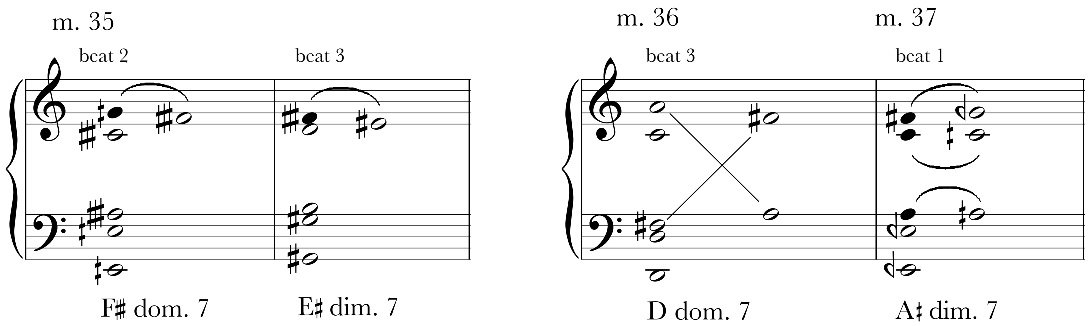
[14] Of course, if this C♭ were spelled as a B♮, the minor triad {E, G, B} would be correctly spelled.

fifth voice, all discords are treated strictly, prepared and resolved according to the rules of strict counterpoint.



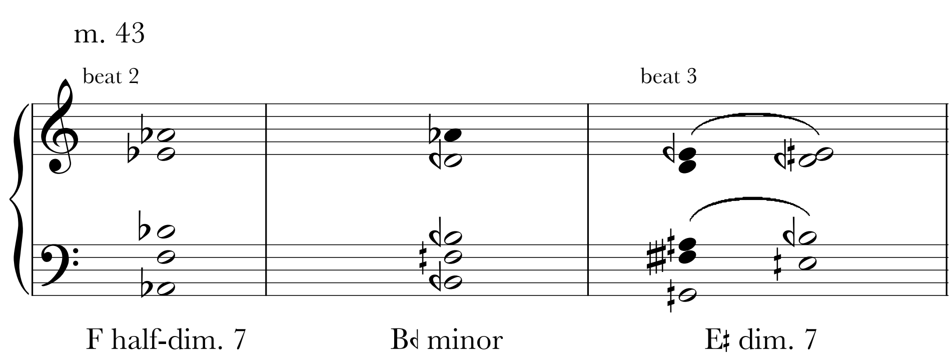
Example 2.14: *24 notes,* mm. 31–2

The first discord in the piece appears in m. 31, as the suspended F♮ resolves to F𝄲. We can interpret this discord resolution in one of two ways: (1) the discordant F resolves to the third of a D𝄲–diminished seventh chord—in other words, the discord resolves to a chord tone in a dissonant harmony; (2) the F functions as a discordant interval against the bass C𝄳 (int 5.5) which then resolves to the dissonant tritone C𝄳–F𝄲. In m. 32, the pitch B♭ is prepared as a chord tone of a G♭ major triad (a triad which is elaborated by a voice-exchange), suspended as a discord, and then resolved downward by step to the root of the dissonant A𝄲–diminished seventh chord.



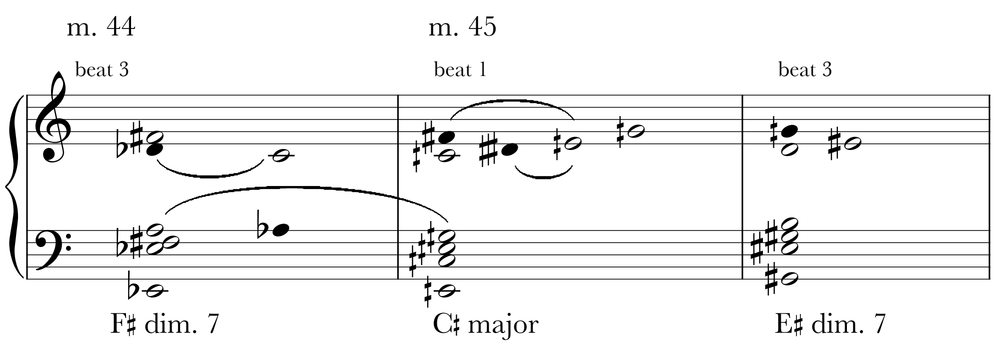
Example 2.15: ***24 notes*****, mm. 35–6**

In m. 35 (Example 2.15), the F♯ is prepared as a chord tone—the root of a dissonant dominant seventh chord—and then suspended as a discord, proceeding down by step to a chord tone in a dissonant diminished seventh chord in a manner similar to a typical 7–6 resolution of a suspension. In m. 37, there is a triple suspension prepared by a dominant seventh chord; the three notes {F♯, A, C}—which themselves form a dissonant diminished triad—sound as a discord against the bass E𝄳, resolving into the dissonant A𝄲 diminished seventh chord.



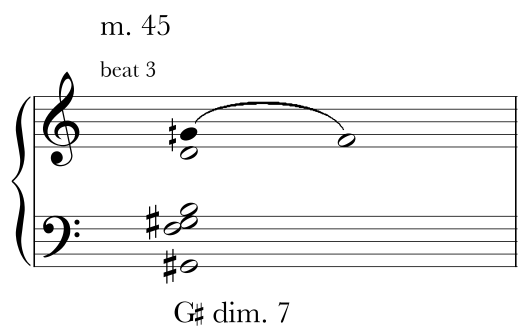
Example 2.16: ***24 notes*****, m. 43**

With the entrance of the fifth voice, discord treatment becomes considerably freer. While traditional triads and seventh chords continue to dominate the harmony, some discordant non-chord tones appear either without preparation or without resolution. In m. 43, the A♭ which sounds as a discord against the B𝄳–minor triad is prepared by common tone in the previous chord, but it is not resolved by step—the first time in *24 notes* that a discord omits its resolution (Example 2.16). On beat 3 of m. 43, the pitches {F♯, A𝄲, C♮, E𝄳} sound as a discordant appoggiatura resolving to the dissonant E𝄲–diminished seventh chord. The soprano E𝄳 is the first unprepared discord in the piece.



Example 2.17: *24 notes,* m. 44–5

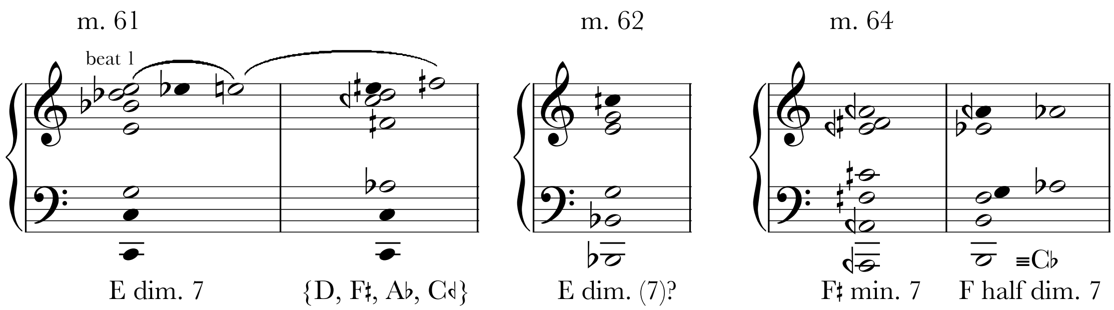
In m. 45, the soprano presents a double neighbour figure F𝄲–D♯–E𝄲 (Example 2.17). The D♯ sounds as a dissonance against the C𝄲–major triad, while the F𝄲 sounds as a discord. Of special interest is the choice of the discordant F♯ because of its relationship to the two chord-tones in the soprano in m. 45: E♯ (the third of the triad) and G♯ (the fifth). These two chord-tones are a minor third apart (ic 3.0), and the F♯ divides this interval into two equal int1.5s. This feature, which uses int 1.5 to divide a minor third, illustrates one of the ways in which int 1.5 *could* play a role in the piece. However, its use here is an isolated instance and appears to have little motivic significance.



Example 2.18: *24 notes*, m. 45, beat 3, E♯ respelled as F to clarify voice-leading

On beat 3 of m. 45, the soprano G♯ resolves down by third to the root of the E♯–diminished seventh chord. Here arises another enharmonic question—namely, why is the pitch of resolution E♯ and not F♮, as in Example 2.18? If the soprano line proceeded from G♯ to F, the suspension would appear to be resolving by step. Because both {E♯, G♯, B, D} and {G♯, B, D, F} spell conventional diminished seventh chords, and because

Blackwood appears to have no specific reason for favouring one enharmonic spelling over the other, there seems to be no reason why E♯ could not be respelled as F. In fact, changing the E♯ to an F would make the voice-leading connections clearer.

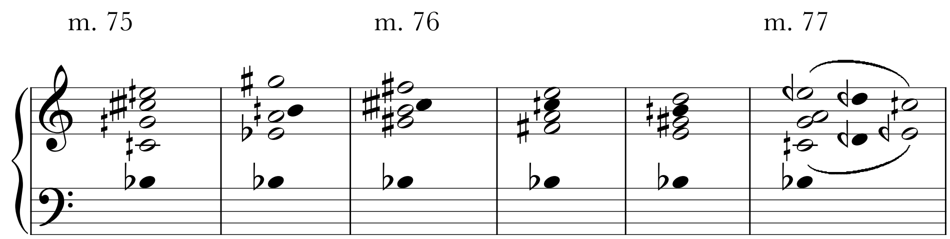


Example 2.19: *24 notes,* mm. 61, 62, and 64

With the entry of the sixth voice, the harmony becomes much more complicated, in part because Blackwood makes use of pedal tones and allows more chords that contain both conventional pitches and quarter-tone pitches. In m. 61 another instance of Blackwood's indifference to enharmonic spelling occurs: the non-chord tone E♭ functions as though it were a lower neighbour D♯ elaborating the chord tone E♮. There are two four-voice chords over the pedal C in m. 61. The first is a diminished seventh chord with a root of E, and the second composed of two interlocking tritones, {D♮, A♭} and {F‡, C𝄳}, approximates a French sixth chord in its interval structure.

In m. 62, the harmony is an E–diminished triad with a non-chord tone C‡ in the soprano. If this C‡ were to be respelled as a D𝄳♭, the chord would be {E, G, B♭, D𝄳♭ (≡C‡)}, which is a diminished seventh chord with one note (the seventh) displaced by a quarter tone. What is puzzling about this chord is that the soprano C‡ is actually part of the subject, and until this point in the composition, Blackwood has consistently avoided harmonizing quarter-tone pitches with chords made up of conventional pitches (and vice versa). In m. 64, the suspended discordant A𝄳 resolves to the third of yet another misspelled chord—an enharmonically misspelled half-diminished seventh chord with a root of F.

Example 2.20: ***24 notes,*** **m. 72; mm. 73–4**



Example 2.21: *24 notes*, mm. 75–77

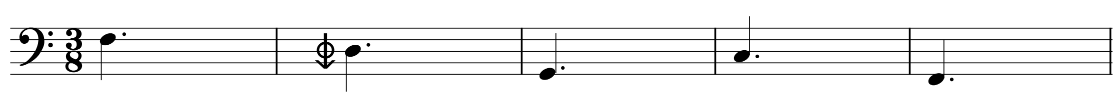
A prolonged B♭ pedal spans mm. 68–79. If we consider B♭ as a sort of "tonic," then this section serves much the same role as a traditional organ pedal-point at the end of a Baroque piece. It is above this pedal-point that some of the more complicated harmonies occur. In mm. 72–74, the upper four voices successively form an A♮–diminished seventh chord, a C♯–diminished seventh chord, and a B♮–diminished seventh chord, all of which sound discordant against the pedal B♭ (Example 2.20). Towards the end of the piece, from mm. 75–77, there occurs a series of the most complicated chords encountered thus far in the piece, the last of which is elaborated by means of a voice-exchange between soprano and tenor (Example 2.21). Even without taking the pedal B♭ into account, each chord mixes conventional and quarter-tone pitches, and each has a different interval structure with respect to the others.

A Critique of *24 notes*

I conclude by offering a critique of Blackwood's contrapuntal writing. In each of the *Twelve Microtonal Etudes,* Blackwood attempts to demonstrate the properties of a given system of equal-tempered tuning. In particular, he is interested in exploiting microtonal intervals that he considers "recognizable." Recognizable intervals are those that sound similar to either the pure intervals of just intonation or to the tempered intervals of the twelve-note equal tempered scale. Most of the equal-tempered tunings will contain some recognizable intervals, but not others. As I have demonstrated, 15-note equal temperament contains recognizable major and minor thirds but a discordant perfect fifth (see Table 2.3 above). Twenty-four-note equal temperament is unique among Blackwood's tuning systems in that it contains all of the familiar intervals from conventional equal-tempered tuning. Not only are these intervals recognizable, they are exactly the same size as conventional intervals.

It is clear that Blackwood likes some equal-tempered tunings, but not others. He believes that 15-note equal temperament "is likely to bring about a considerable enrichment of both classical and popular repertoire in a variety of styles,"[15] and that 19-note equal temperament makes possible "a substantial enrichment of the tonal repertoire."[16] However, Blackwood does not appear to be especially fond of quarter tones; I have the impression that he composed *24 notes* only because he felt obliged to complete the cycle of twelve etudes. He states:

> "There is a substantial body of existing quarter-tone repertoire, such as Alois Hába's, but if you examine it, it's not very encouraging. I don't find the Ives quarter-tone piano pieces to be very compelling either."[17]



Example 2.22: *21 notes,* bass line, mm. 1–5.

To present a coherent analysis of any individual etude from the *Twelve Microtonal Etudes,* a good starting point is to ask what devices Blackwood employs to demonstrate the properties of a particular tuning. In general, if a given tuning can support anything resembling a recognizable diatonic scale, Blackwood will write music that mimics the idioms of common-practice tonality. For instance, the opening bass line of *21 notes* is easily interpreted as

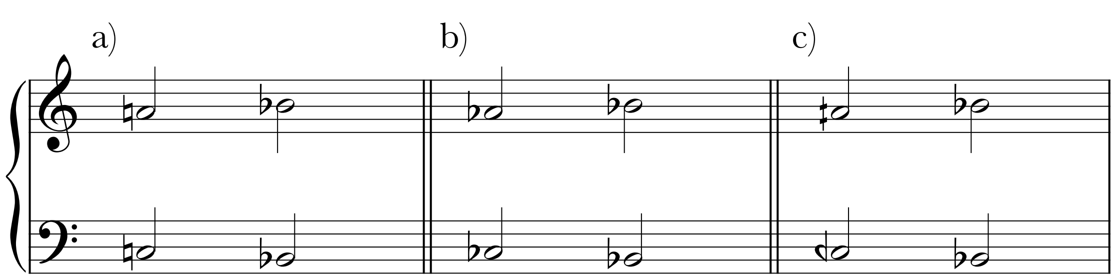
[15] Blackwood, 199.
[16] Blackwood, 173.
[17] Keislar, 204.

supporting a I–*vi*–*ii*–V–I progression in the key of F (Example 2.22). In *19 notes,* Blackwood exploits the relationships among recognizable triads to create chromatic chord progressions that are unavailable in conventional tuning (see Example 2.10). In tunings that do not contain recognizable diatonic scales, Blackwood looks for other characteristics he can exploit. In *16 notes,* a tuning with no major or minor triads, Blackwood uses octatonic modes based on the diminished seventh chords of Example 2.5.

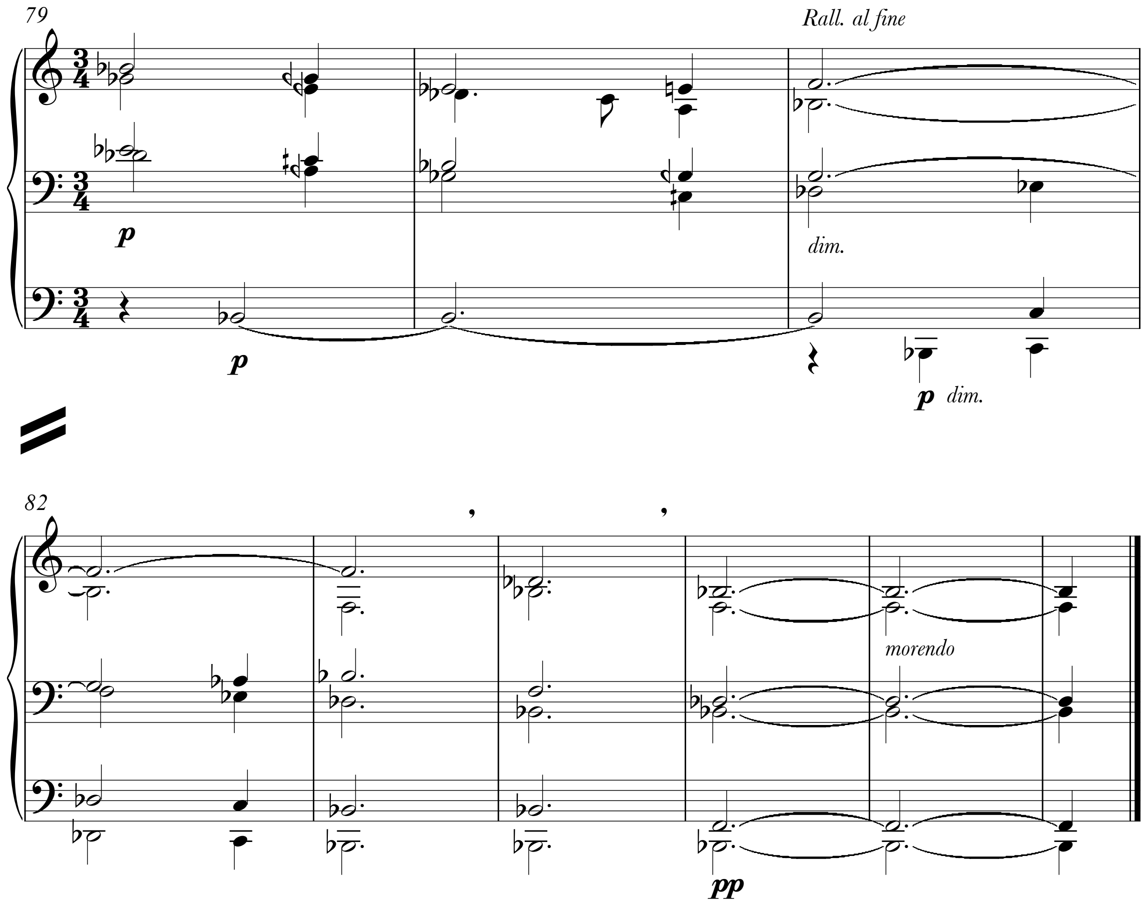
How then does *24 notes* demonstrate the properties of 24-note equal temperament? I believe that Blackwood's attempt to write a piece using strict contrapuntal models and to use quarter-tone intervals only in carefully controlled situations is theoretically sound. The contrapuntal examples that I have given in this chapter hint at a systematic approach to incorporating discords into the traditional consonance-dissonance hierarchy. With such a system, it should be possible to compose effective pieces of music in either 16th- or 18th-century contrapuntal styles. Although I find *24 notes* to be a fascinating experiment when considered from a purely theoretical point of view, I feel that it falls short in a number of important ways. For example, there are two promising compositional seeds planted in the theme which fail to germinate: the prominent int 1.5 in the opening does not achieve motivic significance, and the promise of a B♭ mode—or at the very least, B♭ as a pitch of focus—is given only desultory treatment. In effect, Blackwood only confirms a B♭ mode by the B♭ pedals and the B♭–minor triad that concludes the piece. In general, the theme itself meanders aimlessly without a strong melodic profile, while the contrapuntal lines have a similarly directionless character with little sense of directed motion.

Blackwood's musical realization of *24 notes* appears to support his assessment that quarter-tone music is "not very encouraging," but there is nothing inherently "discouraging" about either quarter tones or Blackwood's model of discord treatment. When we teach students to write good counterpoint, we normally train students to imitate the historical models of either the eighteenth or the sixteenth centuries. The eighteenth-century contrapuntal model reflects the practices of common-practice tonal composers such as J. S. Bach. In the tonal repertoire, good contrapuntal lines must cooperate with an overall functional harmonic design that conforms to the norms of tonal syntax. Sixteenth-century counterpoint is modelled after the high Renaissance polyphony of Palestrina, in which the counterpoint must conform to the hierarchical relationship between consonance and dissonance. Renaissance polyphony does not have the syntactical harmonic requirements of tonal polyphony, although individual melodic lines are directed toward cadences on structurally significant notes within a given mode.

In contrast to the tonal progressions of etudes such as *21 notes* and *19 notes,* the chord successions in *24 notes* seem arbitrary and without a strong functional profile, suggesting that it is appropriate to critique the counterpoint from a 16th-century perspective rather than an 18th-century perspective. Blackwood succeeds in establishing a new hierarchy that gives discords a role among consonances and dissonances, and the strict preparations and resolutions clarify the contrapuntal functions of the discordant intervals. However, in a 16th-century style, we would expect internal cadences that confirm the mode by achieving repose on the modal final (B♭), as well as secondary structural pitches (such as D♭ or F♮). At the very least, the 16th-century style demands a final cadence that confirms the modal final through a well-established cadential formula.



**Example 2.23: a) minor-mode cadence (Dorian or Aeolian);
b) Phrygian cadence; c) quarter-tone cadence**



Example 2.24: *24 notes*, mm. 79-end

If, as the concluding B♭–minor triad suggests, *24 notes* is in a minor mode, then we could reasonably expect a final cadence following the typical formula of the Dorian and Aeolian modes (Example 2.23a) in which the leading tone A♮ (one semitone below the final) resolves up to B♭, supported by a lower voice C♮–B♭, giving rise to the stereotypical cadential gesture of the interval of a sixth resolving to an octave. The 6–8 counterpoint could also be realized in the Phrygian mode in which the leading tone C♭ (a semitone above the final) resolves down to B♭, below an upper-voice A♭–B♭ (Example 2.23b). Example 2.23c presents a third alternative using quarter tones, in which A𝄲 (one quarter tone below the final) acts as a close leading-tone to B♭, supported by C𝄳–B♭ (an interval found in the opening of the subject) in a lower voice.[18] Instead of concluding with a strong cadence, *24 notes* winds down gradually over a simple B♭ pedal (Example 2.24), an unsatisfactory conclusion that does little to reinforce the sense of B♭ as a modal final.

After studying *24 notes* and subsequently discovering Blackwood's strict contrapuntal treatment of discordant intervals, I find listening to the piece to be a disappointing experience. The contrapuntal ideas that are so well executed on paper are not effectively communicated to the listener in performance. *24 notes* is an interesting theoretical experiment, but it could have been a much more musical piece had Blackwood given more thought to the basic principles of good melodic writing in his modal counterpoint.

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[18] Many alternative versions of this cadential formula can be invented by adding various combinations of conventional and quarter-tone accidentals to the pitches C and A that form the sixth preceding the final octave.