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ROBERT GAULDIN

In textbooks on 16th- and 18th-century counterpoint, one of the more neglected topics is the role that chromaticism plays in the polyphony of these periods.[1] The present study will attempt to rectify this deficiency by providing: a) some basic principles concerning the use of linear chromaticism; b) typical models or paradigms of voice-leading; and c) passing references to examples from the musical literature based on the above models. It is not my purpose here to formulate any general theory of chromaticism, although some of the observations may provide an initial step in that direction.

Prior to examining both Renaissance and Baroque polyphonic practice, it is necessary to define the nature and limitations of this investigation. The term *chromaticism* and its relation to the music of the 16th century has been rather loosely employed to denote a number of different compositional techniques. In the present context it will refer to passages in which one or more lines exhibit(s) successive intervals of half-steps, at least one of which involves the chromaticization of a pitch class (or an augmented prime). We are dealing, therefore, with what is basically a melodic phenomenon, and its counterpointing in two or more voices. This excludes the consideration of those works that feature extended cycles of fifths with their resultant exotic accidentals or *musica ficta*, such as Willaert's celebrated duo *Quidnam ebretas* (1519), Matthaeus Greiter's *Passibus ambiguis* (1553), or Costeley's *Seigneur Dieu ta pitie* (c. 1558); the former two have been discussed in detail by Lowinsky[2] and the latter by Levy.[3] Likewise the question of cross relations between different voices, treated at some length by Haar,[4] will be omitted, except in those instances where *simultaneous* vertical augmented primes or diminished octaves occur.

The voice-leading models and theoretical conclusions presented here have been drawn from and based upon an examination of the actual musical literature of the periods. References to theoretical treatises are intentionally avoided.[5] Most of the paradigms appear in

either the untransposed modal system (Renaissance) or C major-A minor (Baroque). In those cases that represent reductions of specific compositions, the original pitch level has usually been retained. Numerous references to various representative works are included in footnotes; these immediately follow the example reference.

LINEAR CHROMATICISM IN 16TH-CENTURY POLYPHONY

Since most texts are traditionally based on the polyphonic practices of the Counter Reformation in general and Palestrina in particular, the problem raised by linear chromaticism is seldom broached. Although admittedly rare in this literature, the device does play a role in some of the secular (and even sacred) music of the century. It appears to have originated with those proponents of the Venetian school (deRore, Willaert, Vicentino, and later Giovanni Gabrieli), whose influence may be seen in the Italian and English madrigal (Marenzio, Gesualdo, Monteverdi, Wilbye, and Weelkes respectively). Certain of these techniques are carried over in keyboard pieces of the first part of the 17th century (Sweelinck, Frescobaldi). It is primarily from these composers, with passing reference to some other masters of the period, that the voice-leading models and citations will be drawn.

Despite Vicentino's abortive attempt to base compositions on the ancient Greek *genera*, the music of the late Renaissance remains firmly rooted in the diatonic pitch collection with the dual alteration of B-natural/B-flat. The term *diatonic* (literally *two tones*) implies successions of major 2nds partitioned into conjunct tetrachords by means of Mi to Fa. *Chromatics* (or *color tones*), in turn, divide the major 2nds by means of the augmented prime (C to C-sharp to D, etc.). In an idealized hypothetical state one might imagine a projection of whole-tones (0, 2, 4, 6, 8, 10, 0, etc.) as the "diatonic" norm, with its "chromatic" complement "filling in" the steps (1, 3, 5, 7, 9, 11, etc); see Figure 1. From the application of such an admittedly artificial system, one significant characteristic of linear chromaticism may, nevertheless, be observed: its tendency to establish and continue *strict sequential patterns.*

Figure 1. Hypothetical "diatonic/chromatic" system

"diatonic" pcs	=	0		2		4		6		8		10		0
"chromatic" pcs	=		1		3		5		7		9		11	

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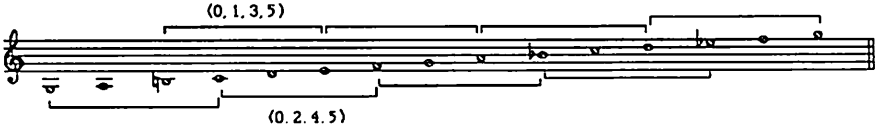
In the diatonic pitch collection the presence of the Mi-Fa half-steps prohibits the rigorous projection of these patterns beyond the span of the tetrachord. Thus the natural minor 2nds act as built-in "dividers or limiters." The various tetrachords present within the basic modal system (using both B-flat and E-flat) are illustrated in Figure 2. Note that the lower quartet (0, 2, 4, 5) represents an inverse relation to the upper four (0, 1, 3, 5).

Figure 2. Conjunct tetrachords in modal system (= diesian scale)



The next step is the establishment of the accidentals commonly employed in the period as the basic source for the generation of chromatics. In the untransposed modes these normally include C-sharp, F-sharp, G-sharp in addition to the usual B-flat; although in the transposed system they appear a fourth higher, only the former will be employed here. This allows the filling-in of the A-D and E-A tetrachords with chromatic motion that may either ascend or descend (see Figure 3). The B-E span requires the use of a D-sharp and is somewhat less common, while the D-G tetrachord with its E-flat is rarer yet. The lower set of tetrachords in Figure 2 (0, 2, 4, 5) are not usually chromaticized, since that would necessitate more exotic accidentals (C, B-natural, B-flat, A-natural, A-flat, G; or C, B-natural, A-sharp, A-natural, G-sharp, G-natural).[6] The three more frequently employed forms may be conveniently related to the standard hexachords of the period (see Figure 4). They will hereafter be designated as *naturale* (E-A), *molle* (A-D), and *duram* (B-E) tetrachords respectively.[7]

Before preceding to a systematic categorization of the various paradigms of linear chromaticism in contrapuntal settings, it is necessary to establish some rhythmic principles regarding their practical use. In general, chromatic passages employ *minims* as the basic durational value, although occasionally augmentations in *semibreves* and diminutions in *semiminims* may be noted. Chromatic

inflections are almost always found on *weaker* metric positions, both in ascending and descending motion (see Figure 5); about the only exception to this rule occurs sometimes in triple meter.[8] These tones are seldom, if ever, encountered as non-harmonic tones, but form part of consonant sonorities. Thus verticalities become an important consideration in their contrapuntal settings.

Figure 3. Chromaticization of upper tetrachords (0, 1, 3, 5)

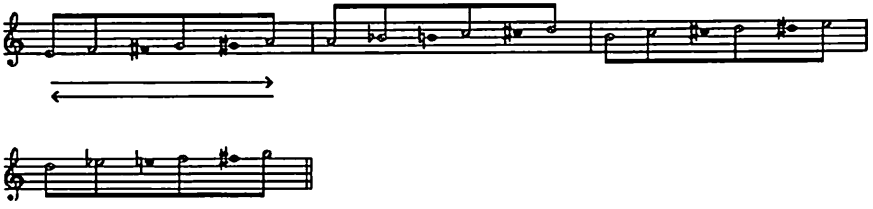


Figure 4. Relation of chromaticized tetrachords to diatonic tetrachords

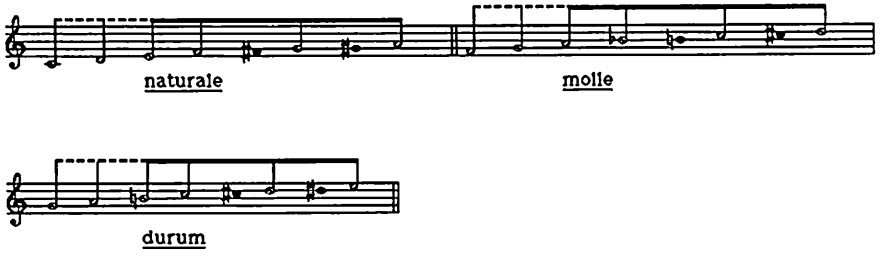
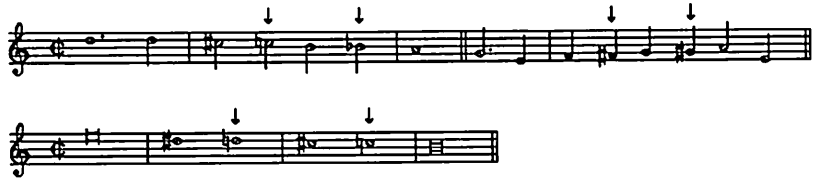


Figure 5. Metric positioning of chromatic notes



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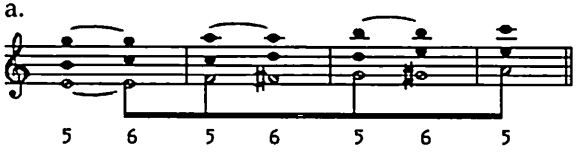
The examples will commence with complete chromatic tetrachords, and progress through successively smaller segments of the fourth span. Passages that extend beyond the tetrachordal bounds will then be considered, followed by the question of overlapping, which results in double-chromatic motion, and finally a brief allusion to chromatic dissonance. Regarding the musical illustrations, chromaticism in vocal works is closely related to specific phrases of appropriate text (or *madrigalism*), so that alternating sections of diatonicism and chromaticism tend to be the norm; the works of Gesualdo are typical cases. In later keyboard pieces, an entire composition may be based on a single chromatic *sogetto*, which pervades the entire work. For instance, the fantasias of Sweelinck are particularly pertinent, since one can study recurrences of the chromatic segment in the light of different polyphonic settings.

Two paradigms form the basis for the voice-leading in *ascending* chromatic tetrachords. In the first (see Figure 6) the harmonic motion is from weak to strong, in that the chromatics on weaker beats operate as miniature "leading-tones," pulling toward their resolution on the following strong beat. The result resembles a kind of "secondary-dominant" progression, which is then sequenced upward. The underlying voice-leading is the familiar 5-6 in terms of three parts (Figure 6a).[9] If the chromatic line appears in the superius, a continual voice-switching may be necessary to avoid inappropriate inversions (Figure 6b).[10] Figure 6c offers another solution. Two-voice reduction produces a pattern of alternating 6ths and 3rds, which can conveniently be incorporated in double counterpoint (Figure 6d).[11]

Figure 6. Voice-leading in ascending tetrachords I

a.



b.

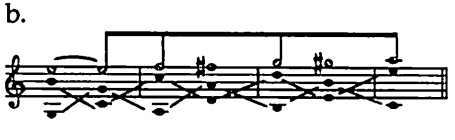
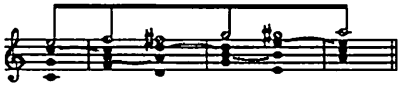
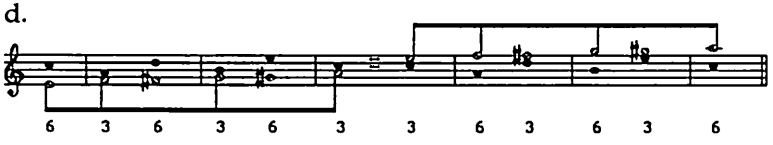


Figure 6. con't.

c.



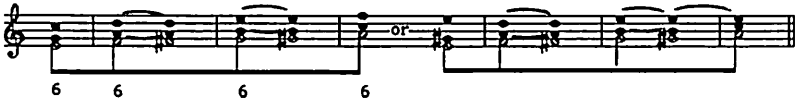
d.



The other less frequently encountered model features a succession of 6/3 sonorities. Note that in Figure 7a the first and last chords may not always form part of the sequence. The motion is from strong to weak, with the minor first inversion mutating into its major counterpart on the weak beat. In Figure 7b the chromaticism is transferred to the upper part (note the avoidance of parallel fifths).[12] The hypothetical two-voice setting shown in Figure 7c is rarely utilized.

Figure 7. Voice-leading in ascending tetrachords II

a.



b.

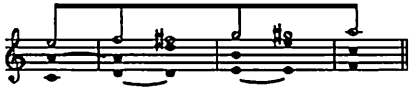
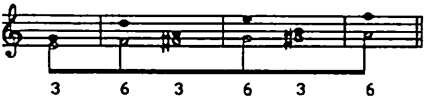


Figure 7. con't.

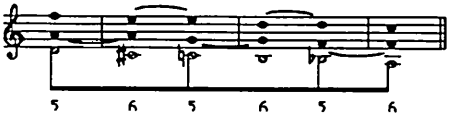
c.



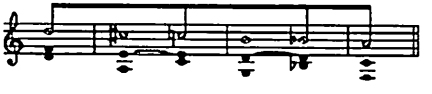
In general, *descending* chromatic tetrachords follow the same voice-leading principles outlined in the previous illustration, although in reverse order. Thus Figure 8a is the retrograde of Figure 6a, and Figure 9a is the retrograde of Figure 7a. In Figure 8a the pairing of diatonic half-steps (see brackets) produce miniature tonicizations of "I - V" from weak to strong. Observe the textural "inversion" in Figure 8b.[13] Figure 8c shows a pair of possible two-part models with their settings in double counterpoint.[14]

Figure 8. Voice-leading in descending tetrachords I

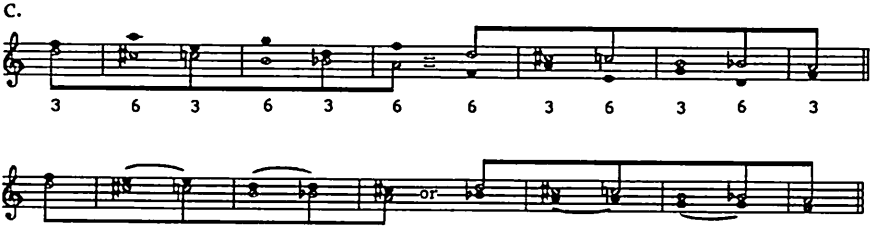
a.



b.



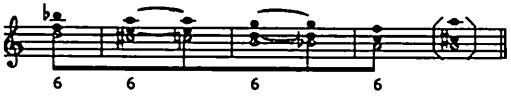
c.



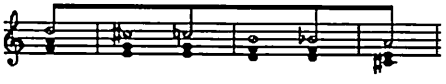
The succession of 6/3 chords may take several different forms, depending on which voice constitutes the chromatic tetrachord (see Figure 9a through c). Figure 9a[15] is sometimes elaborated with 7-6 suspensions to stagger possible parallels in the upper parts (see Figure 9d).[16] Figure 9e illustrates the usual two-voice model.[17] In most of the above voice-leading reductions the counterpointing parts feature exclusive *diatonic* movement. Thus a chromatic theme tends to be tonally balanced with a diatonic countersubject. There is no better illustration of this mannerism than in Sweelinck's *Fantasia Chromatica,* where the descending *molle* tetrachord is given no less than five distinct and different diatonic counterparts during the course of the piece.

Figure 9. Voice-leading in descending tetrachords II

a.



b.



c.

d.

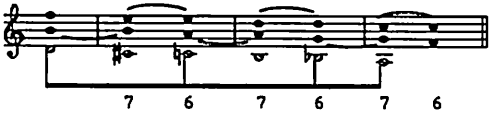
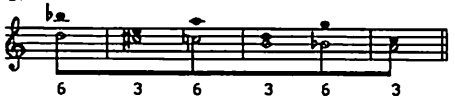


Figure 9. con't.

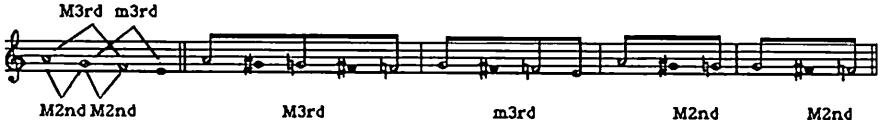
e.



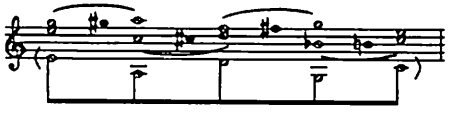
The underlying diatonic components of the various tetrachords may now be segmented into smaller intervallic spans of a major 3rd, minor 3rd, and a pair of major 2nds, each of which, in turn, can be chromaticized. (see Figure 10a). All adhere to the same voice-leading paradigms illustrated previously. While the major-3rd span is somewhat less common, the filled-in minor 3rd is quite frequent.[18] Chromaticization of the whole step often results in an alternating pattern between two separate parts, suggesting a root movement downward by fifths (Figure 10b).[19]

Figure 10. Segmentation in chromaticized tetrachords

a.



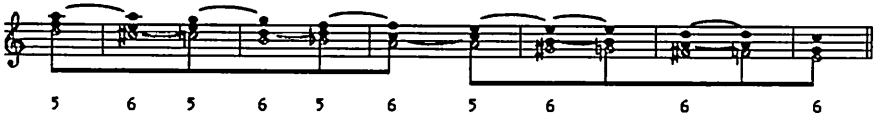
b.



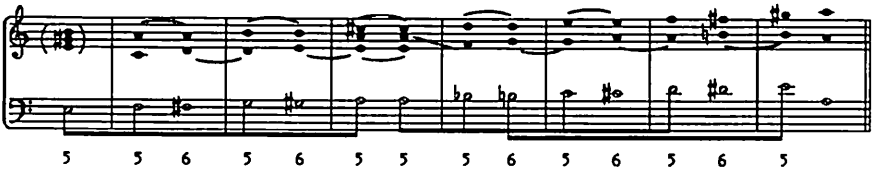
Chromatic *extensions* beyond the bounds of the tetrachordal dividers may be thought of as the result of the elision of two (or more) tetrachords. In the case of Figure 11a the *molle* and *naturale* are employed. Although the succession of 5-6 is maintained, the normal rhythmic pattern of *minims* must be broken at the repeated A in order to assure the metric placement of the chromatics in the second tetrachord. Thus both voice-leading models (Figures 8 and 9) are present. Chromatic spans of this magnitude are rather rare; consult the interesting Marenzio reduction in Figure 11b.[20]

Figure 11. Extended chromatic passages

a. Descending chromatic extension (voice-leading models I and II)

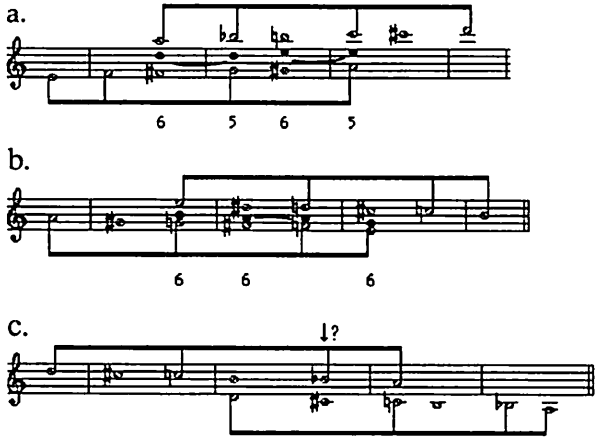


b. Ascending chromatic extension: Marenzio, *Se quel dolor* (Settima parte), mm. 40-54 (reduced and transposed)



The *overlapping* of half-step progressions gives rise to double chromaticism. The more common models, usually the result of stretto, are shown in Figure 12a and b.[21] In cases of this nature the resultant vertical intervals must conform to the standard consonances of the period; augmented or diminished intervals are not allowed (see Figure 12c).[22]

Figure 12. Overlapping of tetrachords, producing double chromatics



A brief word concerning chromatic subjects (*soggetto*) may be inserted. In those themes that frame a perfect fifth or fourth, a *tonal answer* often occurs in imitation, lest the chromaticism direct the tonal motion outside the defining mode (Figure 13). We will return to this topic later in the discussion of Baroque polyphony. Several quotations of vertical dissonance involving either simultaneous cross-relations or "non-harmonic" chromatics are given in Figure 14a and b respectively. The first is more typical of the English school and may be rationalized on purely melodic grounds. The A-flat in Figure 14b may be thought of enharmonically (G-sharp) creating what appears to be an early prototype of the German-sixth sonority.

Figure 13. Tonal imitation of chromatic subject: Frescobaldi, *Ricercar dopo il credo (Fiori musicali)*

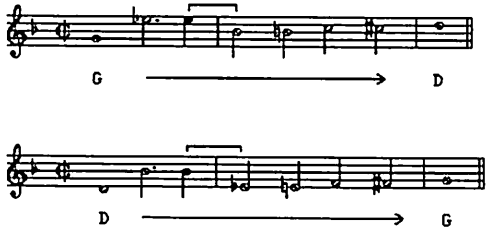
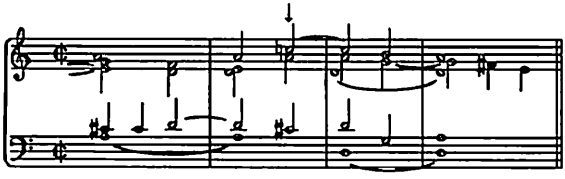
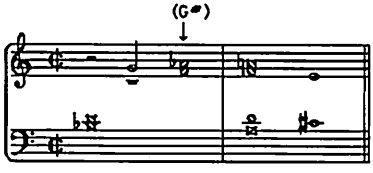


Figure 14. Chromatic dissonance

a. Weelkes, *Those sweet delightful lilies*, mm. 26-29



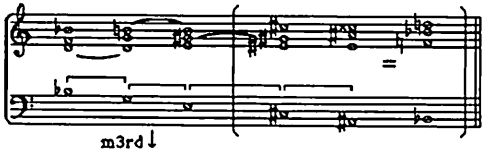
b. Gesualdo, *Io pur respiro*, mm. 29-30



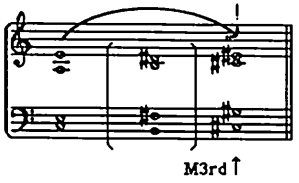
Up to this point all of the prior examples may be reduced back to an underlying diatonic basis. Thus the *surface* chromatics have invariably "resolved" into a diatonic tone. However, with the rise of more exotic accidentals (such as D-sharp, A-sharp, E-sharp, or A-flat, D-flat, etc.) near the end of the century, passages may be encountered that stretch the credibility of the modal system, creating bold and striking harmonic relations. Regarding linear chromaticism, many situations may be found in which the eventual destination is *not* a diatonic tone but the accidental itself. [See Figure 15a.] On the basis of previous harmonies, the initial triad is B-flat major. However, the following B-natural is not "resolved," but instead initiates a sequence by falling thirds, which hypothetically could be extended through the octave by enharmonics. Although the passage does eventually return to the opening B-flat major sonority, it does serve to illustrate a more "structural" use of chromaticism that may move *outside*, if but momentarily, the diatonic confines of the modal system.

Figure 15. Examples of structural (non-resolving) chromaticism (in reduction)

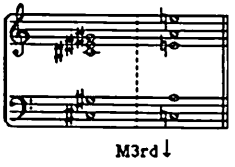
a. G. Gabrieli, *In ecclesiis*, mm. 179-183



b. Gesualdo, *Merce grido piangendo*, mm. 28-29



c. Gesualdo, *Io pur respiro*, mm. 22-23



d. Giovanni Masques, *Consonanze stravaganti*, mm. 26-27

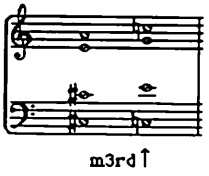
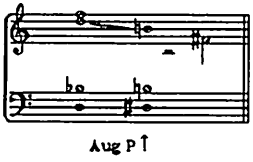
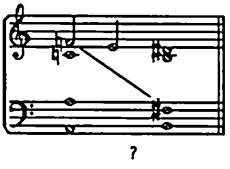


Figure 15. con't.

e. Gesualdo, *Merce grido piangendo*, m. 31



f. "Neapolitan" relation



In nearly all cases these direct "non-resolving" chromatics produce a harmonic third-relation. Illustrations of the four possibilities are given in Figure 15a through d. Gesualdo sometimes substitutes a third-relation in place of an expected cadence (Figure 15b), or uses it as a means of suddenly veering back into a diatonic section (Figure 15c). Figure 15e quotes a rare instance of a root movement by the augmented prime. Strangely enough, the "Neapolitan" progression (bII - V), with its cross-relation and tritone root movement, is almost never encountered in this period (Figure 15f).

LINEAR CHROMATICISM IN 18TH-CENTURY POLYPHONY

The second part of this study will concentrate on chromatic techniques encountered in the contrapuntal practice of the late Baroque period. The emergence of thoroughbass resulted in a shift from the linear characteristics and abstract intervallic calculations of Renaissance polyphony toward an emphasis on vertical sonorities of the triad and even seventh chord. This was coupled with a

replacement of the modal system in favor of a dual major-minor hierarchy and the establishment of tonal harmonic function.

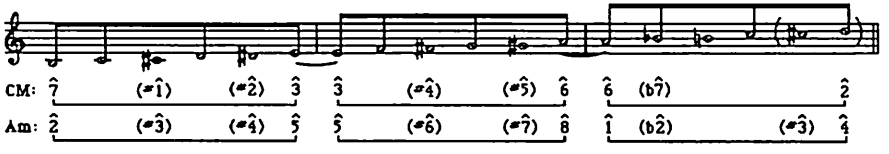
Three basic principles may be enumerated that pertain to the use of linear chromaticism in Baroque counterpoint:

1. The chromatic tones will be indicated as alterations of *diatonic scale degrees* within the major or minor mode (#1, #4, $^{b}7$, etc).

2. Because of non-equivalent enharmonics in the mean-tone derived temperament systems of the early 17th century, a set of accidentals was evolved that allowed modulation from a given tonality to its five closely related keys and their diatonic pitch classes. In terms of C major/A minor these were C-sharp, D-sharp, F-sharp, G-sharp, and B-flat; E-flat and A-flat were rarely encountered.[23] In relation to scale degrees these result in #1, #2, #4, #5, $^{b}7$ in the major mode and $^{b}2$, #3, #4, #6, #7 in the minor mode.

3. The three tetrachords noted previously in the Renaissance continue to operate as the basic dividers that limit the projection of strict sequential chromatic motion. Referring to Figure 16, the *durum* spans 7-3 in major and 2-5 in minor, the *naturale* 3-6 in major and 5-8 in minor, and the *molle* 6-2 in major and 1-4 in minor. While the former two feature *both* ascending and descending motion, the latter is normally limited to falling patterns only; in fact, the major mode tends to employ only 8 down to 6. The various altered scale steps are indicated in Figure 16.

Figure 16. Tetrachordal basis of linear chromaticism in the major-minor modes, expressed as pitch classes and scale degrees

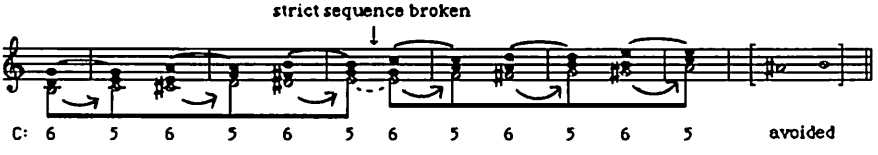


Our survey of Baroque chromaticism will likewise be divided into two general categories: non-structural vs. structural. In the first case, the chromatic halfsteps can be reduced to a diatonic basis, thereby remaining within the confines of the closely-related key system. There

is even evidence that contemporary theorists viewed such passages in a similar fashion.[24] Structural chromaticism, on the other hand, involves the tonicization of "altered" chords or movement to foreign (non-diatonic) key centers. Our investigation will commence with the former topic, outlining the fundamental voice-leading procedures in first the major and then the minor modes.

Figure 17 shows the usual method by which ascending half-step motion is treated in the major key, filling up the tetrachordal spans of scale degrees 7 up to 3 and 3 up to 6 with raised chromatics and thus directing the harmonic movement toward either iii or vi. The latter tetrachord is seldom extended, since #6 implies the improbable tonicization of the leading tone. The basic voice-leading is the familiar 5-6 observed earlier in the Renaissance, producing applied dominants of I, ii, iii (= *durum* tetrachord) and IV, V, vi (= *naturale* tetrachord); refer back to Figure 6a. Although the succession of 5-6 can be continued through the entire m7th span, the repeated Es break the strict pattern metrically.

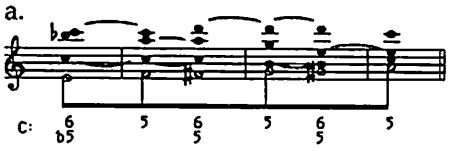
Figure 17. Ascending chromatic voice-leading in the major mode (5-6)



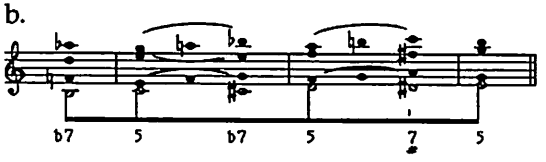
The voice-switching (necessary when chromaticism is assigned to an upper voice) and typical two-voice models are also similar to those of the 16th century; refer back to Figures 6b and 6d respectively. Secondary V6/5s (see Figure 18a) and vii^{o}7s (see Figure 18b) may also be substituted, although the latter is somewhat rare in the major mode.[25] A quotation employing double and staggered chromatics based on the 5-6 paradigm is given in Figure 18c.[26] Progressive segmentation of the tetrachords producing ascending diatonic M3rds, m3rds, and M2nds is common. The latter is often encountered in chromaticized sequences of falling root movement by fifth, providing possible canonic treatment or double counterpoint (see Figure 18d).

Figure 18. Variations of the basic paradigm in Figure 17

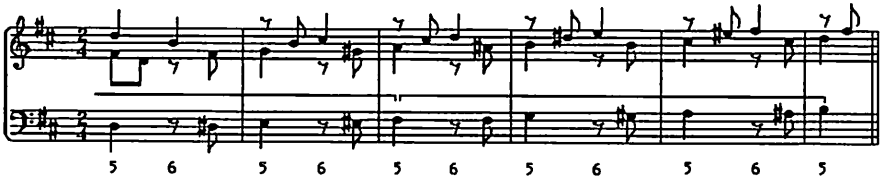
a.



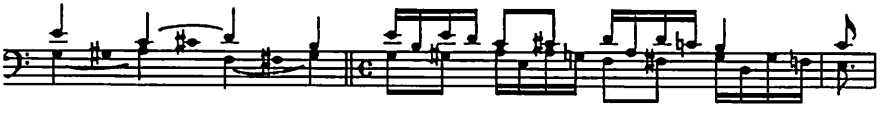
b.



c. Handel, Keyboard Fugue in B minor, mm. 36-41



d. Bach, Prelude and Fugue in A minor BWV 551, mm. 16-17 of Fugue

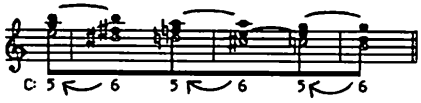


Descending chromatic motion in the major mode employs a pair of related voice-leading models. Figure 19a is the retrograde of Figure 17 with the tonicizations reversed (iii, ii, I); the 5-6 motion is retained.

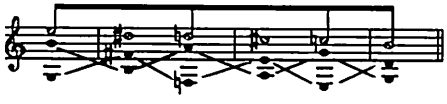
When the chromatic motion is shifted to an upper voice, the lower parts must again be switched (see Figure 19b).[27]

Figure 19. Descending chromatic voice-leading in the major mode I

a.

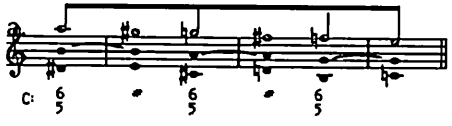


b.



In the second paradigm, the chromatic line consists of an alternation of the seventh and third chord members of the harmony, featuring root movement by fifth. Several versions are cited in Figure 20.[28]

Figure 20. Descending chromatic voice-leading in the major mode II



b.

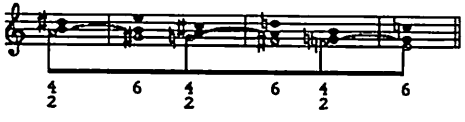
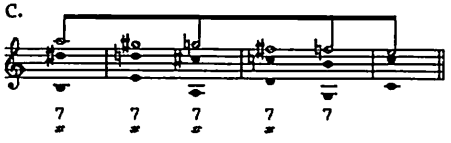
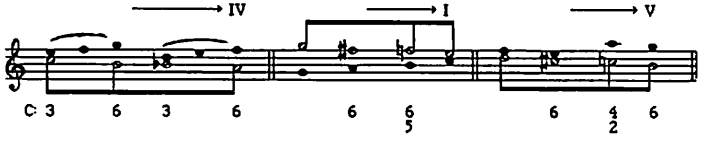


Figure 20. con't.



Segmentation of descending chromatic progressions tends to be limited to the falling m3rd span. Three different settings in two-voice texture are illustrated in Figure 21. Although their predilection is to tonicize either I, IV, or V, they can be extended to include altered chord destinations as well (consult measures 18-28 of the Fuga from Bach's Sonata for unaccompanied violin in A minor). The use of mixture or secondary dim7th chords that evoke scale degrees $^{b}6$ and $^{b}3$ are possible but rather infrequent.[29]

Figure 21. Settings of the falling m3rd chromatic span in major (two part)



Ascending chromatic motion in the minor mode is limited largely to the tetrachords of 2 up to 5 and 5 up to 8, producing tonicization of III, iv, V and VI, VII, i respectively. See the basic voice-leading in Figure 22a,[30] followed by a Vivaldi passage employing 6/5s (Figure 22b).

Figure 22. Ascending chromatic voice-leading in the minor mode

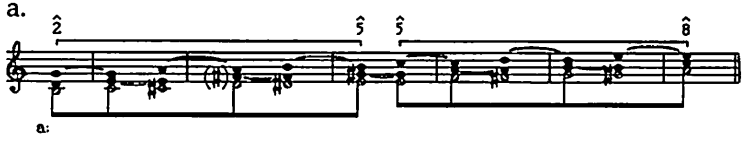
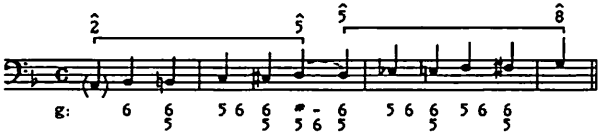


Figure 22. con't.

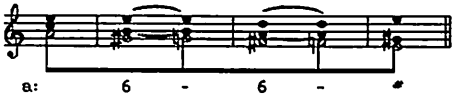
b. Vivaldi, Concerto Grosso in G minor Op. 3, No. 2, mm. 14-17.



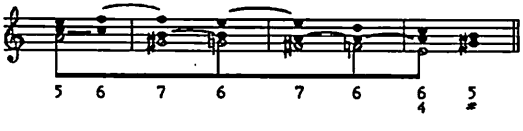
Occurrences of descending chromatics in minor focus more frequently on the 8-down-to-5 tetrachord so much that it is usually referred to as *the* chromatic tetrachord. Often associated with the affective "sigh" figure, it commonly occurs in movements of a more pathetic nature; Dido's final aria and the *Crucifixus* from Bach's B minor Mass are two familiar examples. In these two instances it appears as a varied form of the descending diatonic tetrachord, used as the basis for numerous continuous variations of the period. The more normative settings are given in Figure 23; note the typical use of 7-6 suspensions.[31] Due to the relative frequency of the 8-down-to-5 chromatic tetrachord, especially in variations with their successive reiterations, it came to represent a kind of textbook model for harmonic experimentation, with the result that one may encounter a wide variety of different, and sometimes ingenious, settings in works of the Baroque.[32]

Figure 23. Typical settings of the $\hat{8}\downarrow\hat{5}$ chromatic tetrachord in minor

a.



b.



An extended chromatic passage is quoted in the reduction of Figure 24.[33] Here a pair of 2-down-to-5 tetrachords in D minor and B-flat are elided. Overlapping in different voice parts creates double chromatics, usually the result of stretto technique; see the reduction in Figure 25.[34]

Figure 24. Extended chromatic motion: Bach Contrapunctus XI (*Art of the Fugue*), mm. 105-109 (reduced)

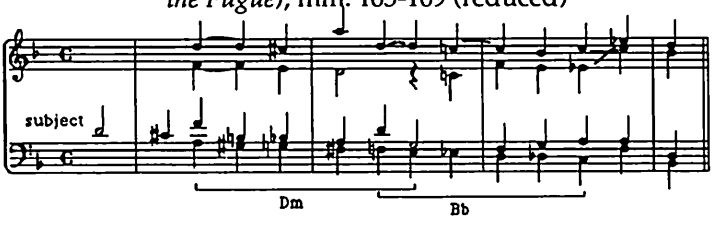
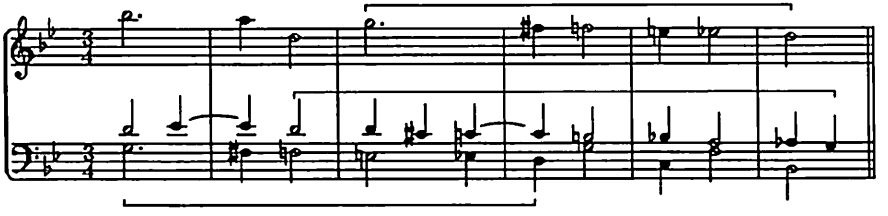


Figure 25. Overlapping chromatic tetrachords: Handel, Chaconne (*Trois Lecons*), Variation 16, mm. 1-6 (reduced)



A brief word on chromatic fugue subjects is in order. In principle, the chromatic segment of a subject is answered by *real* imitation.[35] However, problems involving tonal answers that exchange scale degree 1 for 5 or 5 for 1 may arise. Figure 26 is simple enough; the substitution of a m2nd for the opening m3rd allows the retention of the chromatic segment (in brackets), with the usual implied harmonic goals (in parentheses). If the motion is now reversed, as in Figure 27a, then neither of the cadential approaches in Figures 27b and 27c is satisfactory. Thus an extension is required (see Figure 27d) to allow proper harmonic preparation for the tonic.[36] Of course, the composer may wish to avoid these pitfalls by using a real answer (Figure 27e),

Figure 26. Tonal answer retaining chromatic segment

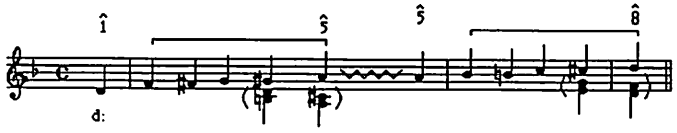
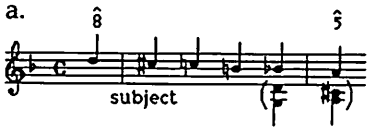
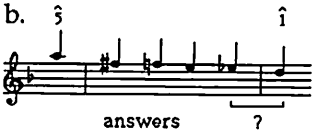
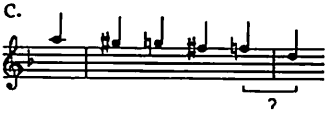
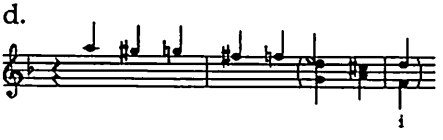


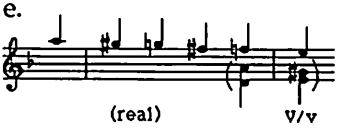
Figure 27. Problems involving tonal answers of descending chromatic subjects







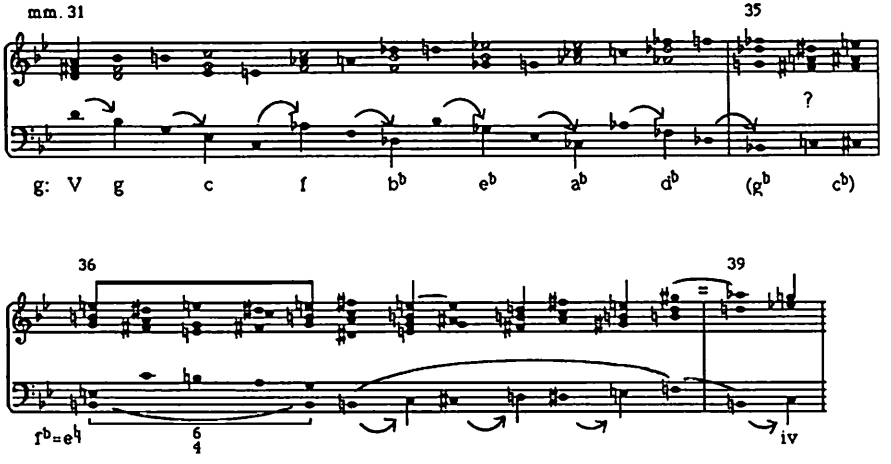




ASPECTS OF CHROMATICISM

Structural chromaticism involves the tonicization of non-diatonic chord functions and/or the exploration of foreign-key relations. In several genres of the Baroque period, such as the toccata, fantasia, or recitative, the modulatory process sometimes features highly chromatic episodes. Indeed, strange, ambiguous passages may occur in which the detection of tonic orientation is occasionally difficult. Space will permit the analysis of but one such excerpt. For other examples the reader is referred to the choral recitative "He sent a great darkness" from Handel's *Israel in Egypt*, the second movement ("Ubriachi domienti") of Vivaldi's *L'Autunno* from his *Four Seasons*, and several striking instances in Bach's Chromatic Fantasia and Fugue in D minor.

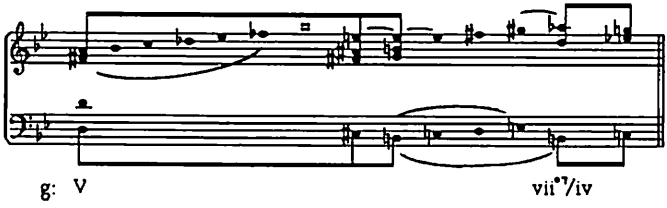
Figure 28. Reduction of mm. 31-39 of Bach's Organ Fantasia in G minor ("Great") BWV 542



The passage to be examined occurs in measures 31-39 of the first movement of Bach's Organ Fantasia and Fugue ("Great") in G minor (see the reduction in Figure 28). Originating with a structural dominant triad, an extensive sequence of descending perfect fifths is initiated, employing the alternating chromatic paradigm in the upper voices (refer back to Figure 18d). In this case, no tritone is inserted between E-

tonic, so that when a D-flat minor (!) chord is reached, any sense of one prevailing key center has been effectively nullified. The strict patterning is finally broken in measure 35, with ambivalent dim7th chords propelling us to the climactic E-minor 6/4 of the next measure. Had this sequence of fifths continued unabated, this would have eventually been the resultant enharmonic key: D-flat m, G-flat m, C-flat m, F-flat m = Em. The bass now initiates a chromatic span of the tritone, whose last F supports a vii°4/2 in A minor. This sonority functions enharmonically as vii°7 of iv in the original key of G minor, in which the movement concludes. A middle-ground reduction (Figure 29) graphs the overall scheme of the passage. The section beginning at measure 36 has already occurred earlier in E-flat minor (see measures 21-25), yet another foreign relation. Further analysis will reveal the significance of the half-step in the tonal design of the entire Fantasia.

Figure 29. Further reduction of Figure 28



In conclusion, I hope that the foregoing discussion has not only stimulated instructors to include some study of chromaticism in their future counterpoint courses, but has also provided sufficient material from which to devise varied and appropriate student exercises.

NOTES

[1]Sections or chapters devoted to chromaticism may be found in Robert Gauldin, *A Practical Approach to Sixteenth-Century Counterpoint* (1985); Kent Kennan, *Counterpoint* (Based on Eighteenth-Century Practice), 2nd ed. (1972); Richard Parks, *Eighteenth-Century Counterpoint and Tonal Structure* (1984).

[2]Edward Lowinsky, *Secret Chromatic Art in the Netherlands Motet* (New York: 1946): 52-56 is devoted to the Willaert; and "Matthaeus Greiter's *Fortuna*: An Experiment in Chromaticism and Musical Iconography," *Musical Quarterly* 42/4 (October 1956): 500-519 and 43/1 (January 1957): 68-85.

[3]Kenneth Levy, "Costeley's Chromactic Chanson," *Annales Musicologiques* 3 (1955): 213-263.

[4]James Haar, "False Relations and Chromaticism in Sixteenth-Century Music," *Journal of the American Musicology Society* 30/3 (Fall 1977): 391-418.

[5]A good overview of theoretical speculation on chromaticism in the late Renaissance may be found in Karol Berger, *Theories of Chromaticism and Enharmonic Music in Late 16th-Century Italy* (*Studies in Musicology*; 10).

[6]A mixture of sharps and flats (C, B-natural, B-flat, A-natural, G-sharp, G-natural) is rare, since it is impossible to maintain any strict sequential pattern.

[7]This classification by tetrachord is hinted at in Theodor-Kroyer, *Die Anfänge der Chromatik im italienischen Madigral* (Leipzig: 1902). This book is an excellent source for chromatic examples in the period.

[8]For instance, in Frescobaldi's *Gagliarda Quarta* (measures 14-17) one finds a succession of semibreves barred thus in triple meter: D, C-sharp | C-natural, B-natural, B-flat | A, G-sharp, G-natural | F-sharp.

[9]Most of the remaining footnotes cite illustrations of the voice-leading models in actual music literature. For an instance of 5 - 6 see William Byrd, *Come Woeful Orpheus* (measures 44-49); note the text "of sourest sharps and uncouth flats."

[10]Lassus, *Alma Deus* (from *Cantiones IV vocum*), measures 53-56.

[11]Dowland, *Farewell* (fancy for lute), measures 3-5.

[12]Vincentino, *Madonna il poco dolce* (from *L"Antici musica*), beginning with the words "il troppo lungo."

[13]Sweelinck, *Fantasia Chromatica* (I), measures 10-13, but with voice-switching in the upper parts.

[14]Dowland, *Forlorn Hope* (fancy for lute), measures 29-30.

[15]Frescobaldi, *Capriccio sopra La, Sol, Fa, Re, Ut* (measures 78-81).

[16]Frescobaldi, *Toccata Duodecima* (measures 25-27). The succession of 7 - 6s in Wilby's *Oft have I vow'd* (measures 45-50) incorporates both voice-leading models.

[17]Sweelinck, *Fantasia Chromatica* (I), measures 71-78; note the use of double counterpooint later in the passage.

[18]Sweelinck's *Fantasia IV* (measures 68-73) employs a falling third, while his *Fantasia VI* (measures 203-214) utilizes the rising form.

[19]In a fantasia attributed to Sweelinck (see pages 152ff. in Leonhardt's edition of his *Opera Omnia*) one may observe the device in measures 217-220.

[20]A most interesting chromatic "cantus" in long durations may be found at the opening of Marenzio's *Solo e pensoso*. It rises in the superius from g^1 to a^2 and then descends to d^2.

[21]Vincentino, *Pioggia de lagrimar* (measures 1-4) and Luzzasco Luzzaschi, *Quivi sospiri* (measures 1-4).

[22]An excellent example of overlapping double-chromaticism in ascending motion may be found in Weelkes, *Cease Sorrows Now* (measures 75-91). For an illustration of the opposite direction in stretto see the final section of Sweelinck's *Fantasia Chromatica* (I).

[23]The diatonic scale degrees in minor would include #6, #7, and even the Picardy #3. Thus A minor = F-sharp, G-sharp, C-sharp; D minor = B-flat, C-sharp; E minor = F-sharp, C-sharp, D-sharp, G-sharp; G major = F-sharp; F major = B-flat. If, after finishing a piece in the C major/A minor complex, a harpsichordist performed a Suite in E major, the temperament would have to be adjusted, since A-sharp does not equal B-flat. The main goal in the systems of the late Baroque (such as 1/6th comma) was to lessen this enharmonic discrepancy.

[24]Johann Marpug in his *Abhandlung con der Fuge* (1753-1754) reduces the chromatic "Royal Theme" of Bach's *Musical Offering* to its diatonic foundation.

[25]For an example of 6/5s see measures 13-14 of the Air from Bach's Overture for Orchestra in D major, BWV 1068.

[26]Also see Bach's Fugue in F-sharp minor (*WTC II*), measures 48-49.

[27]For a two-voice implication see the Fuga of Bach's Sonata for Unaccompanied Violin in C major (measures 4-7).

[28]Bach, Fugue in D minor (*WTC II*), measures 11-12; also refer to Figure 25.

[29]See Bach's harmonization of *Es ist genug* (measures 15-17) and his Prelude in F major (*WTC II*), measures 9-10.

[30]The 2-up-to-5 ascent is more common in minor. See Bach's Fugue in E minor (*Eight Short Preludes and Fugues* for organ), measures 8-12.

[31]See the setting (without suspensions) in the Largo of Handel's keyboard Suite in F-sharp minor (measures 14-17); note the voice-switching to avoid parallel fifths.

[32]For instance, from Bach's work alone see the subject of the E minor "Wedge" Fugue for organ (implying a rare aug6th); the Gigue from the E minor English Suite, measures 38-42 (parallel dim7th chords); the Chaconne from the Violin Partita in D minor, measures 113-116 (applied 6/5s); the *Crucifixus* from the Mass in B minor, measures 37-41 (a remarkable passage cadencing in V/iv); and Variation 25 from the *Goldberg Variations* (measures 1-4).

[33]Also see the chromatic episode in the Ricercar à 6 from Bach's *Musical Offering* (measures 40-44); Frederick's theme incorporates the chromatic span of a dim7th.

[34]Johann Christoph Bach, Prelude and Fugue in E-flat major (measures 36-45) of the Fugue.

[35]It may be observed that some so-called "chromatic" fugue subjects do not technically belong in the category, since no augmented prime is involved. For instance the half-step appoggiaturas in Bach's B minor Fugue (*WTC I*) all employ m2nds. For several examples of real imitation incorporating chromatic segments see Bach's F minor Fugue (*WTC I*) and the answer to the Royal Theme in the Ricercar à 3 of his *Musical Offering*.

[36]An interesting discussion of chromatic subjects and their answers may be found in Marpurg's *Abhandlung von der Fuge*, quoted on pages 170-175 of Alfred Mann's *The Study of Fugue* (New York: 1965).

[37]See Bach's E minor "Wedge" Fugue for Organ and the E minor Fugue (*WTC I*).