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Author(s): Elliott Antokoletz

Source: *Music Analysis*, Vol. 12, No. 1 (Mar., 1993), pp. 25-45

Published by: Blackwell Publishing

Stable URL: <http://www.jstor.org/stable/854074>

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ELLIOTT ANTOKOLETZ

## TRANSFORMATIONS OF A SPECIAL NON-DIATONIC MODE IN TWENTIETH-CENTURY MUSIC: BARTÓK, STRAVINSKY, SRIABIN AND ALBRECHT

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In the early twentieth century, many Eastern European composers turned towards their own national sources for the development of a new musical language, absorbing and utilizing basic elements from their folk-music idioms. At the same time, other Eastern European composers derived their compositional materials from more abstract sources, often arriving at melodic and harmonic constructions that were identical to those found in the folk sources. The folksong settings of Bartók and the early Russian ballets of Stravinsky belong to the first category, while the post-Romantic works of Scriabin belong to the second. The musical language of the Russian-born German composer, Georg von Albrecht (1891-1976), was founded on both approaches, in which he derived special modalities simultaneously from Eastern European folk music and a more abstract sphere of sources. According to Albrecht's own indications in the titles of some of his compositions, the abstract sources significantly included the *Obertonreihen* ('overtone series') and *Untertonreihen* ('undertone series'). Bartók himself discussed the evolution from either Eastern European folk music or more abstract sources towards a common set of non-traditional pitch constructions in the music of early twentieth-century composers:

There are many... harmonic inspirations we owe to the latent harmonies contained in the peasant songs of ours...

Through inversion, and by placing these [modal] chords in juxtaposition one above the other, many different chords are obtained and with them the freest melodic as well as harmonic treatment of the twelve tones of our present-day harmonic system.

Of course, many other (foreign) composers, who do not lean upon folk music, have met with similar results at about the same time – only in an intuitive or speculative way, which, evidently, is a procedure equally justifiable. The difference is that we created through Nature.<sup>1</sup>

## MODAL VARIATION BY ROTATION OR EXTENSION OF SPECIAL NON-DIATONIC FOLK MODES

In his earliest studies of Hungarian, Rumanian and Slovak folk music, Bartók was already aware that the traditional major and minor scales were generally absent from the authentic folk melodies. Instead, he had found a prevalence of the Greek or medieval church modes as well as some that were entirely unknown in modal art music.<sup>2</sup> The latter, unlike the church modes, are non-diatonic. One instance (E-F $\sharp$ -G-A-B $\flat$ -C-D) is given in Fig. 1, where certain overlapping segments of the mode (G-A-B $\flat$ -C-D and E-F $\sharp$ -G-A-B $\flat$ -C) are isolated by brackets. These segments are often extended by Bartók in his own compositions in order to generate larger pitch collections (Fig. 2a and b). Among these, the most significant are complete diatonic and octatonic scales. If we rotate the basic mode to B $\flat$ -C-D-E-F $\sharp$ -G-A (Fig. 2c), five of the six notes of a whole-tone scale (B $\flat$ -C-D-E-F $\sharp$ ) come into adjacency. All of these extensions of the basic mode (diatonic, octatonic and whole-tone) are exploited both melodically and harmonically by Bartók as pitch sets divorced from traditional tonal functions.

Fig. 1 Non-diatonic folk mode found by Bartók in Hungarian peasant music, with divergent overlapping modal segments

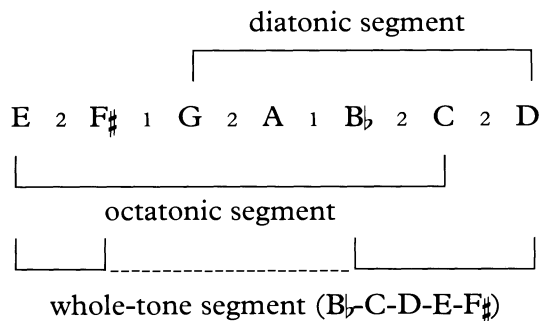
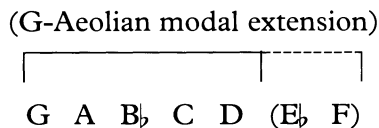


Fig. 2 Diatonic, octatonic and whole-tone extensions of the non-diatonic folk mode in Fig. 1

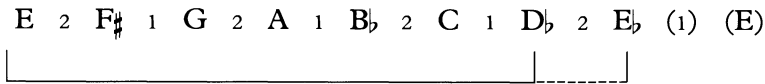
a) two diatonic extensions



(G-Dorian modal extension)



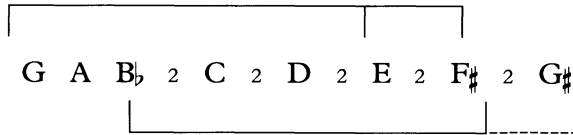
b) octatonic extension



complete octatonic scale

c) rotation of non-diatonic mode and whole-tone extension

rotated non-diatonic mode



complete whole-tone scale (ext.)

As Fig. 3 shows, this non-diatonic folk mode belongs to a larger family of modes related to each other by systematic rotation. These rotations produce seven different non-diatonic modal forms analogous to the seven rotations of the 'white-key' diatonic scale. The mode shown in Fig. 1 appears as rotation 3 in Fig. 3. Both ways of varying the non-diatonic modes that make up this family of modes – rotation and extension – are demonstrated below in the music of Bartók, Stravinsky, Scriabin and Albrecht.

Fig. 3 Larger family of non-diatonic folk modes, related to each other by *systematic rotation*

|                   |   |   |   |                |   |   |                |     |     |     |                   |     |                     |
|-------------------|---|---|---|----------------|---|---|----------------|-----|-----|-----|-------------------|-----|---------------------|
| <i>intervals:</i> | 2 | 2 | 2 | 1              | 2 | 1 | 2              | 2   | 2   | 2   | 1                 | 2   | 1                   |
| rotation 1:       | C | D | E | F <sub>#</sub> | G | A | B <sub>b</sub> | (C) |     |     |                   |     |                     |
| rotation 2:       |   | D | E | F <sub>#</sub> | G | A | B <sub>b</sub> | C   | (D) |     |                   |     |                     |
| rotation 3:       |   |   | E | F <sub>#</sub> | G | A | B <sub>b</sub> | C   | D   | (E) |                   |     |                     |
| rotation 4:       |   |   |   | F <sub>#</sub> | G | A | B <sub>b</sub> | C   | D   | E   | (F <sub>#</sub> ) |     |                     |
| rotation 5:       |   |   |   |                | G | A | B <sub>b</sub> | C   | D   | E   | F <sub>#</sub>    | (G) |                     |
| rotation 6:       |   |   |   |                |   | A | B <sub>b</sub> | C   | D   | E   | F <sub>#</sub>    | G   | (A)                 |
| rotation 7:       |   |   |   |                |   |   | B <sub>b</sub> | C   | D   | E   | F <sub>#</sub>    | G   | A (B <sub>b</sub> ) |

## MODAL VARIATION BY ROTATION OF NON-DIATONIC FOLK MODES

Bartók's *Cantata Profana* (1930) opens with rotation 3 of Fig. 3, but transposed to the D tonic of the work (D-E-F-G-A $\flat$ -B $\flat$ -C-D; see Ex. 1a or c). By analogy with the symbolic transformation of the nine sons into stags, this modal form is transformed by the end of the work into rotation 1 of Fig. 3, which also appears transposed to the D tonic (D-E-F $\sharp$ -G $\sharp$ -A-B-C-D) (Ex. 1d). The latter is a literal inversion of the opening modal form at the same pitch level (see Ex. 1a). The modal inversion appears to reflect the symbolic meaning of the words at the final point of transformation: 'Now their mouths no longer drink from crystal glasses, only from cooling mountain springs'. This inversion can be understood as a systematic rotation of the opening mode transposed to the tonic (Ex. 1b); that is, if we begin the original scale at the sixth degree (B $\flat$ ), we get the rotation B $\flat$ -C-D-E-F-G-A $\flat$ , which, when transposed to the tonic (D), gives us the final (inverted) scale, D-E-F $\sharp$ -G $\sharp$ -A-B-C-D.<sup>3</sup>

The B $\flat$  rotation is already introduced near the beginning of the work (b.4), where the cellos and basses descend from the D tonic to B $\flat$  (Ex. 1c). The upper woodwind in the next passage (Ex. 1e) suggest, then, the tonic transposition (D-E-F $\sharp$ -G $\sharp$ -A-B-C) of the latter rotation (B $\flat$ -C-D-E-F-G-A $\flat$ ) as an early adumbration of the final (inverted) modal form shown in Ex. 1d. The ascending chromatic sequence (bs 5-9), which begins with the initial three-note diatonic figure (D-E-F) of the opening mode, contains, in microcosm, one of the basic procedures by which this modal form is transformed into its inversion. Each of the three-note figures in the woodwind sequence (D-E-F, E-F $\sharp$ -G, E $\sharp$ -F $\sharp$ -G $\sharp$  and A-B-C) contributes in turn to the mutation of the lower modal tetrachord, D-E-F-G, by 'forcing' one of its characteristic dyads (F-G) upwards to F $\sharp$ -G $\sharp$ . This implies the presence of the lower tetrachord (D-E-F $\sharp$ -G $\sharp$ ) of the final inversion (D-E-F $\sharp$ -G $\sharp$ -A-B-C), which is completed by the last figure (A-B-C) of the sequence.<sup>4</sup>

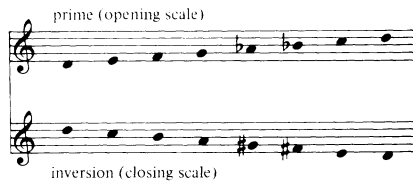
## NON-DIATONIC MODES DERIVED FROM EITHER FOLK-MUSIC OR ART-MUSIC SOURCES IN THE MUSIC OF ALBRECHT AND SCRIABIN

For Bartók, one of the basic sources of this final modal rotation (again, see rotation 1 of Fig. 3) was the Rumanian *colindă* (Christmas song),<sup>5</sup> which served as 'motto' material for the *Cantata Profana*. Like Bartók, Albrecht also revealed broad interests in the absorption of folk music, not only from Eastern Europe but also from Central Asia, having collected melodies from Lithuania, the Crimea, Caucasia and the Ural mountains. In Albrecht's folk-music settings, which occur primarily in a number of short piano

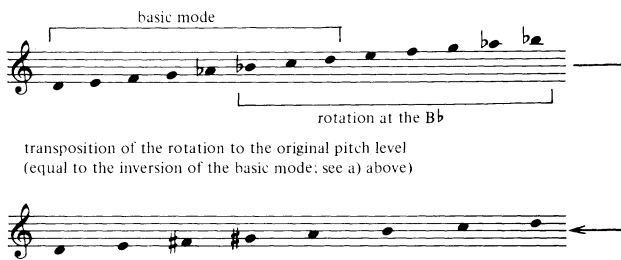
# TRANSFORMATIONS OF A NON-DIATONIC MODE

Ex. 1 Bartók, *Cantata Profana*, two intervallically equivalent variants of the non-diatonic folk mode

a) Basic non-diatonic folk mode (equals rotation 3 of Fig. 3) and its inversion (equals rotation 1 of Fig. 3) at the main pitch level (D) of the *Cantata*



b) Basic non-diatonic folk mode (see rotation 3 of Fig. 3) and its rotation at the sixth degree, Bb (see rotation 1 of Fig. 3)



c) bs 1-5, strings, harmonically suggesting the Bb rotation at b.4

The image shows a musical score for strings, including Violins 1 and 2, Viola, Violoncello, and Contrabass. The tempo is marked 'Molto moderato, ♩ = 116'. The key signature is one flat (Bb). The score includes dynamic markings such as *p* (piano) and *pp* (pianissimo). A bracket indicates a section of the score, and a circled number 5 is visible in the upper right corner.

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- d) bs 72-87, tenor solo and string stretto (D-E-F $\sharp$ -G $\sharp$ -A-B-C-D; equals rotation 1 of Fig. 3)

72 *f espr.* *rallentando rubato* (al  $\text{♩} = 84$ )

Ten. solo Csak hú-vös for rás

Ancora più lento,  $\text{♩} = 92$

Vln. 1. senza sord. *p*

Vln. 2. senza sord. *p*

Vla. *p*

Vic. *p*

Cb. *p*

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- e) bs 5-9, wind, ascending chromatic sequence of diatonic segments foreshadowing transformation of opening mode (D-E-F-G-A $\flat$ -B $\flat$ -C) into its inversion (D-E-F $\sharp$ -G $\sharp$ -A-B-C)

③

1. Flauto *p*

2. Flauto *p*

1, 2. Ob. *p*

1. Clarinetto *p*

2. Clarinetto *p*

1, 2. Fag. *p*

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pieces based on Ukrainian, Russian, Lithuanian, Votyakian (Northern-Ural), Tatarian and Turkish song and dance settings, his diatonic folk tunes are predominantly modal, often with pentatonic inflection. His other works, which may not be based on authentic folk tunes, also reveal principles of modal, thematic and phrasal variation prevalent in folk music.

Albrecht's early compositional studies with Taneyev, Glazunov and others contributed to the formation of those technical skills (including canonic, fugal, variational and other procedures) that permitted him to absorb divergent folk and abstract musical sources into a personal art-music idiom.<sup>6</sup> In many of his compositions, Albrecht infused sonata, rondo and ternary outlines with both Romantic and more contemporary features. While the intervallic construction of Albrecht's chords is primarily triadic, the music of Wagner and the impressionists motivated the composer towards a new harmonic logic based on the independent linear progression of individual voices.

Scriabin's experiments with overtone harmonies were also important in motivating Albrecht towards an entirely 'non-functional' modal-tonal system. After 1910, Scriabin focussed increasingly on the harmonic rather than linear constructions in his works, his harmonies generally being derived from his so-called 'mystic chord' of *Prometheus*. This chord, which approximates the eighth to fourteenth partials of the overtone series (rotation 1 of Fig. 3), can be constructed in fourths, C-F $\sharp$ -B $\flat$ -E-A-D-[]]. In his late sonatas, Scriabin added the seventh note, G (the twelfth harmonic partial), expanding this chord to C-F $\sharp$ -B $\flat$ -E-A-D-G. The linear arrangement (C-D $\flat$ -E-F $\sharp$ -G-A-B $\flat$ ) of the basic set of the Sonata No. 7, 'White Mass', Op. 64 (1911), is closely related to this segment of the overtone series, the latter (C-D-E-F $\sharp$ -G-A-B $\flat$ ) manifesting itself as one of several variants of the basic set in the course of the composition when the second degree (D $\flat$ ) is raised to D.<sup>7</sup> The basic set of the Sonata (C-D $\flat$ -E-F $\sharp$ -G-A-B $\flat$ ), which alters one note of the 'mystic chord' (D to D $\flat$ ), forms a seven-note segment of an octatonic scale (C-D $\flat$ -[E $\flat$ ]-E-F $\sharp$ -G-A-B $\flat$ ). Scriabin's employment of the set as both chord and scale represents a significant adumbration of serial procedures. Albrecht's ability to synthesize these divergent stylistic and technical sources is exemplified in his 24 *Préludes* (in two volumes), the Op. 42 set (1934) based on the abstract concepts of *Ober- und Untertonreihen*, the Op. 61 set (1959) on *Unter- und Obertonreihen*.

Albrecht's strong tonal orientation is evident in his 'major-' and 'minor-key' indications in the titles of the individual pieces of these cycles, but certain mixed key signatures reveal the composer's more contemporary hybrid-modal thinking, influenced by both his folk-music research and his interest in the more abstract possibilities contained in the overtone series. For instance (Ex. 2), the opening C major prelude ('*Wolken im Licht*') of Op. 42 contains a key signature of F $\sharp$  and B $\flat$ , which produces rotation 1 of Fig. 3 (C-D-E-F $\sharp$ -G-A-B $\flat$ -C).



Ex. 2 Georg von Albrecht, Prelude No. 1 in C major ('Wolken im Licht'), from 12 *Préludes in Ober- und Untertonreihen*, Op. 42, for piano



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As Albrecht indicated in the subtitle of his *Préludes*, this non-diatonic scale can also be derived from the eighth to the fourteenth partials of the overtone series. Scriabin's overtone harmonies challenged Albrecht to do something new: not to use overtone harmonies for colouristic effects – for Scriabin, the overtone scale served simultaneously as a chord *and* a tone colour<sup>8</sup> – but to build twenty-four preludes on 'overtone' and 'undertone' scales, which might lay claim to being 'natural' major and minor scales according to the theory of harmonic dualism as expounded by Giuseppe Tartini.<sup>9</sup> Albrecht distinguishes the 'overtone' and 'undertone' forms by indicating either *Dur* or *Moll* for a given modal rotation of the basic overtone scale, C-D-E-F $\sharp$ -G-A-B $\flat$ : rotations 1, 2 and 7 (built on C, D and B $\flat$ ), because of their third degree, are 'major', whereas the remaining rotations 3, 4, 5 and 6 (on E, F $\sharp$ , G and A), because of their third degree, are 'minor'.

These partials of the overtone series, which supposedly laid the foundation for the new harmonic system of Scriabin's late works, also served as the source, according to Ernő Lendvai, of Bartók's use of this scale.<sup>10</sup> In Bartók's case, however, we must trace this scale to the Rumanian non-diatonic folk mode rather than to the more abstract acoustic (overtone) series, since there is no mention by Bartók of the latter as a source for his music in any of his writings.<sup>11</sup>

## MODAL VARIATION BY ROTATION

The inversive relationship between the two transposed modal rotations in Bartók's *Cantata Profana* is also basic to Albrecht's Prelude No.9 in E major-A minor ('Spiegelungen im Wasser') (Ex. 3a). While the concept of *Spiegelungen* ('Reflections') obviously refers to the literal thematic inversions between the two pairs of phrases which constitute each four-line stanza of the large A and B sections,<sup>12</sup> the literal inversive relations between modal rotations add another dimension to Albrecht's 'mirror'

Ex. 3 Georg von Albrecht, Prelude No. 9 in E major-A minor ('Spiegelungen im Wasser'), from *12 Préludes in Ober- und Untertonreihen*, Op. 42  
a) Section A, bs 1-8, transformation of opening overtone E-mode (rotation 1 of Fig. 3) to its undertone inversion (rotation 3 of Fig. 3)

A phrases a

Allegro cantabile

durchsichtig

Red.

overtone E-mode (E-F#-G#-A#-B-C#-D-E) | inversion of overtone E-mode (E-F#-G-A-Bb-C-D-E)

⑤ a-inversion

b-inversion

transposed rotation of overtone E-mode to A (A-Bb-C-D-E-F#-G)

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b) Section B, bs 9-13, modulation to a pair of inversionally related diatonic modes, each altering the original corresponding non-diatonic mode by one note (shown by arrows)

Phrases c (bs 9-11, R.H.) and d (bs 11-13, R.H.)

E-Lydian: E F# G# A# B C# D# E  
overtone E-mode: E F# G# A# B C# D E

Phrases c-invers. (bs 10-12, L.H.) and d-invers. (bs 12-14, L.H.)

E-Locrian: E F G A Bb C D E  
(= literal inversion of E-Lydian, above)  
overtone E-mode: E F# G A Bb C D E  
(= literal inversion of basic overtone E-mode, above)

technique. The exploitation of literal inversion in this prelude on both the structural and modal levels suggests the serial principle, which was to become increasingly prevalent in Albrecht's music. In the initial phrase (a), pitch content and metric-harmonic emphases (downbeats of bs 1 and 3) establish the priority of rotation 1 of Fig. 3: the C overtone scale transposed to 'E major' (E-F $\sharp$ -G $\sharp$ -A $\sharp$ -B-C $\sharp$ -D). Thematic and contrapuntal inversion of this phrase (a) in the corresponding phrase (a-inversion), at b.5, produces a modulation to rotation 6 of Fig. 3: the undertone scale of 'A minor' (A-B $\flat$ -C-D-E-F $\sharp$ -G). The latter is a transposed rotation of this initial overtone modal form on E. At the same time, the right-hand thematic statement (bs 5-8), which is a thematic inversion of the opening left-hand statement (bs 1-4), implies a melodic rotation of the 'A minor' modal content (A-B $\flat$ -C-D-E-F $\sharp$ -G) to E (E-F $\sharp$ -G-A-B $\flat$ -[]-[]), the latter of which is completed by the accompanying figuration to produce E-F $\sharp$ -G-A-B $\flat$ -C-D. As in Bartók's *Cantata Profana*, this 'E minor' rotation (rotation 3 of Fig. 3) is the literal inversion of the opening 'E major' overtone form, E-F $\sharp$ -G $\sharp$ -A $\sharp$ -B-C $\sharp$ -D (rotation 1 of Fig. 3). This inversional modal relation is supported by the corresponding inversional thematic associations. Example 3b shows the same relation between a pair of inversionally related diatonic modes (E-Lydian and E-Locrian) in Section B (bs 9-13), each of these two diatonic modes altering the original corresponding non-diatonic mode by one note (see arrows).

## MODAL VARIATION BY EXTENSION AND SYMMETRICAL TRANSFORMATION

Rotation 3 of Fig. 3, so prominent in Eastern European folk music, was also employed by Stravinsky as the basis for modal variation by extension into both octatonic and whole-tone scales (see Fig. 2 above). In the 'Russian Dance' of *Petrushka* (at No.35: see Ex. 4), Stravinsky assigns the complete E-modal rotation, E-F $\sharp$ -G-A-B $\flat$ -C-D, to the viola ostinato.<sup>13</sup> The remaining individual instrumental layers outline derivative pitch-set components from this non-diatonic folk mode. The lower piano staff has five notes of a whole-tone partition (B $\flat$ -C-D-E-F $\sharp$ ), the derivation of which is evident if we rotate the mode to B $\flat$ -C-D-E-F $\sharp$ -G-A. At the same time, bassoon 1 outlines an octatonic segment (E-F $\sharp$ -G-A-B $\flat$ -[]), which is evident in the lower six notes of the seven-note mode, while the upper woodwind unfold the diatonic segment D-E-F $\sharp$ -G-A, which is evident in the lower five notes of a rotation of the mode: [D]-E-F $\sharp$ -G-A-B $\flat$ -C-[]. In other passages of this work, as well as in Stravinsky's other two early Russian ballets, these segments are extended to the complete whole-tone, octatonic and diatonic scales.

This E-mode (rotation 3 of Fig. 3) is also employed by Bartók as the basis for octatonic and whole-tone extensions in the *Cantata Profana*,<sup>14</sup>

Ex. 4 Stravinsky, 'Russian Dance' of *Petrushka* (at No. 35), simultaneous extensions of non-diatonic folk mode (see rotation 3 of Fig. 3, and Fig. 2b and c)

The musical score is organized into three main sections, each with a specific mode indicated on the left:

- Diatonic (DEFGA):** Includes staves for Fl. Picc. I, II; Fl. I, II; Ob. I, II; Cor. Ingl; Cl. I, II; Cl. III; Fag. I; Fag. II, III; Cor. I; Pist. I, II; Tr. I, II; Xyl ph.; Arpa I; Arpa II; Piano; 2 V. Soli; Vcl I, gli altri; V. II.
- Octatonic (EFGAB):** Includes staves for Cor. I; Pist. I, II; Tr. I, II; Xyl ph.; Arpa I; Arpa II; Piano; 2 V. Soli; Vcl I, gli altri; V. II.
- Whole-tone (BbFDE):** Includes staves for 3 solo; Viole; le altre; Celli div.; C. B.

The score is marked with measure numbers 35 and 36. Performance instructions such as *p stacc.*, *p poco più f*, *sempre stacc.*, *p stacc. leggiero*, *tutti stacc.*, and *arco tutta* are present throughout the score.

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Ex. 5 Bartók, *Cantata Profana*, extensions of non-diatonic folk mode

a) Ancora più lento, bs 178-9, extension of opening non-diatonic folk mode (D-E-F-G-A $\flat$ -B $\flat$ -C) to complete octatonic collection (D-E-F-G-G $\sharp$ -A $\sharp$ -B-C $\sharp$ )

Ancora più lento,  $\text{♩} = 84$

S  
A  
T  
B

tief im Wal - de sind zu Hirsch - en sie ver - wan - delt,  
All were changed to stags there in the for - est shad - ows.

tief im Wal - de sind zu Hirsch - en sie ver - wan - delt,  
All were changed to stags there in the for - est shad - ows.

tief im Wal - de sind zu Hirsch - en sie ver - wan - delt,  
All were changed to stags there in the for - est shad - ows.

complete octatonic collection (D-E-F-G-G $\sharp$ -A $\sharp$ -B-C $\sharp$ )

F-Aeolian extension

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these symmetrical transformations occurring precisely at the point where the nine sons are magically transformed into stags (Ex. 5). As Ex. 5a (bs 178-9) shows, the basic mode – rotation 3 of Fig. 3 transposed to D-E-F-G-A $\flat$ -B $\flat$ -C (in enharmonic spelling, D-E-F-G-G $\sharp$ -A $\sharp$ -B $\sharp$ ) – is extended by the addition of two notes (B-C $\sharp$ ) in the combined descending choral segment (G-F-E-D-C $\sharp$ ) and accompanying chord (A $\sharp$ -E-F-G $\sharp$ -B-D) to the complete octatonic collection D-E-F-G-G $\sharp$ -A $\sharp$ -[B-C $\sharp$ ]. Then, as Ex. 5b (bs 186-7) shows, at the point where the magically transformed sons rove aimlessly through the forest, a transposition (D $\sharp$ -F-F $\sharp$ -G $\sharp$ -A-B-C $\sharp$ ) of the basic mode is rotated in violin 1 to F $\sharp$ -G $\sharp$ -A-B-C $\sharp$ /D $\sharp$ -F. The latter brings five notes (A-B-C $\sharp$ -D $\sharp$ -F) of one of the whole-tone scales into proximity with each other; this segment is then extended to the complete whole-tone scale through almost two octaves.

In No.3 of Bartók's *Eight Improvisations on Hungarian Peasant Tunes*, Op. 20, for piano (1920), the first statement of the folk tune in Strain 1 (Ex. 6a) (bs 3-15, right hand) is based on rotation 2 of Fig. 3. This is the

b) bs 186-7, rotation and extension of transposed opening non-diatonic folk mode (D $\sharp$ -F-F $\sharp$ -G $\sharp$ -A-B-C $\sharp$ ) to complete whole-tone scale (A-B-C $\sharp$ -D $\sharp$ -F-G-A - - -)

The musical score for measures 186 and 187 features several parts:

- S. 1. 2.** (Soprano): Melodic line with lyrics "ben. de." in measure 187.
- A. 1. 2.** (Alto): Melodic line with lyrics "az Wald. er - im" in measure 187.
- T. 1. 2.** (Tenor): Melodic line with lyrics "az Wald. er - im" in measure 187.
- B. 1. 2.** (Bass): Melodic line with lyrics "vál - tak. Wal - de." in measure 186 and "az dort er - im" in measure 187.
- Vln. 1.** (Violin): Accompaniment starting with a *pp* dynamic, marked "div. in 3" and "con sord." in measure 186, and "con sord." and "whole tone scale" in measure 187.

A box at the bottom of the score indicates the "permutation of basic mode transposed to D $\sharp$ -F-F $\sharp$ -G $\sharp$ -A-B-C $\sharp$ ".

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symmetrical form of the non-diatonic folk mode. A basic symmetrical property (augmented triad, D-F $\sharp$ -A $\sharp$ ) of this rotation (Ex. 6b) emerges as a prominent foreground event in the second episode (quintuplet upbeat to b.26 to b.30) (Ex. 6c). The quintuplet figure is initiated by this augmented triad, which is reiterated throughout the passage. The augmented triad, which is a segment of a whole-tone scale, is anticipated in the first phrase of Strain 2 (bs 19-21) (Ex. 6d). The succession of major thirds exclusively outlines a five-note segment of a whole-tone scale (D-E-F $\sharp$ -G $\sharp$ -A $\sharp$ ), which is symmetrically constructed around the basic augmented triad. This triad is formed here by the adjacency of its two major thirds, F $\sharp$ -A $\sharp$  and D-F $\sharp$ . Structural variation is thus produced not only by the transposition of the folk tune from D to F in Strain 2, but also by this whole-tone transformation of the symmetrical D mode in the accompaniment. At the

Ex. 6 Bartók, No. 3 of *Eight Improvisations on Hungarian Peasant Tunes*, Op. 20, for piano

a) Strain 1 of folk tune, bs 3-15, right hand, non-diatonic folk mode D-E-F $\sharp$ -G-A-B $\flat$ -C-D (rotation 2 of Fig. 3)

Lento, rubato. ( $\text{♩} = \text{cca. } 96$ )

*pp senza colore* *mf quasi parlando* *sempre pp* *mf* *p dolce* *poco espr.*

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b) Symmetrical augmented-triadic structure (D-F $\sharp$ -A $\sharp$ , enharmonic spelling of D-F $\sharp$ -B $\flat$ ) of non-diatonic folk mode D-E-F $\sharp$ -G-A-B $\flat$ -C-D

D F $\sharp$  A $\sharp$  D

c) Episode 2, bs 25-30, symmetrical chord (D-F $\sharp$ -A $\sharp$ ) from mode of folk tune

25 26 27 28 29 30

*mf* *molto espr.* *mf* *dim.*

*più lento* (♩ = 58) *espr.*

d) Strain 2 accompaniment, bs 18-21, whole-tone variant/extension (D-E-F $\sharp$ -G $\sharp$ -A $\sharp$ ) of non-diatonic folk mode

18 19 20 21

*mf* *quasi parlando* *dolce*

tune transposed to  
F G A B $\flat$  C D $\flat$  E $\flat$

quintuplet figure (b.25) that initiates Episode 2, this five-note whole-tone segment (D-E-F $\sharp$ -G $\sharp$ -A $\sharp$ ) is explicitly partitioned into the basic augmented triad (D-F $\sharp$ -A $\sharp$ ) and the symmetrically related major third (E-G $\sharp$ ).

Cyclic-interval extensions of this special non-diatonic folk mode (specifically as rotation 1 of Fig. 3, or overtone scale) are discussed by George Perle in connection with Scriabin's Piano Sonata No.7.<sup>15</sup> Perle refers first to Scriabin's use of a seven-note segment derived from the octatonic scale, such a derivation having practical advantages over the octatonic. Since the octatonic scale remains unchanged at its successive



minor-third ( $T_3$ ) transpositions, there are only three different octatonic collections. A derived seven-note segment is permitted to modulate to four  $T_3$  transpositions within a given octatonic scale, so that a single pitch class in each seven-note group differs in relation to each of the other groups. For instance, segments  $A\sharp-B\sharp-C\sharp-D\sharp-E-F\sharp-G$ ,  $C\sharp-D\sharp-E-F\sharp-G-A-B\flat$ ,  $E-F\sharp-G-A-B\flat-C-D\flat$  and  $G-A-B\flat-C-D\flat-E-F\flat$  of the octatonic scale  $A\sharp-B\sharp-C\sharp-D\sharp-E-F\sharp-G-A$  produce four transformations of slightly varied content. Perle states that 'Scriabin provides a source of contrast through a variant form of the derived scale, the final degree of which is occasionally raised by a semitone' and that this produces 'a striking change of harmonic colour by converting a five-note segment of the scale into a whole-tone collection'.<sup>16</sup> This variant form is the special non-diatonic (overtone) mode (rotation 1 of Fig. 3).

In Albrecht's Prelude No.12 in B minor ('Spiegelungen'), in which the composer employs fugal procedures as the framework for a more serialized idiom,<sup>17</sup> we also find significant modal extensions into complete whole-tone and octatonic collections. As an expression of the title ('Reflections', or 'Mirrors'), every pair of bars in Section A (Ex. 7a) is based on a strict inversive relationship of the motivic material. As the basis for his fugal subject (bs 1-8), the composer employs two-bar phrases which, according to the corresponding rhythmic figurations within each phrase, form the pattern a (a-inversion), b (b-inversion), a' (a'-inversion), b' (b'-inversion).

Despite the more traditional diatonic modal setting of this prelude, in B-Dorian ( $B-C\sharp-D-E-F\sharp-G\sharp-A-B$ ), which makes rotation 5 of Fig. 3 diatonic by altering one element, modal extensions to one of the overtone modal rotations and the symmetrical whole-tone and octatonic scales articulate the larger sectional structure. The two inversionally-related bars that make up each phrase are separated exclusively by a whole tone ( $F\sharp$  and  $E$ ). This whole-tone relationship between the transposition of phrases is reflected within each B-Dorian motivic statement. The modal whole-tone tetrachord  $D-E-F\sharp-G\sharp$  prominently initiates phrase a. As Ex. 7b shows, the answer (bs 13ff.) is transposed up a tone to  $G\sharp$ , so that the original whole-tone relationships now occur transposed.

The significance of this modal transposition from B-Dorian of the subject to  $C\sharp$ -Dorian of the answer is that the initial whole-tone tetrachord  $D-E-F\sharp-G\sharp$  is replaced by  $E-F\sharp-G\sharp-A\sharp$ , suggesting an extension of the basic whole-tone scale to five notes,  $D-E-F\sharp-G\sharp-A\sharp$ . This occurs as a local adjacency where the end of the subject connects with the answer (bs 12-13) (see Ex. 7b). The original tetrachord, which then forms the exclusive content of the countersubject, is reiterated against the  $E-F\sharp-G\sharp-A\sharp$  of the answer. The addition of  $B\sharp$  at bs 18 and 20 of the answer completes the whole-tone collection  $D-E-F\sharp-G\sharp-A\sharp-B\sharp$ , which forms the total pitch content of the answer, except for one 'odd' note, the modal tonic  $C\sharp$ . The significance of these variations lies in the transformation of the diatonic B-Dorian mode of the subject into the complete whole-tone collection of the answer.

As Ex. 7c shows, the opening bars of Section B' (bs 66-72) transform the basic B-Dorian mode (B-C#-D-E-F#-G#-A-B) into a B transposition of rotation 5 of Fig. 3 by altering one note, A, to A#. This gives us the overtone-scale B-C#-D-E-F#-G#-A# or, because of the prominence of the note E, rotation 1 of Fig. 3 on E (E-F#-G#-A#-B-C#-D). The next bar replaces pitch classes A# and C# with A and C to produce an E transposition of overtone rotation 2 of Fig. 3 (E-F#-G#-A-B-C-D). The bass line unfolds a complete descending form of this scale. The remainder of the piece alternates both of these overtone-scale transpositions, the final modal tonic (B) of the piece establishing their B-modal rotations.

A seven-note octatonic segment, A#-B-C#-D-E-[]-F\*-G#, emerges as the exclusive scalar basis of the end of the answer (left hand, bs 22-4) and the first note of Section B (b.25) (Ex. 7d). This scale suggests an octatonic transformation (B-C#-D-E-[]-[F\*]-G#-[A#]) of B-Dorian, and appears to be an intermediate stage between the original B-Dorian form (B-C#-D-E-F#-G#-A) and one of the final two non-diatonic (overtone) transformations, B-C#-D-E-F#-G#-A#. Thus, the overall move from diatonic to non-diatonic (overtone) modal forms in this prelude is implemented by means of a complex set of variational, almost serialized, interactions of diatonic, whole-tone and octatonic sets.

Ex. 7 Georg von Albrecht, Prelude No. 12 in B minor ('Spiegelungen'), from *12 Preludes in Ober- und Untertonreihen*, Op. 42

a) Section A, bs 1-8, fugal subject based on strict inversional (serialized) relationship of motivic material; B-Dorian mode (diatonic scale form of rotation 5 of Fig. 3)

phrases a (a-inversion)      b (b-inversion)      a'

P-7 (F#)      I-5 (E)      P-7      I-5      P-7

Presto *mp legato*

B-Dorian (B-C#-D-E-F#-G#-A)

(a'-inversion)      b' (b'-inversion)

I-5      p-7      I-5

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b) bs 13ff., answer based on complete whole-tone variant/extension (D-E-F#-G#-A#-B#-[C#]) of diatonic mode of subject

D E F# G# A# → B# → (at bs 18 + 20)

E F#

11

16

D E F# G#

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c) Section B', bs 66-72, transformation of basic B-Dorian mode into a transposition (on B) of rotation 5 of Fig. 3

B C# D E F# G# A# = rot. 5

66

r.h.

r.h.

r.h.

r.h.

or: E F# G# A# B C# D = rot. 1

71

r.h.

r.h.

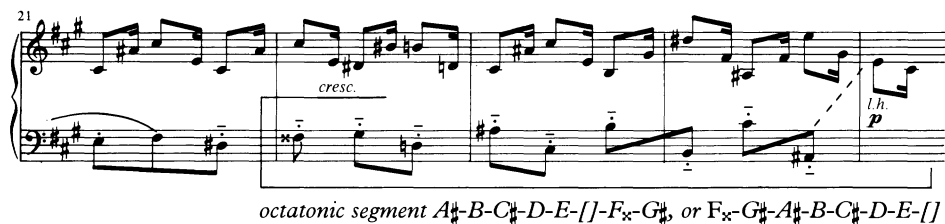
r.h.

r.h.

E F# G# A B C D = rot. 2 → F#-E

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d) end of answer, bs 22-5, octatonic transformation ( $A\sharp-B-C\sharp-D-E-[]-F\sharp-G\sharp$ , or on B tonic =  $B-C\sharp-D-E-[]-F\sharp-G\sharp-A\sharp$ ) of the opening B-Dorian mode ( $B-C\sharp-D-E-F\sharp-G\sharp-A-B$ )



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## CONCLUSION

The transformational approaches to modal structure revealed by these early twentieth-century composers show the pervasive absorption of structural melodic characteristics of native Eastern European folk sources into more abstract contemporary art-music idioms. Like his great Eastern European contemporaries Stravinsky and Bartók, Albrecht would draw from divergent musical sources ranging from diatonicism to the more complex scalar constructions that make up the larger family of non-diatonic Eastern European folk modes. At the same time, like his more cosmopolitan contemporary Scriabin, he would draw upon the modal properties implied in the overtone series.

All of these composers, whether they were inclined towards the authentic folk music of Eastern Europe or the more abstract possibilities implied in the overtone series as the basis for their compositional resources, were to vary the modal constructions with endless skill within the larger formal framework. These compositional procedures, based on modal transformation by means of rotation or extension into the more abstract octatonic and whole-tone spheres, have general relevance to a larger body of twentieth-century music. The foregoing modal procedures appear to have developed in two opposite directions: composers of diverse backgrounds moved either towards freer (non-serialized) modal-tonal contexts or towards serialized idioms in either twelve-note or non-twelve-note contexts.

Stravinsky and Albrecht eventually moved towards serialized twelve-note composition, in which they were still to maintain a sense of modal-tonal underpinning. Scriabin likewise moved towards an increasingly systematic handling of pitch-set constructions, but in an atonal idiom. Given Scriabin's proclivities, it is likely that if he had had a longer

compositional career he might well have entered the realm of twelve-note serialism. Bartók, on the other hand, was never inclined towards strict serial principles, though he approached a species of twelve-note composition in the early 1920s when he developed an increasingly complex polymodal chromaticism as well as a more abstract set of symmetrical pitch relations which were largely removed from his native folk modes. Thus, despite their divergent origins, both the diatonic modes and the special non-diatonic modes represented areas of convergence for these individual compositional approaches to new kinds of pitch construction and progression.

## NOTES

1. Béla Bartók, 'The Folk Songs of Hungary', *Pro Musica* (1928), pp.28-35. See also *Béla Bartók Essays*, ed. Benjamin Suchoff (New York: St Martin's Press, 1976), pp. 334-5.
2. See *Béla Bartók Essays*, p.363. The source is Bartók's Harvard Lectures, given during February 1943. Only extracts of the manuscripts of four of the lectures were published in John Vinton, 'Bartók on His Own Music', *Journal of the American Musicological Society*, Vol. 19, No.2 (Summer 1966), pp.232-43.
3. See Elliott Antokoletz, *The Music of Béla Bartók: A Study of Tonality and Progression in Twentieth-Century Music* (Berkeley: University of California Press, 1984), pp.246-9.
4. This sequence, which leads to a musical quotation from the opening of Bach's Saint Matthew Passion, is based on a chromatic 'filling-in' technique typical of Bartók's melodic lines. The opening themes of the *Music for Strings, Percussion and Celesta* and the Sixth String Quartet are only two of many such instances of Bartók's polymodal chromaticism based on chromatic complementation. Bartók's use of this principle is confirmed by his own discussion of 'bi-modality' and 'polymodal chromaticism', in the Harvard Lectures; see *Béla Bartók Essays*, pp.365-7.
5. This non-diatonic folk mode is Pattern 15 of Table 2 of Bartók's *Rumanian Folk Music*, Vol. 4, ed. Benjamin Suchoff, trans. E.C. Teodorescu *et al.* (The Hague: Martinus Nijhoff, 1975), p.20. Bartók refers to the Patterns as 'scale families' with chromatic alteration of the less important degrees (p.18).
6. Information about Albrecht's studies and influences was provided in a letter to me (8 January 1990) from the composer's son, Michael von Albrecht, Professor of Classical Philology at the University of Heidelberg.
7. See George Perle, *Serial Composition and Atonality* (6th edn, Berkeley: University of California Press, 1991), p.41. See also Antokoletz, *Twentieth-Century Music* (Englewood Cliffs: Prentice Hall, 1992), p.101.
8. See Boris de Schloezer, *Scriabin, Artist and Mystic*, trans. Nicolas Slonimsky (Berkeley: University of California Press, 1987), p.331.
9. In his *Trattato di musica secondo la vera scienza dell'armonio* (Padua: 1754),

- Tartini derived the major system from the harmonic series, the minor from the arithmetic sextuplum, but differed from other dualists by assuming that major and minor harmonies are outgrowths of the same basic law.
10. See Ernő Lendvai, *Béla Bartók: An Analysis of His Music* (London: Kahn and Averill, 1971), p.67, for Lendvai's discussion of this scale as part of the diatonic or acoustic system and his identification of it in Bartók's music.
  11. Furthermore, the intonation of several of the partials in the overtone series differs greatly from the intonation of the pitches in the tempered system of the music.
  12. The form of the piece is as follows: Section A (bs 1-8) – a (bs 1-2), b (bs 3-4), a-inversion (bs 5-6), b-inversion (bs 7-8); Section B (bs 9-13) – c (bs 9-11, right hand), d (bs 11-13, right hand), c-inversion (bs 10-12), d-inversion (bs 12-13); Section A' (bs 14-21) reordered – a (bs 14-15), a-inversion (bs 16-17), b' (bs 18-19), b'-inversion (bs 20-1); Section B' (bs 22-7) reordered – c-inversion (bs 22-4, left hand), c (bs 23-5, right hand), d-inversion (bs 24-6, left hand), d (bs 25-7, right hand); Section-A" abridged to b'-inversion (bs 27-8), b' (bs 29-30), plus codetta-like cadential extension (bs 31-3).
  13. See Antokoletz, 'Interval Cycles in Stravinsky's Early Ballets', *Journal of the American Musicological Society*, Vol. 39, No.3 (Fall 1986), pp.597-600.
  14. See Antokoletz, *The Music of Béla Bartók*, pp.241-6.
  15. George Perle, 'Scriabin's Self-Analyses', *Music Analysis*, Vol. 3, No.2 (July 1984), pp.103-4. See also Antokoletz, *Twentieth-Century Music*, p.104.
  16. Perle, 'Scriabin's Self-Analyses', p.104.
  17. The overall form of Prelude No.12 is as follows: Section A (bs 1-24) – subject (bs 1-8), free part (bs 9-12), answer and countersubject (bs 13-20), free part (bs 21-4); Section B (bs 25-37); Section A', with reversal of subject and answer (bs 38-65), answer and new countersubject from B and then original countersubject (bs 38-53), subject (bs 54-61), free part (bs 62-5); Section B' (bs 66-89), with codetta (bs 86-9).