Rhythmic structure in music: a study of the perception of metrical and phrase structure, from a mechanistic viewpoint

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RHYTHMIC STRUCTURE IN MUSIC: A STUDY OF THE PERCEPTION OF METRICAL AND PHRASE STRUCTURE, FROM A MECHANISTIC VIEWPOINT

by

George Robert Mackie Fraser

Thesis submitted to the Faculty of Music in the University of Durham for the Degree of Doctor of Philosophy

1982

In Two Volumes

VOLUME TWO

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22. MAY 1984
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<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>B</td>
<td>Bass Accentuation</td>
</tr>
<tr>
<td>DC</td>
<td>Duration Contour</td>
</tr>
<tr>
<td>DP</td>
<td>Duration Phrase</td>
</tr>
<tr>
<td>d-r</td>
<td>Dissonance and Resolution</td>
</tr>
<tr>
<td>Estd</td>
<td>Pre-established Metre</td>
</tr>
<tr>
<td>HR</td>
<td>Harmonic Rhythm</td>
</tr>
<tr>
<td>I</td>
<td>Interpreted structure</td>
</tr>
<tr>
<td>LN</td>
<td>Longer-note Accompaniment</td>
</tr>
<tr>
<td>M</td>
<td>Metre</td>
</tr>
<tr>
<td>MC</td>
<td>Metrical Contour</td>
</tr>
<tr>
<td>p-p</td>
<td>Pitch Unity</td>
</tr>
<tr>
<td>PS</td>
<td>Pitch separation</td>
</tr>
<tr>
<td>R</td>
<td>Repetition</td>
</tr>
<tr>
<td>S</td>
<td>Subdivision (of metrical unit or phraselength)</td>
</tr>
<tr>
<td>S1</td>
<td>Beam altered by Separation Rule 1,2,5</td>
</tr>
<tr>
<td>S2</td>
<td></td>
</tr>
<tr>
<td>S5</td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>Structurally accented Tonic</td>
</tr>
<tr>
<td>t</td>
<td>Tonic</td>
</tr>
<tr>
<td>Tr</td>
<td>Transferred phrase grouping</td>
</tr>
<tr>
<td>x:</td>
<td>Structural groupings on this level produced by x, until otherwise indicated</td>
</tr>
<tr>
<td></td>
<td>Structural grouping created or positioned by x</td>
</tr>
<tr>
<td></td>
<td>End of phrase grouping</td>
</tr>
<tr>
<td></td>
<td>Tonic Accent</td>
</tr>
<tr>
<td></td>
<td>Dynamic Accent</td>
</tr>
<tr>
<td></td>
<td>Tied note or articulated slur</td>
</tr>
<tr>
<td></td>
<td>Staccato and non legato</td>
</tr>
<tr>
<td></td>
<td>'gives way to' (of progressive closure)</td>
</tr>
<tr>
<td></td>
<td>Directional Grouping</td>
</tr>
<tr>
<td></td>
<td>Congruent with</td>
</tr>
<tr>
<td></td>
<td>Incongruent with</td>
</tr>
<tr>
<td></td>
<td>Stronger than (and incongruent with)</td>
</tr>
<tr>
<td></td>
<td>Weaker than (and incongruent with)</td>
</tr>
<tr>
<td></td>
<td>Subsidiary structural grouping</td>
</tr>
<tr>
<td></td>
<td>Projected or anticipated structural grouping</td>
</tr>
<tr>
<td></td>
<td>Beam reflecting separation and continuation</td>
</tr>
<tr>
<td></td>
<td>Beam reflecting separation</td>
</tr>
<tr>
<td></td>
<td>Structural rest, tied note, subconscious metrical accent</td>
</tr>
<tr>
<td></td>
<td>Dual branch</td>
</tr>
<tr>
<td></td>
<td>Shared time point - two voices</td>
</tr>
<tr>
<td></td>
<td>Shared branch (and subtree)</td>
</tr>
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Ex. 1: Schubert, Impromptu in C minor, Op. 90/1

Allegro molto moderato

Ex. 2
Ex.1/1

Ex.1/2: Chopin, Nocturne in F#, Op. 15/2

Ex.1/3: Mozart, The Marriage of Figaro, Act I, 'Non so più'
Ex.1/4: Palestrina, *Missa Papae Marcelli*, Credo

Ex.1/5: Beethoven, *Sonata in F minor*, Op. 2/1, I

Ex.1/6: Bach, *Musical Offering*, Theme; Trio Sonata, IV
Ex.1/7: Beethoven, Sonata in D, Op. 10/3, I

Ex.1/8: Beethoven, Violin Concerto, III

Ex.1/9

Ex.1/10
Ex.2/23: Haydn, Quartet, Op.33/3, IV

Ex.2/24: Chopin, Prelude in C minor, Op.28/20

Ex.2/25

Ex.2/26: Beethoven, Symphony No.9, II

Ex.2/27: Bach, 'O Haupt voll blut und Wunden'
Ex. 2/35: Tchaikovsky, Symphony No. 4, I

Ex. 2/36: Mendelssohn, Symphony No. 4, I

Ex. 2/37

Ex. 2/38

Ex. 2/39
Ex.2/40: Mozart, Sonata in A, K. 331, I

Ex.2/41

Ex.2/42

Ex.2/43

Ex.2/44

Ex.2/45

a: Schumann, Piano Concerto, I
Ex. 2/46: Beethoven, Symphony No. 1, I

Ex. 2/47: Bach, '48', I, Fugue No. 2
Ex. 2/48: Mozart, Sonata in D, K. 284, I
Ex. 2/51

\[ \begin{array}{c}
\begin{array}{c}
J J J \\
\text{anbetont (beginning-accented)}
\end{array} \\
\begin{array}{c}
J J J \\
\text{inbetont (middle-accented)}
\end{array} \\
\begin{array}{c}
J J J \\
\text{abbetont (end-accented)}
\end{array}
\end{array} \]

Ex. 2/52

\[ \begin{array}{c}
\begin{array}{c}
\text{a.} \\
\text{b.}
\end{array}
\end{array} \]

\[ \text{(p. 104)} \]

\[ \text{(p. 65)} \]

Ex. 2/53

\[ \begin{array}{c}
4
\end{array} \]

\[ \text{(p. 170)} \]

Ex. 2/54

\[ \begin{array}{c}
\begin{array}{c}
\text{a.} \\
\text{b.} \\
\text{c.}
\end{array}
\end{array} \]

\[ \text{(p. 65)} \]

\[ \text{(p. 90)} \]

\[ \text{(p. 23)} \]

Ex. 2/55: Schubert, Symphony No. 5, II

\[ \text{Andante con moto} \]

\[ \text{ allegro} \]
Ex. 2/56: Beethoven, Sonata in A, Op. 2/2, III

Ex. 2/57

Ex. 2/58

Ex. 2/59

Ex. 2/60

Ex. 2/61

Ex. 2/62
Ex.2/63: Brahms, Symphony No. 3, III

Ex.2/64

Ex.2/65: Beethoven, Violin Concerto, III

Ex.2/66
Ex. 3/1: Mendelssohn, Symphony No. 4, IV

Ex. 3/2: Brahms, Symphony No. 1, IV

Ex. 3/3: Bartók, Music for Strings, Percussion, and Celesta, III
Ex.3/9: Chopin, Sonata in B minor, I

Ex.3/10: Bach, '48', II, Fugue No.14

Ex.3/11: Brahms, Symphony No.1, IV

Ex.3/12: Stravinsky, The Rite of Spring, 'Evocation of the Ancestors' (adapted)

Ex.3/13: Beethoven, Piano Concerto No.5, III
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Ex. 5/15: Berlioz, Overture, 'Le Carnaval Romain'

Ex. 5/16: Handel, Water Music, VII, 'Air'

Ex. 5/17: Wagner, Götterdämmerung, Funeral Music

Ex. 5/18: Schumann, Piano Concerto, I
Ex. 3/19: Berlioz, Romeo and Juliet, III

Ex. 3/20: Schumann, Piano Concerto, I

Ex. 3/21: Berlioz, Romeo and Juliet, III

Ex. 3/22: Bach, '49', II, Fugue No. 14
Ex.3/23: Bach, '48', I, Fugue No. 8

Ex.3/24: Bach, '48', I, Fugue No. 14

Ex.3/25: Haydn, Symphony No. 101 ('Clock'), II

Ex.3/26: Chopin, Sonata in B minor, III

Ex.3/27: Brahms, Piano Concerto No. 1, I
Ex.3/28: Mozart, Piano Trio in Bb, K.502, II

```
\[\text{Larghetto}\]
```

Ex.3/29: Mozart, Symphony No. 40, K. 550, I

Ex.3/30

Ex.3/31: Bach, '48', I, Fugue No. 15

Ex.3/32: Mozart, Violin Concerto, K. 219, I

Allegro molto

Ex.3/33: Mozart, Piano Sonatina in F, K. 331, I
Ex.3/33: Handel, Tolomeo, 'Non lo dirò col labbro'

Ex.3/34: Wagner, Die Meistersinger, Prelude

Ex.3/35

Ex.3/36

Ex.3/37

Ex.3/38

(a) \( \frac{2}{4} \)  

(b) \( \frac{6/8}{} \)
Ex. 3/40: Bernstein, West Side Story, 'America'

Ex. 3/41: Bach, '48', Fugue No. 3

Ex. 3/42: Beethoven, Symphony No. 5, III

Ex. 3/43: Mozart, Serenade ('Eine Kleine Nachtmusik'), K. 525, III

Ex. 3/44

Ex. 3/45: Mozart, Symphony No. 25 in G minor, K. 185, I
Ex. 3/46

Ex. 3/47

Ex. 3/48: 'Auld Lang Syne'

Ex. 3/49: Chopin, Prelude in E minor, Op. 28/4

Ex. 3/50: Musical Cliché
Ex. 3/51: Bach, '48', I, Fugue No. 14

Ex. 3/52

A. S. Joplin, The Entertainer

Ex. 3/53

Ex. 3/54: Bartók, Mikrokosmos, No. 153

Notes:
\[ \wedge = \text{attack} \]
\[ \| = \text{sounded metrical accent} \]
\[ : = \text{unsounded} \]
Ex.3/55: Bach, Clavier Concerto in D minor, I 3 0

Ex.3/56

Ex.3/57: Grieg, Sonata in C minor (Violin and Piano), Op. 45, I

Ex.3/58: Beethoven, Symphony No. 3 ('Eroica'), I
Ex.3/63: Brahms, Rhapsody, Op. 79/1
{Grieg, Peer Gynt, 'Ase's Death'

Ex.3/64: Bach, Brandenburg Concerto No. 3, I

Ex.3/65

Ex.3/66

Ex.3/67

Ex.3/68

Ex.3/69

Ex.3/70: Schubert, Symphony No. 9, III

Ex.3/71: Wagner, Tannhäuser, 'Pilgrims' Chorus'

\( \text{R} \) \( \text{(d.c.54)} \)

Ex. 3/73

Ex. 3/74: Haydn, Symphony No. 101 ('Clock'), I

a.

b.

Ex. 3/75: Mozart, Symphony No. 40, K. 550, IV

\( \text{(d=120)} \)

b.
Ex.3/75 ctd.

Ex.3/76: Beethoven, Piano Concerto No. 3, III

Ex.3/77

Ex.3/78: Haydn, Symphony No. 101 ('Clock'), I
Ex.3/83: Bach, '48', I, Fugue No. 5

Ex.3/84

Ex.3/85: Mozart, Sonata in F, K. 332, I

Ex.3/86

Ex.3/87: Bach, '48', I, Fugue No. 2

Ex.3/88: Bach, Organ Chorale, 'Wachet Auf'
Ex.3/90

Ex.3/91

a: Beethoven, Symphony No. 6, I

b: Sibelius, Symphony No. 1, III

Ex.3/92

Ex.3/93
Ex.3/94: Chopin, Waltz in Eb, Op.18

Ex.3/95: Beethoven, Sonata in F minor, Op.2/1, I

Ex.3/96

a: Mendelssohn, Symphony No. 3, IV

b: Sibelius, Symphony No. 1, I

Ex.3/97

1.  

2.  

3.  
c.f. Ex.2/33
Ex. 3/98

a. 

b. 

I = Interpolated structural group

c. 

d. 

e. 

f. 

Ex. 3/99: Ravel, Piano Trio, I

Motivic

\( \text{LV} = \text{Langer-note accompaniment} \)
Ex.3/108

Ex.3/109

Ex.3/110

Ex.3/111

Ex.3/112

Elgar, Pomp and Circumstance, No.4

Ex.3/113: Chopin, Prelude in A, Op. 28/7

Ex.3/114
Ex.3/115

a: Boyce, Symphony No.4, III

b: Berlioz, Symphonie Fantastique, IV

c: Beethoven, Piano Concerto No.4, I

d: Wagner, Die Meistersinger, Prelude
Ex.3/115e: Sibelius, Karelia, III

Ex.3/116: Prokofiev, Romeo and Juliet, 'Montagues and Capulets'

Ex.3/117: Bartók, Dance Suite, IV

Ex.3/118

a: Schubert, Symphony No.9, I

b: Puccini, Manon Lescaut, Act I

c: Haydn, Symphony No.104, I
Ex.3/119: Brahms, Variations on 'St. Anthony Chorale', Theme

Ex.3/120

Ex.3/121: Mozart, Sonata in A minor, K.310, III

Ex.3/122: Beethoven, Piano Concerto No.4, I

Ex.3/123

a: 'Twinkle Twinkle Little Star'

b: Musical Cliché
Ex. 3/123 ctd.

c: Schumann, Papillons, Op. 2, XII

![Sheet music for Schumann's Papillons, Op. 2, XII](image)

d: Beethoven, Piano Concerto No. 3, I

![Sheet music for Beethoven's Piano Concerto No. 3, I](image)

e: Mozart, Sonata in C, K. 330, III

![Sheet music for Mozart's Sonata in C, K. 330, III](image)

f: Arne, Rule Britannia

![Sheet music for Arne's Rule Britannia](image)

Ex. 3/124: Tchaikovsky, Symphony No. 4, I

a. 

![Sheet music for Tchaikovsky's Symphony No. 4, I, part a](image)

b. 

![Sheet music for Tchaikovsky's Symphony No. 4, I, part b](image)
Ex. 3/125: Beethoven, Symphony No. 1, I

Ex. 3/126: Holst, The Planets, 'Mars'

Ex. 3/127

Ex. 3/128
Ex.3/129: Haydn, Symphony No.101 ('Clock'), II

Decay value

4 1
.25

4 (1 1) 1
.39

4 (2 2) 1
.5

4 (4 4) 1
.707

4 (1 1 2)
.625

4 (1 1 3)
.737

4 (1 2 2)
.816

4 (1 2 3)
.859

4 (2 2 3)
.866

4 (2 2 3)
.885

Ex.3/130

Decay value

.5

.6899

.707

.79

.8409 (c.f. Ex.3/129)

.8909

Decay value

.75

.7825

.866
Ex.3/131: Beethoven, Symphony No.6, IV

Ex.3/132:

Ex.3/133

Ex.3/134
Ex. 3/135: Beethoven, Symphony No. 7, I

Ex. 3/136a: Berlioz, Te Deum, II, 'Tibi omnes'

Ex. 3/136b: Mozart, Sinfonia Concertante (Violin and Viola), K. 364, I

Ex. 3/137: Rachmaninov, Symphony No. 3, I
Ex. 3/138

A. 3 12  
B. 3 1 12  
C. 8 2 1 12  
D. 3 1 2 1 1 2  

E. 4 1 12  
F. 8 1 12  
G. 6 1 1 1 2  

Ex. 3/139: Beethoven, Symphony No. 7, I

Ex. 3/140

A.  

B.  

C.  

D.  

E.  

Decay values
Ex. 3/141

a: Shostakovich, Symphony No. 5, IV

\[ \begin{array}{cccccccc}
2 & 4 & 6 & 11 & 22 & 12 & 24 & 4
\end{array} \]

--- etc.

b: Sibelius, Karelia, III

--- etc.

c: Tchaikovsky, Symphony No. 5, IV

--- etc.

Ex. 3/142

a: Dvořák, Cello Concerto, II

\[ \begin{array}{ccccccc}
8 & 3 & 4 & 6 & 2 & 2 & 4
\end{array} \]

b: Chopin, Sonata in B minor, I

\[ \begin{array}{ccccccc}
1 & 1 & 1 & 8 & 4 & 6 & 2
\end{array} \]

c: Tchaikovsky, Symphony No. 5, IV

\[ \begin{array}{ccccccc}
1 & 1 & 1 & 1 & 4 & 4 & 4
\end{array} \]
Ex. 3/143: Schubert, Sonatina in D, Op. 137, III

Ex. 3/144: Monteverdi, Vespers, IV, 'Laudate pueri'

Ex. 3/145: Bach, '48', I, Fugue No. 8

Ex. 3/146: Beethoven, Sonata in C# minor ('Moonlight'), II

HR = Structural grouping created by Harmonic Rhythm.
Ex. 3/147: Wagner, *Tannhäuser*, 'Pilgrims' Chorus'

Ex. 3/148: Mozart, Clarinet Concerto, K. 622, II

Ex. 3/149: Bartók, *Mikrokosmos*, No. 149

Ex. 3/150: Bartók, *Mikrokosmos*, No. 150
Ex.3/151: Bartók, Mikrokosmos, No. 141

Allegro, \( \frac{d}{2} = 136-144 \)

Ex.3/152: Shostakovich, Symphony No. 10, III

Allegretto, \( \frac{d}{2} = 118 \)

Ex.3/153: Dvořák, Symphony No. 8, IV
Ex.3/154: Mozart, Sonata in D, K.284, I

Ex.3/155: Borodin, On the Steppes of Central Asia (1st theme)

Ex.3/156: Borodin, On the Steppes of Central Asia (2nd theme)

(3/157 not used)
Ex. 3/158: Stravinsky, The Rite of Spring, 'Danses des Adolescents'

Addend ludum.
Ex. 3/159: Stravinsky, *The Rite of Spring*, 'Glorification de l'Élue'

\[ \begin{align*}
\text{Vivo} & \quad \text{tempo} = 144 \\
\end{align*} \]

Ex. 5/160: Stravinsky, *The Rite of Spring*, 'Danse Sacrale'

\[ \begin{align*}
& \quad \text{tempo} = 126 \\
\end{align*} \]
Ex. 3/161

Ex. 3/162: Schubert, Symphony No. 3, III

Ex. 3/163: Beethoven, Violin Concerto, III

Ex. 3/164: Beethoven, Symphony No. 8, I

Ex. 3/165: Haydn, Sonata in E minor, Hob.XVI/34, III
Ex.3/166: Beethoven, Sonata in D, Op.10/3, I

Ex.3/167: Mozart, Piano Trio in B♭, K.502, II

Ex.3/168: Mozart, Piano Concerto in C minor, K.491, III

Ex.3/169
a: Brahms, Requiem, II, ‘Denn alles Fleisch’

b: Brahms, Symphony No.4, II

Ex.3/170: Mozart, Adagio and Fugue, K.546 (426), Fugue
Ex.3/171: Tchaikovsky, Swan Lake, 'Dance of the Swans'

Ex.3/172

a. \[
\begin{array}{c}
2 & 3 & 4 & 1 \\
2 & 3 & 4 & 1 \\
\end{array}
\]

b. \[
\begin{array}{c}
2 & 3 & 4 & 1 \\
2 & 3 & 4 & 1 \\
\end{array}
\]

c. \[
\begin{array}{c}
2 & 3 & 4 & 1 \\
2 & 3 & 4 & 1 \\
\end{array}
\]

Ex.3/173

Ex.3/174: Bach, '48', I, Prelude No. 7

HR = Structural grouping created by Harmonic Rhythm
Ex.3/175: Beethoven, Overture: Prometheus, Op. 43

Ex.3/176: Bach, '48', I, Fugue No. 5

Ex.3/177: Bach, Sonata in G minor (Solo Violin) Fugue

Ex.5/178: Brahms, Piano Concerto No. 2, II

\( \text{HRC structural grouping created by harmonic rhythm} \)
\( s = \text{Subdivision} \)

\( \wedge = \text{Time point slurred by separate voices} \)
Ex.3/181

Ex.3/182

Ex.3/183: Stravinsky, The Rite of Spring, 'Cortège du Sage'

Ex.3/184: Mozart, Symphony No.40, K.550, I

Ex.3/185: Beethoven, Symphony No.1, III

Ex.3/186: Beethoven, Symphony No.3 (‘Eroica’), IV
Ex. 3/187: Schumann, Sonata in A minor (Violin and Piano), Op. 105, II

Ex. 3/188: Bach, "48", I, Fugue No. 6

Ex. 3/189: Bach, Mass in B minor, III, 'Kyrie Eleison'
Ex. 3/191
\[ \text{etc.} \]

Ex. 3/192: Bartók, Mikrokosmos, No. 151

Ex. 3/193: Bartók, Mikrokosmos, No. 153

Ex. 3/194: Bartók, Mikrokosmos, No. 148

Ex. 3/196: Beethoven, Symphony No. 8, II

Ex. 3/197: Mozart, Symphony No. 41, K. 551, II

Ex. 3/198

(a)  
(b)  

Predominant metric:  

Attack string:  

\text{HR} = \text{Harmonic Rhythm}  
\text{SF} = \text{Structural groupings positioned as created by } \text{X}.
Ex.3/199

Ex.3/200

Ex.3/201

Ex.3/202: Brahms, Intermezzo in B minor, Op.119/1

Ex.3/203: Mozart, Sonata in C minor, K.457, III

3/204 not used
Ex. 3/205: Bach, '48', II, Fugue No. 19

Ex. 3/206

Ex. 3/207: Bach, '48', II, Fugue No. 19

Ex. 3/208
Ex. 3/208.1
a: Chopin, Ballade No. 4 in F minor, Op. 52

b: Rachmaninov, Symphony No. 3, Op. 44, III

Ex. 3/209: Beethoven, Sonata in G, Op. 79, II

Ex. 3/210

b. Stravinsky, The Firebird, Infernal Dance of All Kastchei’s Subjects

Ex. 3/211: Dvořák, 'Cello Concerto, Op. 104, I
Ex. 3/212

Ex. 3/213

Ex. 3/214: Purcell, Abdelazer, Hornpipe (Britten, Young Person's Guide, Op.34, I)

Ex. 3/215
Ex. 3/216: Mozart, Quartet in E, K. 428, I

Ex. 3/217: Francisco de la Torre, Alta (HAM No. 102a)
Ex. 5/218: Schoenberg, Six Little Piano Pieces, Op. 19, III

Sehr langsame \( \textit{f} \)
Ex. 4/1: Tchaikovsky, Symphony No. 5, I

Ex. 4/2: Bach, '48', I, Prelude No. 6

Ex. 4/3: Stravinsky, The Rite of Spring, 'Evocation of the Ancestors'

Ex. 4/4: Tchaikovsky, Symphony No. 4, I
Ex. 4/5: Prokofiev, Romeo and Juliet, Op. 64, 'Dance'

Ex. 4/6: Berlioz, Harold in Italy, Op. 16, IV

Ex. 4/7: Bach, '48', I, Fugue No. 21

Ex. 4/8: Bach, Sonata in G minor (Solo Violin), Fugue
Ex. 4/9: Bach, Suite No. 3 (Solo 'Cello), Bourrée I

Ex. 4/10: Bach, '48', I, Prelude No. 21

Ex. 4/11: Shostakovich, Symphony No. 5, I

Ex. 4/12: Brahms, Symphony No. 2, I
Ex. 4/13: Prokofiev, Romeo and Juliet, Op. 64, 'Dance of the Maids from the Antilles'

Ex. 4/14: Mozart, Sonata in A (Piano and Violin), K. 305, I

Ex. 4/15

Ex. 4/16: Mozart, Sonata in B♭, K. 333, III

Ex. 4/17: Beethoven, Sonata in G♯ minor ('Moonlight'), Op. 27/2, III
Ex. 4/18: Bach, '48', I, Prelude No. 14

Ex. 4/19: Chopin, Ballade No. 4 in F minor, Op. 52 (ending)

Ex. 4/20: Bach, '48', I, Prelude No. 11

Ex. 4/21: Bach, '48', II, Fugue No. 6

Ex. 4/22
Ex. 4/23: Mozart, Sonata in F, K. 332, III

Ex. 4/24: Brahms, Piano Concerto in D minor, III

Ex. 4/25: Schumann, Sonata in A minor (Violin and Piano), Op. 105, III

Ex. 4/26

Ex. 4/27: Bach, '48', I, Prelude No. 15
Ex. 4/28: Bach, Brandenburg Concerto No. 3, I

Ex. 4/29: Chopin, Ballade No. 1 in G minor, Op. 23

Ex. 4/30: Beethoven, Sonata in F minor, Op. 2/1, I

Ex. 4/31: Beethoven, Sonata in C ('Waldstein'), Op. 53, III

Ex. 4/32: Chopin, Ballade No. 1 in G minor, Op. 23
Ex. 4/33: 'Twinkle Twinkle Little Star'

Ex. 4/34: Mozart, Sonata in C minor, K. 457, I

Ex. 4/35: Bach, '48', II, Prelude No. 6

Ex. 4/36: Bach, Sonata in G minor (Solo Violin), IV

Ex. 4/37: Bach, Mass in B minor, XIX, 'Confiteor'

Ex. 4/38
Ex.4/39: Bach, Brandenburg Concerto No.1, I

\[ \begin{align*} &\begin{array}{c} \text{Ex.4/40} \\
\end{array} \\
&\begin{array}{c} \text{Ex.4/41: Brahms, Piano Concerto in D minor, I} \\
\end{array} \\
&\begin{array}{c} \text{Ex.4/42: Kodály, Suite: Háry János, V, 'Intermezzo'} \\
\end{array} \\
&\begin{array}{c} \text{Ex.4/43: Brahms, Piano Concerto No.2, III} \\
\end{array} \\
&\begin{array}{c} \text{Ex.4/44: Berlioz, Symphonie Fantastique, Op.14, II} \\
\end{array} \end{align*} \]
Ex.4/45: Beethoven, Quartet, Op. 18/1, I

Ex.4/46

Ex.4/47

Ex.4/48: Bach, Orchestral Suite No. 3 in D, I

Ex.4/49

Ex.4/50
Ex.4/51: Schubert, Symphony No.8, I

Ex.4/52

Ex.4/53

Ex.4/54: Mozart, Sonata in F, K.332, I

Ex.4/55

Ex.4/56
Ex.4/61: Bruckner, Symphony No. 8, IV

Ex.4/62: Schumann, Piano Concerto, Op. 54, I

Ex.4/63
a: Tchaikovsky, Symphony No. 5, Op. 29, I

b: Debussy, Prelude, 'La fille aux cheveux de lin'

Ex.4/64: Stravinsky, Symphony of Psalms, II

Ex.4/65: Bach, Concerto in C minor (Two Claviers and Orchestra), BWV 1060, III
Ex.4/66: Bach, Violin Concerto in A minor, I

Ex.4/67: Chopin, Nocturne in E, Op.9/2 (accompaniment)

Ex.4/68: Bach, Brandenburg Concerto No.3, I

Ex.4/69: Brahms, Piano Concerto No.1, III

Ex.4/70

Ex.4/71
Ex.4/72: Ravel, Piano Concerto in G, II

Ex.4/73: Chopin, Ballade No.1, Op.23

Ex.4/74
Ex. 4/75: Chopin, Ballade No. 4, op. 52

Ex. 4/76: Bach, Mass in B minor, VII, 'Domine Deus'

Ex. 4/77: Holst, The Planets, 'Mars'

Ex. 4/78: Mozart, Fantasie, K. 475, Andantino
Ex. 4/79: Beethoven, Sonata in F minor, Op. 2/1, I

Ex. 4/80: Tchaikovsky, Symphony No. 6, IV

Ex. 4/81

Ex. 4/82: Tippett, Fantasia Concertante on a Theme of Corelli, Theme
Ex. 4/83

Ex. 4/84: Beethoven, Sonata in C minor, Op. 10/1, I

Ex. 4/85: Mozart, Sonata in F, K. 332, I

Ex. 4/86: Beethoven, Sonata in A, Op. 2/2, IV

Ex. 4/87: Mozart, Sonata in B♭, K. 333, III
Ex. 4/88: Beethoven, Sonata in C minor, Op. 10, I, II

Ex. 4/89: Mozart, Symphony No. 41, IV

Ex. 4/90: Scriabin, Prelude in Gb, Op. 11/13

Ex. 4/91: Tchaikovsky, Symphony No. 5, IV
Ex. 4/92: Bach, Concerto in D minor (Two Violins), I

Ex. 4/93: Mozart, Piano Concerto in A, K.448, I

Ex. 4/94: Tchaikovsky, Piano Concerto No. 1, I

Ex. 4/95: Bach, Mass in B minor, III, 'Kyrie Eleison'
Ex. 4/96: Beethoven, Symphony No. 3, II

Ex. 4/97: Beethoven, Overture, Leonore No. 3, Op. 72a


Ex. 4/99: Wagner, Die Meistersinger, Prelude
Ex. 4/100: Mozart, Fantasie, K. 475, Andantino

Ex. 4/101: Beethoven, Sonata in C minor, Op. 10/1, II

4/102 not used

Ex. 4/103: Brahms, Piano Concerto No. 2, IV
Ex.4/104: Brahms, Piano Concerto No. 2, I

Ex.4/105: Tchaikovsky, Symphony No. 5, III

Ex.4/106: Tchaikovsky, Symphony No. 5, III
Ex. 4/107: Beethoven, Violin Concerto, I


Ex. 4/109: Bach, '48', I, Prelude No. 24

Ex. 4/111: Chopin, Op. 22

Allegro molto

(2+4)

Resolutions in category:

1. Catenation (1) (3) (4) (5) (6) (7)

2. Let also:

(3) (4) (5) (6) (7)

3. (4) (5) (6) (7)

4. (6) (4)

5. (7) (5)
Ex. 4/113 (c.f. Elgar, 'Enigma Variations', 'Nimrod')

Ex. 4/114: Beethoven, Six Variations, Op. 34, Var. II

Ex. 4/115
Ex.4/118: Brahms, Piano Concerto No.1, I

Ex.4/119: Bach, Partita No.1 (Solo Violin), Gigue

Ex.4/120: Mozart, Serenade ('Eine Kleine Nachtmusik'), K.525, III

T = Structurally accented tonic
HR = Harmonic Rhythm
S = Subdivision
DC = Durebin Contour
R = Repetition
Ex. 4/121: Mozart, Quartet in D minor, K. 421, III

Ex. 4/122: Berlioz, Harold in Italy, Op. 16, III

Ex. 4/123: Chopin, Piano Concerto No. 1, Op. 11, I

Ex. 4/124: Prokofiev, Romeo and Juliet, Op. 64, 'Folk Dance'
Ex. 4/125: Schubert, Impromptu in A♭, Op. 90/4

Ex. 4/126: Bach, '48', I, Prelude No. 24

Ex. 4/127: Mozart, Serenade, K. 380, V

Ex. 4/128: Brahms, Piano Concerto No. 1, III
Ex.4/129: Bach, Mass in B minor, XXI, 'Hosanna'

Ex.4/130: Brahms, Intermezzo in E, Op.117/1

Ex.4/131: Bach, '48', II, Prelude No.14

Ex.4/132: Mozart, Sonata in D, K.576, I
Ex. 4/133: Haydn, Quartet, Op. 50/1, III

Ex. 4/134: Mozart, Quintet, K. 516, V

Ex. 4/135: Beethoven, Sonata in E, Op. 14/1, III

Ex. 4/136: Mozart, Sonata in A, K. 331, I, Variation 1
Ex. 4/137: Bartók, Music for Strings, Percussion and Celesta, I

Ex. 4/138

Ex. 4/139

Ex. 4/140: Debussy, Prélude à l'Après-midi d'un Faune (ending)
Ex. 4/141

Ex. 4/142: Beethoven, Sonata in E minor, Op. 90, I

Mit Lobhaftigkeit
(Con animato)

b. $p-p = Pitch unity$

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Mit Lobhaftigkeit
(Con animato)

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Ex. 4/144: Beethoven, Sonata in D, Op. 10/3, IV

Ex. 4/145: Bach, '48', II, Prelude No. 4

Ex. 4/146: Beethoven, Piano Trio, Op. 97, III
Ex.4/147: Beethoven, Sonata in C minor, Op.111, II

Ex.4/148: Brahms, Variations on a Hungarian Song, Op.21/8


Ex.4/150
Ex. 4/151: Mussorgsky, Pictures at an Exhibition, 'The Gnome'

Ex. 4/152: Beethoven, Sonata in D, Op. 10/3, I

Ex. 4/153: Beethoven, Sonata in E, Op. 14/1, I

Ex. 4/154
Ex. 4/155: Saint-Saëns, Quartet, Op. 112, II

Ex. 4/156: Brahms, Intermezzo in E minor, Op. 119/2


Ex. 4/158
Ex. 4/159: Mozart, Quartet, K. 590, IV

Ex. 4/160: Mozart, Sonata in F, K. 332, I

Ex. 4/161: Bach, English Suite No. 3, Gavotte

Ex. 4/162: Mozart, Sonata in C, K. 330, III
Ex.4/163: Beethoven, Piano Concerto No. 4, I

Ex.4/164: Mozart, Symphony No. 40, K. 550, III

Ex.4/165: Schumann, Sonata in A minor (Violin and Piano), Op. 105, II

Ex.4/166: Bach, Mass in B minor, III, 'Hosanna'
Ex. 4/167: Chopin, Mazurka in Bb, Op. 71

Ex. 4/168

a: Mozart, Sonata in F (Piano and Violin), K. 377, II

b: Franck, Symphony in D minor, I

Ex. 4/169: Mozart, Sonata in A (Piano and Violin), K. 305, I
Ex. 4/173.1: Bach, *Musical Offering* (as Ex. 1/6)
Ex. 4/178: Bartók, Concerto for Orchestra, II

Ex. 4/179: Shostakovich, Symphony No. 1, III

Ex. 4/180: Barber, Adagio for Strings
Ex. 4/181: Brahms, Intermezzo in A, Op. 118/2

Ex. 4/182: R. Rogers, The King and I, "March of the Siamese Children"
Ex. 4/183

D# A# E# B# Fx Cx Gx
B F# C# G# D# A# E#
G D A E B F# C#
E7 Bb F C G D A
Ch Gb Db Ab Ep Bb F
Ab Eb Bb Fb Cb Gb Db

Ex. 4/184

3 10 5 0 7 2 9
11 6 1 8 3 10 5
7 2 9 4 11 6 4
3 10 5 0 7 2 9
11 6 1 8 3 10 5
7 2 9 4 11 6 4

Ex. 4/185

G A E B F C E A

Ex. 4/186

E - e - g
f - a - c g - b - d

Ex. 4/187

F a c e g
4 : 5 : 6 : \%
4 : 6

Ex. 4/188: see p. 181

Ex. 4/189

G: 2 - 5 2 2 (Tonal values)

Ex. 4/190
Ex. 5/1

Ex. 5/2: Beethoven, Sonata in G, Op. 14/2, I

Ex. 5/3: Schumann, Album for the Young, Op. 68, 'Soldiers' March'

Ex. 5/4: Bartók, Allegro Barbaro
Ex. 5/5: Dvořák, Symphony No. 6, III

Ex. 5/6: Brahms, Rhapsody in E♭, Op. 119/4

Ex. 5/7: Stravinsky, The Rite of Spring, 'Dances des Adolescents'

Ex. 5/8: Beethoven, Symphony No. 6, I
Ex. 5/9: Beethoven, Symphony No. 3 ('Eroica'), IV.

Ex. 5/10

Ex. 5/10.1

Ex. 5/10.2

(\(=\) Articulation, not ties)
Ex. 5/11

Ex. 5/12: Beethoven, Quartet in G♭ minor, Op. 131, IV

Ex. 5/13: Haydn, Symphony No. 97 ('Salomon'), IV

Ex. 5/14: Mozart, Duo for violin and viola, K. 423, III

Ex. 5/16: adapted from: Beethoven, Sonata in Eb, Op. 56/3, IV

as above
Ex. 5/17: Lassus, Chanson, 'Bon Jour Mon Coeur'

Ex. 5/18
Ex. 5/19

Schering

Sachs

Gombosi

Ex. 5/20: Harris, Madrigal, 'Quando Lieta Sperai'
Ex. 5/21: Brahms, Piano Concerto No. 1, III

Ex. 5/22: Janáček, Sinfonietta, IV

Legend:
- = Directional grouping
Est: = Pre-established metre
Λ = Tonic accent
Ex. 5/23: Bach, Orchestral Suite No. 2 in B minor, Badinerie

Ex. 5/24: Bizet, L'Arlesienne, Suite No. 1, I, Overture

Ex. 5/25: Mozart, Violin Concerto in G, K. 216, II

Ex. 5/26: Berlioz, Harold in Italy, I
Ex. 5/27: Brahms, Symphony No. 2, II

Ex. 5/28: Dvořák, Slavonic Dances, Op. 46, I

Ex. 5/29: Tchaikovsky, Piano Concerto No. 1, I
Ex.5/30: Brahms, Symphony No.2, I

Ex.5/31: Shostakovich, Symphony No.1, II
Ex.5/32: Stravinsky, L'Histoire du Soldat, 'Marche du Soldat'

Top line alone:

Ex.5/33:

a: Debussy, Nocturnes, II, 'Fêtes'

Top line relative to accompaniment:
Ex. 5/33 ctd.

b: Ravel, Introduction and Allegro

Top line relative to accompaniment: \( R(A) \)

Ex. 5/34: Stravinsky, Symphony of Psalms, III

Top line:

Ex. 5/35: Ravel, Quartet in F, II
Ex. 5/36: Schoenberg, Six Little Piano Pieces, Op. 19, I

Leicht, zart (\(\text{L}^{\text{b}}\))

etc. zögernd  

flüchtig

espress.

leicht
Ex. 5/38

Ex. 5/39: Schoenberg, Piano Concerto, I

Ex. 5/40: Mozart, Sonata in A, K. 331, III (adapted)