

MTO 23.4 Examples: Wells, A Generalized Intervallic Approach to Metric Conflict in Liszt

(Note: audio, video, and other interactive examples are only available online)

<http://www.mtosmt.org/issues/mto.17.23.4/mto.17.23.4.wells.php>

Example 1. Liszt, “Invocation,” mm. 1–5

(1 2 1 2 1 2 1 2)

1 **Andante con moto.**

sotto voce

mf marcato

cre scen do

Example 2. Liszt, *Totentanz*, mm. 3–6 and rehearsal H. *Dies irae* theme and displaced variant

Theme (mm. 3-6)



Displaced Variant (Rehearsal H)

(1 2 1 2 1

H Sempre Allegro, ma non troppo

2/4

Pno.

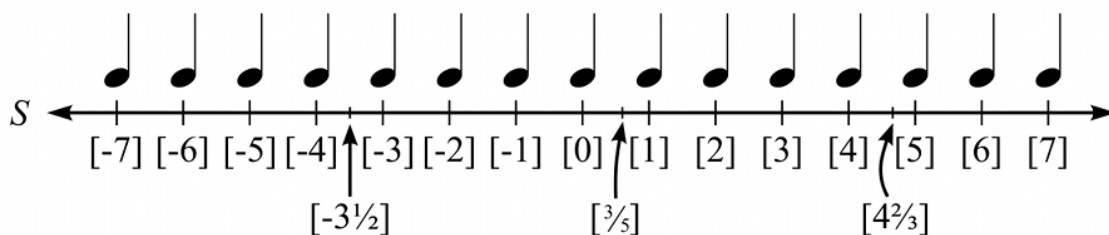
f Hr.

3 3

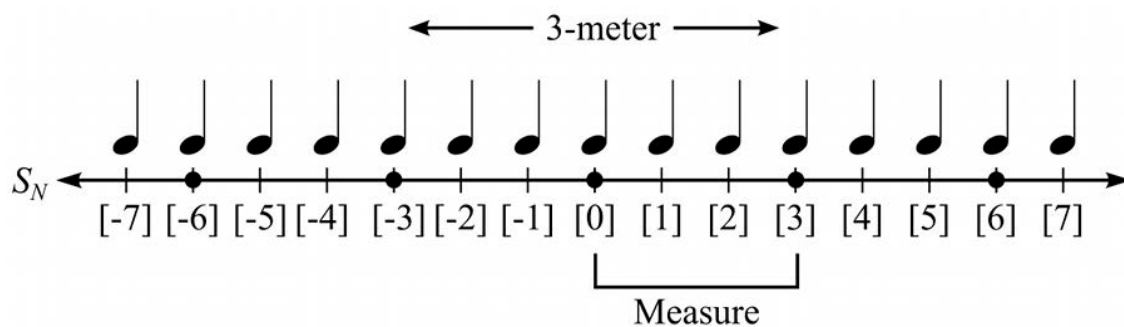
2 1 2 etc.)

Detailed description: This block contains the musical notation for the Displaced Variant (Rehearsal H) in 2/4 time. It features two staves: a piano (Pno.) part and a horn (Hr.) part. The piano part begins with a melody in the right hand and a supporting bass line in the left hand. The horn part enters with a series of chords, marked with fingerings (1 2 1 2 1) and dynamics (*f*). The notation includes various musical symbols such as notes, rests, and articulation marks.

Example 3. S space with a quarter-note pulse

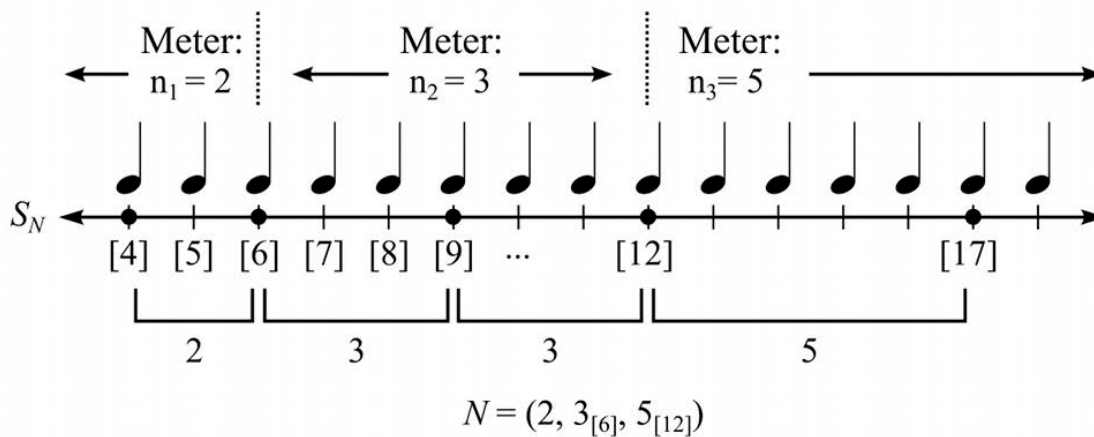


Example 4. Quarter-note S_N space endowed with 3-meter, where black dots represent downbeats



Example 5. Quarter-note S_N space where $N = (2, 3_{[6]}, 5_{[12]})$

The brackets indicate measure lengths, which correspond to local meter values



Example 6. Brief melody in S_N space, where $N = (4)_{[1]}$



Example 7. Brief melody in S_N space, where $N = (3)_{[1]}$



Example 8. Passage with changing meter, where $N = (3, 2)_{[13]}$



Example 9. Liszt, “Pensée des morts,” mm. 20–25

This musical score is for Franz Liszt's "Pensée des morts" (Thought of the Dead), measures 20 through 25. The piece is in 7/4 time. The score is divided into two systems, each with a vocal line and a piano accompaniment.

System 1 (Measures 20-25):

- Measure 20:** The vocal line begins with a whole note rest, followed by a half note rest, and then a quarter note rest. The piano accompaniment starts with a *pp* (pianissimo) dynamic and a *sotto voce* instruction. The bass line features a series of eighth notes, with some beamed together in groups of 2 and 3. Pedal points (Ped.) and asterisks (*) are marked under the bass line.
- Measure 21:** The vocal line continues with a half note rest, followed by a quarter note rest, and then a half note rest. The piano accompaniment continues with the same eighth note pattern.
- Measure 22:** The vocal line continues with a half note rest, followed by a quarter note rest, and then a half note rest. The piano accompaniment continues with the same eighth note pattern.
- Measure 23:** The vocal line continues with a half note rest, followed by a quarter note rest, and then a half note rest. The piano accompaniment continues with the same eighth note pattern.
- Measure 24:** The vocal line continues with a half note rest, followed by a quarter note rest, and then a half note rest. The piano accompaniment continues with the same eighth note pattern.
- Measure 25:** The vocal line continues with a half note rest, followed by a quarter note rest, and then a half note rest. The piano accompaniment continues with the same eighth note pattern.

System 2 (Measures 26-30):

- Measure 26:** The vocal line begins with a whole note rest, followed by a half note rest, and then a quarter note rest. The piano accompaniment starts with a *pp* dynamic and a *sotto voce* instruction. The bass line features a series of eighth notes, with some beamed together in groups of 2 and 3. Pedal points (Ped.) and asterisks (*) are marked under the bass line.
- Measure 27:** The vocal line continues with a half note rest, followed by a quarter note rest, and then a half note rest. The piano accompaniment continues with the same eighth note pattern.
- Measure 28:** The vocal line continues with a half note rest, followed by a quarter note rest, and then a half note rest. The piano accompaniment continues with the same eighth note pattern.
- Measure 29:** The vocal line continues with a half note rest, followed by a quarter note rest, and then a half note rest. The piano accompaniment continues with the same eighth note pattern.
- Measure 30:** The vocal line continues with a half note rest, followed by a quarter note rest, and then a half note rest. The piano accompaniment continues with the same eighth note pattern.

Performance Instructions:

- Tempo:** *poco accelerando* (measures 20-25), *Recit. lento* (measures 26-30).
- Dynamic:** *pp* (pianissimo) throughout.
- Articulation:** *sotto voce* (under the voice) throughout.
- Pedal:** Pedal points (Ped.) and asterisks (*) are marked under the bass line in measures 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, and 30.

Example 10. Liszt, "Wilde Jagd," mm. 1–15

Presto furioso. (♩ = 116)

1 *fff* [1] [7] [13] [19] *fff*

5 [25] [31] [37] [43]

9 [49] [55] [61] [67] [73] [79] [85]

12

"5": 1 2 3 4 * | 1 2 3 4 5 | 1

2 3 4 5 | 1 2 * 3 4 5 | 1 2 3 4 5 | 1 2 3 4 5 | 1

3 8 2 3 8 "6" again

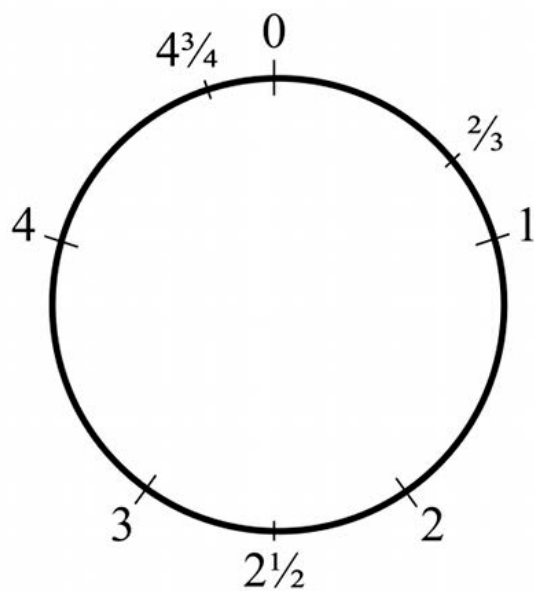
truncation

Ped. *

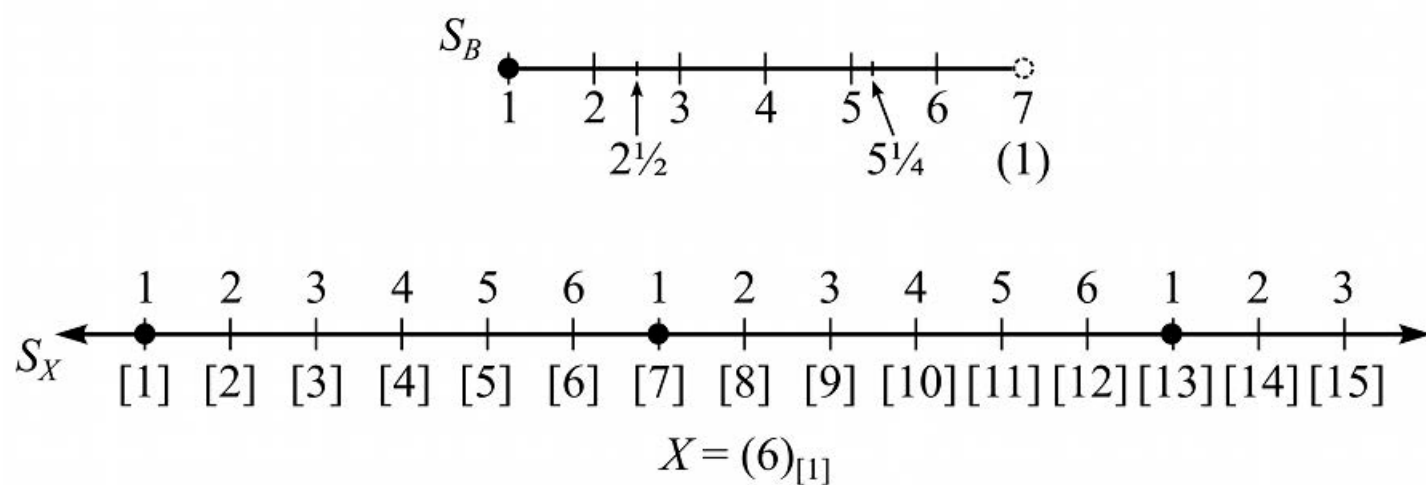
Example 11. Liszt, “Pensée des Morts,” mm. 1–3. Y-downbeat shift of $-1/2$ (dotted bar lines indicate Y-measures)

The image shows a musical score for Liszt's "Pensée des Morts," measures 1–3. The score is in 5/4 time and consists of two staves: a treble staff and a bass staff. The tempo is marked "Lento assai." and the mood is "pesante." The score is divided into two sections: "Lento assai." and "Recit." (Recitativo). The "Lento assai." section spans measures 1 and 2, and the "Recit." section spans measure 3. The score includes a Y-downbeat shift of $-1/2$, indicated by dotted bar lines. The first Y-measure is measure 1, and the second Y-measure is measure 2. The shift is indicated by an arrow pointing to the dotted bar line between measures 1 and 2, with the text "Y-downbeat on beat $2\frac{1}{2}$ of X-measure." The second Y-measure is measure 2, and the shift is indicated by an arrow pointing to the dotted bar line between measures 2 and 3, with the text "Y-downbeat on beat 2 of X-measure." The score also includes a "Ped." (Pedal) marking and a "*" (crescendo) marking.

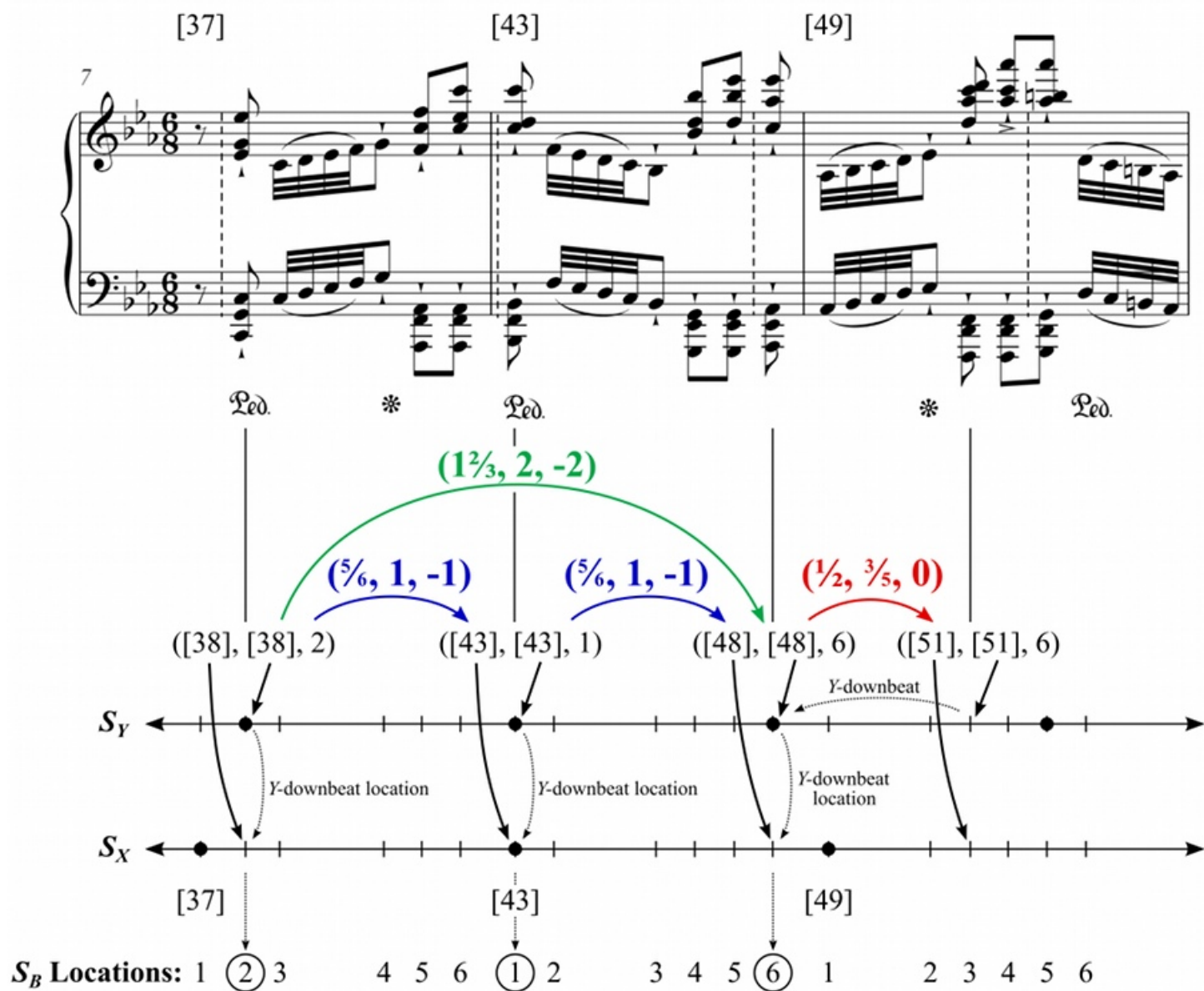
Example 12. $\mathbb{Q}/5\mathbb{Z}$, with sample integer and fractional values



Example 13. 6-meter S_X and corresponding S_B space, which represents an idealized length-6 measure (“1” = beat 1, “2” = beat 2, etc.)



Example 14. *Met*-based analysis summary. Dotted bar lines mark the passage of Y -measures, dots mark downbeats in S_X and S_Y spaces, and colored arrows indicate GIS intervals between points in the space of *Met* ($S_X \times S_Y \times S_B$)



Example 15. Liszt, “Invocation,” mm. 1–5 and 194–203. Y-decomposed *Met* intervals

$(2\frac{2}{3}, 4, -1)$
 $(\frac{2}{3}, 1, -1) (\frac{2}{3}, 1, -1) (\frac{2}{3}, 1, -1) (\frac{2}{3}, 1, -1)$ || $(2\frac{2}{3}, 4, -1) = 4(\frac{2}{3}, 1, -1)$
 || (neutralization)

1 **Andante con moto.** *mf marcato*

sotto voce *cre - - - - -* *scen - - - - - do*

Ped.

=

$2\frac{2}{3}$ Notated Measures [Suggests $(2\frac{2}{3}, 4, -1)$?]
 Span of passage → ||
 Possible decomposition? → $(\frac{2}{3}, 1, -1) (\frac{2}{3}, 1, -1) (\frac{2}{3}, 1, -1) (\frac{2}{3}, 1, -1)$ ||

194 *8va* ----- (LH Triplets) ----- (LH Eighth) -----

199 *fff* *Ped.*

Example 16. Liszt, Totentanz, rehearsal H. Y-decomposition weakness

Y-Decomposition:

(2, 2, 0)

(1, 1, 0) (1, 1, 0)

1 $\xrightarrow{+1}$ 2
Y-downbeat

Y-Decomposition:

(2, 2, 0)

(1, 1, 0) (1, 1, 0)

H Sempre Allegro, ma non troppo

Pno.

f Hr.³

8^{va}

Example 17. Liszt, Totentanz, rehearsal H. X-decomposition illustrated

X-Decomposition:

(2, 2, 0)

(1, 1, 0) (1, 1, 0)

1 $\xrightarrow{+1}$ 2
Y-downbeat

X-Decomposition:

(2, 2, 0)

($\frac{1}{2}$, $\frac{1}{2}$, 0) (1, 1, 0) ($\frac{1}{2}$, $\frac{1}{2}$, 0)

H Sempre Allegro, ma non troppo

Pno.

f Hr.³

8^{va}

Example 18. Liszt, *Totentanz*, rehearsal H. *XY*-decomposition illustrated

The image displays a musical score for a piece titled "H Sempere Allegro, ma non troppo". The score is written for Piano (Pno.) and Horn (Hr.). The tempo is marked "H Sempere Allegro, ma non troppo". The key signature is one flat (B-flat), and the time signature is 2/4. The score is divided into two systems. The first system shows the piano part with a melodic line and a bass line. The second system shows the horn part with a melodic line and a bass line. Above the piano part, there are two "XY-Decomposition" diagrams. The first diagram shows a green arrow labeled $(2, 2, 0)$ and a blue arrow labeled $2(1, 1, 0)$. The second diagram shows a green arrow labeled $(2, 2, 0)$ and a red arrow labeled $4(\frac{1}{2}, \frac{1}{2}, 0)$. Between the two diagrams, there is a transition labeled $1 \xrightarrow[+1]{Y\text{-downbeat}} 2$. The piano part includes a section marked "8va" and a section marked "Pno.". The horn part includes a section marked "Hr. 3" and a section marked "3".

Example 19. Several transformations of a *Met* interval, generated by traditional augmentation and diminution

Diagram illustrating the concept of k in a 3/4 time signature. The notation shows three measures of music in 3/4 time, with notes and rests. Above the staff, three curved arrows indicate different values of k : $k = \frac{1}{2}$, $k = 2$, and $k = \frac{1}{4}$. Below the staff, three groups of notes are labeled with their respective k values and transformations: $(1\frac{1}{3}, 1, +1)$, $(2\frac{2}{3}, 1, +2)$, and $(\frac{2}{3}, 1, +2)$. The basic beat unit is defined as a quarter note.

Example 20. Liszt, “Wilde Jagd,” mm. 7–9 and 16–21. Intervallic expansion

One Y-measure ($5 \times \text{♩}$)
 $(\frac{5}{6}, 1, -1)$

One Y-measure
 $(\frac{5}{6}, 1, -1)$

7 [37] 1 2 3 4 5 1 2 3 4 5 1... [43] [49]

$k = 3$
 expansion $(\text{♩ basic beat unit} \rightarrow \text{♩. basic beat unit})$

One Y-measure ($5 \times \text{♩.}$)
 $(2\frac{1}{2}, 1, -3)$

16 [91] 1 2 3 4 5 1 (continued) [97] [103]

One Y-measure
 $(2\frac{1}{2}, 1, -3)$

19 [109] 2 3 4 5 1... [115] [121]

Example 21. Liszt, “Wilde Jagd,” mm. 7–8. Intervallic decomposition of $W = (\frac{5}{6}, 1, -1)$

The image displays a musical score for Liszt's "Wilde Jagd," measures 7 and 8. The score is written for piano in 6/8 time, featuring a treble and bass staff. The key signature has two flats (B-flat and E-flat). The score includes several annotations for intervallic decomposition:

- A green curved arrow at the top spans from measure 7 to measure 8, labeled with the intervallic decomposition $(\frac{5}{6}, 1, -1)$.
- A blue curved arrow spans from the first measure of measure 7 to the first measure of measure 8, labeled with the intervallic decomposition $(\frac{1}{2}, \frac{3}{5}, 0)$.
- A red curved arrow spans from the second measure of measure 7 to the first measure of measure 8, labeled with the intervallic decomposition $(\frac{1}{3}, \frac{2}{5}, -1)$.
- Measure numbers [37] and [43] are placed above the first and second measures of measure 8, respectively.
- Below the bass staff, there are two "Ped." (pedal) markings under the first and second measures of measure 7.
- A blue bracket labeled "3" spans the first three measures of measure 7.
- A red bracket labeled "2" spans the last two measures of measure 7.
- A black asterisk (*) is placed between the blue and red brackets in measure 7.
- Below the bass staff, there are two more brackets: a black one labeled "3" spanning the first three measures of measure 8, and a black one labeled "2" spanning the last two measures of measure 8.

Example 22. Liszt, “Wilde Jagd,” mm. 7–8 and 16–21. Y-decomposition-preserving 3-expansion

Top Staff (mm. 7–8):

Measure 7: $(\frac{5}{6}, 1, -1)$

Measure 8: $(\frac{5}{6}, 1, -1)$

Measure 7 decomposition: $(\frac{1}{2}, \frac{3}{5}, 0) + (\frac{1}{3}, \frac{2}{5}, -1)$

Measure 8 decomposition: $(\frac{1}{2}, \frac{3}{5}, 0) + (\frac{1}{3}, \frac{2}{5}, -1)$

Bottom Staff (mm. 16–21):

Measure 16: $(2\frac{1}{2}, 1, -3)$

Measure 17: $(2\frac{1}{2}, 1, -3)$

Measure 16 decomposition: $(1\frac{1}{2}, \frac{3}{5}, 0) + (1, \frac{2}{5}, -3)$

Measure 17 decomposition: $(1\frac{1}{2}, \frac{3}{5}, 0) + (1, \frac{2}{5}, -3)$

Legend:

$k = 3\text{-expansion}$ (♩ basic beat unit $\rightarrow$ ♩ basic beat unit)

Example 23. Liszt, “Wilde Jagd,” mm. 7–8 and 11–15. Intervallic 6-expansion of *W*

$(\frac{5}{6}, 1, -1)$

1 2 3 4 5 1

$3 \times \text{♩}$
 $(\frac{1}{2}, \frac{3}{5}, 0)$

$2 \times \text{♩}$
 $(\frac{1}{3}, \frac{2}{5}, -1)$

k = 6-expansion $\downarrow$ (♩ basic beat unit $\rightarrow$ ♩. basic beat unit)

$(5, 1, 0)$

1 2

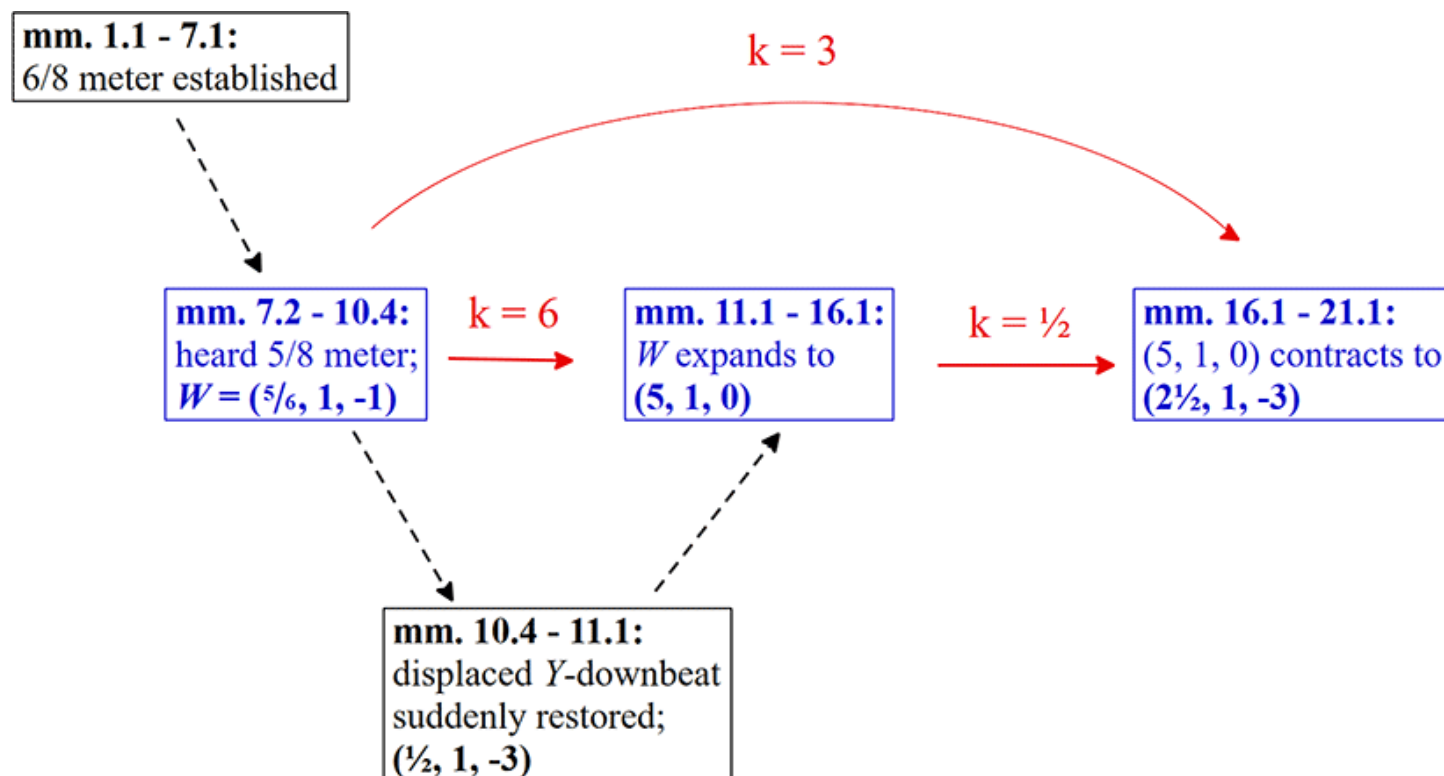
$3 \times \text{♩.}$
 $(3, \frac{3}{5}, 0)$

3 4 5

$2 \times \text{♩.}$
 $(2, \frac{2}{5}, 0)$

+

Example 24. Liszt, “Wilde Jagd,” mm. 1–20. Overall path of interval $W = (\frac{5}{6}, 1, -1)$. Solid arrows represent k -expansions or contractions, while dotted arrows represent motions between metric states not related by subinterval-preserving expansions or contractions



Example 25. Introduction of the interval $J = (3, 4, 0) = 3(2/3, 1, -1) + (1, 1, 0)$

22 (3, 4, 0) = 3(2/3, 1, -1) + (1, 1, 0) (3, 4, 0) = ...

26 (3, 4, 0) = ...

30 (3, 4, 0) = ...

34 (neutralization)

Example 26. Liszt, “Invocation,” mm. 22–25 and 133–42. A 3-expansion of $J = (3, 4, 0) = 3(\frac{2}{3}, 1, -1) + (1, 1, 0)$ at the recapitulation of the opening theme, spanning the surge to a dramatic climax in m. 142 (triplets have been removed from mm. 133–142 for clarity)

22

$(3, 4, 0)$

$(\frac{2}{3}, 1, -1)$ $(\frac{2}{3}, 1, -1)$ $(\frac{2}{3}, 1, -1)$ $(1, 1, 0)$

p 3 3 3 *ff*

1 2 1 2 1 2 1 2 3

ff

$k = 3$
expansion

(♩ basic beat unit → ♪ basic beat unit)

133

$(9, 4, 0)$

$(2, 1, 0)$ $(2, 1, 0)$ $(2, 1, 0)$

ff *cresc.* *poco*

1 2 1 2 1 2

139

$(3, 1, 0)$

a poco *rinforz.*

1 2 3 1

Example 27. Liszt, “Invocation,” mm. 52–57 and 155–67. The first statement of the chorale theme, the cadenza, and the second statement of the chorale theme in tonic. The cadenza spans another 3-expansion of J

(Chorale Theme, in V)

52 *grandioso* *ff*

con forza

*Ped. ** *Ped.* *Ped.* *Ped. ** *Ped.*

$(9, 4, 0)$

$(2, 1, 0)$ $(2, 1, 0)$

155 *Cadenza ad libit. accelerando* *p*

Ped. *Ped.* *Ped.*

$(2, 1, 0)$ $(3, 1, 0)$

159 *cre* *scen* *do* *molto*

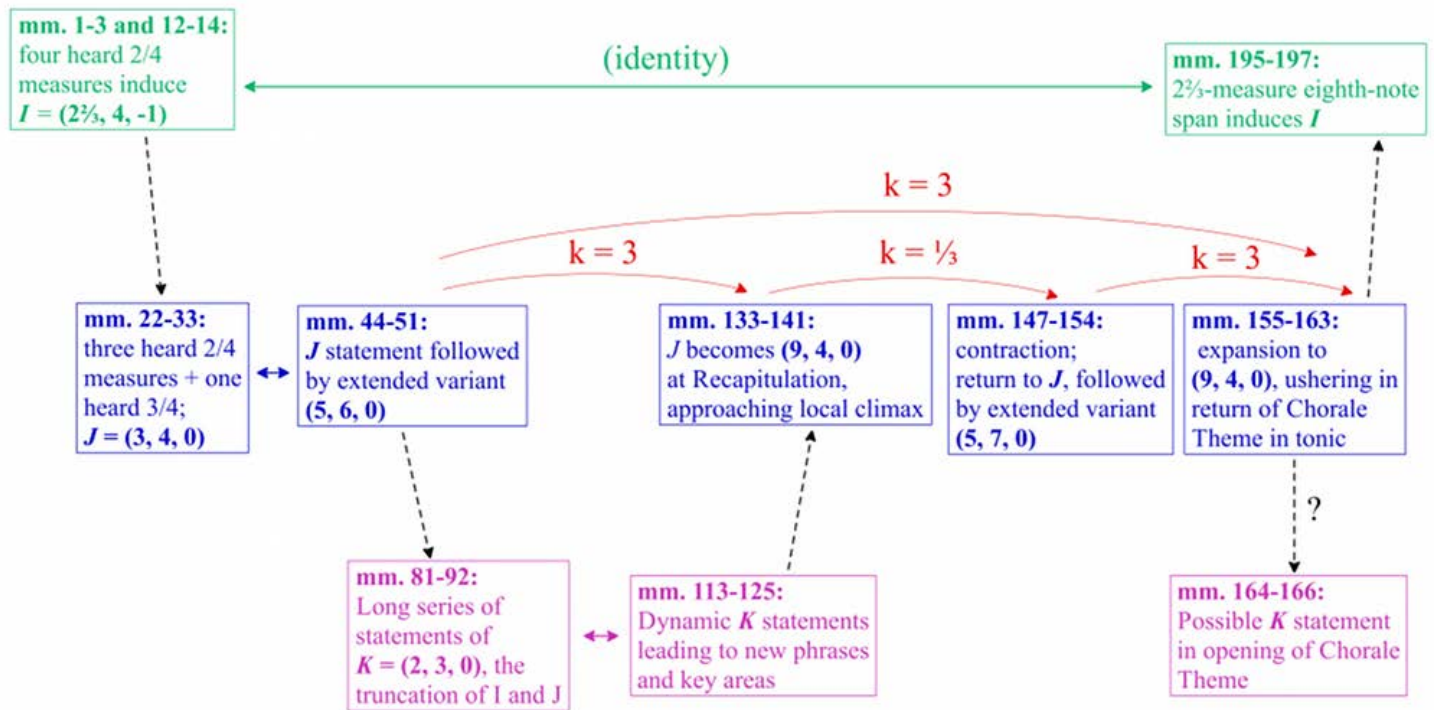
Ped. *Ped.* *Ped.* *Ped.*

(Chorale Theme, in Tonic)

163 *ff* *Andante grandioso.* *ff*

Ped. *Ped. ** *Ped.* *Ped.*

Example 28. Summary of key intervallic events and transformations in Liszt's "Invocation"
As in Example 24, solid arrows represent intervallic expansions and contractions



Example 29. Liszt, "Invocation," mm. 22–25. A new set of intervals resulting from swapped interpretations of X and Y . Dotted bar lines take the place of Liszt's notated bar lines, while solid bar lines demarcate heard measures. Parenthetical time signatures indicate local X -meter (heard meter).

The musical score for Liszt's "Invocation", mm. 22–25, is shown. The score is in 3/4 time and features a new set of intervals resulting from swapped interpretations of X and Y . Dotted bar lines take the place of Liszt's notated bar lines, while solid bar lines demarcate heard measures. Parenthetical time signatures indicate local X -meter (heard meter).

Annotations above the score indicate intervallic events:

- (4, 3, 0)** (green arrow) spans from the first measure to the end of the section.
- (1½, 1, +1)** (blue arrow) spans from the first measure to the second measure.
- (1½, 1, -1)** (blue arrow) spans from the second measure to the third measure.
- (1, 1, 0)** (red arrow) spans from the third measure to the end of the section.

The score includes dynamic markings p^3 and ff , and parenthetical time signatures $(\frac{2}{4})$ and $(\frac{3}{4})$.

Example 30. Liszt, “Invocation,” mm. 133–42. Reversed meanings of X and Y drastically increase the number of components in the Y-decomposition

The image displays two musical staves from Liszt's "Invocation," measures 133–42. The notation includes treble and bass clefs, a key signature of three sharps (F#, C#, G#), and a 6/4 time signature. The first staff (measures 133–42) is marked *ff* and includes dynamic markings *cresc.* and *poco*. The second staff (measures 139–42) is marked *a poco* and includes the marking *rinforz.*.

Annotations above the staves indicate Y-decomposition components:

- Staff 1 (mm. 133–42):** A green bracket labeled $(4, 9, 0)$ spans the entire section. Below it, six pairs of arrows indicate components: $(\frac{1}{2}, 1, +3)$ (blue), $(\frac{1}{2}, 1, -3)$ (red), $(\frac{1}{2}, 1, +3)$ (blue), $(\frac{1}{2}, 1, -3)$ (red), $(\frac{1}{2}, 1, +3)$ (blue), and $(\frac{1}{2}, 1, -3)$ (red).
- Staff 2 (mm. 139–42):** A green bracket spans the section. Below it, three pairs of arrows indicate components: $(\frac{1}{3}, 1, +3)$ (purple), $(\frac{1}{3}, 1, +3)$ (purple), and $(\frac{1}{3}, 1, -6)$ (yellow).

Example 31. Liszt, “Invocation,” mm. 155–66. (4, 9, 0) in rebarred cadenza

(4, 9, 0)

$(\frac{1}{2}, 1, +3)$ $(\frac{1}{2}, 1, -3)$ $(\frac{1}{2}, 1, +3)$ $(\frac{1}{2}, 1, -3)$

155 *Cadenza ad libit. accelerando*

p $(\frac{6}{4})$

Ped. Ped. Ped.

$(\frac{1}{2}, 1, +3)$ $(\frac{1}{2}, 1, -3)$ $(\frac{1}{3}, 1, +3)$ $(\frac{1}{3}, 1, +3)$

159 *cre* *scen do* *molto* $(\frac{9}{4})$

Ped. Ped. Ped. Ped.

$(\frac{1}{3}, 1, -6)$ (Chorale Theme, in Tonic)

163 *ff* $(\frac{3}{4})$ *Andante grandioso.* *ff* *8va*

Ped. Ped. * Ped. Ped.

Example 32. Liszt, “Wilde Jagd,” mm. 16–21 (rebarred). The partitioning of two X-measures into 3+2 subdivisions

The image displays two musical staves from Liszt's "Wilde Jagd," measures 16 and 19, illustrating the partitioning of two X-measures into 3+2 subdivisions.

Measure 16 (Top Staff):

- Staff: S_B
- Measure numbers: 1, 7, 13, (1)
- Measure 16 is marked with a green bracket above it, labeled $(1, 2\frac{1}{2}, +12)$.
- Measure 16 is partitioned into two subdivisions:
 - First subdivision (blue bracket): $3 \times \text{quarter note}$, labeled $(\frac{3}{5}, 1\frac{1}{2}, +6)$.
 - Second subdivision (red bracket): $2 \times \text{quarter note}$, labeled $(\frac{2}{5}, 1, +6)$.

Measure 19 (Bottom Staff):

- Measure numbers: 4, 10, 1
- Measure 19 is marked with a green bracket above it, labeled $(1, 2\frac{1}{2}, -12)$.
- Measure 19 is partitioned into two subdivisions:
 - First subdivision (blue bracket): $3 \times \text{quarter note}$, labeled $(\frac{3}{5}, 1\frac{1}{2}, -3)$.
 - Second subdivision (red bracket): $2 \times \text{quarter note}$, labeled $(\frac{2}{5}, 1, -9)$.