



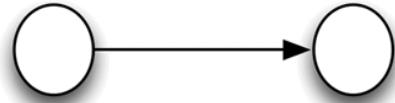
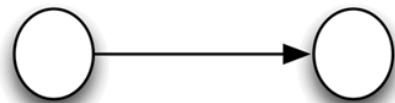
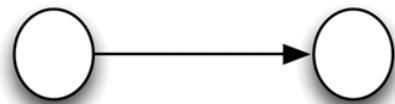
MTO 20.2 Examples: Joseph N. Straus, Total Voice Leading

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

<http://www.mtosmt.org/issues/mto.14.20.2/mto.14.20.2.straus.php>

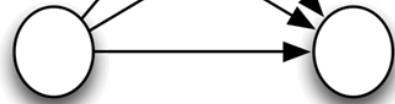
Example 1. Traditional view of voice leading from Chord X to Chord Y

chord X chord Y



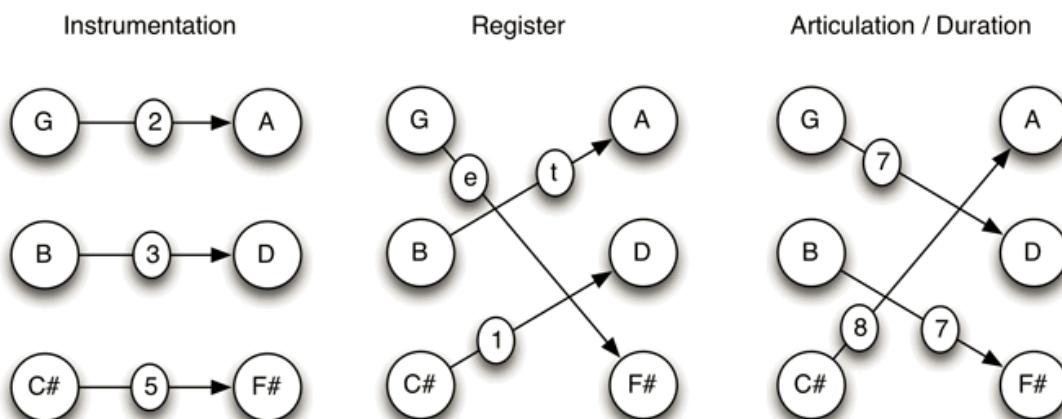
Example 2. Total voice leading from Chord X to Chord Y

chord X chord Y



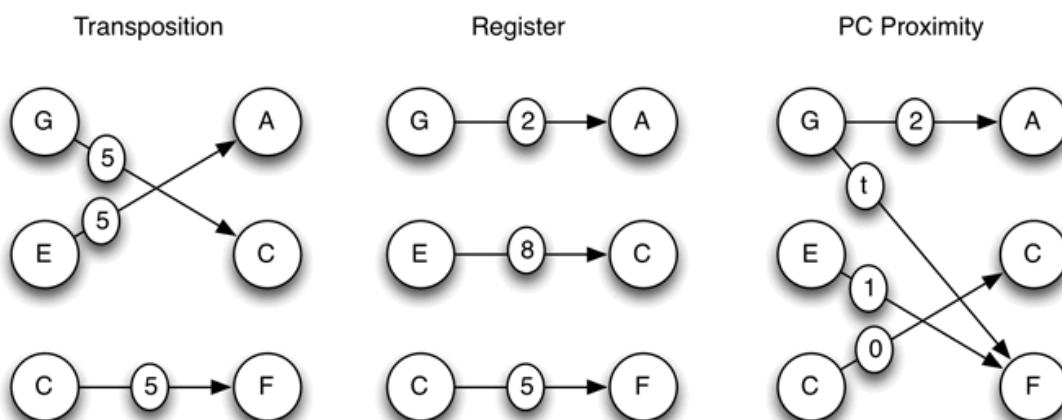
Example 3. Voice-leading intervals projected by instrumentation, register, or articulation/duration: each note in Set X can be heard to move to each of the three notes in Set Y

The image shows three musical staves. The top staff is labeled "Flute" and has a note on the first measure, a rest on the second, and another note on the third. The middle staff is labeled "Violin" and has a rest on the first measure, a note on the second, and another rest on the third. The bottom staff is labeled "Trumpet in C" and has a note on the first measure, a rest on the second, and another note on the third. All staves are in common time.

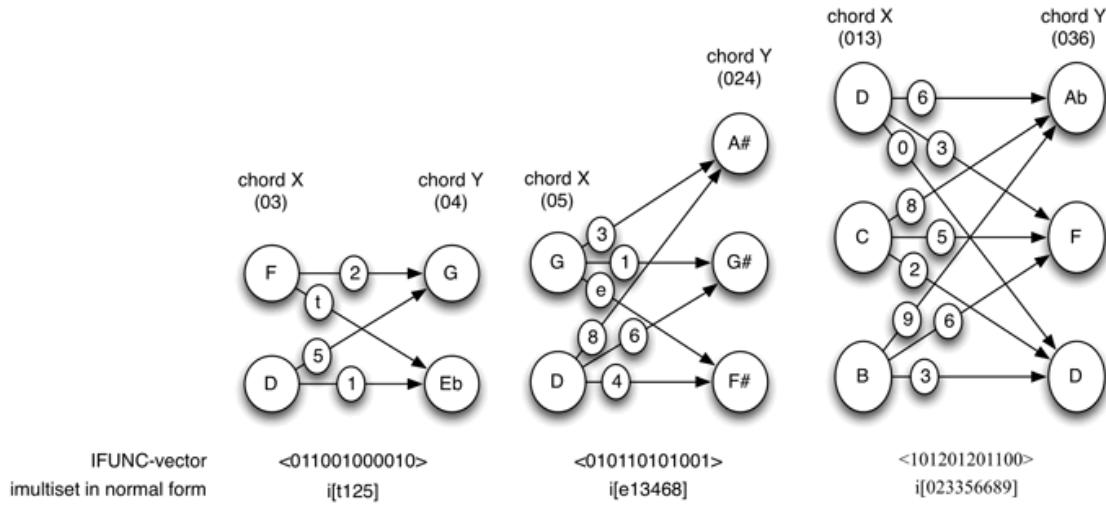


Example 4. Voice-leading intervals projected by transposition, register, and pc proximity

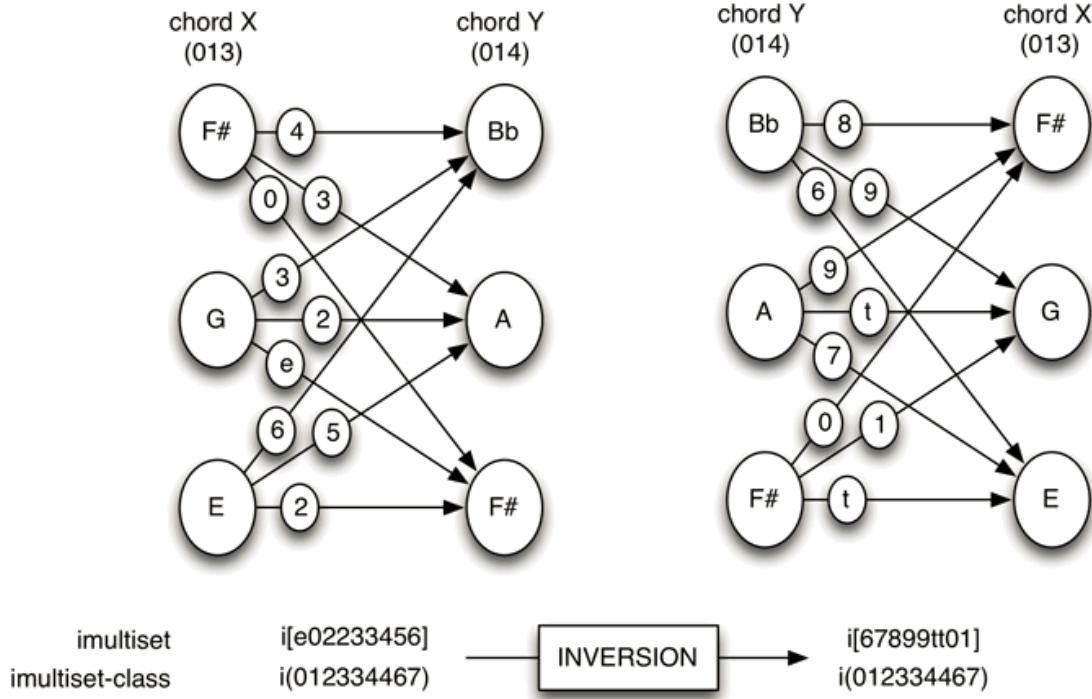
The image shows a musical staff in G major (indicated by a treble clef and a G sharp symbol) with a time signature of 3/8. It contains four notes: G, E, C, and F.



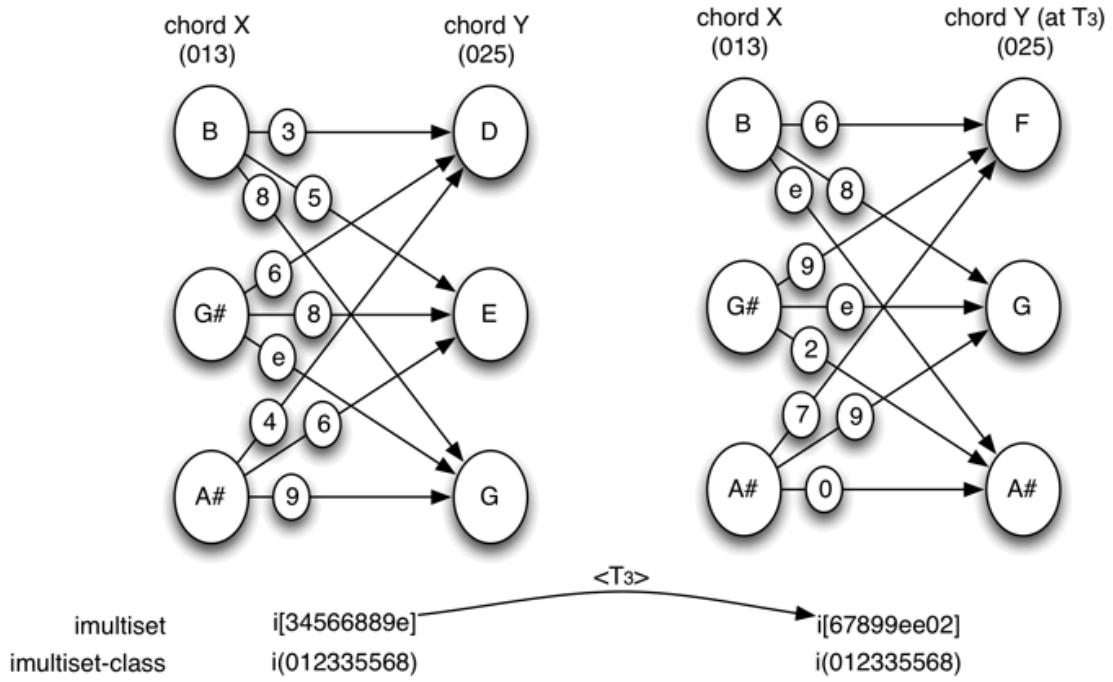
Example 5. IFUNC-vectors, imultisets, and normal form for imultisets



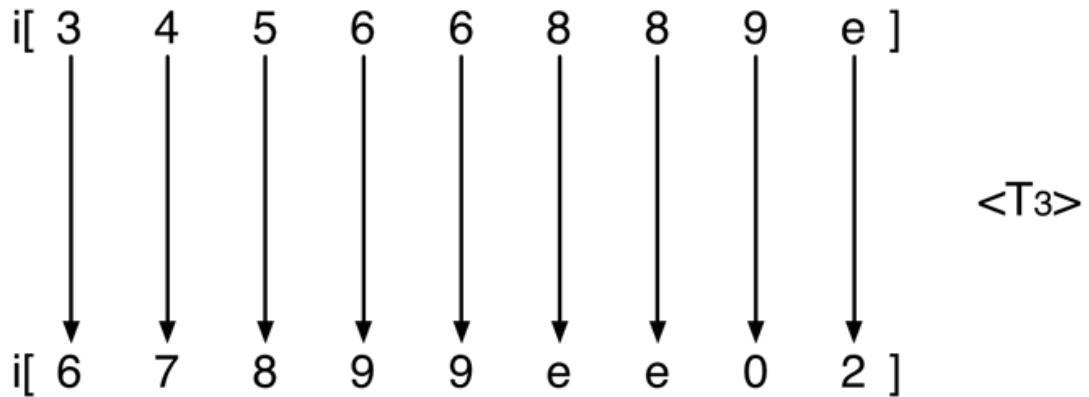
Example 6. The order of X and Y is reversed: imultisets related by inversion belong to the same imultiset-class



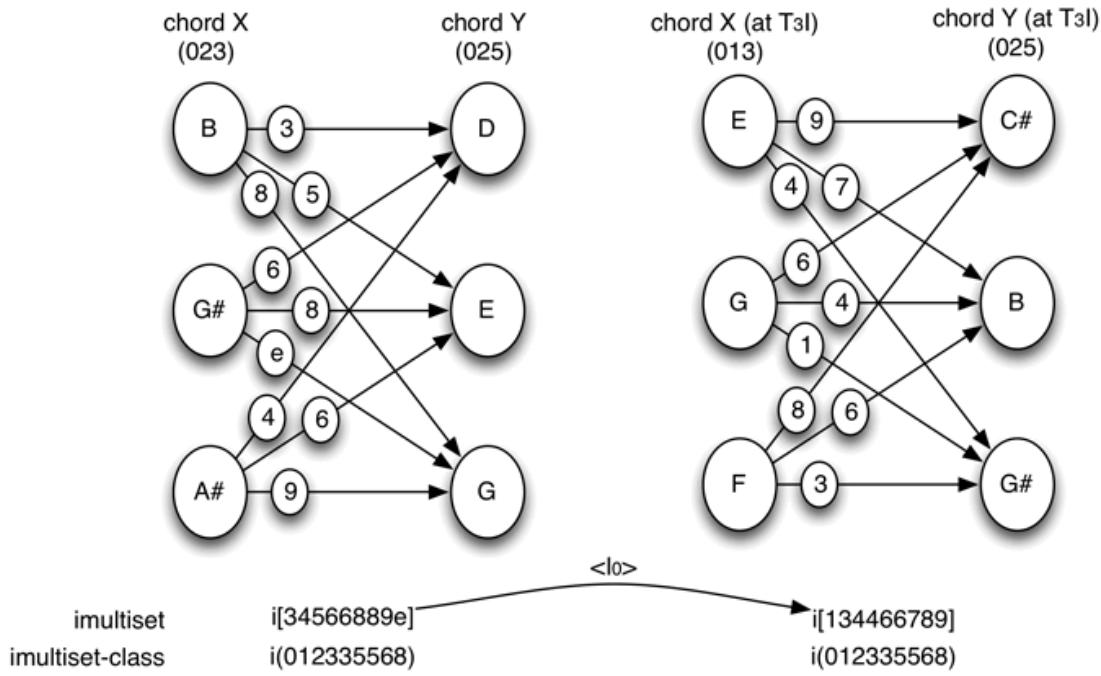
Example 7. Y is transposed: imultisets related by transposition $\langle T_n \rangle$ belong to the same imultiset-class



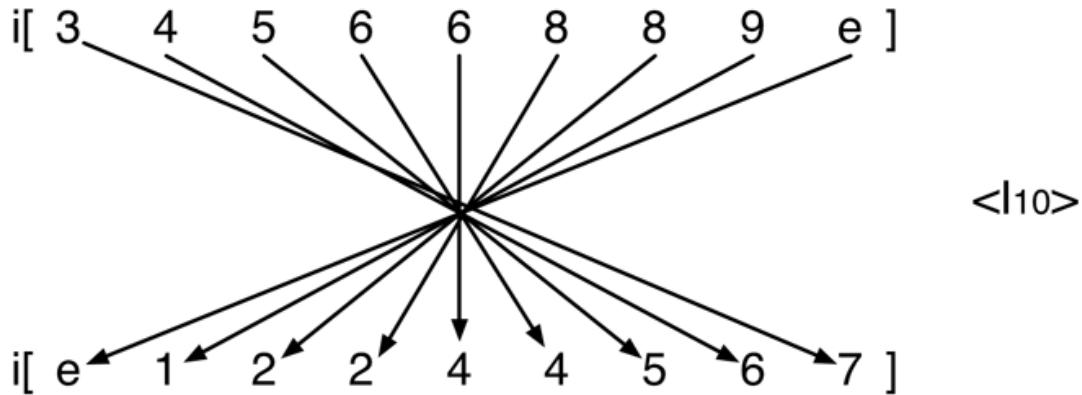
Example 8. Hyper-transposition at $\langle T_3 \rangle$: each interval in the second imultiset is 3 semitones larger than the corresponding interval in the first multiset



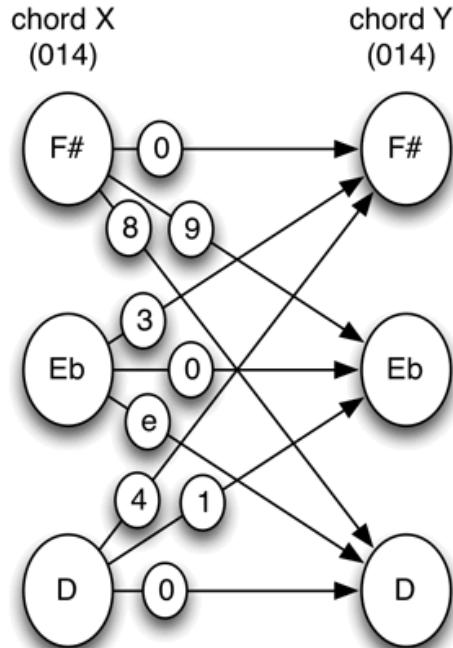
Example 9. X and Y are both inverted: imultisets related by inversion <In> belong to the same imultiset-class



Example 10. Hyper-inversion at <I10>: Each interval in one imultiset is as much larger than 5 semitones as the corresponding interval in the other imultiset is smaller than 5 (and vice versa). Corresponding intervals thus sum to 10



Example 11. X and Y are pc identical (i.e., related at T0): the imultiset is inversionally symmetrical (and corresponds to the traditional interval vector)

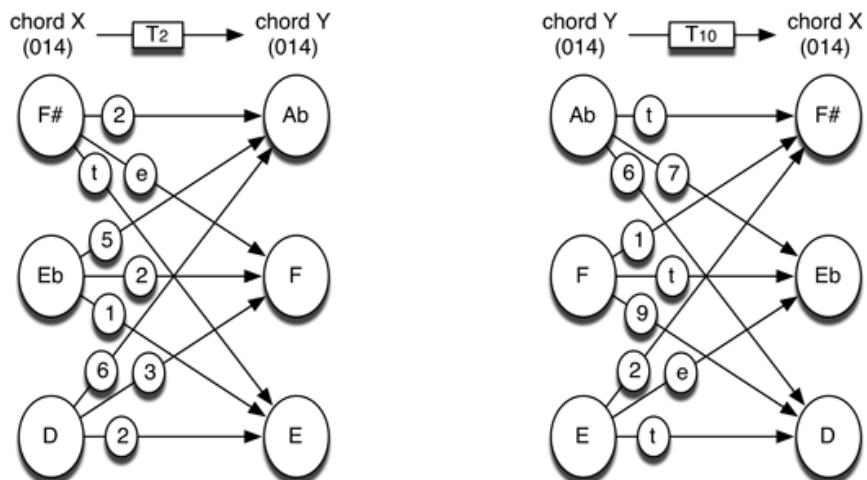


i[89e000134] i(013444578)

I-symmetrical at $\langle I_0 \rangle$ [i.e. intervals distributed equally around intervals 0 and 6)

[compare 12-place interval vector: 310110001101]

Example 12. X and Y are related by T_n : the imultiset is inversionally symmetrical at $\langle I_{2n} \rangle$ (and corresponds to a rotation of the traditional interval vector)



i[te1222356]

i(013444578)

I-symmetrical at $\langle I_4 \rangle$

[i.e. intervals distributed equally around intervals 2 and 8)

$\langle I_0 \rangle$ and $\langle T_8 \rangle$

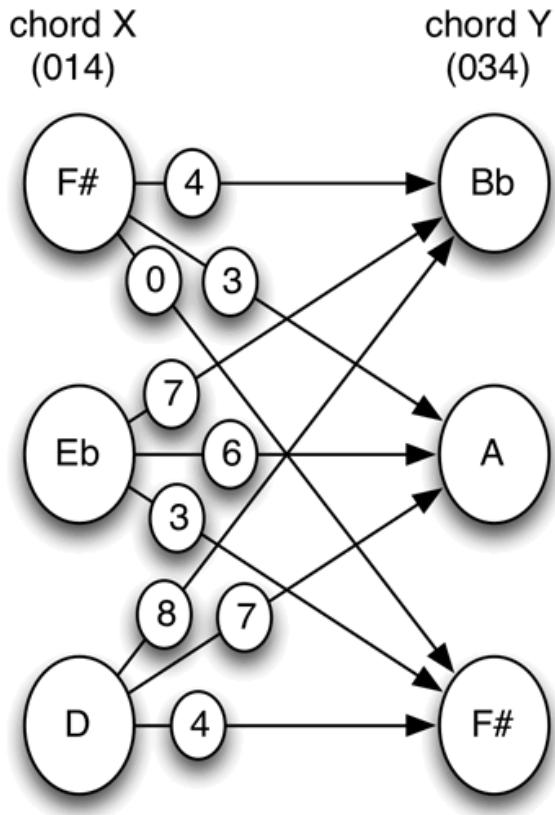
i[679tte12]

i(013444578)

I-symmetrical at $\langle I_8 \rangle$

[i.e. intervals distributed equally around intervals 4 and 10)

Example 13. X and Y are related by inversion: the imultiset is usually not inversionally symmetrical

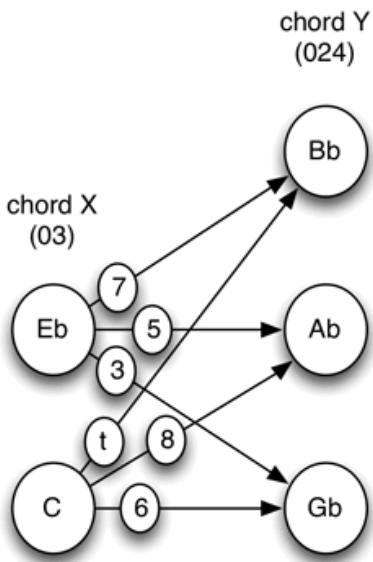


i[033446778]

i(011244558)

NOT I-symmetrical

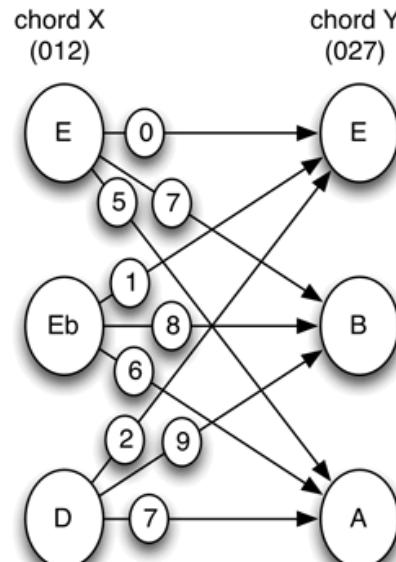
Example 14. X and Y are both pc-symmetrical: the imultiset is inversionally symmetrical



i[35678t]

I-symmetrical at <1>

[i.e. intervals distributed equally around intervals 0/1 and 6/7]

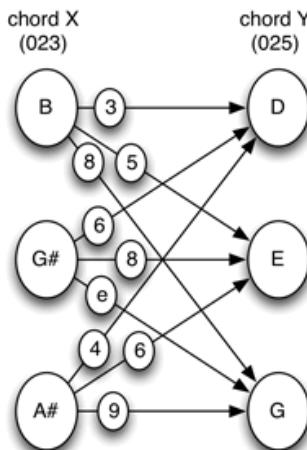


i[567789012]

I-symmetrical at <1>

[i.e. intervals distributed equally around intervals 1 and 7]

Example 15. Transpositional combination: forms of I(X), transposed by the intervals of Y, and forms of Y, transposed by the intervals of I(X), are embedded in the voice-leading imultiset



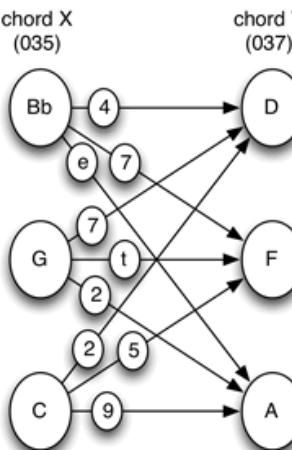
i[34566889e] =

8	9	e
5	6	8
3	4	6

Three forms of (013)
[364] + [568] + [89e]
T₀ T₂ T₅

OR

Three forms of (025)
[358] + [469] + [68e]
T₀ T₁ T₃



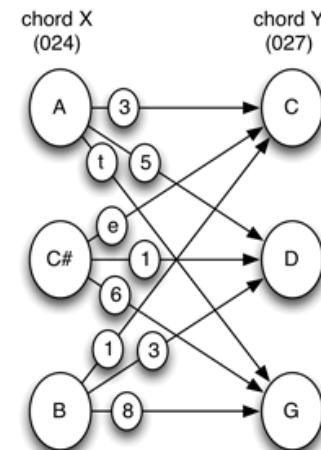
i[2245779te] =

9	e	2
5	7	t
2	4	7

Three forms of (025)
[247] + [57t] + [9e2]
T₀ T₃ T₇

OR

Three forms of (037)
[259] + [47e] + [712]
T₀ T₂ T₅



i[1133568te] =

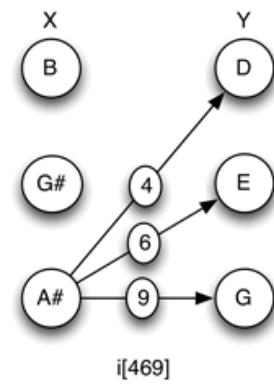
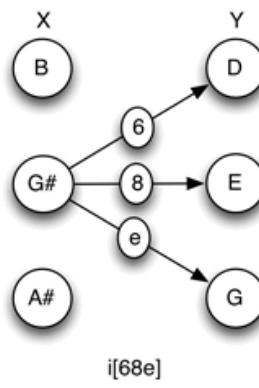
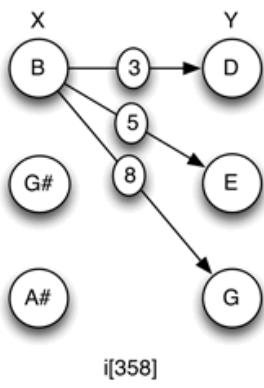
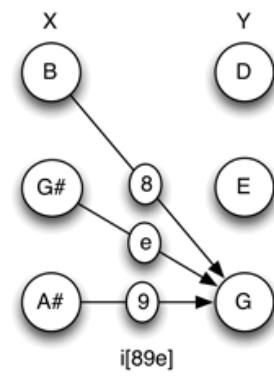
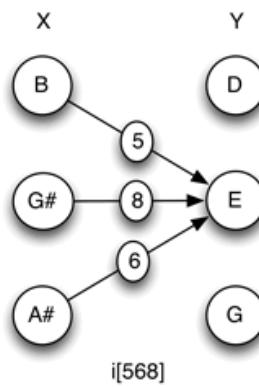
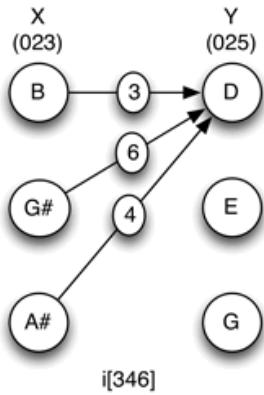
6	8	t
1	3	5
e	1	3

Three forms of (013)
[e13] + [135] + [68t]
T₀ T₂ T₇

OR

Three forms of (027)
[e16] + [138] + [35t]
T₀ T₂ T₄

Example 16. I(X)-type trichords (rows of the array) have arrows from all three of the pc's of X to the same single pc of Y; Y-type trichords (columns of the array) have arrows from one single pc of X to all three of the pc's of Y

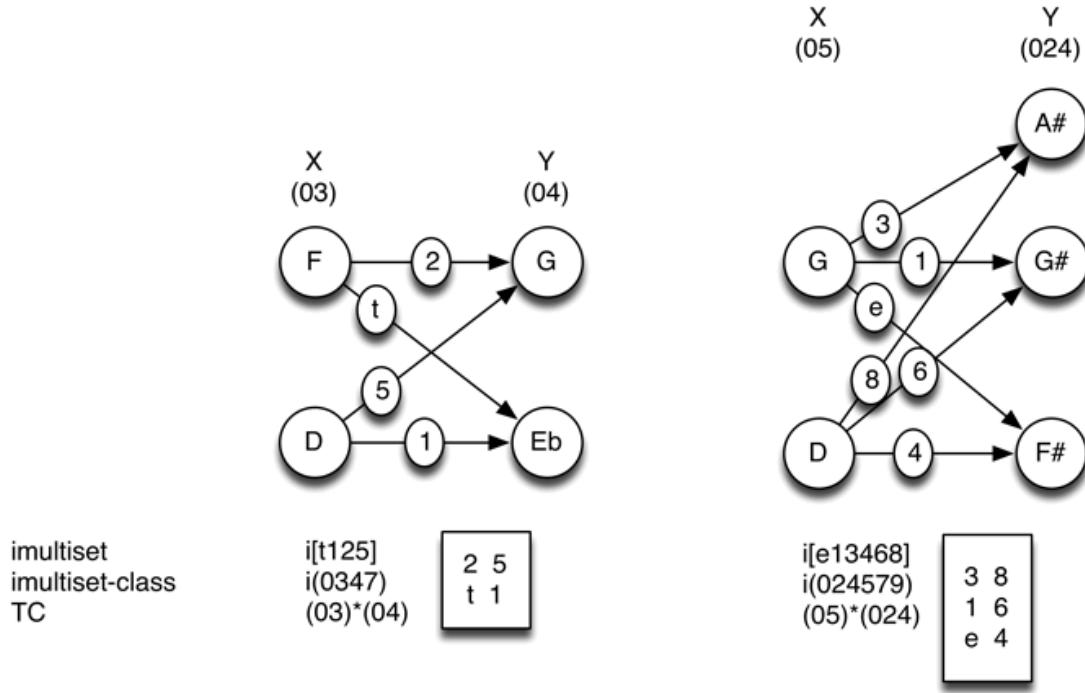


Total voice-leading multiset: i[34566889e]

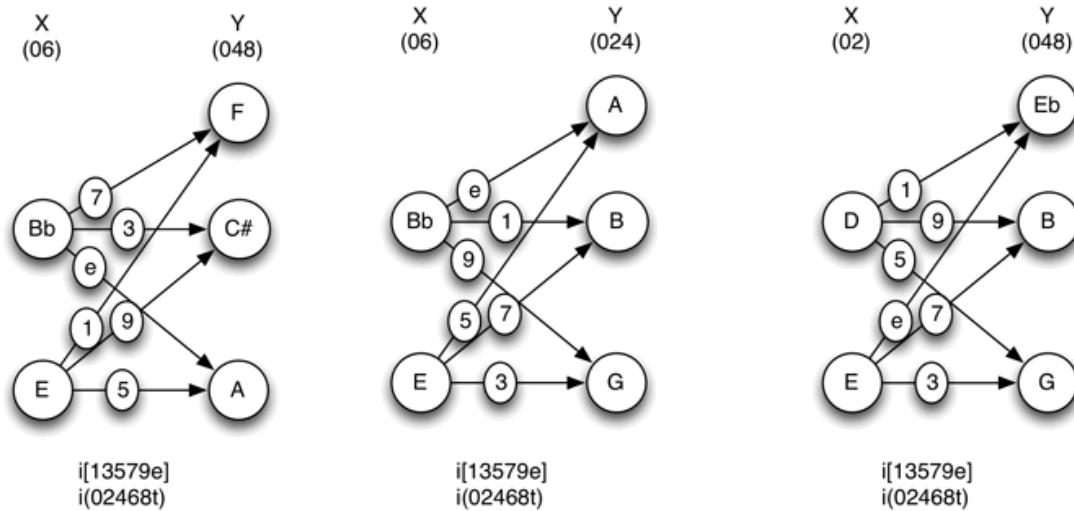
Total voice-leading matrix:

8	9	e
5	6	8
3	4	6

Example 17. Transpositional combination: the voice-leading imultiset has the TC property with X and Y, both of which are I-symmetrical, as the generating sets



Example 18. Different pairs of pcsets ($06 \rightarrow 048$, $06 \rightarrow 024$, $02 \rightarrow 048$) have the same total voice leading (after Lewin, GMIT, Figure 5.1)

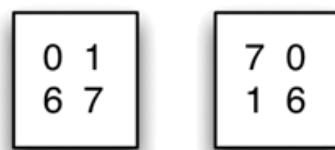


Example 19. Imultiset-classes resulting from the total voice leading between any two two-element pcset-classes

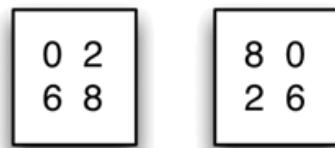
2x2		01	02	03	04	05	06
01	0112	0123	0134	0145	0156	0167*	
02		0224	0235	0246	0257	0268*	
03			0336	0347	0358	0369	
04				0448	0158	0268*	
05					0277	0167*	
06						0066	

Example 20. Two four-element (2x2) imultisets with multiple parentage

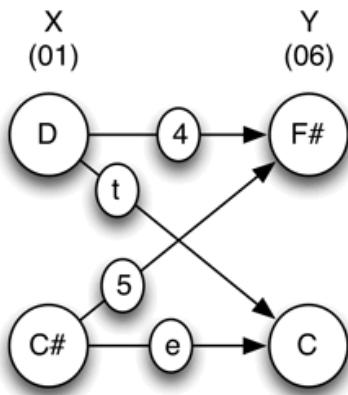
1. $i(0167) = (01)^*(06)$ and $(05)^*(06)$



2. $i(0268) = (02)^*(06)$ and $(04)^*(06)$

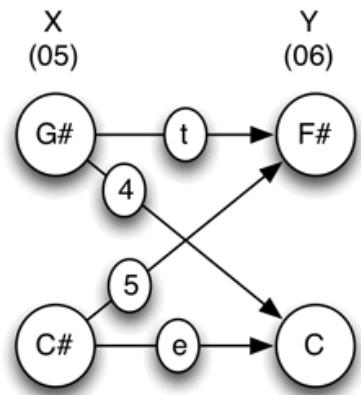


Example 21. Schematic realizations of the two multiply parented total voice leadings among dyads



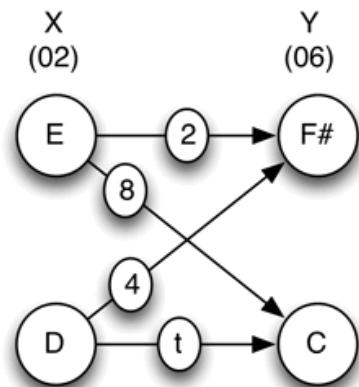
i[45te]
 $i(0167) = (01)^*(06)$

4	5
t	e



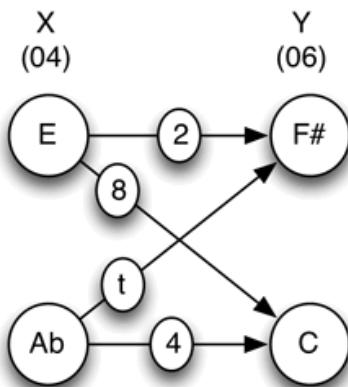
i[45te]
 $i(0167) = (05)^*(06)$

t	5
4	e



i[248t]
 $i(0268) = (02)^*(06)$

2	4
8	t

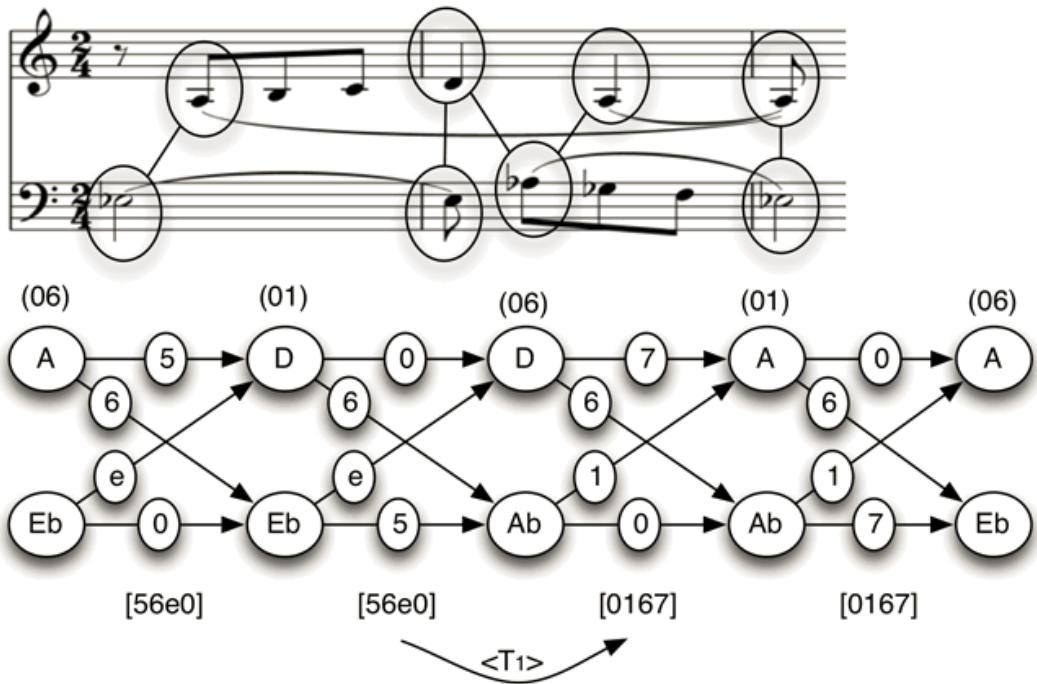


i[248t]
 $i(0268) = (04)^*(06)$

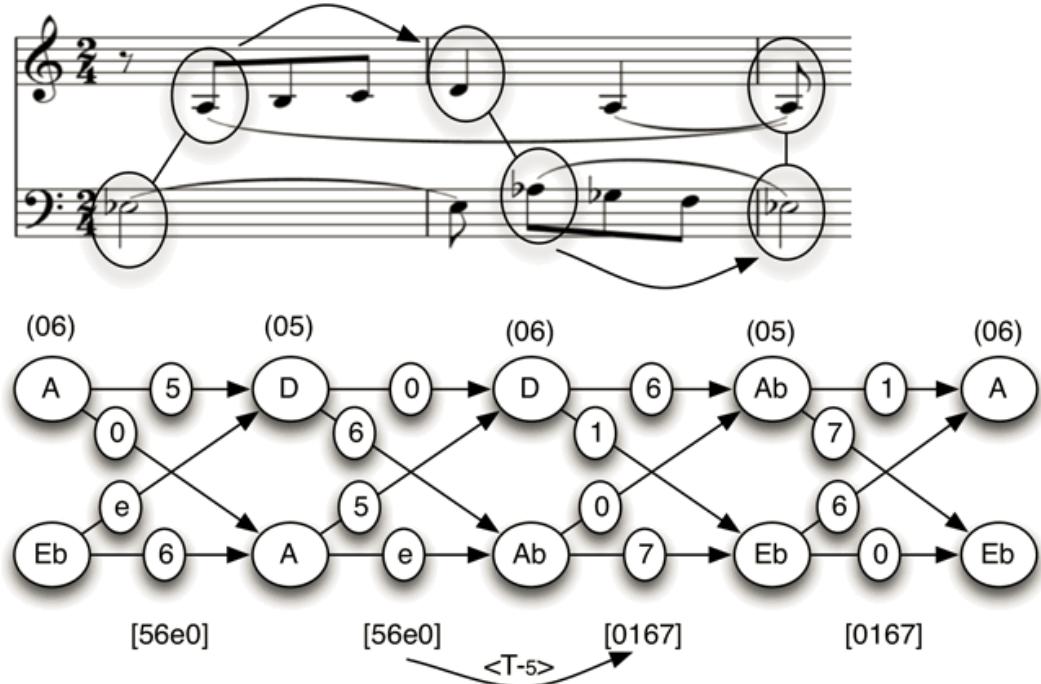
2	t
8	4

Example 22. Bartók, “Diminished Fifth,” measures 1–3: multiple parentage of i(0167), from (01)*(06) and (05)*(06)

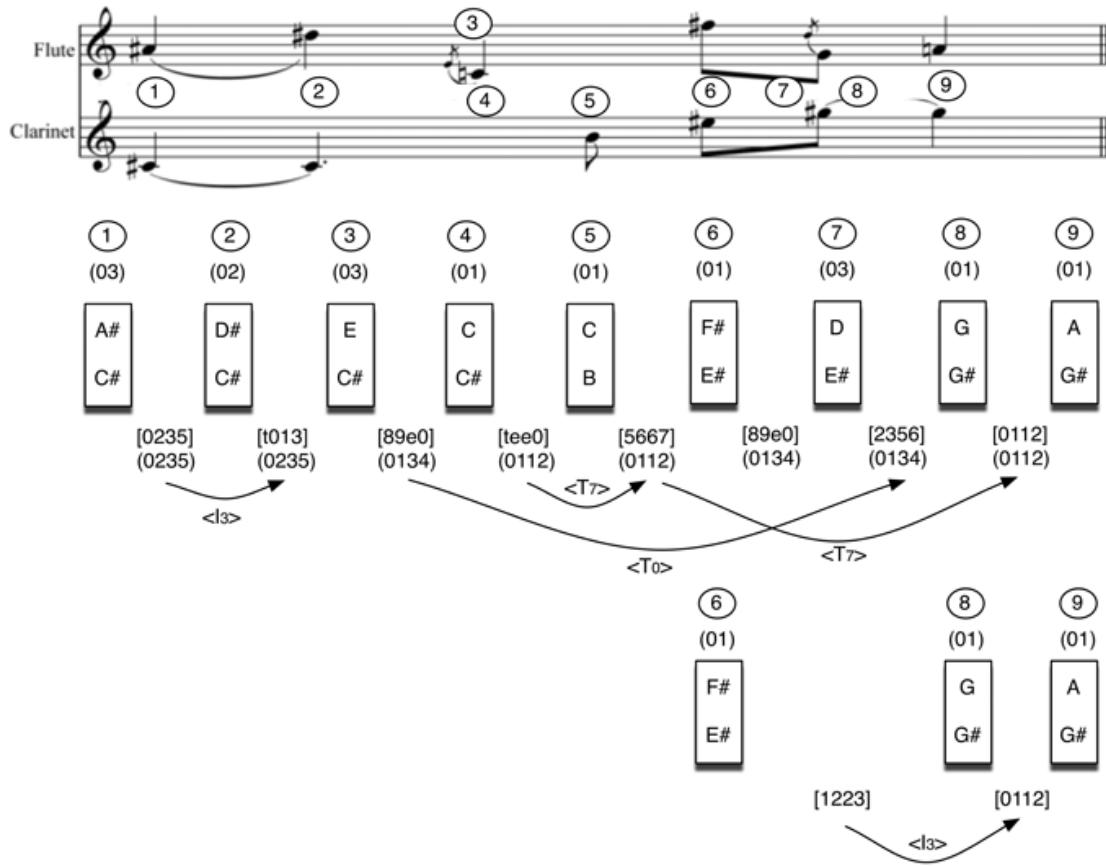
a



b



Example 23. Stravinsky, *Epitaphium*, m. 1. Total voice leadings among dyads related by <Tn> and <In>



Example 24. Varèse, *Density 21.5*, measures 1–14. Approaching or leaving a tritone from a semitone or perfect fourth produces the same total voice leading

The musical score for Example 24 consists of four staves of music, labeled mm. 1 - 3, mm. 3 - 5, and mm. 11 - 14. The score includes dynamics such as *m.f*, *f*, *p*, *ff*, *mf subito*, and *fff*. Performance instructions include *—f—*, *—p—*, and *—ff—*.

Graphs:

- mm. 1 - 3:** Shows nodes F# (7), G (1), G# (6), and C# (0). Arrows indicate Tn leadings: F# to G, G to G#, and G# to C#.
- mm. 3 - 5:** Shows nodes G (0), G# (6), F# (7), and C# (1). Arrows indicate Tn leadings: G to G#, G# to F#, and F# to C#.
- mm. 11 - 14:** Shows nodes G# (7), G# (1), A (0), Bb (6), E (0), D (6), D# (0), A (7), and Bb (1). Arrows indicate Tn leadings between these nodes, forming a complex network of connections.

Nodes (pitch sets):

- mm. 1 - 3: [56e0]
- mm. 3 - 5: [56e0]
- mm. 11 - 14: [0167]
- mm. 11 - 14: [0167]
- mm. 11 - 14: [0167]

Example 25. Imultiset-classes resulting from the total voice leading between any two-element and three-element pcset-classes

2x3

	01	02	03	04	05	06
012	011223	012234	012345*	012456	012567	012678*
013	011234	012335	013346	013457	013568	013679*
014	011245	012346	013447	014458	012569	013679*
015	011256	012357	013458	011458	011568	012678*
016	011267	012368	013469*	012568	012677	001667
024	012345*	022446	023457	024468	024579*	02468t*
025	012356	023557	023558	024569	024799	013679*
026	012367	022468	013469*	002468	012578	002668
027	012378	022479	024579*	013578	002577	012678*
036	013467	023568	003369	013479	014679	003669
037	013478	023579	014699	014588	013588	013679*
048	014589*	02468t*	014589*	004488	014589*	02468t*

Example 26. Seven six-element (2x3) imultisets have multiple parentage

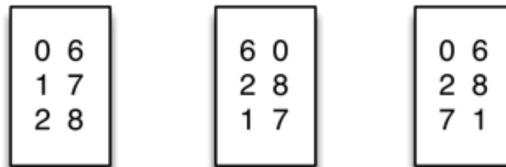
1. $i(012345) = (03)^*(012)$ and $(01)^*(024)$



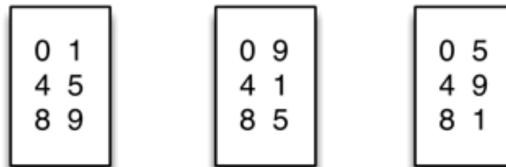
2. $i(013469) = (03)^*(016)$ and $(03)^*(026)$



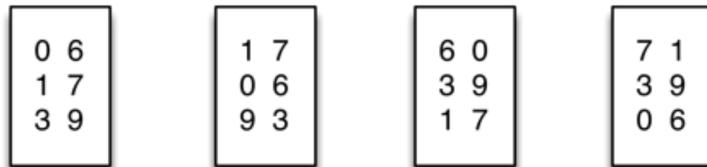
3. $i(012678) = (06)^*(012)$ and $(06)^*(015)$ and $(06)^*(027)$



4. $i(014589) = (01)^*(048)$ and $(03)^*(048)$ and $(05)^*(048)$



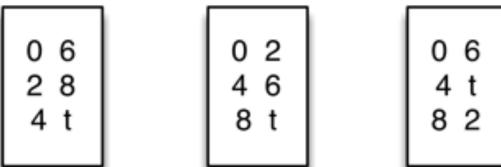
5. $i(013679) = (06)^*(013)$ and $(06)^*(014)$ and $(06)^*(025)$ and $(06)^*(037)$



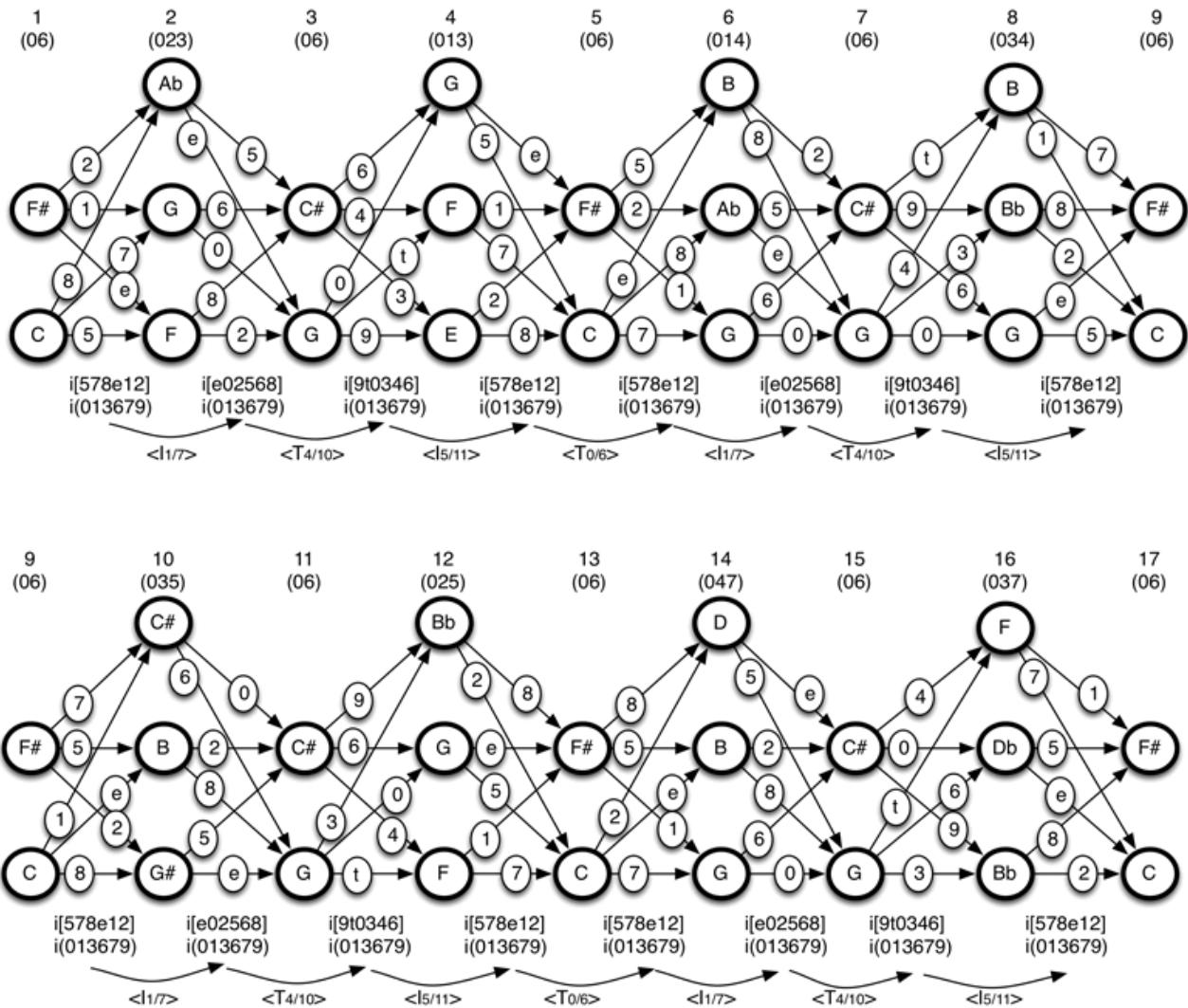
6. $i(024579) = (05)^*(024)$ and $(03)^*(027)$



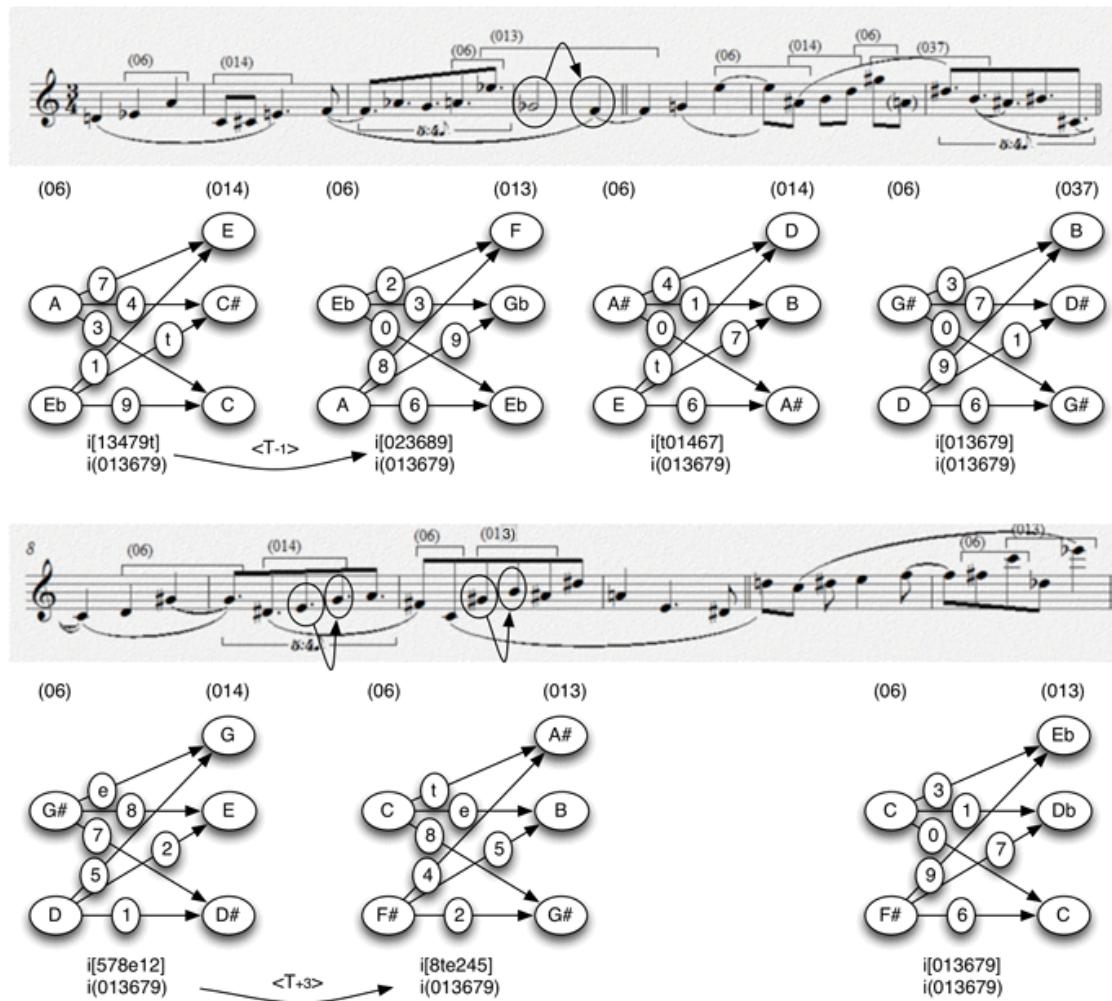
7. $i(02468t) = (06)^*(024)$ and $(02)^*(048)$ and $(06)^*(048)$



Example 27. Progression of seventeen chords where every adjacent pair has a total voice leading of i(013679)



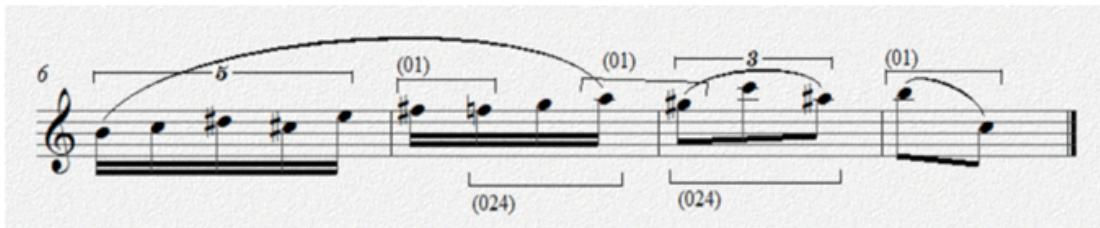
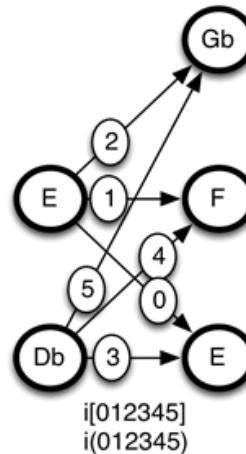
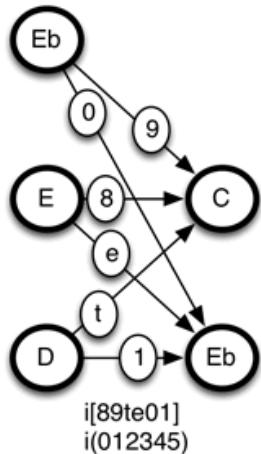
Example 28. Crawford, Diaphonic Suite No. 1 for solo flute or oboe, second movement, first four phrases (measures 1–13): seven progressions from a tritone to a trichord produce the same total voice leading, i(013679)



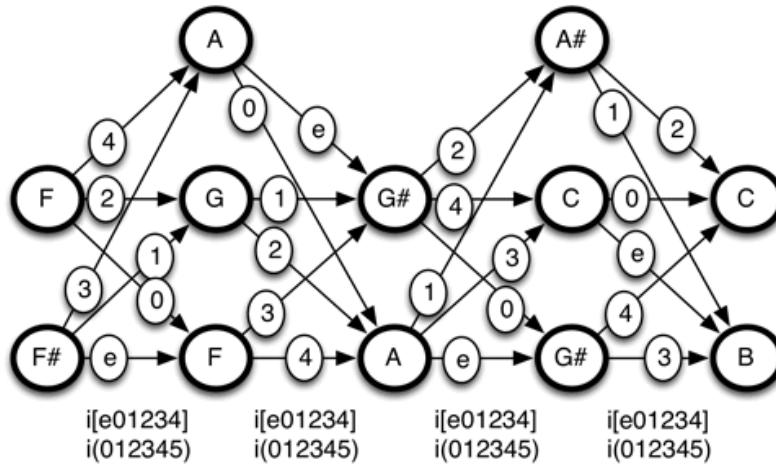
Example 29. Crawford, Diaphonic Suite No. 1, first movement, first two phrases: the same total voice leading results from combinations of different pairs of dyads and trichords



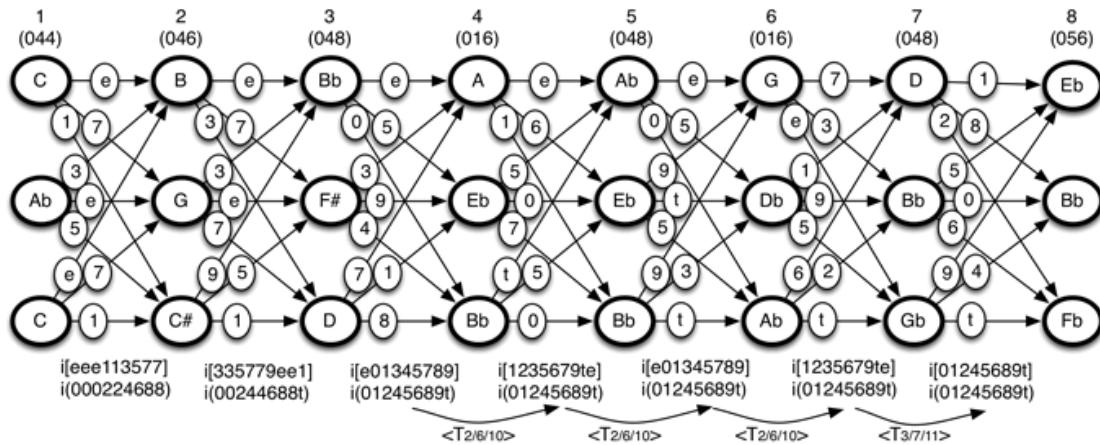
(012) (03) (03) (012)



(01) (024) (01) (024) (01)



Example 32. Schoenberg, Op. 15, No. 7, measures 14–19. Similarities in total voice leading when approaching or leaving an augmented triad



Example 33. Schoenberg, “Eine blasse Wäscherin,” No. 4 from *Pierrot Lunaire*, Op. 21, measures 1–3

Flute

Clarinet in A
(sounds as written)

Violin

(reduction)

chord X1
(036)

X1 X2 X1 X2

chord Y
(048)

D 1 9 5 D#

B 4 0 8 G

F t 2 6 B

i[01245689t]
i(01245689t)

D e 7 5 D#

B 4 0 8 G

F t 5 9 B

i[e01345789]
i(01245689t)

Example 34. Schoenberg, “Eine blasses Wäscherin,” No. 4 from *Pierrot Lunaire*, Op. 21, measure 7

The musical score shows four staves: Flute, Clarinet in A (sounds as written), Violin, and a reduction. The reduction consists of three chords labeled X1, X2, X3, and Y. Chord X1 (027) contains notes B, e, 3, 7. Chord X2 (013) contains notes A, 1, 5, 9. Chord X3 (013) contains notes E, 6, 2, t. Chord Y (048) contains notes Bb, F#, D. The reduction staff shows the notes from the first three chords grouped together, followed by the notes of chord Y.

