



MTO 25.1 Examples: Link, Harmony in Elliott Carter's Late Music

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

<http://mtosmt.org/issues/mto.19.25.1/mto.19.25.1.link.html>

Example 1. The Core Harmonies

All-interval tetrachords (AITs):

$\boxed{18}$ (0146)

$\boxed{23}$ (0137)

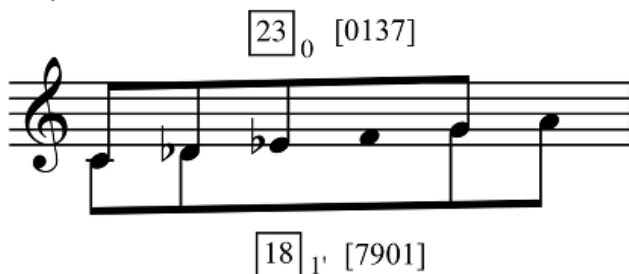
All-trichord hexachord (ATH):

$\boxed{35}$ (012478)

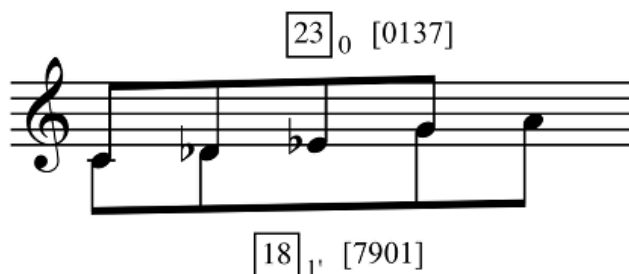
Notation: $\boxed{23}_{7'} = \text{t7i of } (0137) = [0467]$

Example 2. Non-core hexachord 9 (013579) and derived core pentachord 36 (02368)

$\boxed{9}_0$ [013579]



$\boxed{36}_{3'}$ [79013]



Example 3. Derived core harmonies

	No.	prime form	18+18	23+23	18+23		prime form	No.	18+18	23+23	18+23
5	31	01367			x		01367	31			x
	36	02368			x		02368	36			x
6	10	012468			x		012348	23		x	
	11	014568			x		012357	20			x
	14	013469			x		012378	34		x	
	15	013679	x	x			012456	24	x		
	20	012357			x		012468	10			x
	22	013479	x	x	x		012567	33	x		
	23	012348		x			012579	25	x		
	24	012456	x				013467	29	x	x	x
	25	012579	x				013469	14			x
	26	013578		x			013479	22	x	x	x
	27	023568	x	x	x		013578	26		x	
	29	013467	x	x	x		013679	15	x	x	
	31	014679	x	x	x		014568	11			x
	33	012567	x				014679	31	x	x	x
	34	012378		x			023568	27	x	x	x

	No.	prime form	18+18	23+23	18+23		35+18	35+23	35+35
7	4	0124678	x	x			x	x	x
	6	012468t	x	x					
	13	0123567	x		x				
	15	0123468	x		x				
	17	0124568		x	x				
	22	0123579		x	x				
	27	0123478		x	x			x	
	28	0123578		x	x				
	29	0124578					x	x	
	30	0123678			x				
	33	0134679	x	x					
	34	0124789	x		x		x		
	35	0123589					x	x	
	36	0135679					x	x	
	37	0124689	x		x				

	No.	prime form	18+18	23+23	18+23		35+18	35+23	35+35
8	2	01236789	x	x					
	3	02345679	x	x					
	5	0134679t			x				
	8	01234589							x
	9	01234569			x				
	10	01234789				x	x	x	
	12	0124678t			x	x	x	x	
	13	01345689	x	x					
	14	0124579t			x				
	15	01245789							x
	18	01234689				x			
	19	01235789				x	x		
	21	01235689				x	x		
	22	01234678				x	x		
	23	01235679					x		
	28	01345679				x	x		
	29	0124578t				x	x		

Example 4a. Derived core hexachord 22 (013479) as a collection of AIT mappings (after Childs, 2006)

22
[013479]
[9t0146]
[013479]

23₀ 23_{4'} 18₀ 18_{t'} 23₀ 18₃

5T3 (= t4i) 1T3 (= t10i) 1X5

(1)(3)(74)(09) (4)(6)(09)(1t) (3)(7)(09)(14)

Example 4b. Derived core hexachords interpreted as AIT mappings (after Childs, 2006)

		$\boxed{18} \longrightarrow \boxed{18}$	$\boxed{23} \longrightarrow \boxed{23}$	$\boxed{18} \rightleftharpoons \boxed{23}$
(012456)	$\boxed{24}$	3T1 (= t6i)		
(012579)	$\boxed{25}$	3T5 (= t0i)		
(012567)	$\boxed{33}$	6T1 (= t5i)		
(012348)	$\boxed{23}$		3T1 (= t2i)	
(013578)	$\boxed{26}$		3T5 (= t8i)	
(012378)	$\boxed{34}$		6T1 (= t3i)	
(013679)	$\boxed{15}$	3T6 (= t6)	3T6 (= t6)	
(013479)	$\boxed{22}$	1T3 (= t10i)	5T3 (= t4i)	5X1 / 1X5
(023568)	$\boxed{27}$	5T3 (= t4i)	1T3 (= t10i)	1X5 / 5X1
(013467)	$\boxed{29}$	4T3 (= t7i)	2T3 (= t7i)	2X4 / 4X2
(014679)	$\boxed{31}$	2T3 (= t1i)	4T3 (= t1i)	4X2 / 2X4
(012468)	$\boxed{10}$			6T2
(014568)	$\boxed{11}$			3T4
(013469)	$\boxed{14}$			3T2
(012357)	$\boxed{20}$			6T3

Example 5. Octachords formed by non-intersecting AITs ("combination sets"), from Carter (1970), with annotations

COMBINATION OF TETRACHORDS

The musical score is divided into two main sections: Piano Tetrachords and Harpsichord Tetrachords. The Piano section is further divided into Piano and Harpsichord parts, and the Harpsichord section is also divided into Piano and Harpsichord parts. The score includes annotations for the combination of tetrachords and the residue of pairs of tetrachords.

"Residue" of pairs of tetrachords

"Residue"

$\boxed{3}_5$ [5789te02]	$\boxed{3}_1$ [1346]
$\boxed{13}_2$ [235678te]	$\boxed{13}_9$ [9014]
$\boxed{2}_4$ [4567te01]	$\boxed{2}_2$ [2389]
$\boxed{5}_1$ [124578te]	$\boxed{5}_0$ [0369]
$\boxed{14}_t$ [te023578]	$\boxed{14}_1$ [1469]
$\boxed{9}_5$ [56789te2]	$\boxed{9}_0$ [0134]
$\boxed{12}_3$ [34579te1]	$\boxed{12}_0$ [0268]

"Piano Tetrachords" = $\boxed{18}$ (0146)

"Harpsichord Tetrachords" = $\boxed{23}$ (0137)

Example 6. Elliott Carter, Oboe Quartet (2001), mm. 38–39
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38 **Maestoso** ♩ = 96

Ob. [23]₇ [0467] (oboe)

Vn. (mf)

Va. f-mf

Vc. f

(mf)

[2]₂ [2389]

[23]_t [te15] (cello)

[2]₄ [4567te01] (oboe + cello)

(A)

Example 7. Carter's sketch of his "seven-note chord system"
showing derived core septachord 34 (0124789) (Analysis added)

The image displays a musical sketch on a grand staff (treble and bass clefs) with a key signature of one sharp (F#). The melody in the treble clef consists of two phrases: the first phrase contains notes F#, G, A, B, C, D, E, F#; the second phrase contains notes G, A, B, C, D, E, F#. The bass clef contains two chords: the first is a triad of F#, A, C, and the second is a triad of G, B, D. The second chord is circled. The text "etc." follows the second chord. Below the staff, a horizontal line connects two crown-shaped symbols. The first symbol is labeled $34/0$ [3458te0] and the second is labeled $34/5$ [5679012]. A circled letter 'A' is positioned below the line connecting the two symbols.

Example 8. Carter, Epigrams (2012), I, mm. 2–10

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[♩ = 72]

Vn. *f* *mf* *poco* *mf* *mp* *p*

Vc. *f* *mf* *mp*

Pno. *mp* *mf*

2 *i4* *i5*

3 *i7*

18 *e'* [57te]

33 *t* [te12457]

34 *3* [3457te0]

7 *i8*

Vn. *mf* *p*

Vc. *p* *mp*

Pno. *mp* *mf* *p*

18 *4'* [t034]

34 *3* [3457te0]

35 *8* [89t034]

(22 *r*) [489t]

34 *r* [89t1345]

Example 9. Carter, *Epigrams* (2012), I, mm. 3–5 (strings), harmonic analysis

Harmonic analysis for Example 9 (mm. 3–5):

- Vn. staff:**
 - Measure 3: $[23]_4$ [457e]
- Vc. staff:**
 - Measure 3: $([9]_1)$ [1245]
 - Measure 4: $[23]_{2'}$ [7e12]
 - Measure 5: $(\hat{27})_e$ [e12457]
- Overall structure:**
 - Measure 5: $[18]_{e'}$ [57te]
 - Measure 6: $(\hat{33})_t$ [te12457]

Example 10. Carter, *Concertino for Bass Clarinet and Chamber Orchestra* (2009), mm. 75–81, solo part (sounding pitch)

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Harmonic analysis for Example 10 (mm. 75–81):

- Measure 75:** $\text{♩} = 40$, < 2 , 4, 2, 6, 2, 6, 4, $>$, < 7 , 4, $>$
- Measure 76:** p *espr.*, *poco*, *poco*, *poco*
- Measure 77:** $(\hat{6})_7$ [79e13]
- Measure 78:** $(\hat{37})_{3'}$ [679e123]
- Measure 79:** $(\hat{37})_{3'}$ [321e976]
- Measure 80:** $[18]_{3'}$ [9e23]
- Measure 81:** $[18]_{3'}$ [9e23]
- Measure 82:** $[23]_6$ [6791]
- Measure 83:** $[18]_7$ [1367]

Example 11. Derived core octachords derived from pairs of ATHs

The image displays four musical examples, each consisting of a treble staff and a hexagram below it. The hexagrams are labeled with a number in a box and a set of numbers in brackets, and a hexagon with '35' and a subscript.

- Example 1:** Treble staff: [12] [0124678t]. Hexagram: (35)₀ above, (35)₆ below.
- Example 2:** Treble staff: [8] [e0123478]. Hexagram: (35)₀ above, (35)_{3'} below.
- Example 3:** Treble staff: [10] [01234789]. Hexagram: (35)₀ above, (35)_{4'} below.
- Example 4:** Treble staff: [15] [01245789]. Hexagram: (35)₀ above, (35)_{9'} below.

Example 12a. Carter, "Re-Statement of Romance," from *In the Distances of Sleep* (2006), mm. 14–18 © Copyright 2006 by Hendon Music, Inc., a Boosey & Hawkes Company

14 [♩ = 66] [*espr.*]

Mezzo Sop.

On - ly we two may in - ter - change

Vla.

Strings

mp *p*

16

Mezzo Sop.

Each in the oth - er what each has to give.

Vln. I & II 3

Strings

p

Example 12b. Carter, "Re-Statement of Romance," mm. 14–15, harmonic analysis

Harmonic analysis of measures 14 and 15, showing voice and string parts with figured bass notation.

Mezzo Sop. (voice):

- Measure 14: [31]₃ [3479t0] (voice)
- Measure 15: [18]_{4'} [t034] [23]_{t'} [379t]

Strings:

- Measure 14: [31]₉ [9t034] [31]_{t'} [3479t]
- Measure 15: [8]₇ [789te034]

Mezzo Sop. (voice):

- Measure 14: [35]₈ [89t034]
- Measure 15: [35]_{e'} [3479te]

Strings:

- Measure 14: [8]₇ [789te034]
- Measure 15: [8]₇ [789te034]

Example 12c. "Re-Statement of Romance," mm. 16–18, harmony

$\boxed{15}_6$ [678te123]
 $\boxed{35}_6$ [678t12]
 Each in the oth - er what each has to give.
 $\boxed{35}_{3'}$ [78e123]
 $(\boxed{16}_6)$ [68t2] $(\boxed{16}_e)$ [e137]

Example 13a. Carter, Oboe Quartet (2001), mm. 1–5

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Moderato $\text{♩} = 96$

Oboe

Violin

Viola

Cello

Example 13b. Carter, Oboe Quartet (2001), mm. 1–5, harmonic analysis

Harmonic analysis for mm. 1–5 of Carter, Oboe Quartet (2001). The score is in 4/4 time. The analysis includes the following set-theoretic notations:

- Staff 1 (Treble): [5679e01] (4)₅, [0124678] (4)₀, [34578te] (29)₃, [0124678] (4)₀ (str. only)
- Staff 2 (Bass): [e156] (19)_{6'}, [3457te] (35)₃, [17]_{1'}, [35]_{1'}, [9e01], [569e01], [16]_{1'}, [69e01], [26]₁, [10]₀, [1246], [012468], [28]_{6'}, [e1456], [19]_t, [17]₃, [te35], [3458te], [19]_e, [e0124678]
- Bottom Analysis: [19]_{9'}, [01246789] --- A

Example 14. Carter, Rhapsodic Musings (2000), mm. 21–22

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Harmonic analysis for mm. 21–22 of Carter, Rhapsodic Musings (2000). The score is in 4/4 time. The analysis includes the following set-theoretic notations and dynamic markings:

- Staff 1 (Treble): [31]₁ [12478], *ff*, *ff-mf*, *ff* → *mf*
- Staff 2 (Bass): [27]_{6'}, [23]_{5'}, [27]₀, [23]₁, [18]_{8'}, [2478], [35]_{6'}, [te2456], [35]₀, [012478], [35]₀, [012478]

Example 15. Carter, *Rhapsodic Musings* (2000), m. 1
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Adagio appassionato ♩ = ca. 66
quasi improvisando

ff *i1* **f-mf** *i2*

(21)₈ [8903]

(35)₄ [890234]

Example 16a. Carter, *Rhapsodic Musings* (2000), mm. 9–13
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[**Adagio appassionato** ♩ = ca. 66]

p dolce *poco* **pp** *p sub.* *poco*

pp *p sub.* **p** **mf** **p** *poco* **mf**

p **f**

Example 16b. Carter, *Rhapsodic Musings* (2000), mm. 9–13, harmonic analysis

Harmonic analysis for measures 9–13 of Carter, *Rhapsodic Musings* (2000). The analysis is presented on two staves.

Staff 1 (Measures 9–11):

- Measure 9: Above staff: $([17]_{2'}) [t012]$; Below staff: $(35)_{2'} [67t012]$
- Measure 10: Above staff: $([17]_5) [5679]$; Below staff: $(35)_5 [567901]$
- Measure 11: Above staff: $([17]_{1'}) [9e01]$; Below staff: $(35)_{1'} [569e01]$

Staff 2 (Measures 12–13):

- Measure 12: Above staff: $([17]_{2'}) [t012]$; Below staff: $(35)_2 [23469t]$
- Measure 13: Above staff: $([17]_5) [5679]$; Below staff: $(10)_8 [89t024]$

Intervallic structures (il) are indicated above the notes in measures 9, 10, and 11.

Example 17. Carter, *Rhapsodic Musings* (2000), final measure
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Final measure of Carter, *Rhapsodic Musings* (2000). The tempo is *Adagio appassionato* with a quarter note equal to approximately 66 beats per minute. The time signature is 7/4. The measure is marked with *ff* (fortissimo) and *f* (forte) dynamics. The harmonic analysis label $(35)_0$ is shown below the staff.

Example 18a. Carter, Quintet for Piano and String Quartet (1997), mm. 241–46 (strings only)
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241 [♩ = 84]

Vn. 1

Vn. 2

Va.

Vc.

pp p mf

pp p mf

$mf-pp$ p mf

pp mf

[23]₄ [457e] [35]₃ [3457te] [3]₆ [689te013]

Example 18b. Carter, Quintet for Piano and String Quartet (1997), mm. 241–46, harmonic analysis

(9)_t (12)_{5'}

[te1357] [9e1235]

[23]₄ [35]₃ [36]_e [22]₂ [33]_{3'} [3]₆

[457e] [3457te] [e1257] [23569e] [689e023] [689te013]

[36]_t [te13457] [6]₁ [3457te]