

Schoenberg, Op. 35/2, "Ausdrucksweise"

Row Matrix (using fixed "at mod" \neq integers)

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

The hexachord is 6-27. It is 1-combinatorial with one value of t .

$P_3 I_8$

$P_0 I_5$

$P_{11} I_4$

\vdots

$P_{10} I_3$

T_{11}

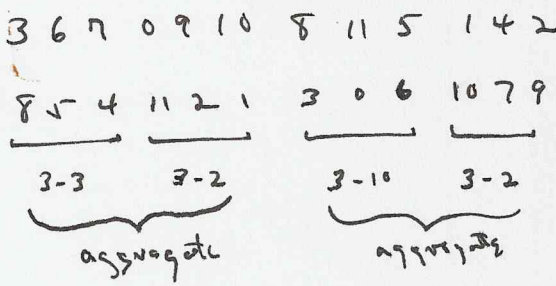
inverted to 6-27

7-32	0,1,3,4,6,8,9	335442	harm. minor scale
7-33	0,1,2,4,6,8,10	262623	12 forms, almost wt
7-34	0,1,3,4,6,8,10	254442	12 forms, diatonia secunda
7-35	0,1,3,5,6,8,10	254361	12 forms, dia scale
7-Z36	0,1,2,3,5,6,8	444342	7-Z12, 12 forms
7-Z37	0,1,3,4,5,7,8	434541	7-Z17, 12 forms
7-Z38	0,1,2,4,5,7,8	434442	7-Z18
8-1	0,1,2,3,4,5,6,7	765442	12 forms
8-2	0,1,2,3,4,5,6,8	665542	
8-3	0,1,2,3,4,5,6,9	656542	12 forms
8-4	0,1,2,3,4,5,7,8	655552	
8-5	0,1,2,3,4,6,7,8	654553	
8-6	0,1,2,3,5,6,7,8	654463	12 forms
8-7	0,1,2,3,4,5,8,9	645652	12 forms
8-8	0,1,2,3,4,7,8,9	644563	12 forms
8-9	0,1,2,3,6,7,8,9	644464	6 forms
8-10	0,2,3,4,5,6,7,9	566452	12 forms
8-11	0,1,2,3,4,5,7,9	565552	
8-12	0,1,3,4,5,6,7,9	556543	
8-13	0,1,2,3,4,6,7,9	556453	
8-14	0,1,2,4,5,6,7,9	555562	
8-Z15	0,1,2,3,4,6,8,9	555553	8-Z29
8-16	0,1,2,3,5,7,8,9	554563	
8-17	0,1,3,4,5,6,8,9	546652	12 forms
8-18	0,1,2,3,5,6,8,9	546553	
8-19	0,1,2,4,5,6,8,9	545752	
8-20	0,1,2,4,5,7,8,9	545662	12 forms
8-21	0,1,2,3,4,6,8,10	474643	
8-22	0,1,2,3,5,6,8,10	465562	12 forms
8-23	0,1,2,3,5,7,8,10	465472	12 forms
8-24	0,1,2,4,5,6,8,10	464743	12 forms
8-25	0,1,2,4,6,7,8,10	464644	6 forms
8-26	0,1,2,4,5,7,9,10	456562	12 forms
8-27	0,1,2,4,5,7,8,10	456553	
8-28	0,1,3,4,6,7,9,10	448444	4 forms
8-Z29	0,1,2,3,5,6,7,9	555553	8-Z15
9-1	0,1,2,3,4,5,6,7,8	876663	12 forms
9-2	0,1,2,3,4,5,6,7,9	777663	
9-3	0,1,2,3,4,5,6,8,9	767763	
9-4	0,1,2,3,4,5,7,8,9	766773	
9-5	0,1,2,3,4,6,7,8,9	766674	
9-6	0,1,2,3,4,5,6,8,10	686763	12 forms
9-7	0,1,2,3,4,5,7,8,10	677673	
9-8	0,1,2,3,4,6,7,8,10	676764	
9-9	0,1,2,3,5,6,7,8,10	676683	12 forms
9-10	0,1,2,3,4,6,7,9,10	668664	12 forms
9-11	0,1,2,3,5,6,7,9,10	667773	
9-12	0,1,2,4,5,6,8,9,10	666963	4 forms

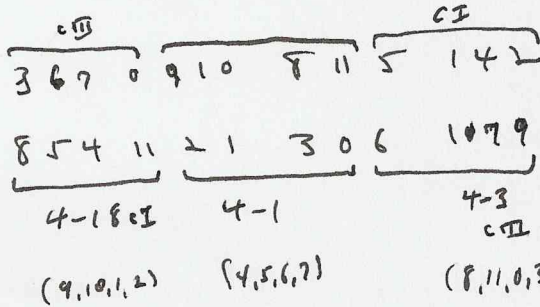
↓ "vertical"
load
pro dyads

6-250 CI

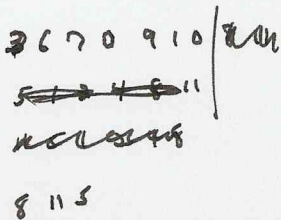
P_{3H_1/H_2}
 I_8
 H_2/H_1



matching triads



"symmetric"



3 6 7 0 9 10

~~3~~
~~8~~

Tetrachords of combinatorial hexachords, Op. 35/3

	G1	G2	G3	G6	G7	G9	G12
4-3				●			
4-10					●		
4-13	●		●		○		
4-z15	●	○					
4-18	○		●			○	
4-27		○	●				○

Counts: 3 2 3 1 2 1 1

G1 G2 G3 G6 G7 G9 G12

Squo Indices in Descending Order with Genera

- .133: G3 (diminished)
- .095: G1 (atonal)
- .088: G7 (chroma-dia)
- .061: G2 (whole-tone)
- .048: G9 (atonal-tonal)
- .044: G6 (semichroma), G12 (dia-tonal)

Combinatorial hexachords of Op. 35/3: overlapping tetrachords

I_8 3-0-6-10-7-9
 H_2 3-0-6-10
4-27: {10, 0, 3, 6} C_{III}

0-6-10-7
4-Z15: {6, 7, 10, 0}

6-10-7-9
4-3: {6, 7, 9, 10}

P_3 3-6-7-0-9-10:

H_1 3-6-7-0
4-18: {0, 3, 6, 7}

6-7-0-9
4-13: {6, 7, 9, 0}

7-0-9-10
4-10: {7, 9, 10, 0}

I_8 8-5-4-11-2-1:

H_1 8-5-4-11
4-18: {4, 5, 8, 11} C_{II}

5-4-11-2
4-13: {11, 2, 4, 5}

4-11-2-1
4-10: {11, 1, 2, 4}

P_3 8-11-5-1-4-2:

H_2 8-11-5-1
4-27: {5, 8, 11, 1}

11-5-1-4
4-Z15: {11, 1, 4, 5}

5-1-4-2
4-3: {1, 2, 4, 5}

I_8 3-element segments of 3-0-6-10-7-9:

H_2 3-0-6
3-10: {0, 3, 6}

0-6-10
3-8: {6, 10, 0}

6-10-7
3-3: {6, 7, 10}

10-7-9
3-2: {7, 9, 10}

P_3 3-element segments of 3-6-7-0-9-10:

H_1 3-6-7
3-3: {3, 6, 7}

6-7-0
3-5: {6, 7, 0}

7-0-9
3-7: {7, 9, 0}

0-9-10
3-2: {9, 10, 0}

I_8 3-element segments of 8-5-4-11-2-1: *Reordering preserves trichotomical classes*

H_1 8-5-4
3-3: {4, 5, 8}

5-4-11
3-5: {11, 4, 5}

4-11-2
3-7: {11, 2, 4}

11-2-1
3-2: {11, 1, 2}

P_3 3-element segments of 8-11-5-1-4-2:

H_2 8-11-5
3-10: {5, 8, 11}

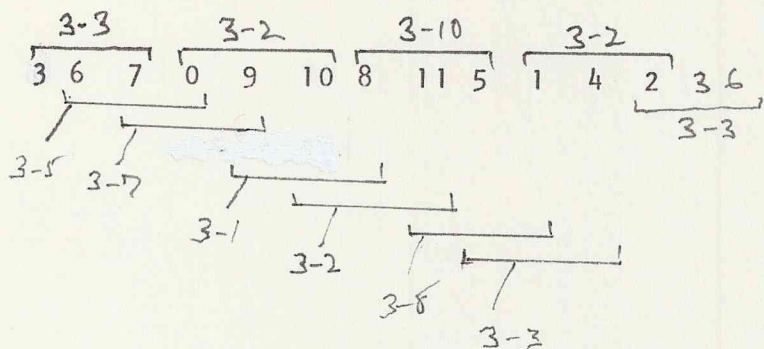
11-5-1
3-8: {11, 1, 5}

5-1-4
3-3: {1, 4, 5}

1-4-2
3-2: {1, 2, 4}

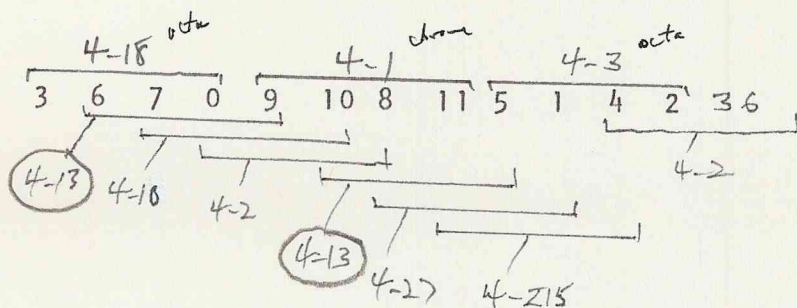
Linear Subsets of the Row

Trichords



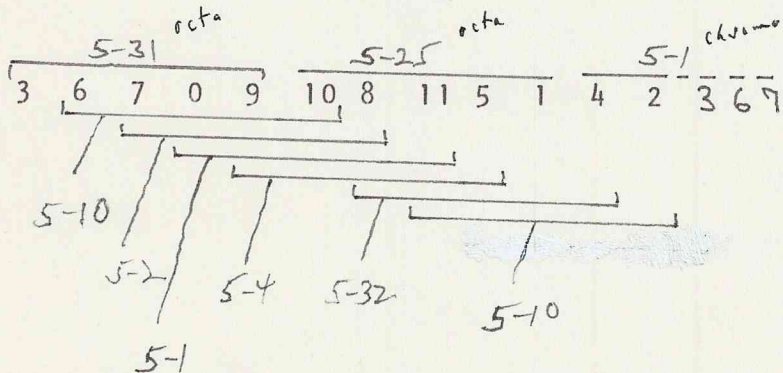
3-2 and 3-3
replicate distinct
trichords

Tetrachords



4-13 2x
4-2 is embedded

Pentachords

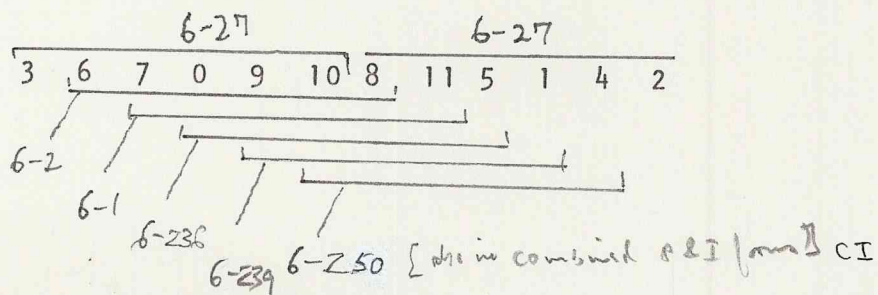


First 5-10 is embedded
7-2 is also a
linear subset
5-1 is embedded
5-2 is embedded

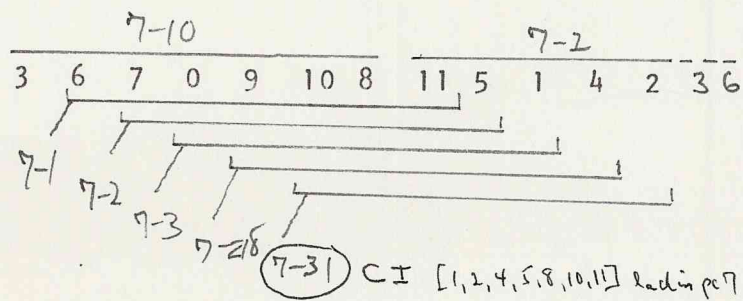
Schoenberg, Op. 35/3, "Ausdrucksweise"

Linear Subsets of the Row

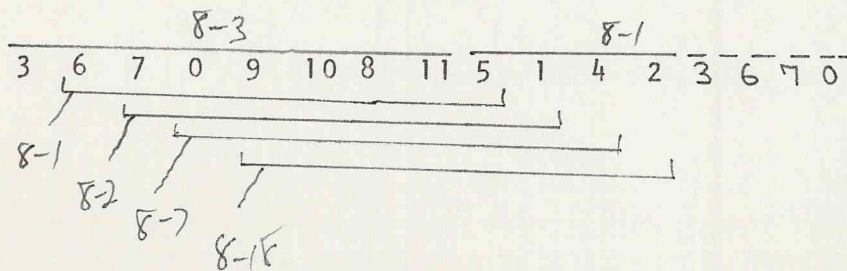
Hexachords



Heptachords



Octachords



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

5

4

11

2

1

3

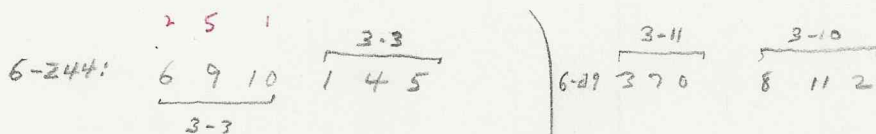
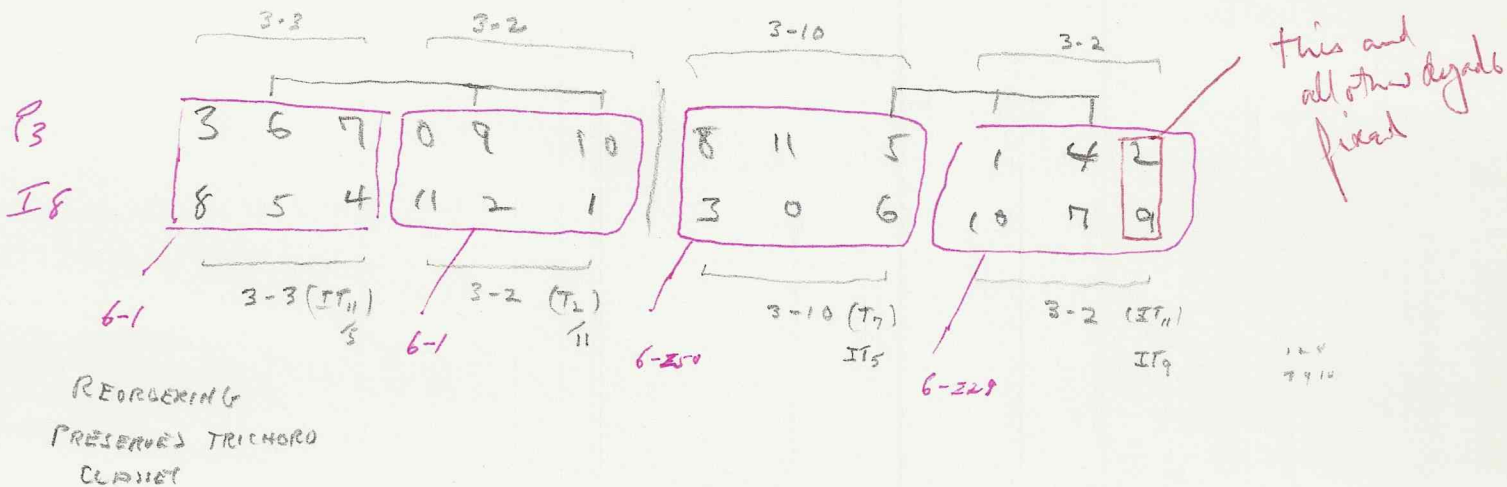
0

6

10

7

9



Schoenberg, Op. 35, No. 3: "Ausdrucksweise" (1930)
Pitch-class map

①

P₃

	①	②	③	④
T1	6 ₁ 6 7 6	6 9 ₄ 10 9 10	10 9 10 9 10	8 ₆ 8 8
T2	3 ₀ 3	3 10 ₅ 9 10 9	9 10 9 10 9	5 ₈ 5 5 5 4 ₁₀
B1	7 ₂ 7 6 7 7	0 ₃	0 0 0 0	11 ₇ 11 11 11 2 ₁₁
B2	8 ₀	5 ₁ 4 ₂	4 ₂ 11 ₃ 2 ₄ 1 ₅	3 ₆ 0 ₇ 6 ₈ 10 ₉

I₈

	⑤	⑥ R(P ₃)	⑦	⑧
T1	8 8 8 8	4 ₁ 4 ₁ 5 ₃ 8 ₅ 8		0 ₈ 0 7 ₉ 3 ₁₁
T2	5 4	2 ₀ 1 ₂ 11 ₄ 11		10 ₆ 9 ₇ 9 9 6 ₁₀
B1	11 1 2 2	7 ₁ 7 6 ₃ 6 3 ₃	1 ₆ 2 ₇	2 2 8 ₁₁
B2	9 ₁₁ 7 ₁₀ 9 ₁₁	9 ₆ 10 ₂ 10 0 ₄	11 ₈ 4 ₉	4 ₉ 5 ₁₀ 5 ₁₀

"Gott"

A B C H

R(I₈)

I₈ first hex. with trichords on 2nd hex.

⑨	<i>I₈</i>	⑩	⑪	⑫
T1	8 5 5 4 4 8 5 4	8 5 5 4 8 5 4	3 0 6	6 10 10 7 7
T2	11 2 2 1	1 11 2 1 1 11 2 1	11 11 1 11 1	2 1 2 2
B1	6 7 6	7 7 6 9 10 10 9 9 10	5 5 4 5 5 4	5 5
B2	3	3 3 3 3 3 0 3 0 3 0	8 8 8 8 8	8

P₃ first hex.

⑬	<i>I₈</i>	⑭	⑮
T1	7 9	8 5 4 11 2 1	3 3 0 0 6
T2	2	6 7 6 7 9 10 11 11 11	1 1 2 2 2
B1	5	3 3 3 3 0 8 8 8	5 5 4 4 4
B2	8	3 6 7 0 9 10 8 8	

P₃ in inverted canon with T₁

Extension of 2nd hex. of B with

$R(I_8)$ first hexachord

(16)	(17)	(18)	(19)
T1 10 7 9 T2 2 2 2 4 5 8 B1 4 4 4 2 2 1 11 B2 8 11 11 5 1 4 2	9 7 9 7 10 6 6 0 3 3 3 3 3 3 10 10 9 0 0 0 0 6 6 7 2 4 2 4 1 5 5 11 11 8 8 8	8 5 5 4 5 4 8 8 11 11 8 8 8 8 2 2 1 2	8 5 5 4 5 4 8 8 11 11 8 8 8 8 2 2 1 2

$R(P_3)$ first hex.
second hex.

NB! Head pc of second hex of P_3 and foot hex of I_8 (As)

I_8

$R(I_8)$

(20)	(21)	(22)	(23)	(24)
T1 3 2 0 6 0 6 0 6 6 T2 3 10 10 10 10 10 B1 3 3 3 3 3 B2 3 3 7 7 9 7 9 7 9	9 3 2 8 10 6 11 8 7 0 1 8 4 5 5 8	10 1 2 2 7 7 4 4 4 4 4 4 5 5 5 5 5 5 3 0 11 11 6 6 6 10	3 3 6 8 8 8 8 9 9 9 9 6 6 6 10	3 3 6 8 8 8 8 9 9 9 9 6 6 6 10

NB! Head pc of first hex of P_3 and second hex of I_8

NB

P_{10}

I_3 (I-comp. with P_{10})
 ≡ last pentachord of R (or RI) (w/ first of P_{10})
 Here the unaltered contour of first pentachord of I_5

↑ 5-31
 ↑ 4-12?
 ↑ 4-13 second tetrachord of I_9 or fourth tetrachord of P_{10}
 ↑ 4-13 second (non-disjunct) tetrachord of I_1 or fourth tetrachord of P_2

aggregat

32 P_3

T1	5	1	1	4	4	4	2
T2	3	3	3	3	3	3	3
B1	10	9	0	10	10	9	0
B2	6	7	6	6	7	6	7

33

34 I_8

8	8	8	8	8	8		
5	4	4	5				
3	6	6	7	7	3	6	7
			0	9	9	10	

I_8 P_3

35 P_3 I_8

T1	8	8	8	11	8	11	8
T2	4	5	1	2	2	1	1
B1	3	6	6	7	3	6	6
B2	10	0	9	10	10	0	9

P_3 R_7 trichord

36 P_3 I_8 $agg.$ $agg.$

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

I_8 $\uparrow \uparrow \uparrow \uparrow \uparrow \uparrow$
 $4-10$ $4-10$ $4-5$ $4-10$ $4-20$ $4-20$

37 $3-5$ (second trichord)

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

$3-5$ (second trichord)

39

T1	6	9	2
T2	3	11	4
B1	7	8	1
B2	0	10	5

P_3

→ $6-8$: $3-3$ | $7-5$
 → $6-5$: $2-10$ | $3-5$
 → $6-5$: $2-10$ | $2-5$
 → $6-5$: $3-3$ | $7-5$

3-1	0,1,2	210000	12 forms
3-2	0,1,3	111000	octa
3-3	0,1,4	101100	octa
3-4	0,1,5	100110	
3-5	0,1,6	100011	
3-6	0,2,4	020100	12 forms
3-7	0,2,5	011010	
3-8	0,2,6	010101	
3-9	0,2,7	010020	12 forms
3-10	0,3,6	002001	12 forms
3-11	0,3,7	001110	diatonic triad
3-12	0,4,8	000300	4 forms
4-1	0,1,2,3	321000	12 forms
4-2	0,1,2,4	221100	
4-3	0,1,3,4	212100	12 forms, octa lin, Stravinsky
4-4	0,1,2,5	211110	
4-5	0,1,2,6	210111	
4-6	0,1,2,7	210021	12 forms
4-7	0,1,4,5	201210	12 forms
4-8	0,1,5,6	200121	12 forms
4-9	0,1,6,7	200022	6 forms, octa
4-10	0,2,3,5	122010	12 forms, octa lin, dia
4-11	0,1,3,5	121110	
4-12	0,2,3,6	112101	octa
4-13	0,1,3,6	112011	octa
4-14	0,2,3,7	111120	dia (minor)
4-Z15	0,1,4,6	111111	4-Z29, all-interval
4-16	0,1,5,7	110121	
4-17	0,3,4,7	102210	12 forms, major-minor tet
4-18	0,1,4,7	102111	octa, Stravinsky
4-19	0,1,4,8	101310	atonal emblem, Berg
4-20	0,1,5,8	101220	12 forms, major 7th
4-21	0,2,4,6	030201	12 forms, wt tet
4-22	0,2,4,7	021120	dia
4-23	0,2,5,7	021030	12 forms, ultra-dia
4-24	0,2,4,8	020301	12 forms
4-25	0,2,6,8	020202	6 forms, octa-wt
4-26	0,3,5,8	012120	12 forms, octa, minor 7th
4-27	0,2,5,8	012111	dominant/half-dim. 7th
4-28	0,3,6,9	004002	3 forms, dim. 7th
4-Z29	0,1,3,7	111111	4-Z15, all-interval
5-1	0,1,2,3,4	432100	12 forms
5-2	0,1,2,3,5	332110	
5-3	0,1,2,4,5	322210	
5-4	0,1,2,3,6	322111	
5-5	0,1,2,3,7	321121	
5-6	0,1,2,5,6	311221	
5-7	0,1,2,6,7	310132	
5-8	0,2,3,4,6	232201	12 forms
5-9	0,1,2,4,6	231211	
5-10	0,1,3,4,6	223111	octa lin
5-11	0,2,3,4,7	222220	
5-Z12	0,1,3,5,6	222121	5-Z36, 12 forms
5-13	0,1,2,4,8	221311	

5-14	0,1,2,5,7	221131	
5-15	0,1,2,6,8	220222	12 forms
5-16	0,1,3,4,7	213211	octa
5-Z17	0,1,3,4,8	212320	5-Z37, 12 forms
5-Z18	0,1,4,5,7	212221	5-Z38
5-19	0,1,3,6,7	212122	octa
5-20	0,1,3,7,8	211231	
5-21	0,1,4,5,8	202420	hexatonic subset
5-22	0,1,4,7,8	202321	12 forms
5-23	0,2,3,5,7	132130	
5-24	0,1,3,5,7	131221	
5-25	0,2,3,5,8	123121	octa
5-26	0,2,4,5,8	122311	
5-27	0,1,3,5,8	122230	
5-28	0,2,3,6,8	122212	octa
5-29	0,1,3,6,8	122131	dia
5-30	0,1,4,6,8	121321	Wozzeck
5-31	0,1,3,6,9	114112	octa
5-32	0,1,4,6,9	113221	octa
5-33	0,2,4,6,8	040402	12 forms, wt pentad
5-34	0,2,4,6,9	032221	12 forms, dom. 9th
5-35	0,2,4,7,9	032140	12 forms, pentatonic scale
5-Z36	0,1,2,4,7	222121	5-Z12, 12 forms
5-Z37	0,3,4,5,8	212320	5-Z17, 12 forms
5-Z38	0,1,2,5,8	212221	5-Z18
6-1	0,1,2,3,4,5	543210	12 forms, all-comb
6-2	0,1,2,3,4,6	443211	inv-comb
6-Z3	0,1,2,3,5,6	433221	6-Z36
6-Z4	0,1,2,4,5,6	432321	6-Z37, 12 forms
6-5	0,1,2,3,6,7	422232	inv-comb Schoenberg
6-Z6	0,1,2,5,6,7	421242	6-Z38, 12 forms
6-7	0,1,2,6,7,8	420243	all-comb
6-8	0,2,3,4,5,7	343230	12 forms, all-comb
6-9	0,1,2,3,5,7	342231	inv-comb
6-Z10	0,1,3,4,5,7	333321	6-Z39
6-Z11	0,1,2,4,5,7	333231	6-Z40
6-Z12	0,1,2,4,6,7	332232	6-Z41
6-Z13	0,1,3,4,6,7	324222	6-Z42, 12 forms, octa lin
6-14	0,1,3,4,5,8	323430	prime-comb
6-15	0,1,2,4,5,8	323421	inv-comb
6-16	0,1,4,5,6,8	322431	inv-comb
6-Z17	0,1,2,4,7,8	322332	6-Z43, all-trichord
6-18	0,1,2,5,7,8	322242	inv-comb
6-Z19	0,1,3,4,7,8	313431	6-Z44
6-20	0,1,4,5,8,9	303630	4 forms, all-comb, hexatonic
6-21	0,2,3,4,6,8	242412	almost wt
6-22	0,1,2,4,6,8	241422	almost wt
6-Z23	0,2,3,5,6,8	234222	6-Z45, 12 forms, octa lin
6-Z24	0,1,3,4,6,8	233331	6-Z46
6-Z25	0,1,3,5,6,8	233241	6-Z47, dia
6-Z26	0,1,3,5,7,8	232341	6-Z48, 12 forms
6-27	0,1,3,4,6,9	225222	inv-comb, octa
6-Z28	0,1,3,5,6,9	224322	6-Z49, 12 forms, octa rel
6-Z29	0,1,3,6,8,9	224232	6-Z50, 12 forms, octa rel

6-Z28	0,1,3,5,6,9	224322	6-Z49, 12 forms, octa rel
6-Z29	0,1,3,6,8,9	224232	6-Z50, 12 forms, octa rel
6-30	0,1,3,6,7,9	224223	12 forms, octa
6-31	0,1,3,5,8,9	223431	inv-comb
6-32	0,2,4,5,7,9	143250	12 forms, all-comb, dia
6-33	0,2,3,5,7,9	143241	inv-comb, minor hex
6-34	0,1,3,5,7,9	142422	almost wt, Scriabin
6-35	0,2,4,6,8,10	060603	2 forms, all-comb, wt scale
6-Z36	0,1,2,3,4,7	433221	6-Z3
6-Z37	0,1,2,3,4,8	432321	6-Z4, 12 forms
6-Z38	0,1,2,3,7,8	421242	6-Z6, 12 forms
6-Z39	0,2,3,4,5,8	333321	6-Z10
6-Z40	0,1,2,3,5,8	333231	6-Z11
6-Z41	0,1,2,3,6,8	332232	6-Z12
6-Z42	0,1,2,3,6,9	324222	6-Z13, 12 forms, octa rel
6-Z43	0,1,2,5,6,8	322332	6-Z17
6-Z44	0,1,2,5,6,9	313431	6-Z19, Schoenberg sig
6-Z45	0,2,3,4,6,9	234222	6-Z23, 12 forms, octa rel
6-Z46	0,1,2,4,6,9	233331	6-Z24
6-Z47	0,1,2,4,7,9	233241	6-Z25
6-Z48	0,1,2,5,7,9	232341	6-Z26, 12 forms
6-Z49	0,1,3,4,7,9	224322	6-Z28, 12 forms, octa
6-Z50	0,1,4,6,7,9	224232	6-Z29, 12 forms, octa
7-1	0,1,2,3,4,5,6	654321	12 forms
7-2	0,1,2,3,4,5,7	554331	
7-3	0,1,2,3,4,5,8	544431	
7-4	0,1,2,3,4,6,7	544332	
7-5	0,1,2,3,5,6,7	543342	
7-6	0,1,2,3,4,7,8	533442	
7-7	0,1,2,3,6,7,8	532353	
7-8	0,2,3,4,5,6,8	454422	12 forms
7-9	0,1,2,3,4,6,8	453432	
7-10	0,1,2,3,4,6,9	445332	
7-11	0,1,3,4,5,6,8	444441	
7-Z12	0,1,2,3,4,7,9	444342	7-Z36, 12 forms
7-13	0,1,2,4,5,6,8	443532	
7-14	0,1,2,3,5,7,8	443352	
7-15	0,1,2,4,6,7,8	442443	12 forms
7-16	0,1,2,3,5,6,9	435432	
7-Z17	0,1,2,4,5,6,9	434541	7-Z37, 12 forms
7-Z18	0,1,2,3,5,8,9	434442	7-Z38
7-19	0,1,2,3,6,7,9	434343	
7-20	0,1,2,4,7,8,9	433452	
7-21	0,1,2,4,5,8,9	424641	
7-22	0,1,2,5,6,8,9	424542	12 forms
7-23	0,2,3,4,5,7,9	354351	
7-24	0,1,2,3,5,7,9	353442	
7-25	0,2,3,4,6,7,9	345342	
7-26	0,1,3,4,5,7,9	344532	
7-27	0,1,2,4,5,7,9	344451	
7-28	0,1,3,5,6,7,9	344433	
7-29	0,1,2,4,6,7,9	344352	
7-30	0,1,2,4,6,8,9	343542	
7-31	0,1,3,4,6,7,9	336333	octa septad