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DETERMINISM, ALEATORISM AND TRADITION:
THE RELATIONSHIP BETWEEN THE ANALYSIS AND COMPOSITIONAL TECHNIQUE OF SELECTED MUSIC FROM 1954-64

A Thesis in Two Volumes

by

JOHN McLACHLAN

A THESIS SUBMITTED IN CANDIDACY FOR THE DEGREE OF

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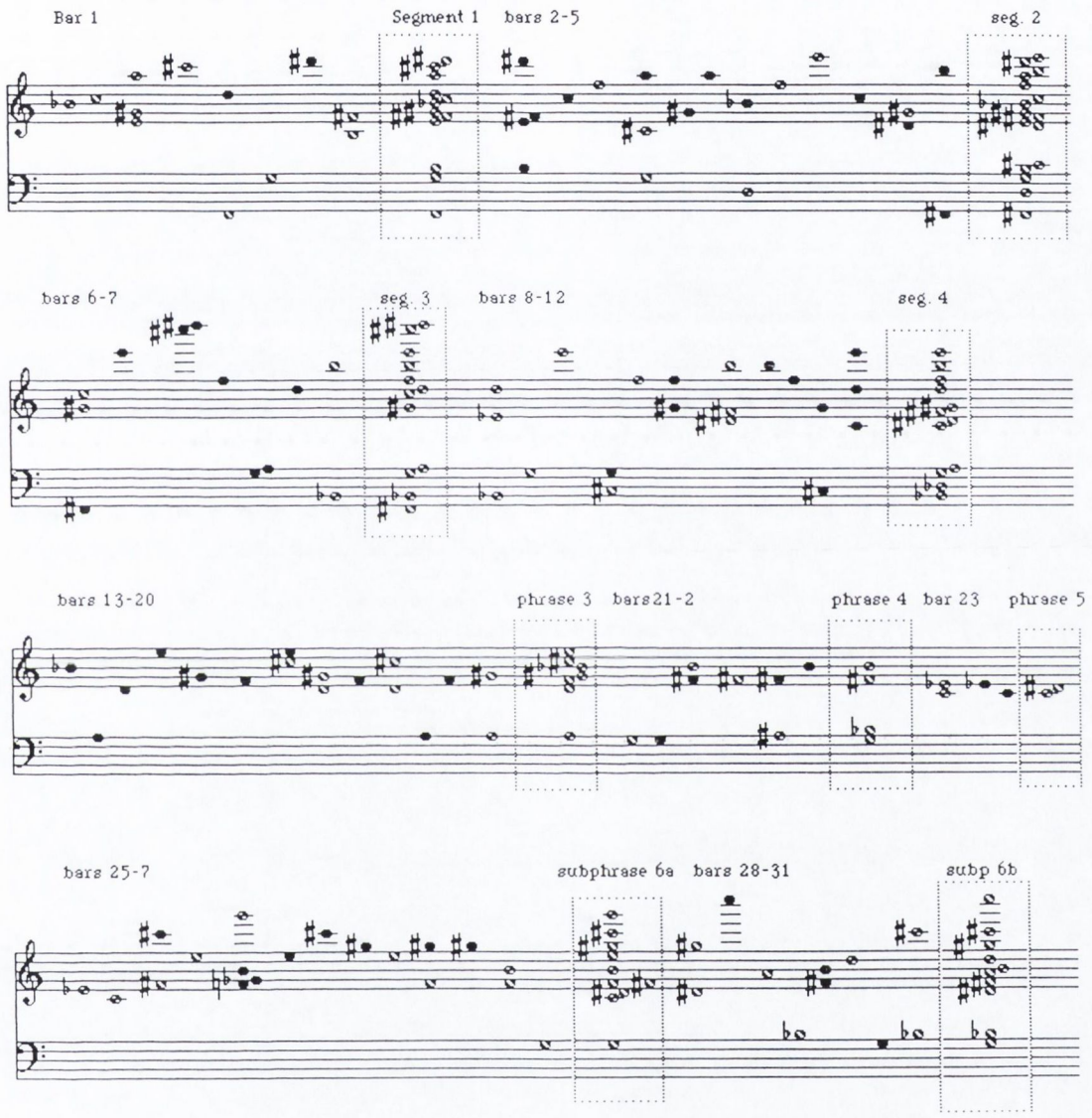
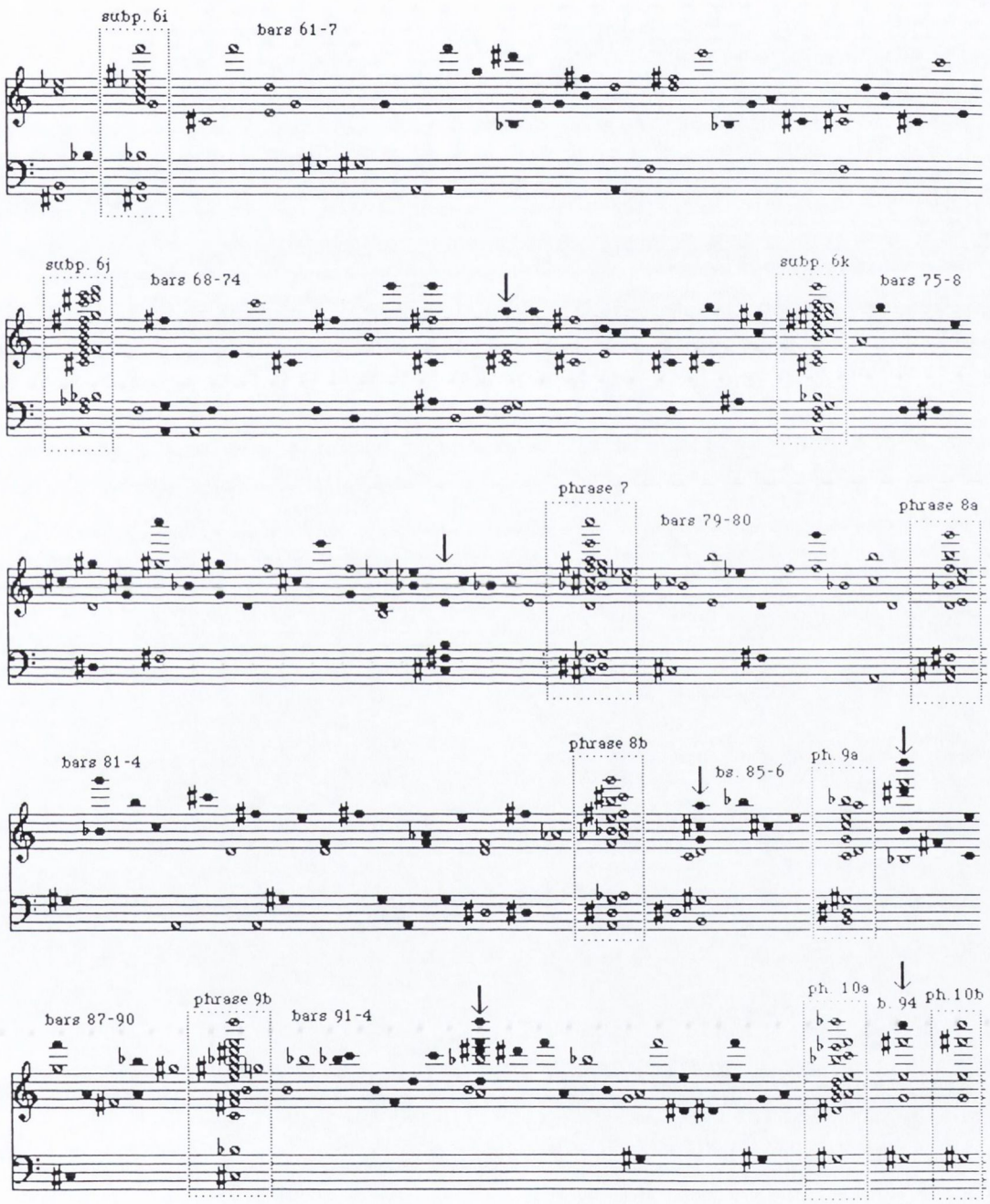


Fig. B. 2. All of the pitches in *Bourreaux* and their phrase aggregates



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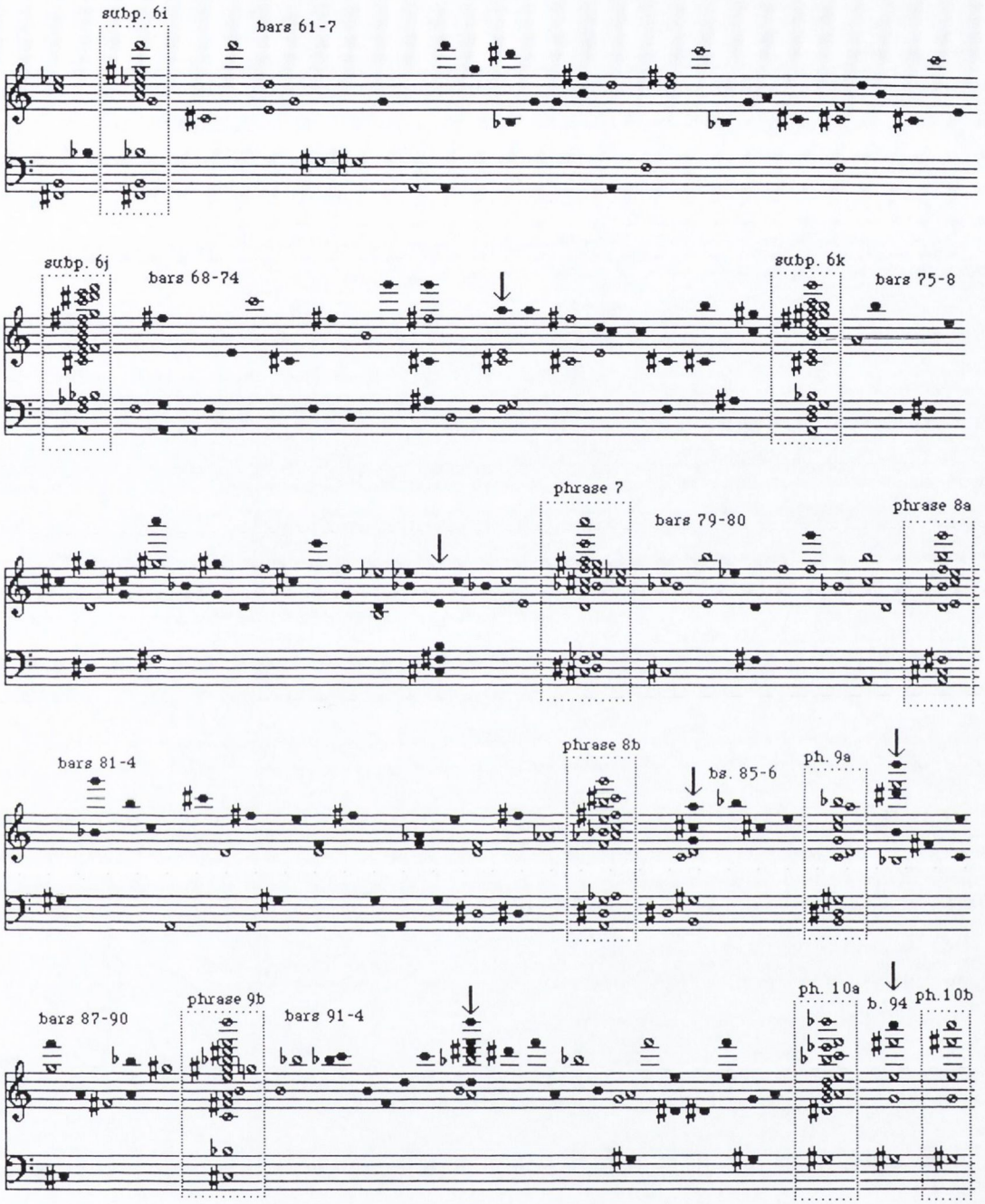

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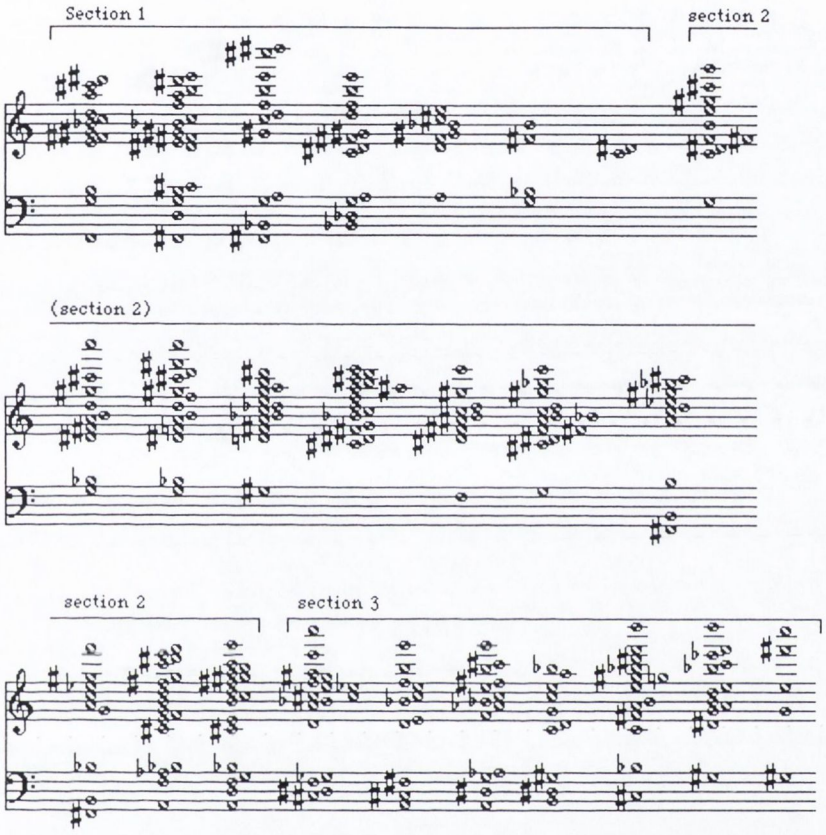

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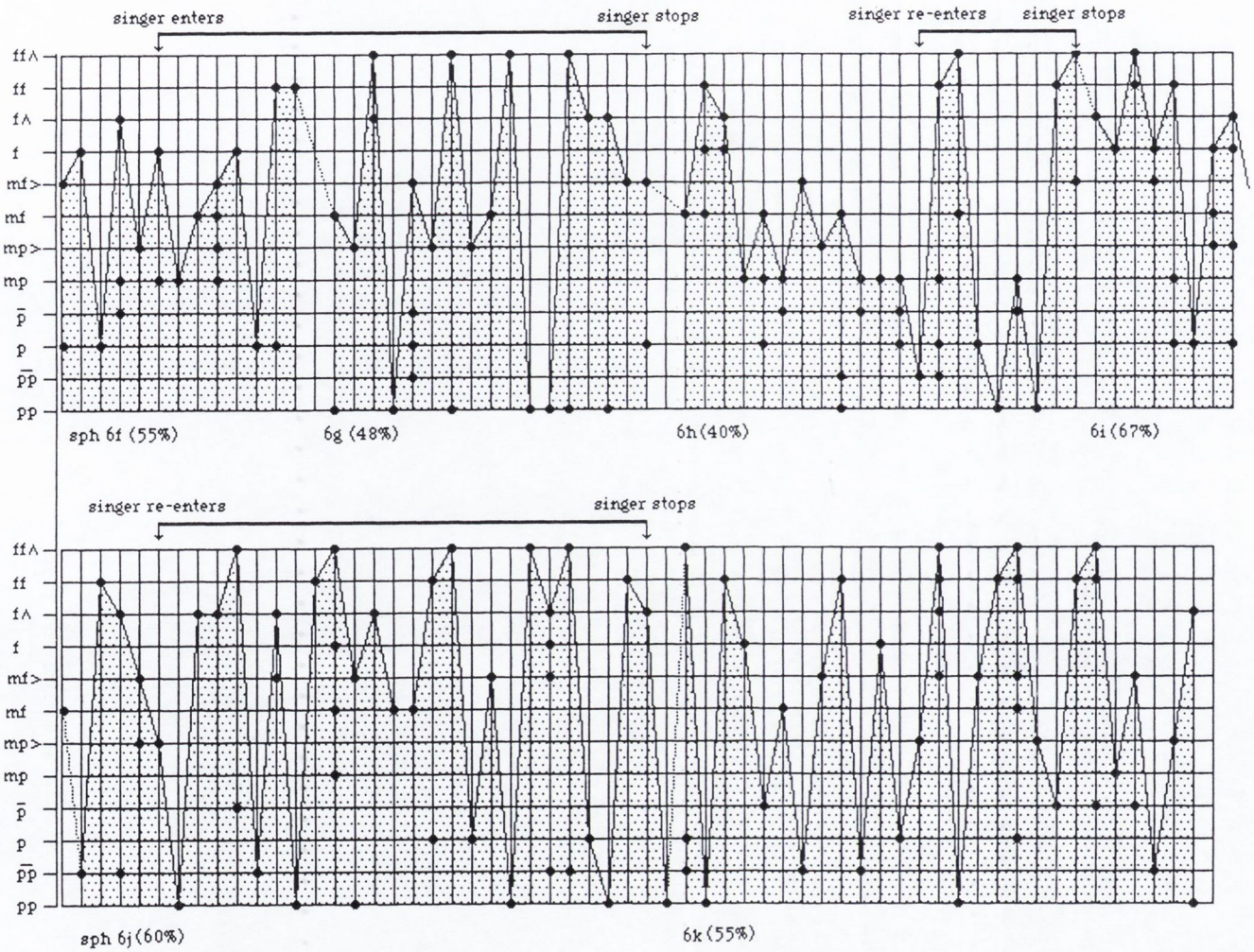

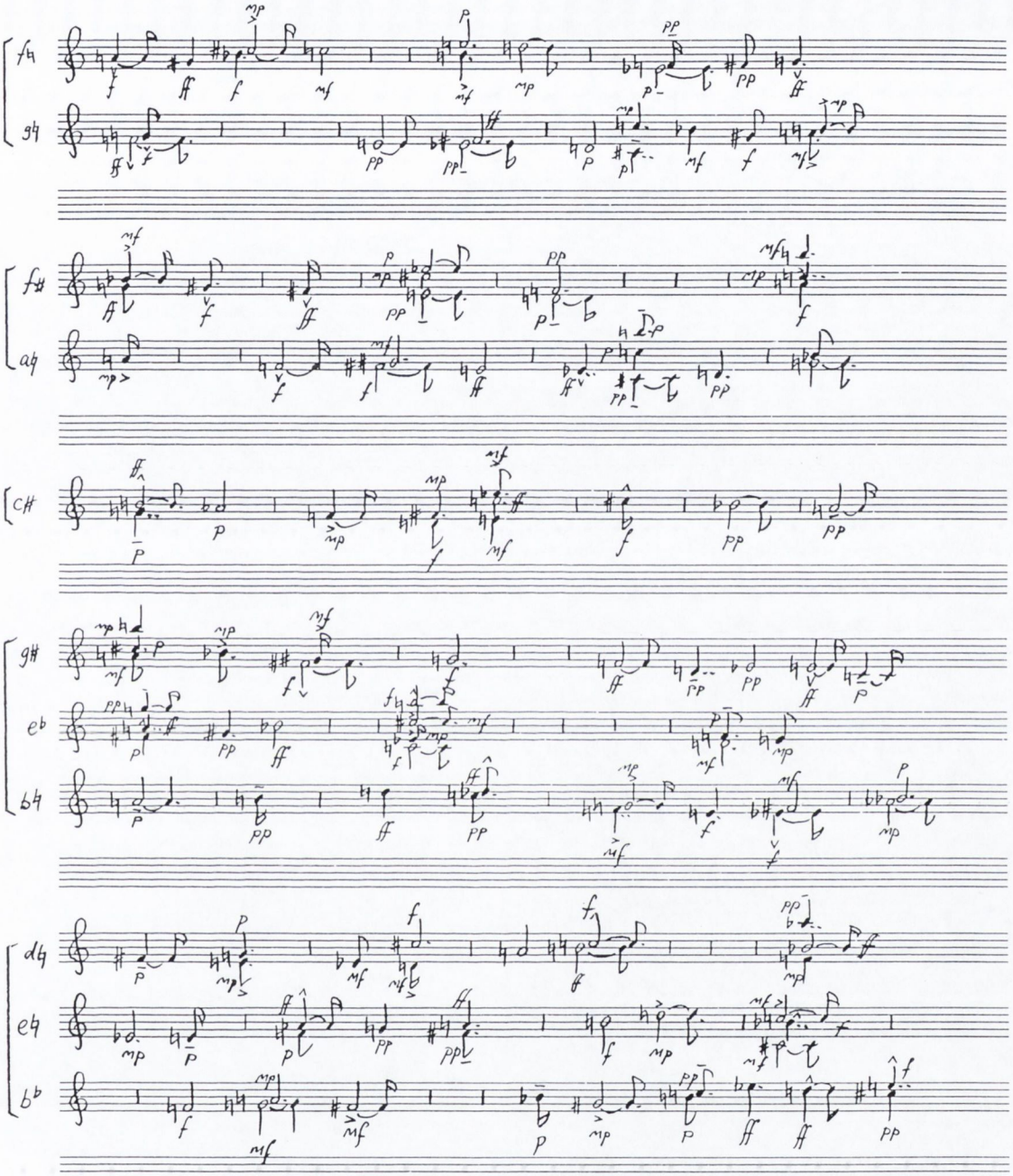

Fig. B. 11. First derived series

:PAN-A3 18 STAVE

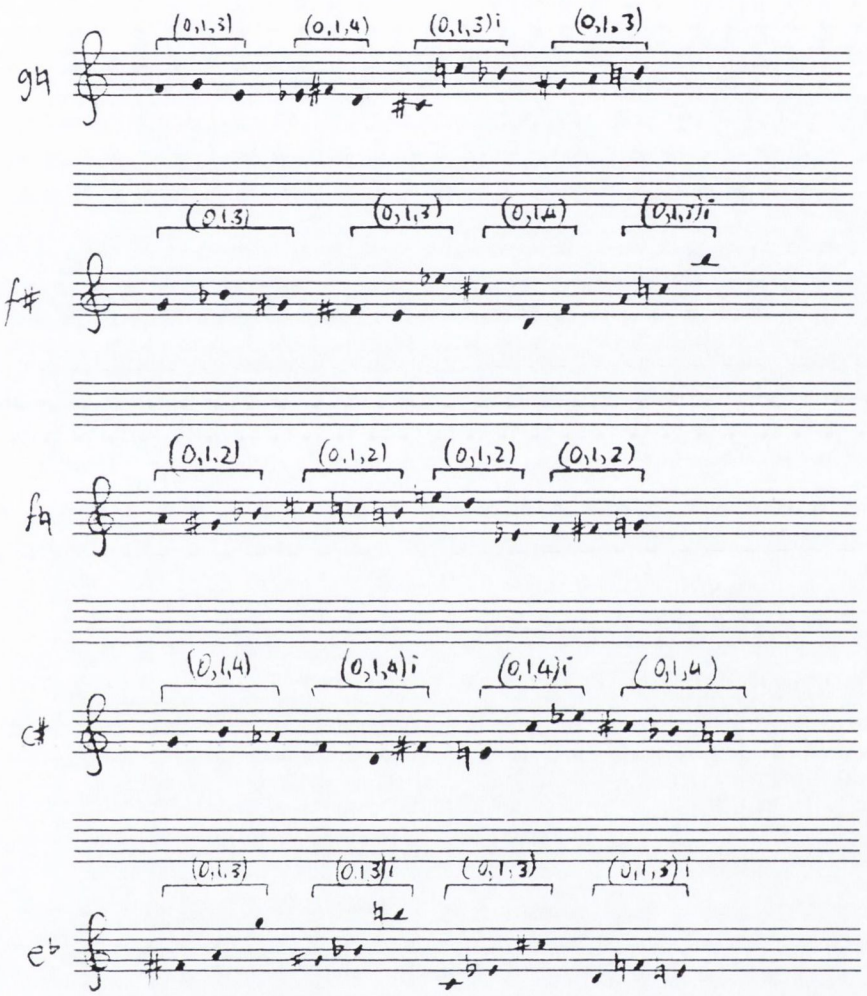

Fig. B. 13. Isometries in first derived series

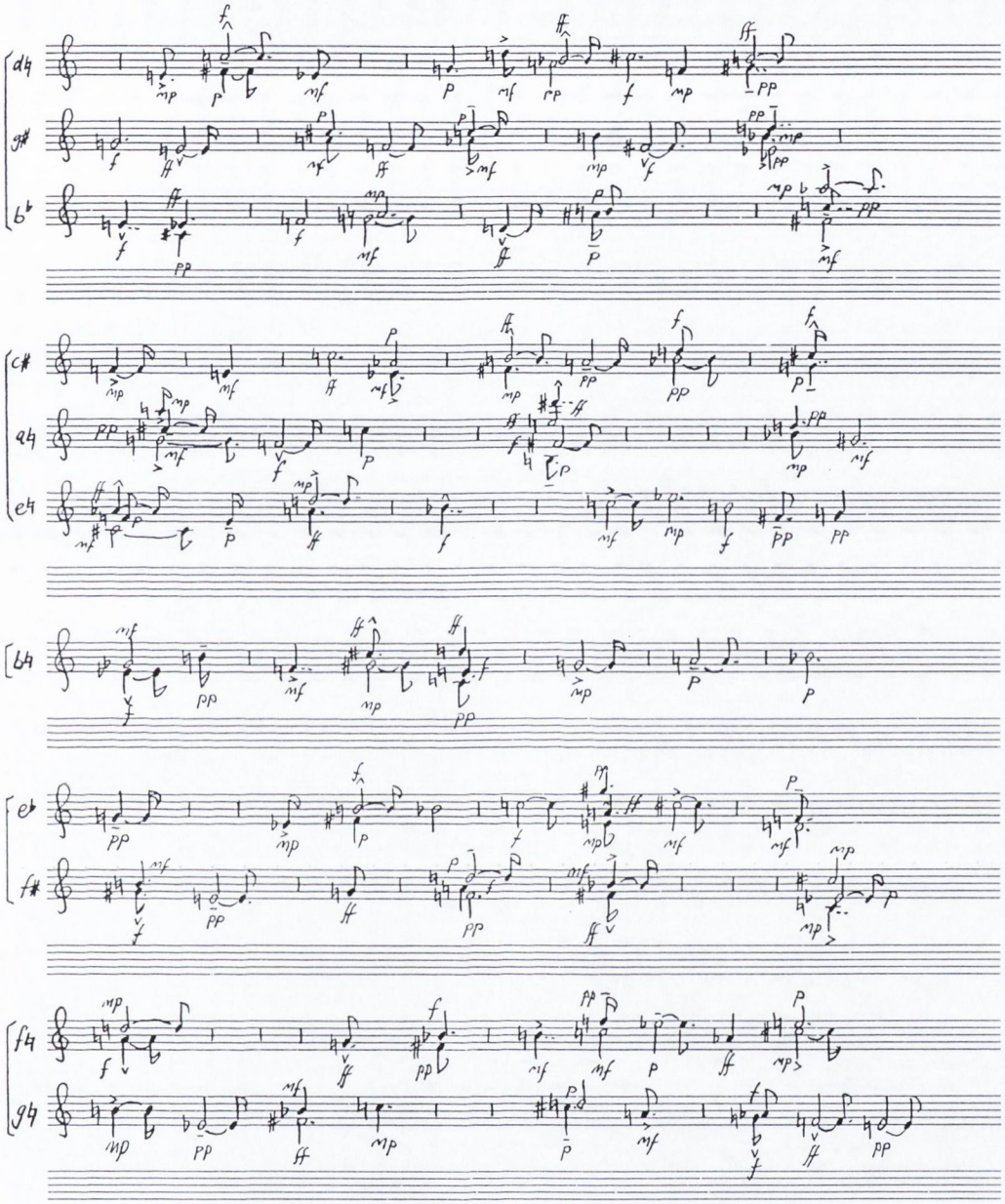

Fig. B. 14. Second derived series

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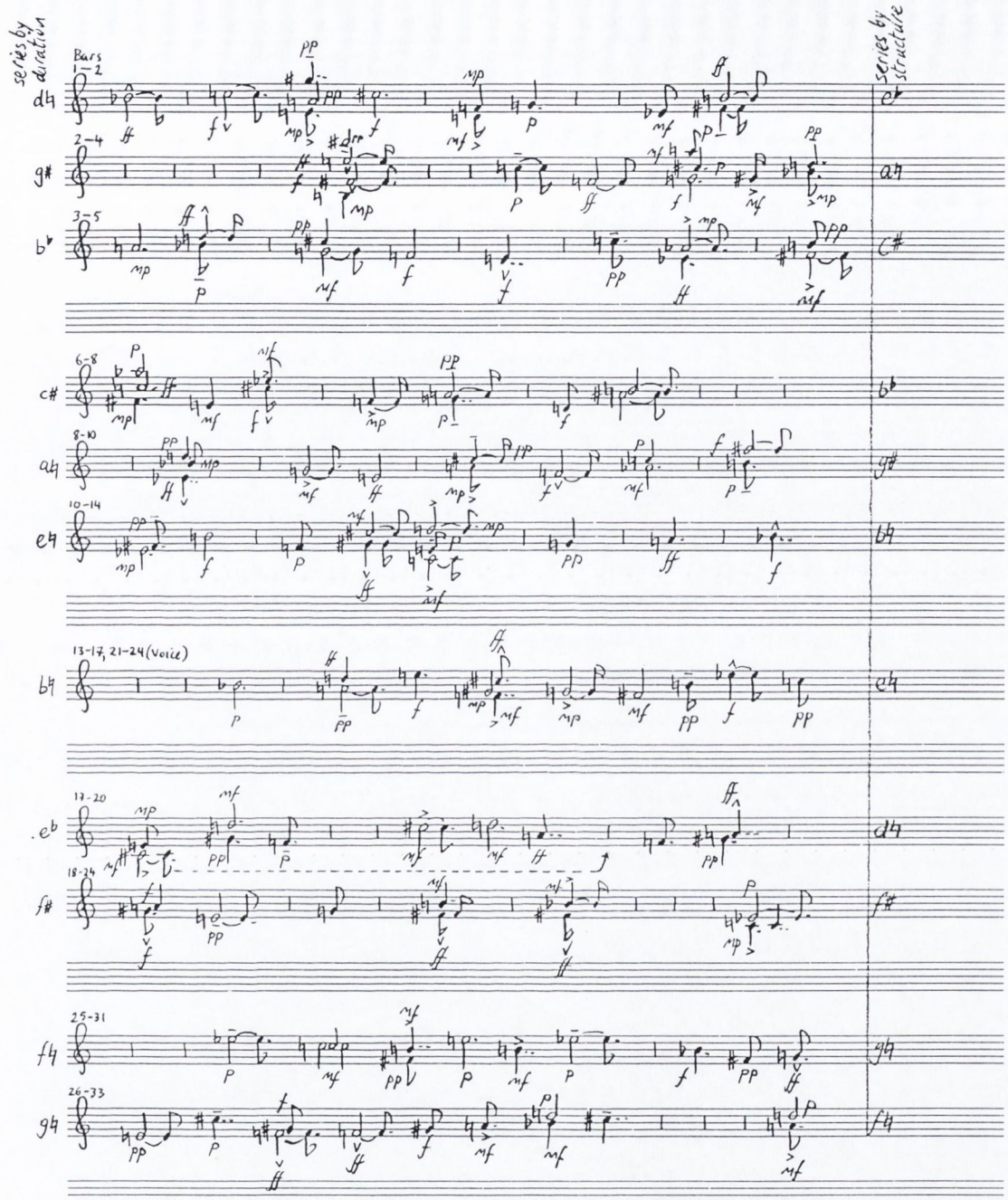


Fig. B. 16. Third derived series, as they appear in bars 1-33

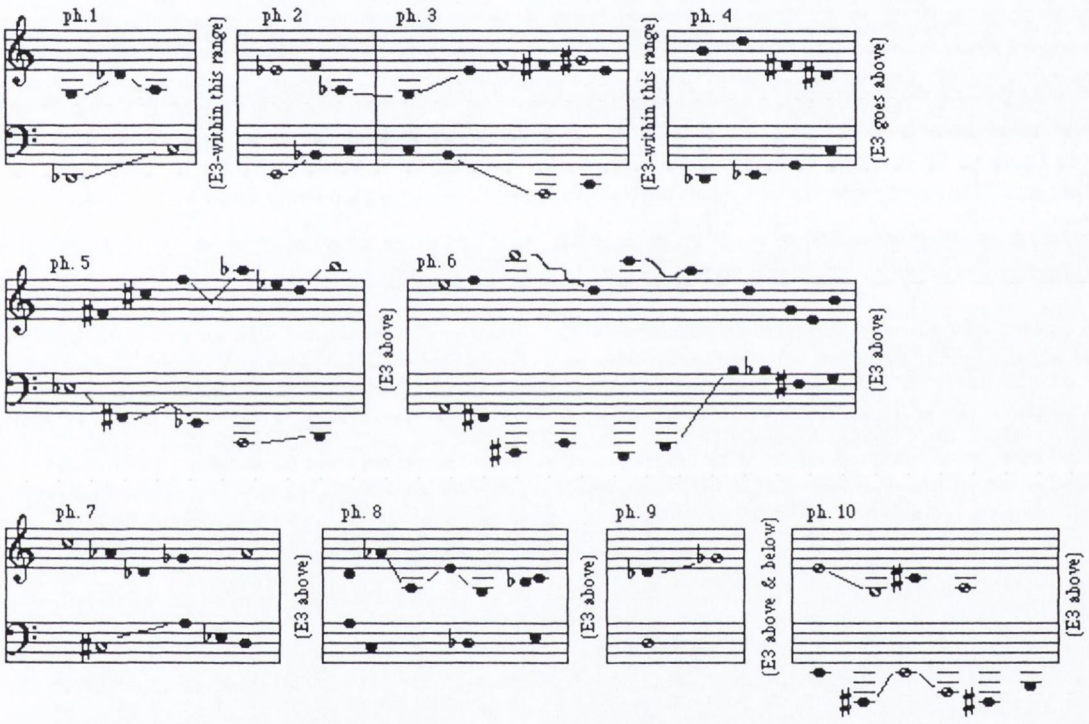


Fig. C. 5. Register in Theme

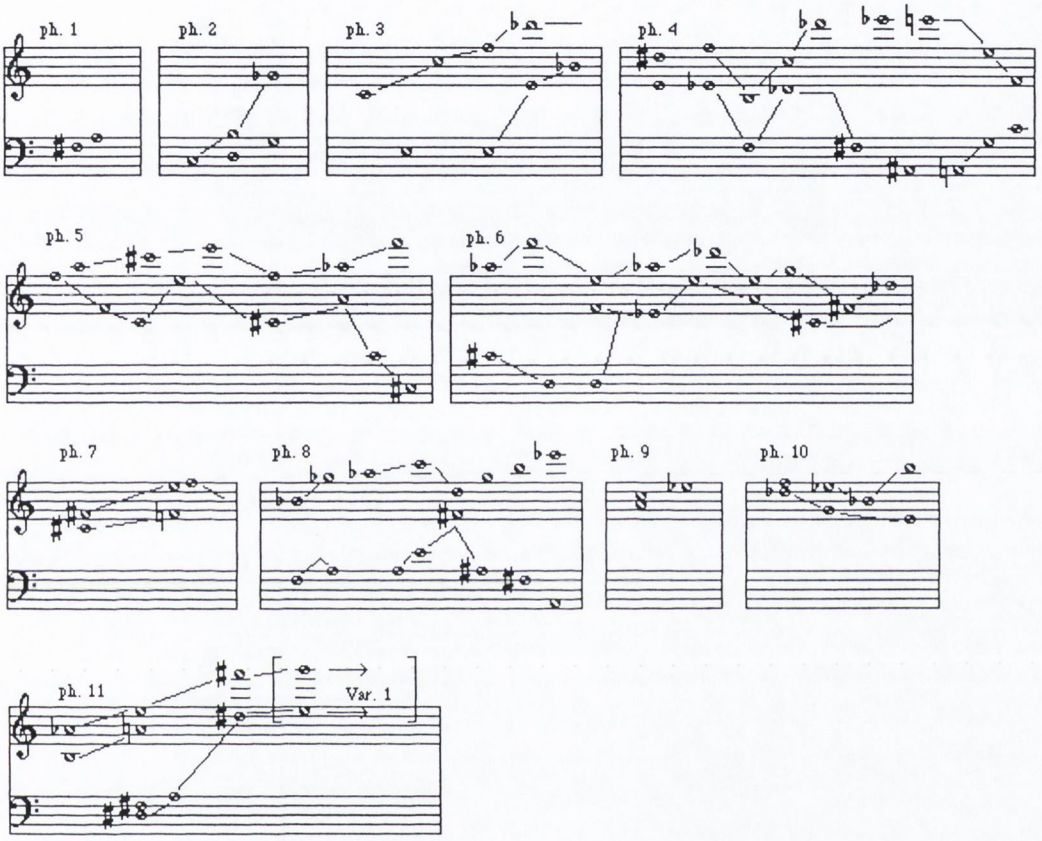


Fig. C. 8. Register in **E3**

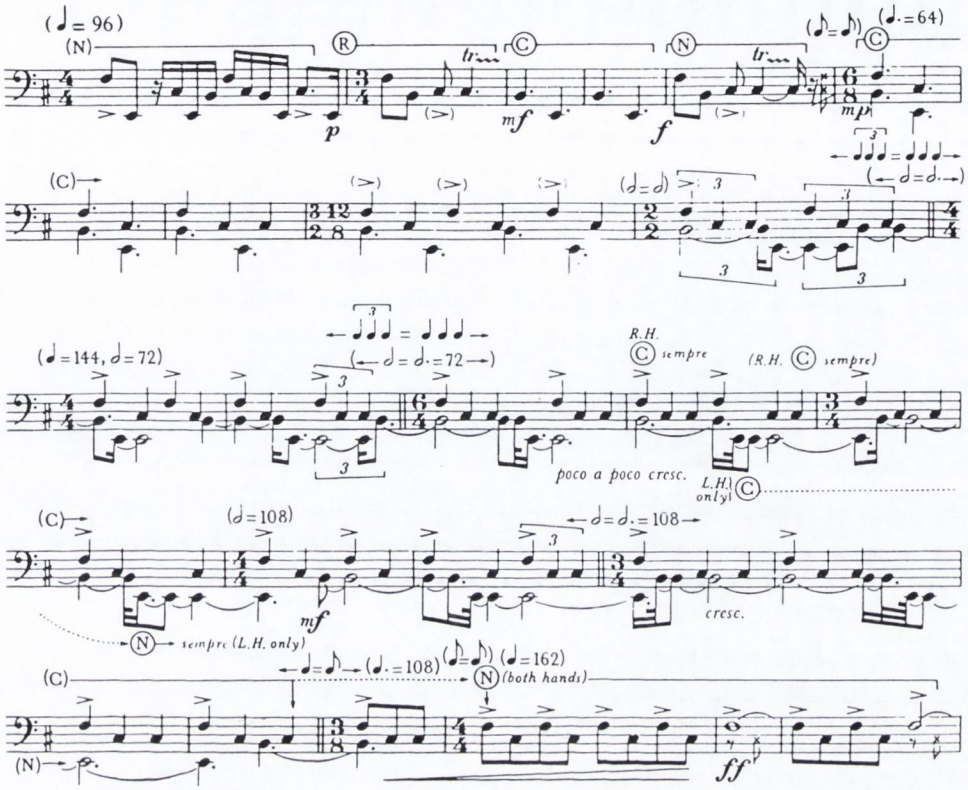


Fig. C. 18. Canaries, illustrating metric modulation

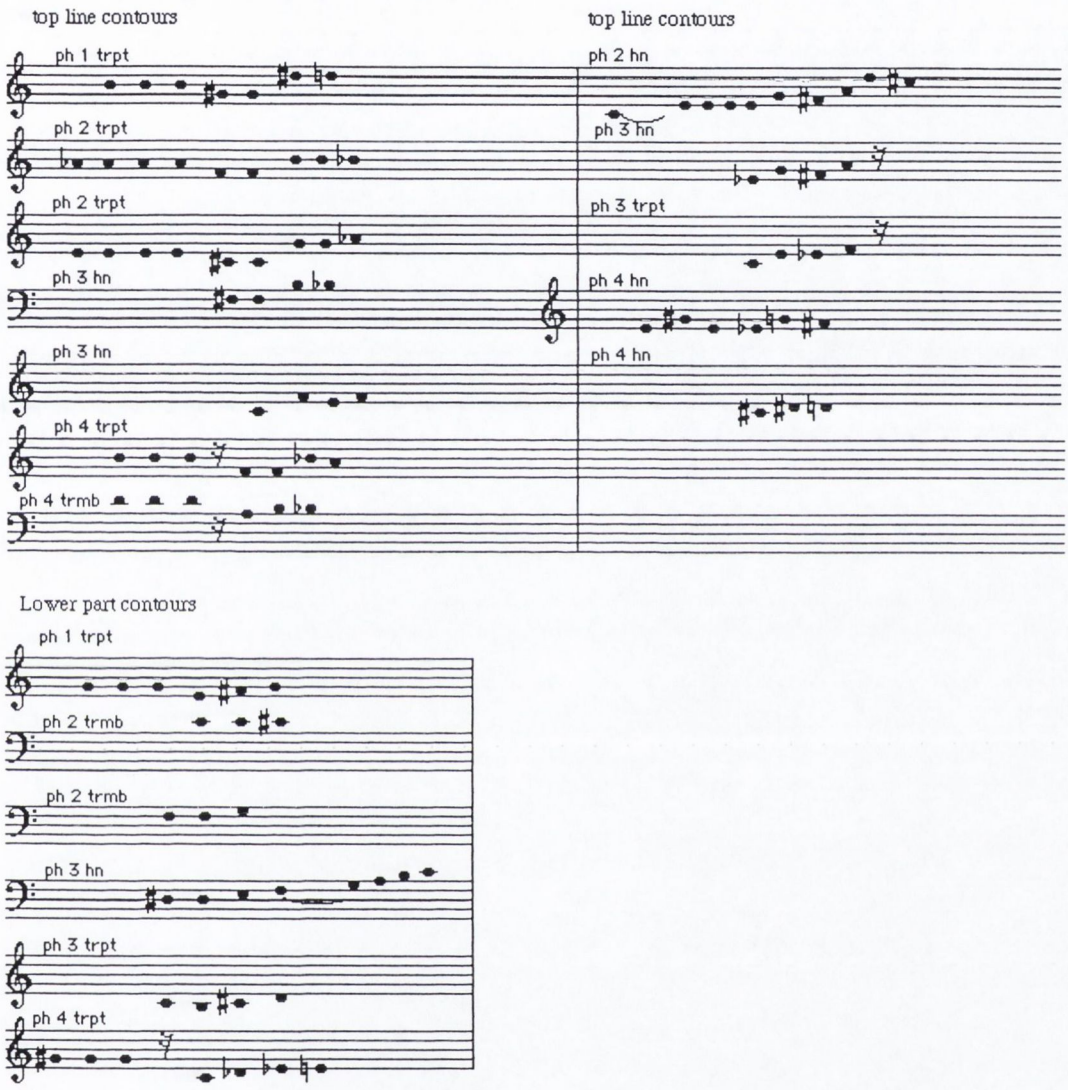


Fig. C. 20. Isomorphisms in **E3**/mosaic texture

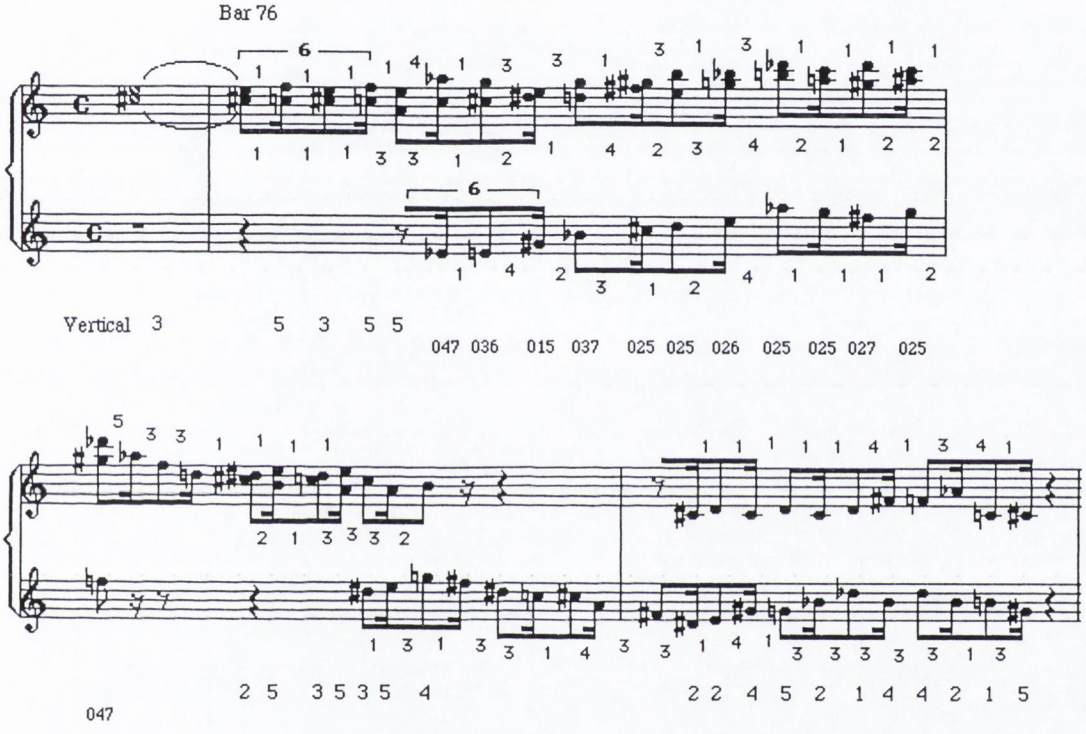
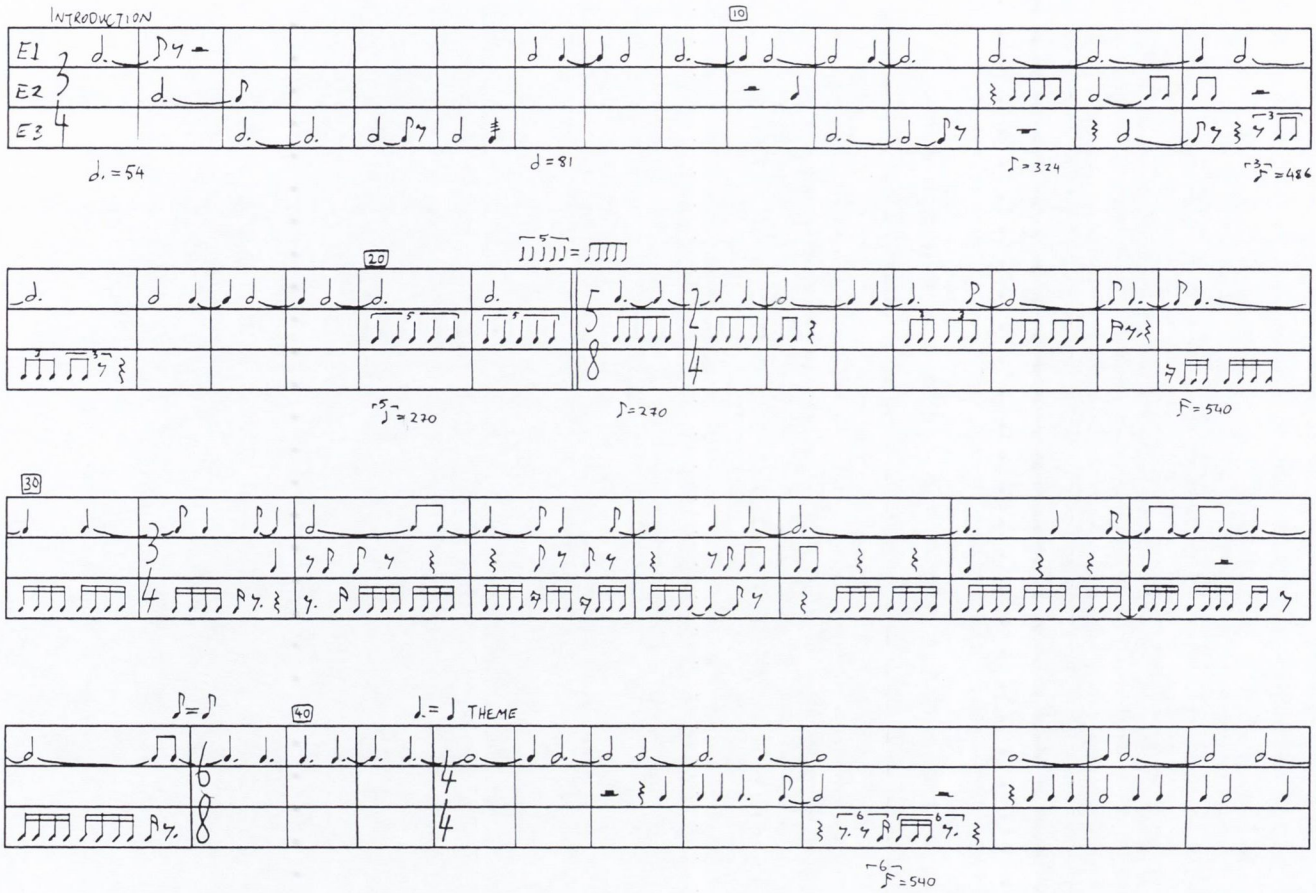


Fig. C. 21. Sonorities in **E3**, bars 76-8


INTRODUCTION
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THEME

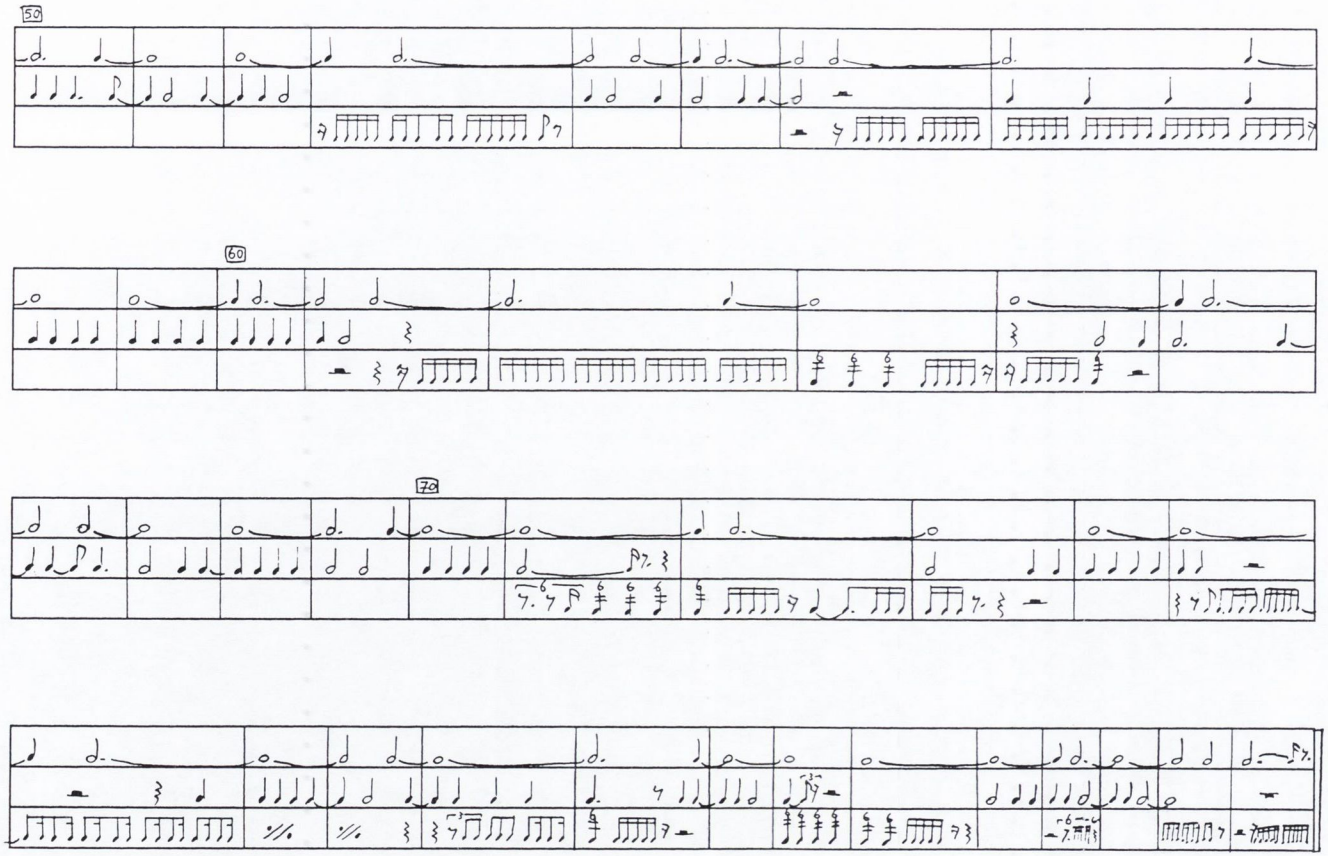


Fig. C. 22. Rhythm of the elements

All existing tetrachords			(R) Set based on I.V. similarity to a.i.t.	(S) Subgroup [..2...] of (R)	(3) All [..2+...] chords
4-1	0,1,2,3	[321000]			
4-2	0,1,2,4	[221100]			
4-3	0,1,3,4	[212100]			•
4-4	0,1,2,5	[211110]	•		
4-5	0,1,2,6	[210111]	•		
4-6(12)	0,1,2,7	[210021]			
4-7(12)	0,1,4,5	[201210]			
4-8(12)	0,1,5,6	[200121]			
4-9(6)	0,1,6,7	[200022]			
4-10(12)	0,2,3,5	[122010]			•
4-11	0,1,3,5	[121110]	•		
4-12	0,2,3,6	[112101]	•	•	•
4-13	0,1,3,6	[112011]	•	•	•
4-14	0,2,3,7	[111120]	•		
4-Z15	0,1,4,6	[111111]	•		
4-16	0,1,5,7	[110121]	•		
4-17(12)	0,3,4,7	[102210]			•
4-18	0,1,4,7	[102111]	•	•	•
4-19	0,1,4,8	[101310]			
4-20(12)	0,1,5,8	[101220]			
4-21(12)	0,2,4,6	[030201]			
4-22	0,2,4,7	[021120]			
4-23(12)	0,2,5,7	[021030]			
4-24(12)	0,2,4,8	[020301]			
4-25(6)	0,2,6,8	[020202]			
4-26(12)	0,3,5,8	[012120]			•
4-27	0,2,5,8	[012111]	•	•	•
4-28(3)	0,3,6,9	[004002]			•
4-Z29	0,1,3,7	[111111]	•		

Fig. C. 27. Related tetrachords

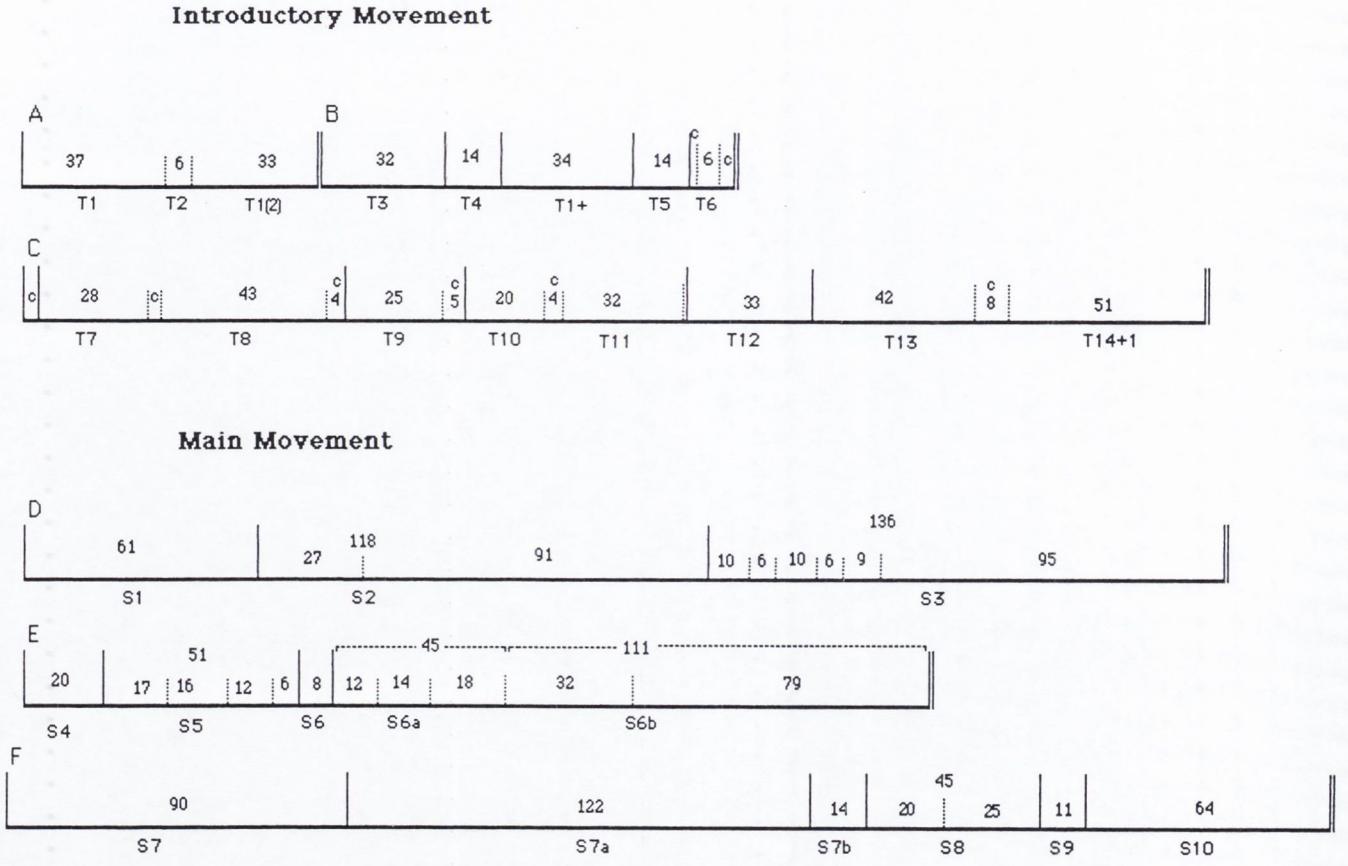


Fig. L. 1. String quartet, overview of sections

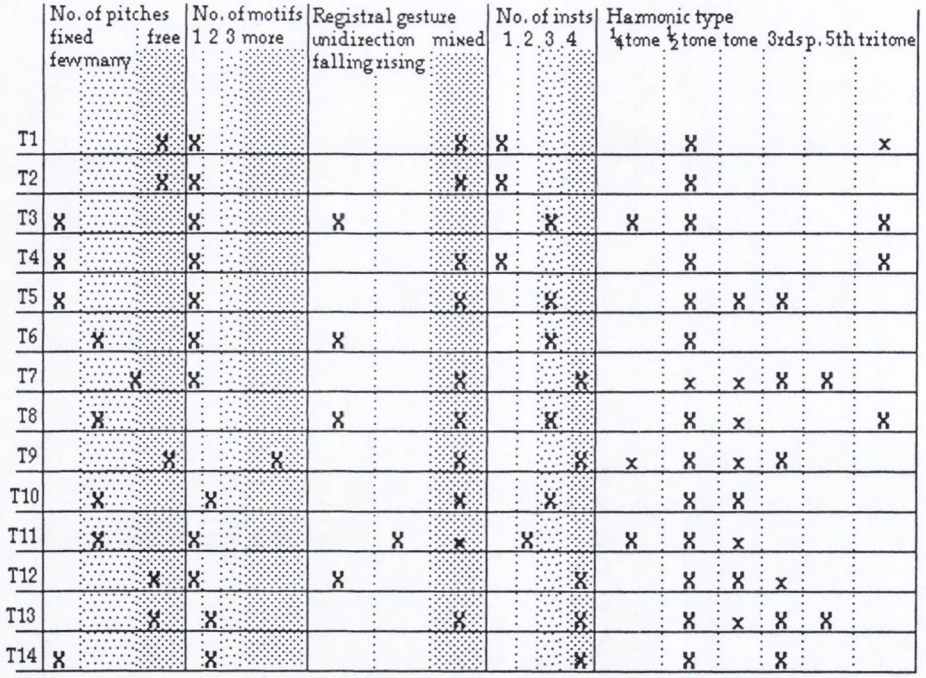


Fig. L. 2. Gestural weighting in the Introductory movement

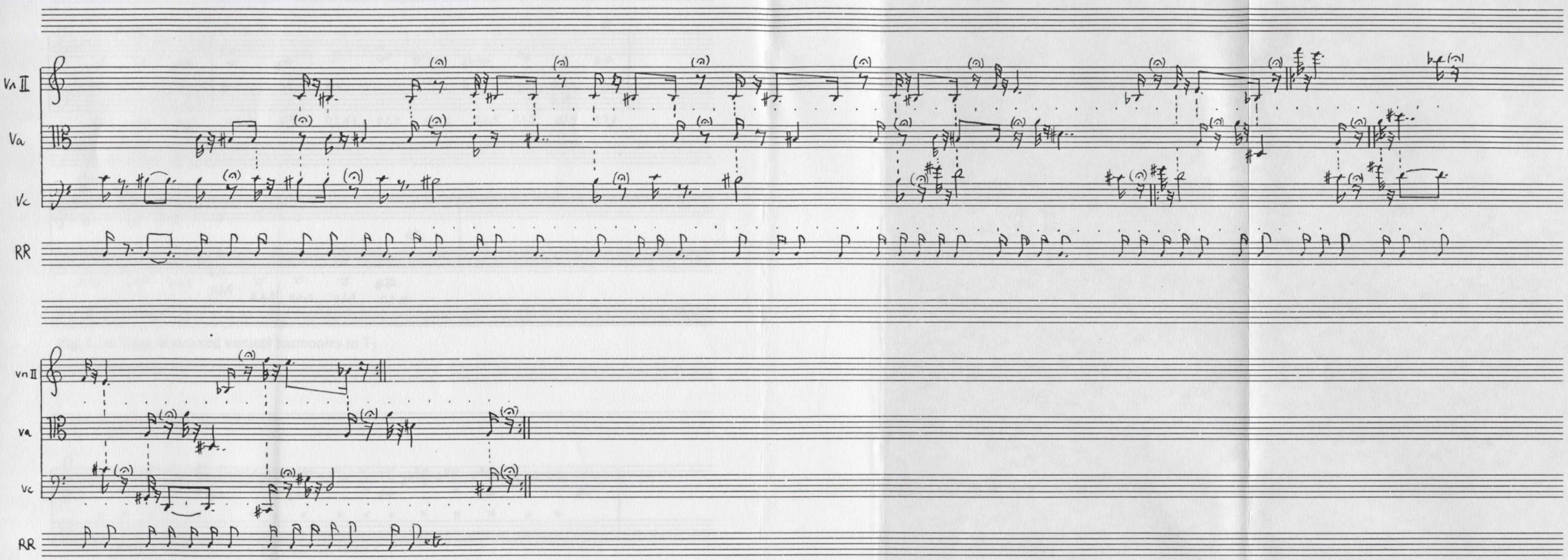


Fig. L. 3. Idealised version of T_3

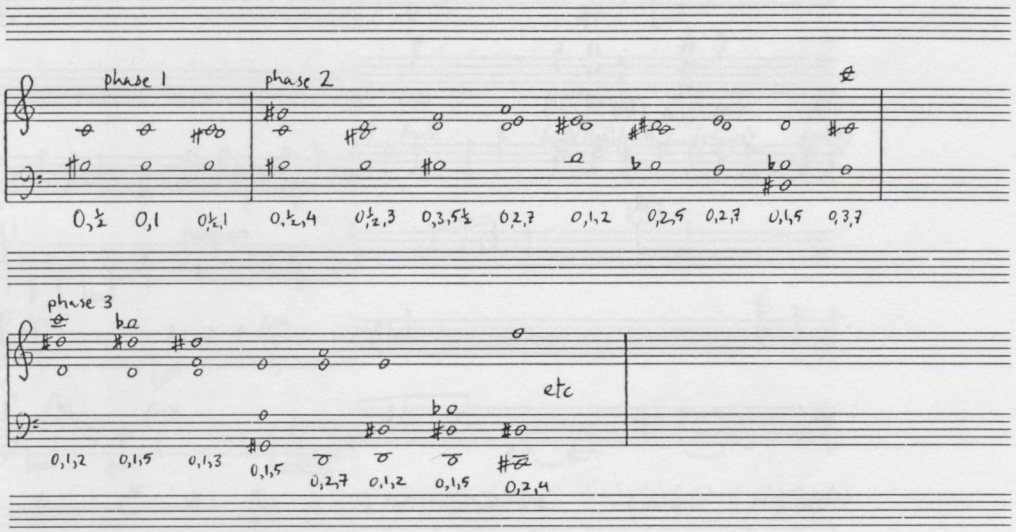


Fig. L. 4. Typical derived vertical harmonies in T_3

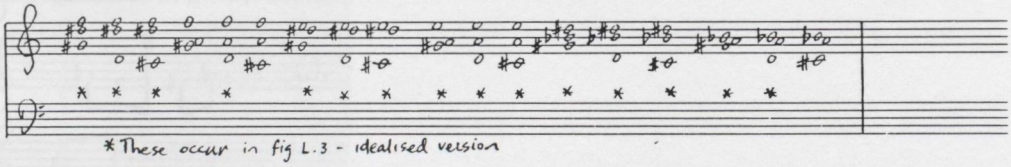


Fig. L. 4a. The 18 possible chords in T_3

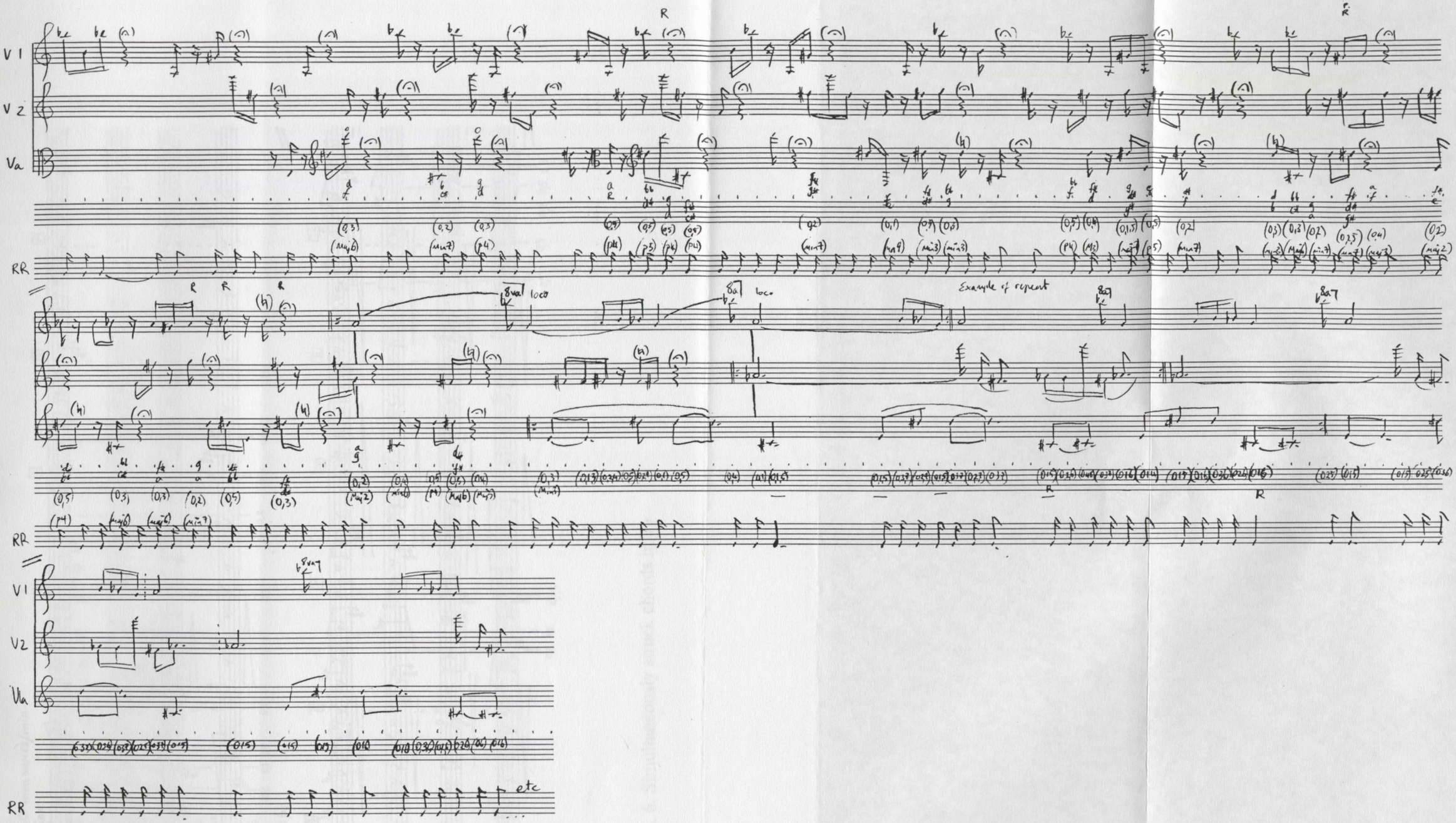


Fig. L. 5. Idealised version of T_{1+} and T_5

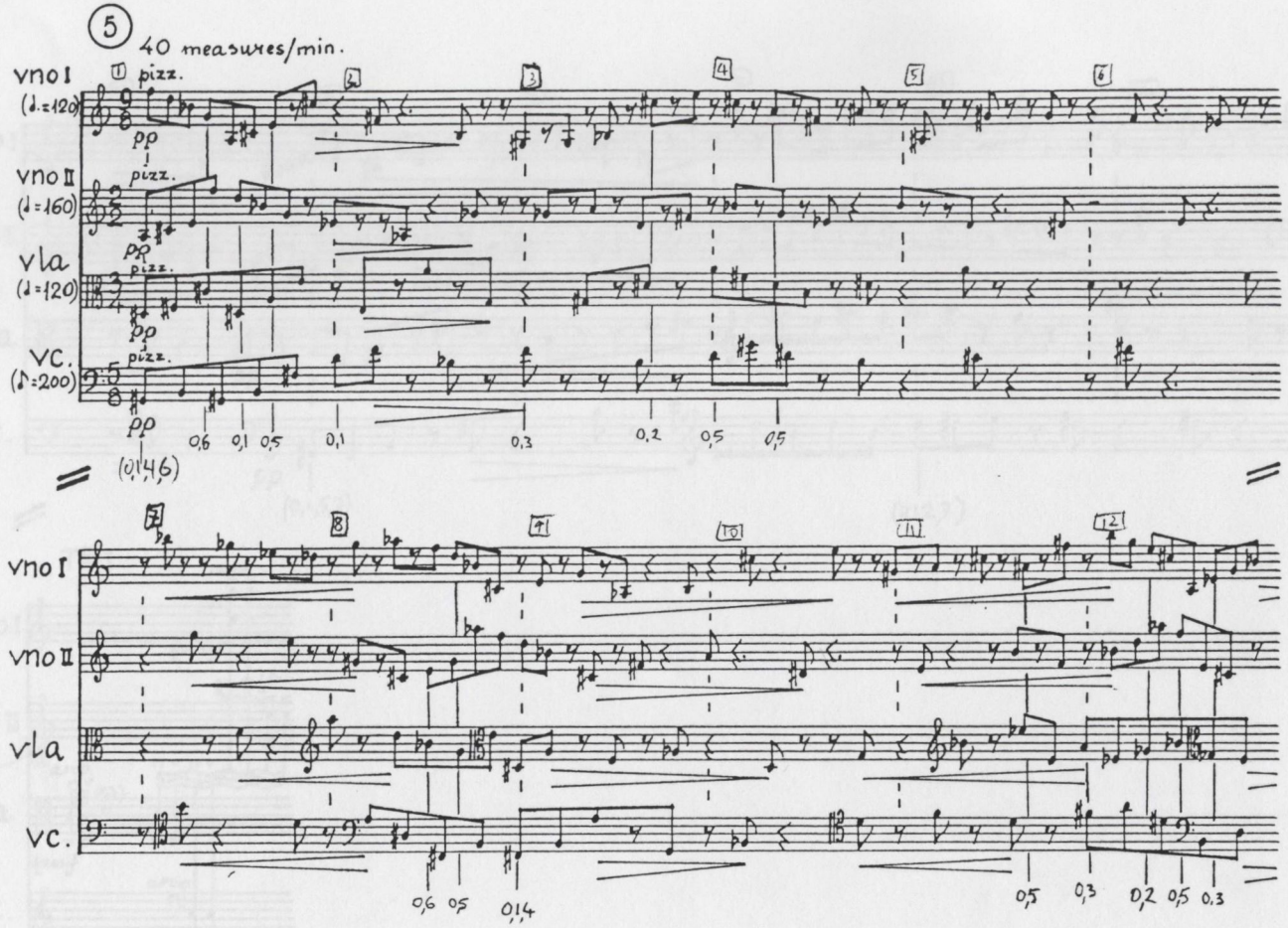


Fig. L. 6. Simultaneously struck chords in T_7

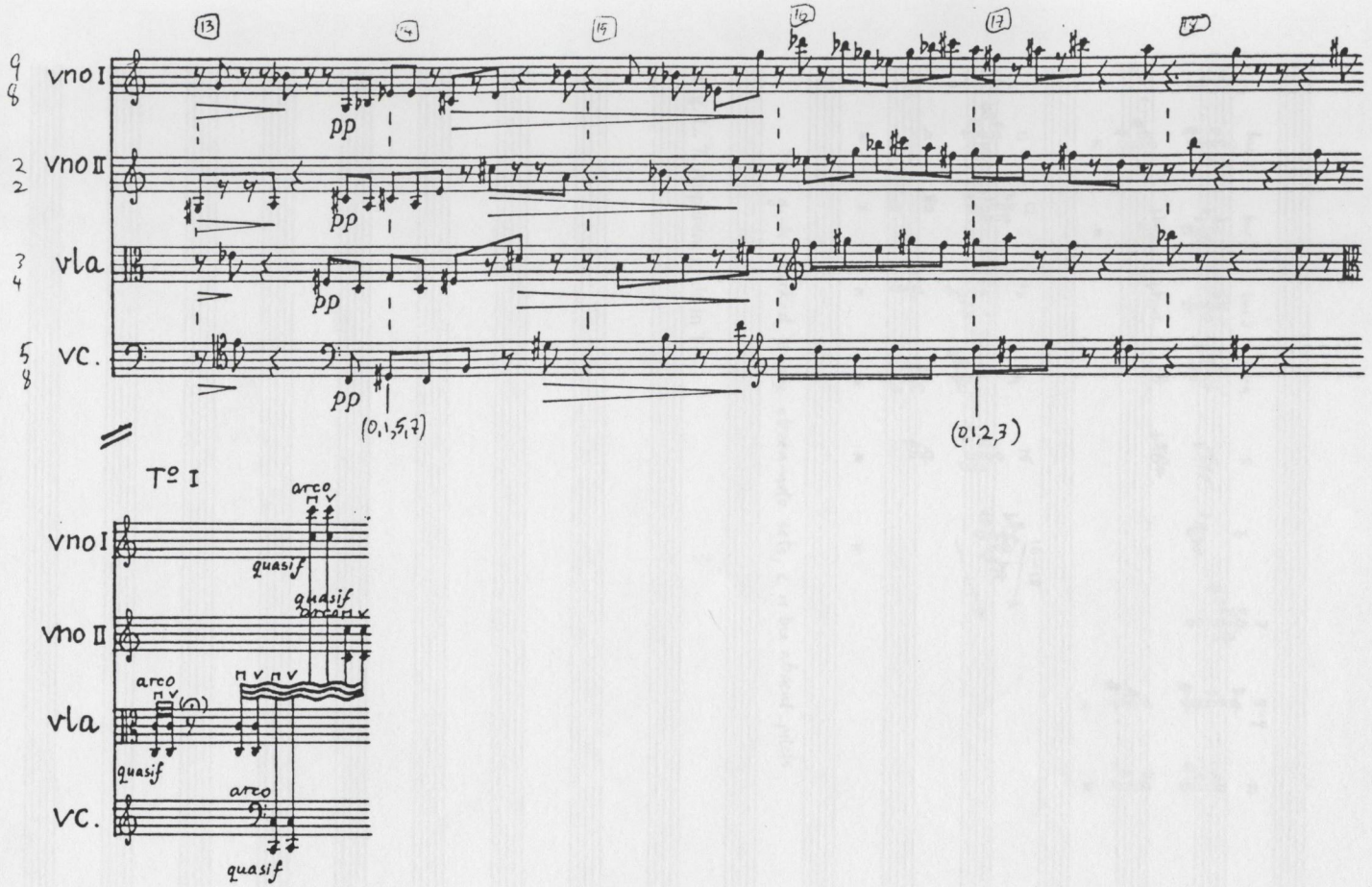


Fig. L. 6. *continued*

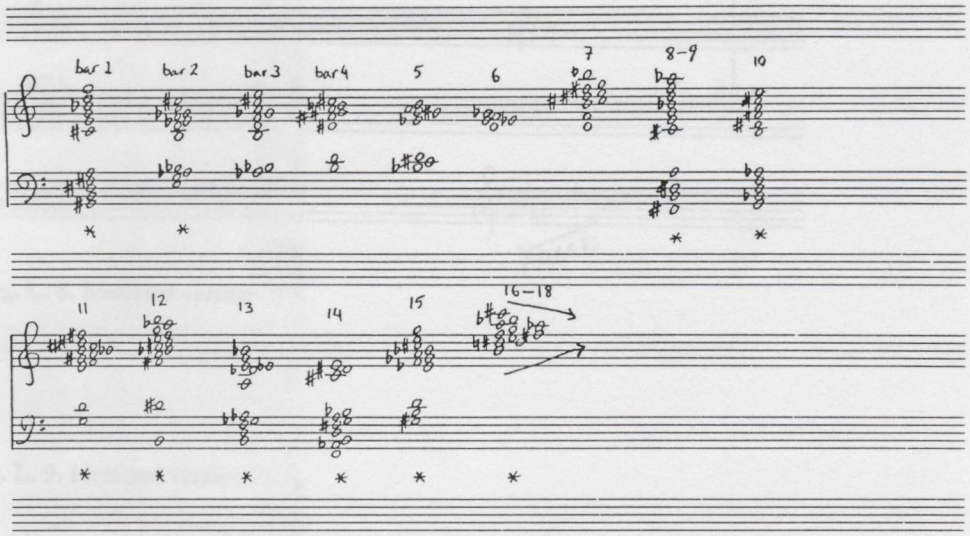


Fig. L. 7. Apparent grids in T_7

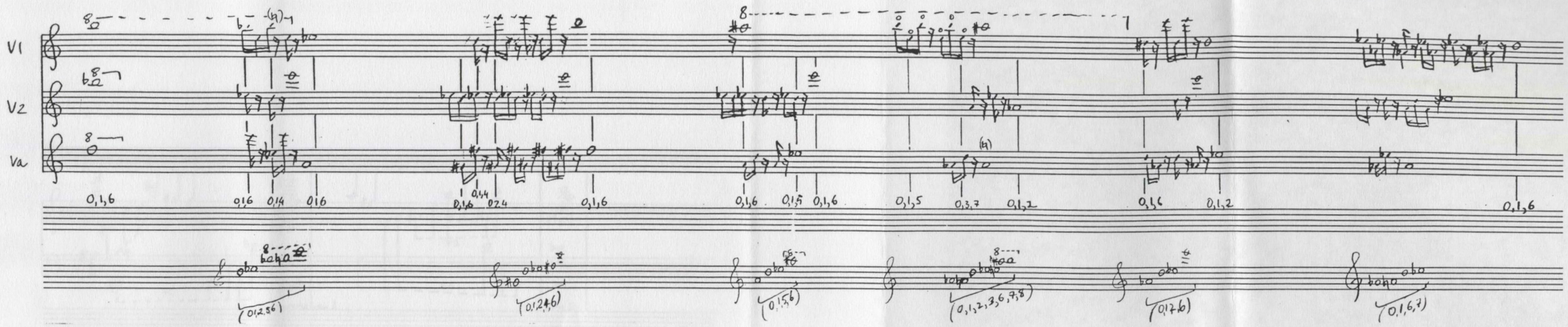
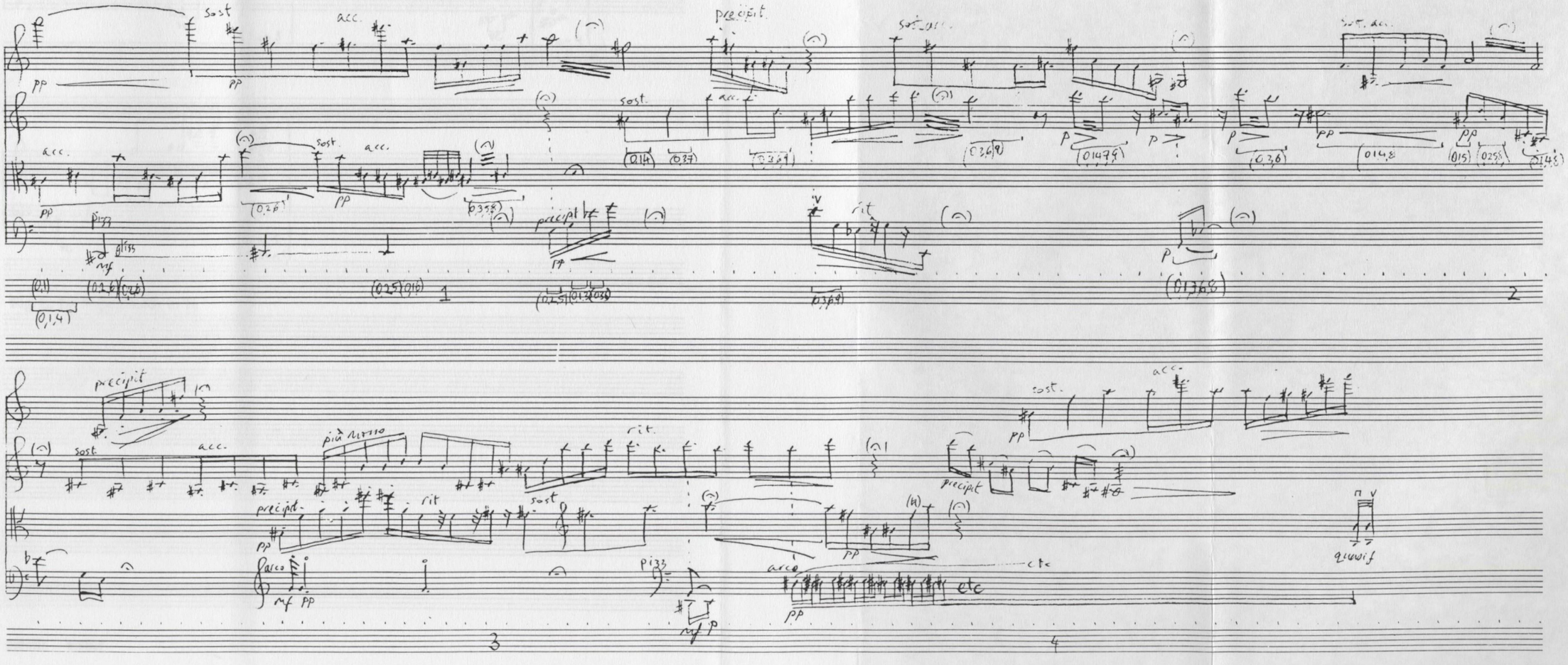


Fig. L. 8. Idealised version of T_8

Fig. L. 9. Idealised version of T_9



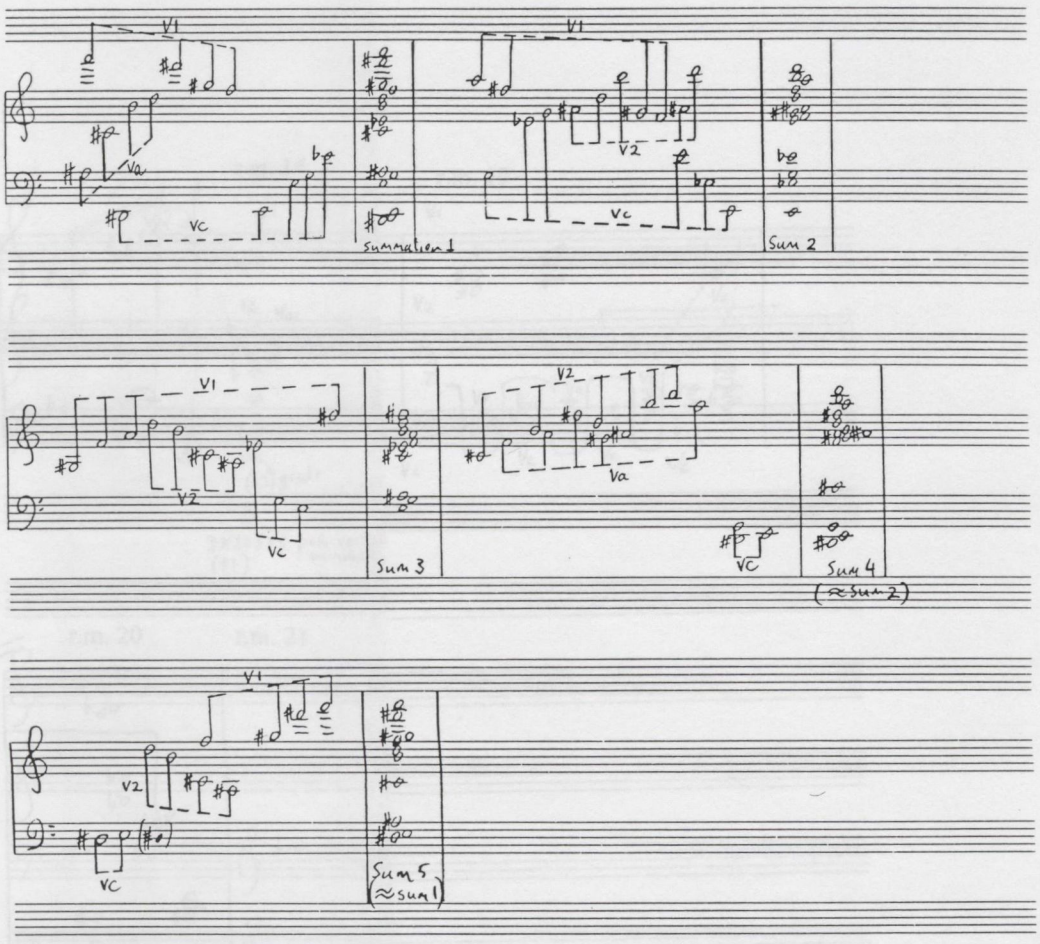


Fig. L. 10. Superchords in T_9

PAN-A3 18 STAVE

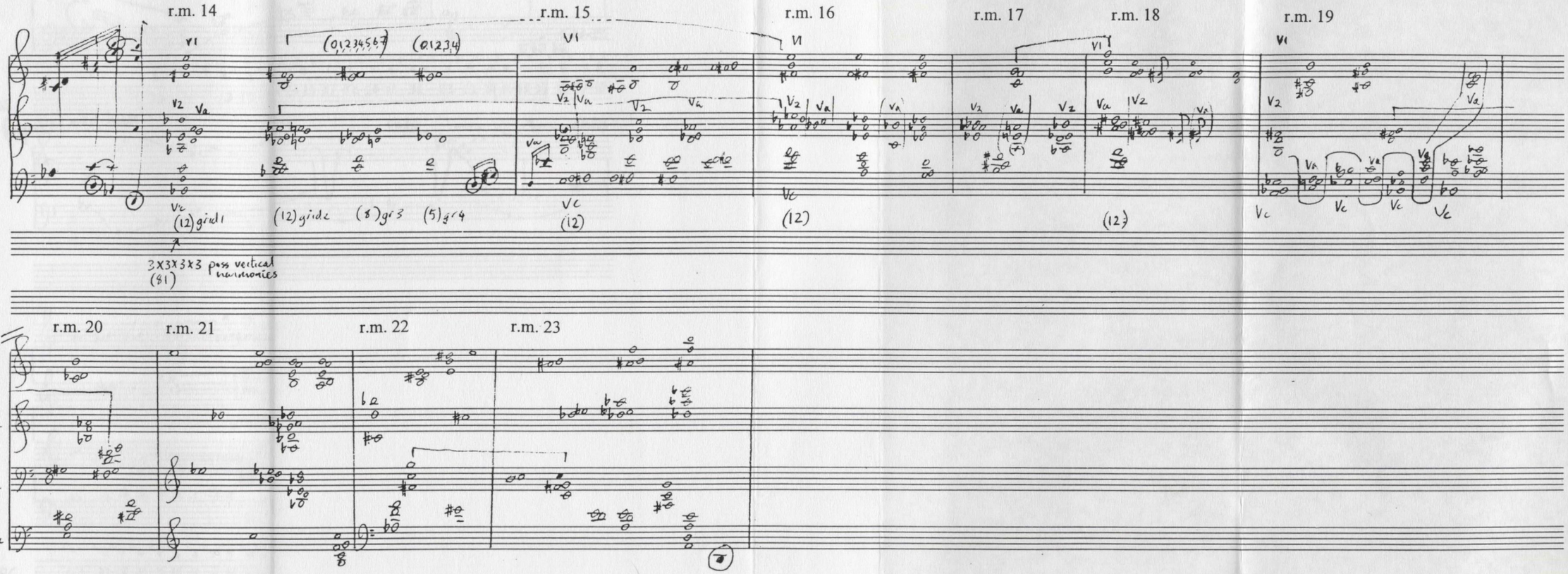


Fig. L. 13. Partitioned sets in S_2

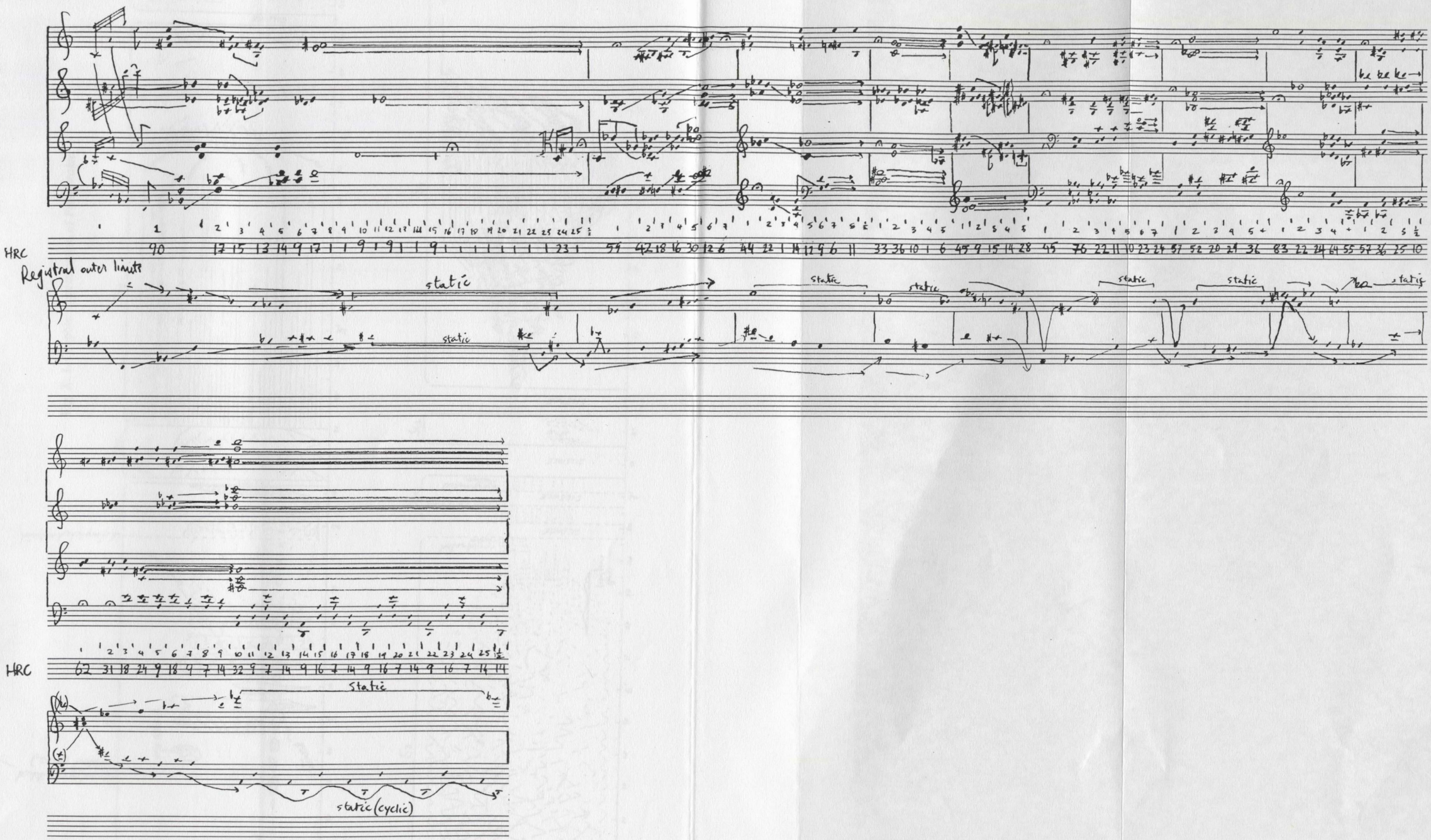


Fig. L. 19. Proportional HRC, S_2

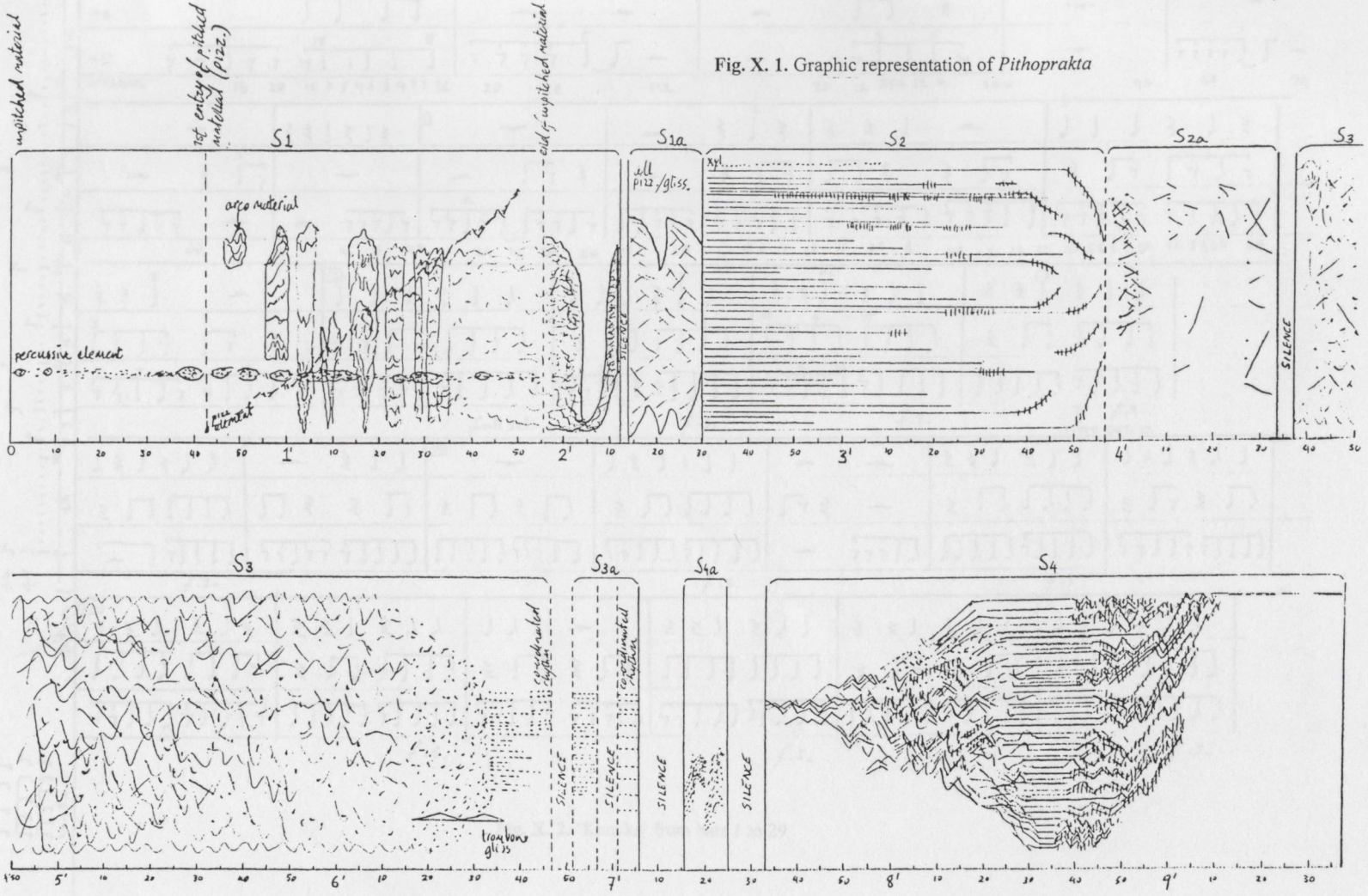


Fig. X. 1. Graphic representation of *Pithoprakta*

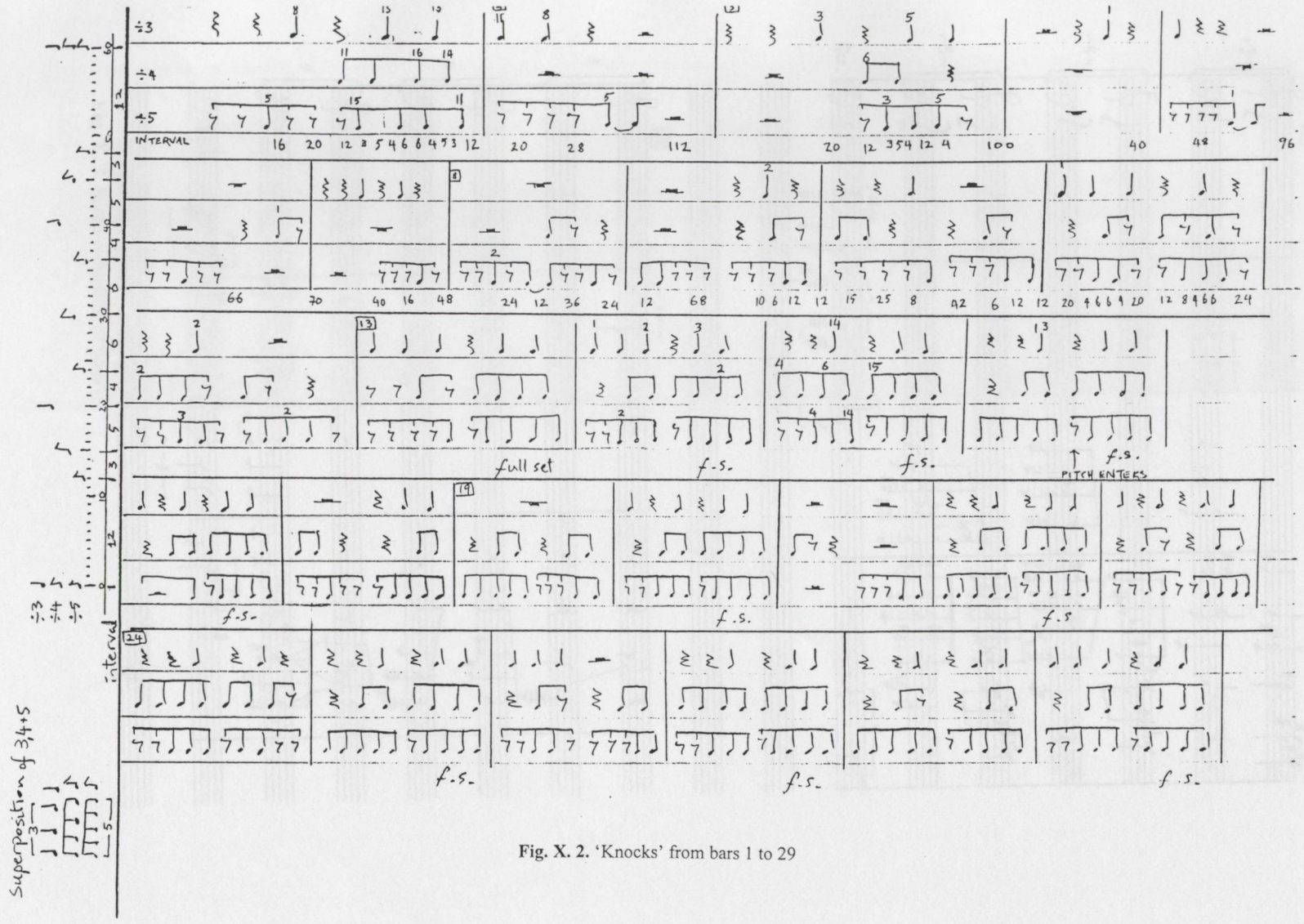


Fig. X. 2. 'Knocks' from bars 1 to 29

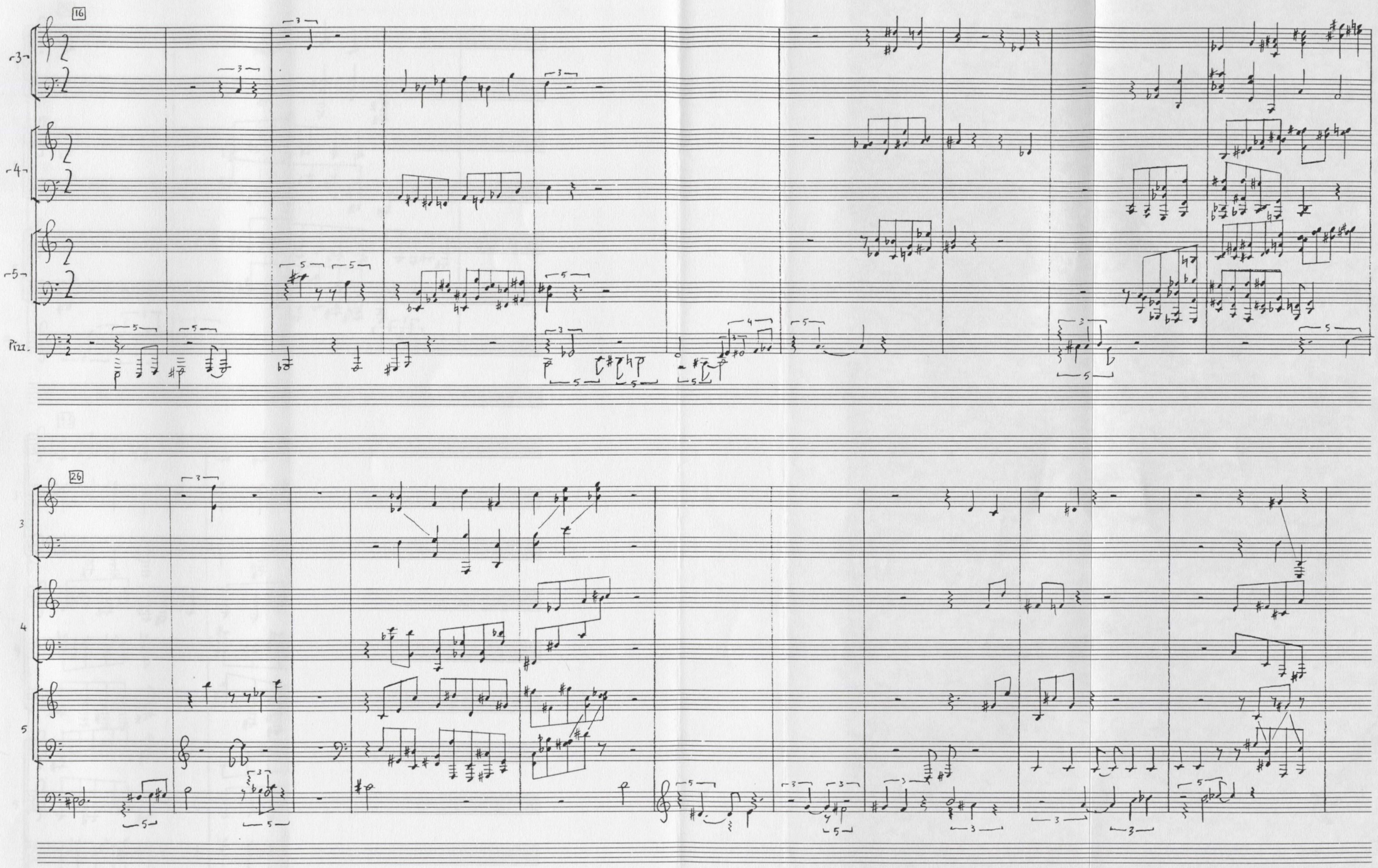
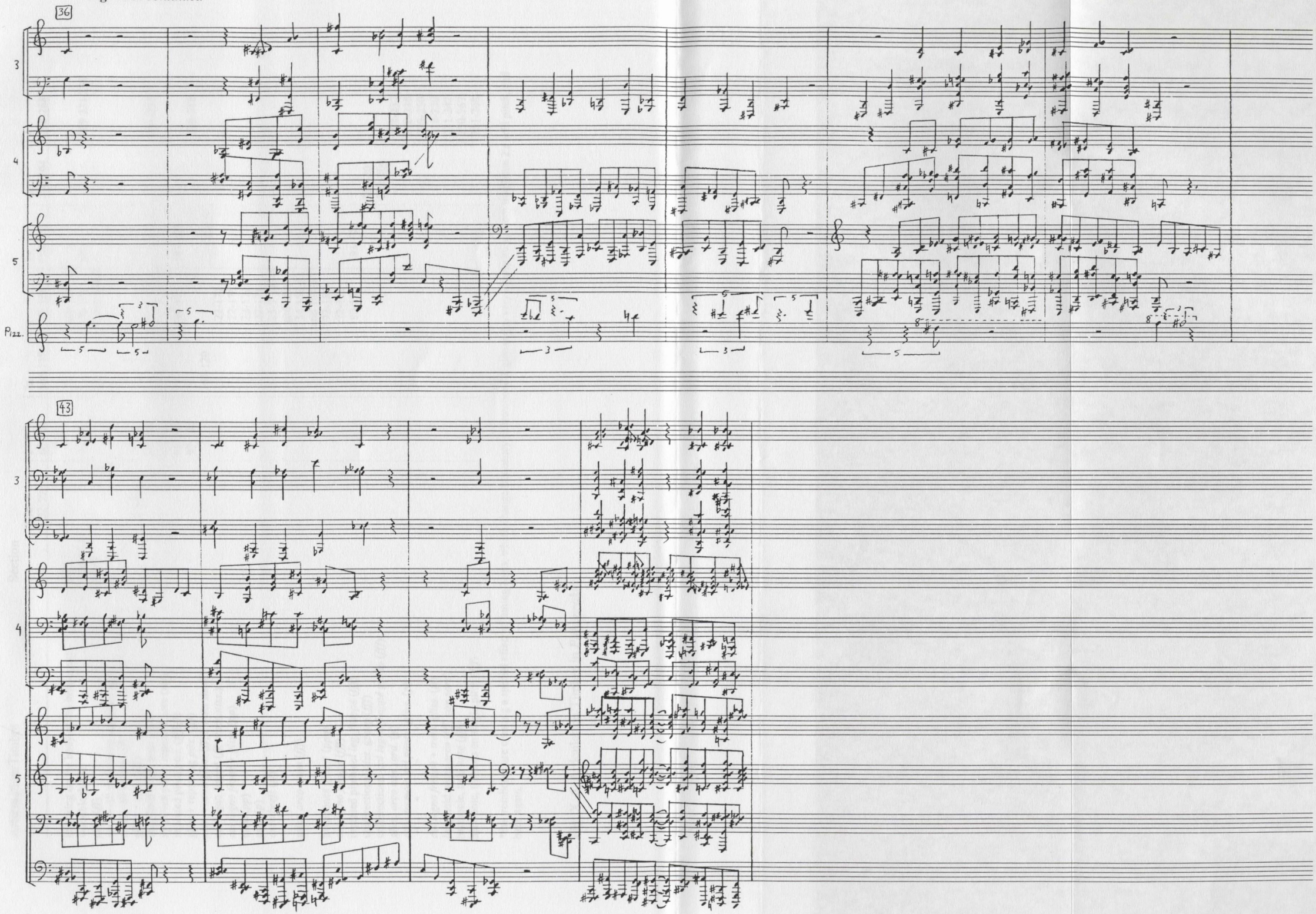


Fig. X. 3. Score reduction of bars 16-46

Fig. X. 3. *continued*



Articulation/Timbre	Section							
	1 1-51	1a 52-59	2 60-104	2a 105-119	3 122-186	3a 189-195	4a 200-204	4 208-268
knocking on the body of the instrument	1-43				139-167			
woodblock (*ff*)	7 24 46-8		70 72		130 171	191		209 231 256
pizz. (*ff*)	15-41				130-3 146-8			
arco—all downbows *'au talon'* (*f*)	16-51							
arco—all upbows (*f*)	23(Vc)-51							
gliss. + *pizz.* (*fff*)		52-59						
long held notes *arco* (*mf*)			60-104					231-242
xyl, even pulse, repeated note (*mf*)			60-104					
repeated pitch *pizz.* (*fff*|*ff*)			68-101		180-186	189-191		
gliss + repeating *pizz.* (*fff*)			97-104					210-218
pizz. + *arco gliss.* (*ff*, 2 insts share)				105-120				
col legno frappé (*ff, staccatiss.*)					122-171			
col legno frotté + *gliss.* (*pp*)					122-171			
arco (*pp*)					122-171			
pizz. (*p*)					122-171			
arco brefs (*ff*)					125-7 143-5 and 162			
gliss. arco norm (*fff*)					154 158-62 and 164-6			
trombones *gliss.** (*ppp*)					172-183			
col legno frappé (*fff*)					172-179			
repeated pitch *col leg. frappé* (*fff*)					180-182	193-195		
unidirectional *pizz.* group (*fff*)							200-201	
unidirectional *col legno frappé* group (*fff*)							202-204	
gliss. arco con sord. (*p*)								208-237
arco tremolo sul pont + *gliss.* (*p*)								212-230
" " " "								239-250
col legno frappé + *trem. gliss.* (*ff*)								218-230
long held notes *arco* (*fff, con sord*)								231-242
harmonic, held note (*fff*)								250-267
harmonic, tremolo on single pitch (*fff*)								251-268

*the trombones are creating a special effect of tuning beats, which change frequency as trombone 1 glissandos very slowly away from trombone 2's held pitch, and back again.

Fig. X. 6. Articulation/Timbre in *Pithoprakta*

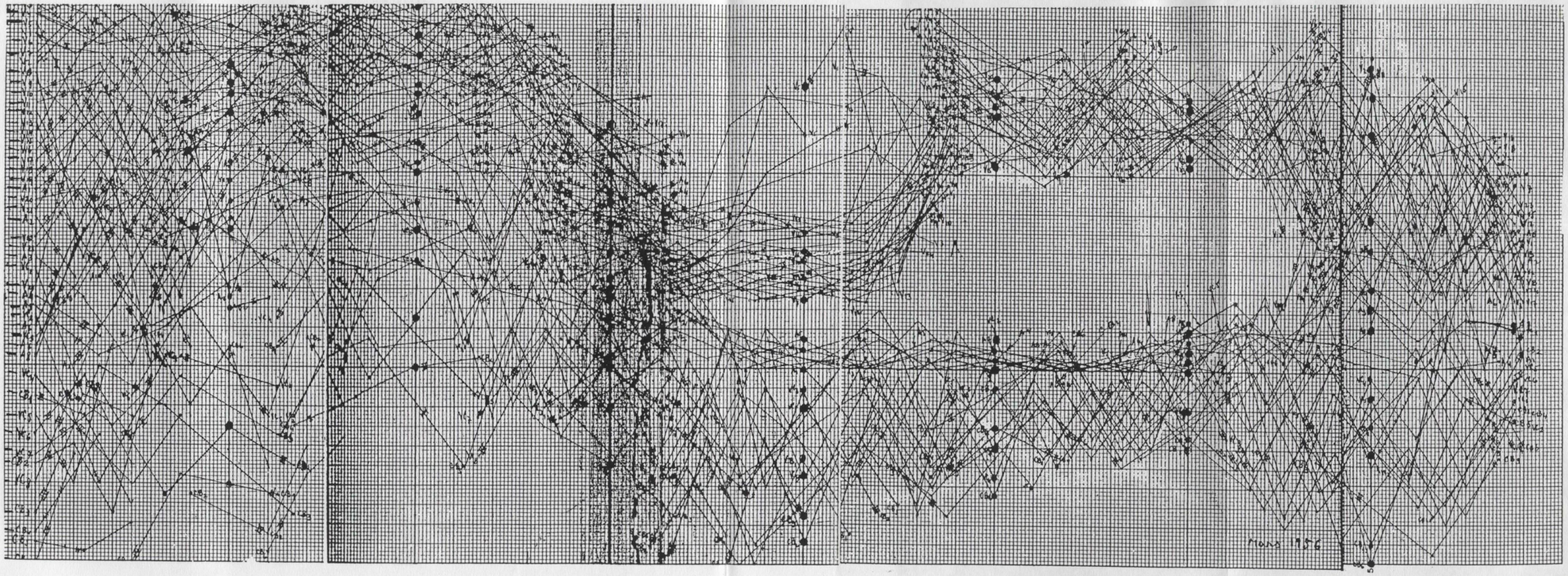


Fig. X. 9. Graph of S_{1a}

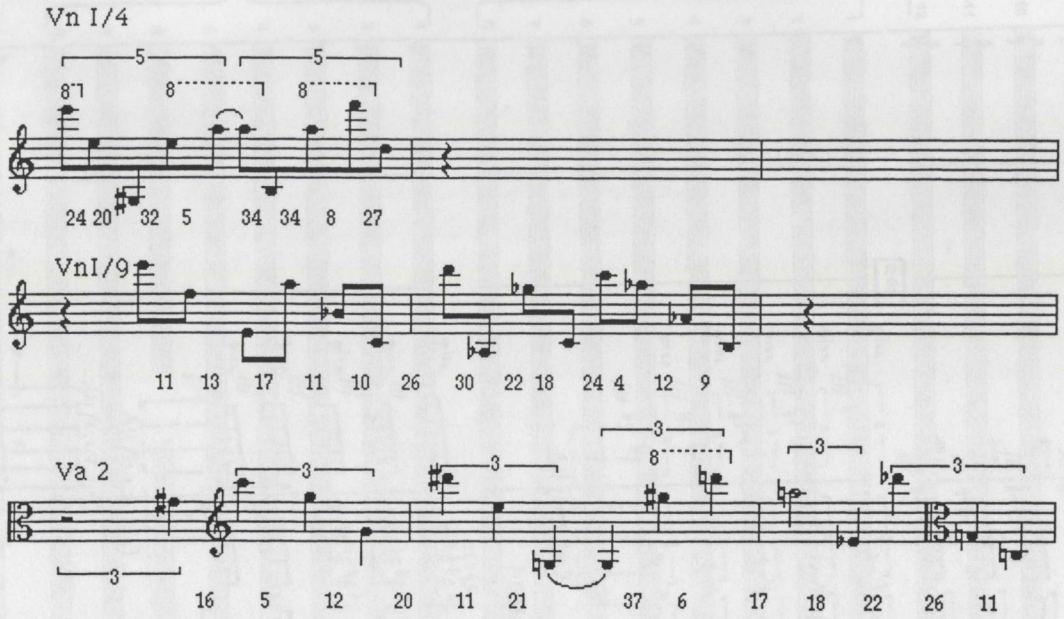


Fig. X. 12. Typical lines from bars 122-4

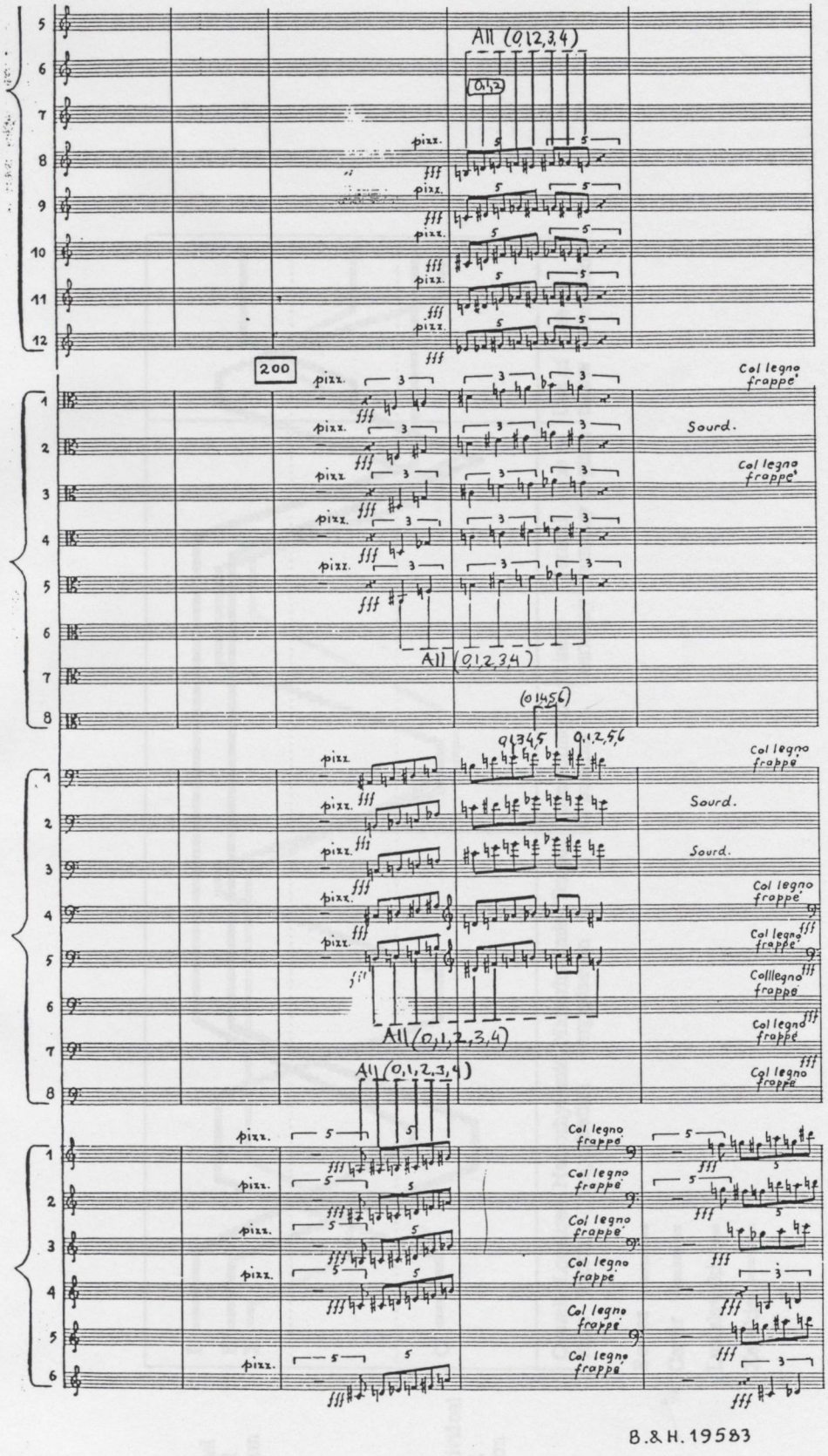


Fig. X. 13. Vertical pitch structures, bar 200-201

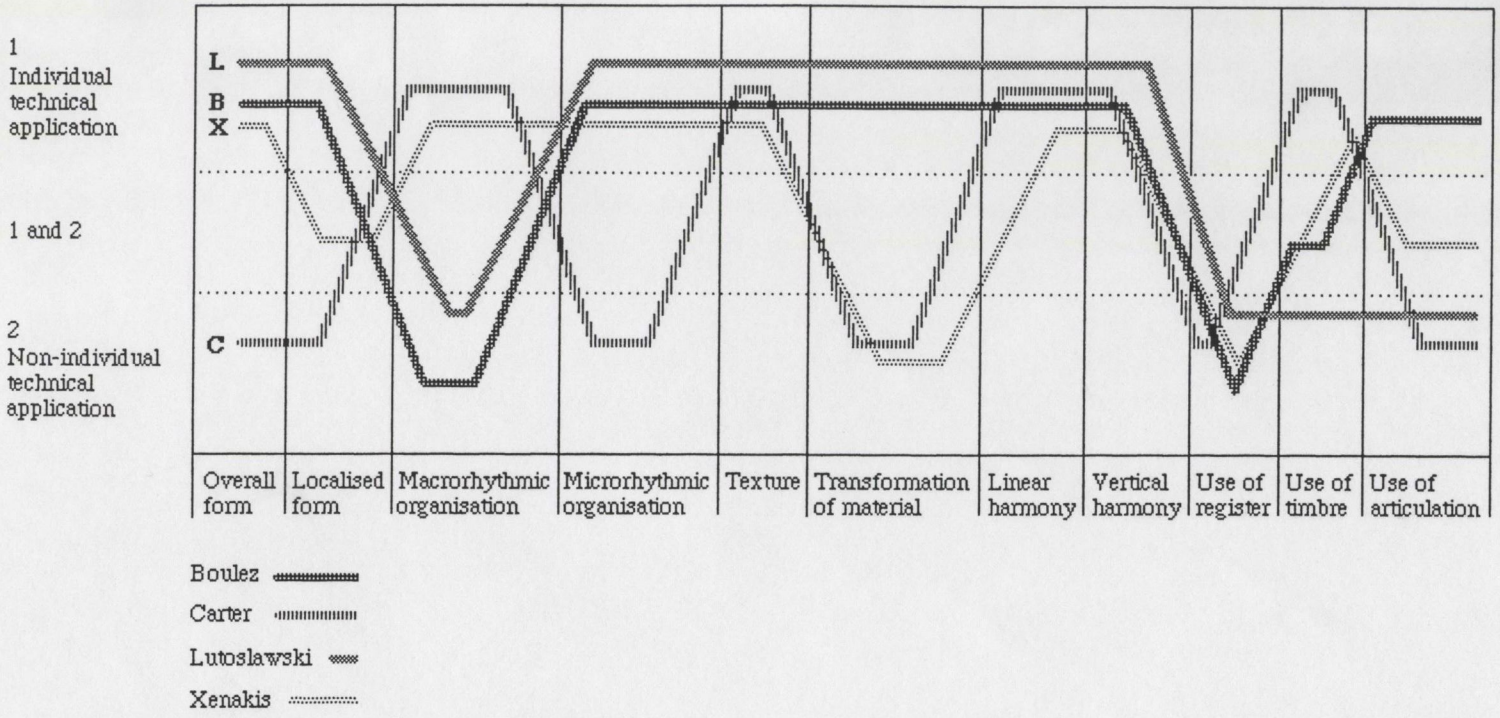


Fig. Cn. 1. Overview of technical applications