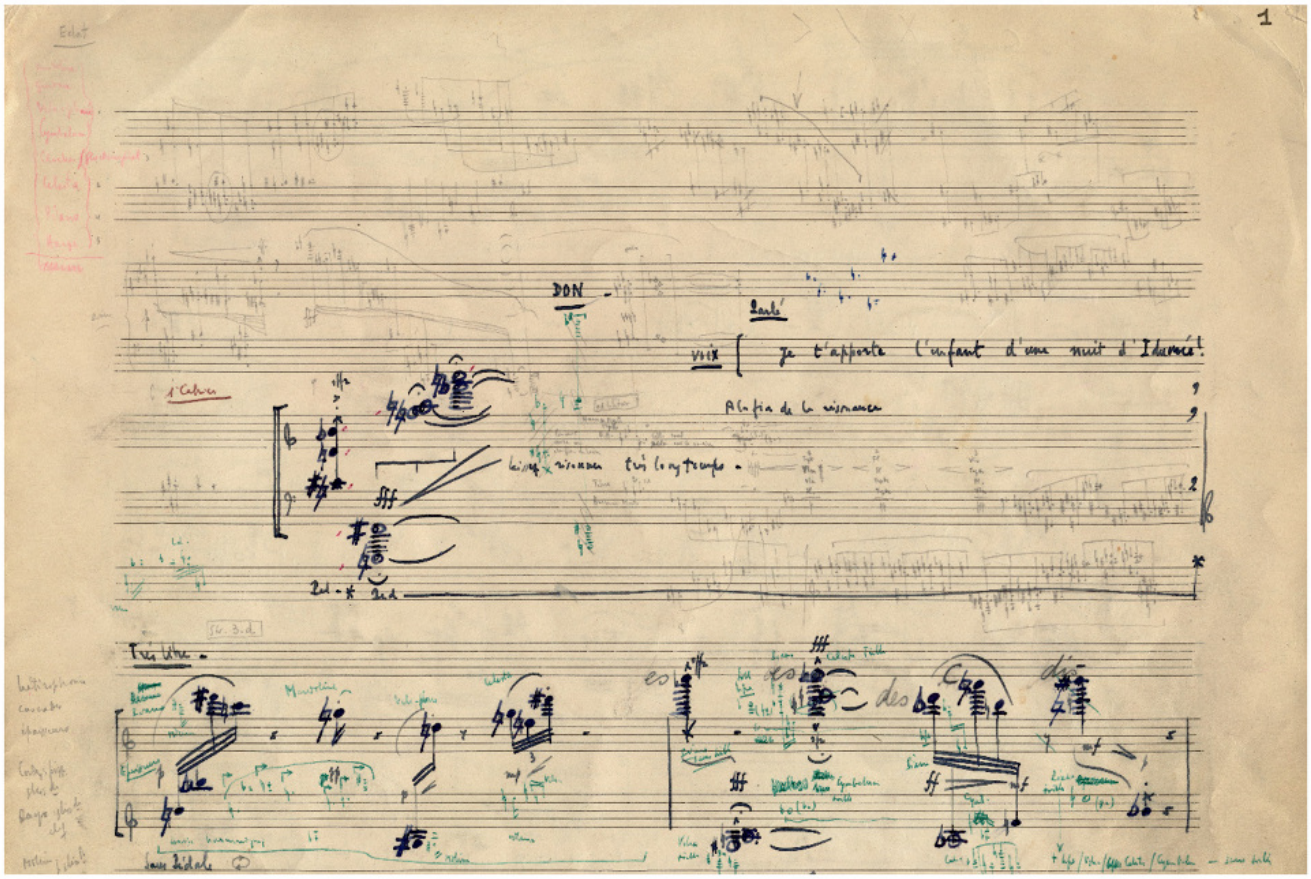
A JOURNAL OF THE SOCIETY FOR MUSIC THEORY

MTO 25.1 Examples: Losada, Middleground Structure in the Cadenza to Boulez's *Éclat*

(Note: audio, video, and other interactive examples are only available online)
http://mtosmt.org/issues/mto.19.25.1/mto.19.25.1.losada.html

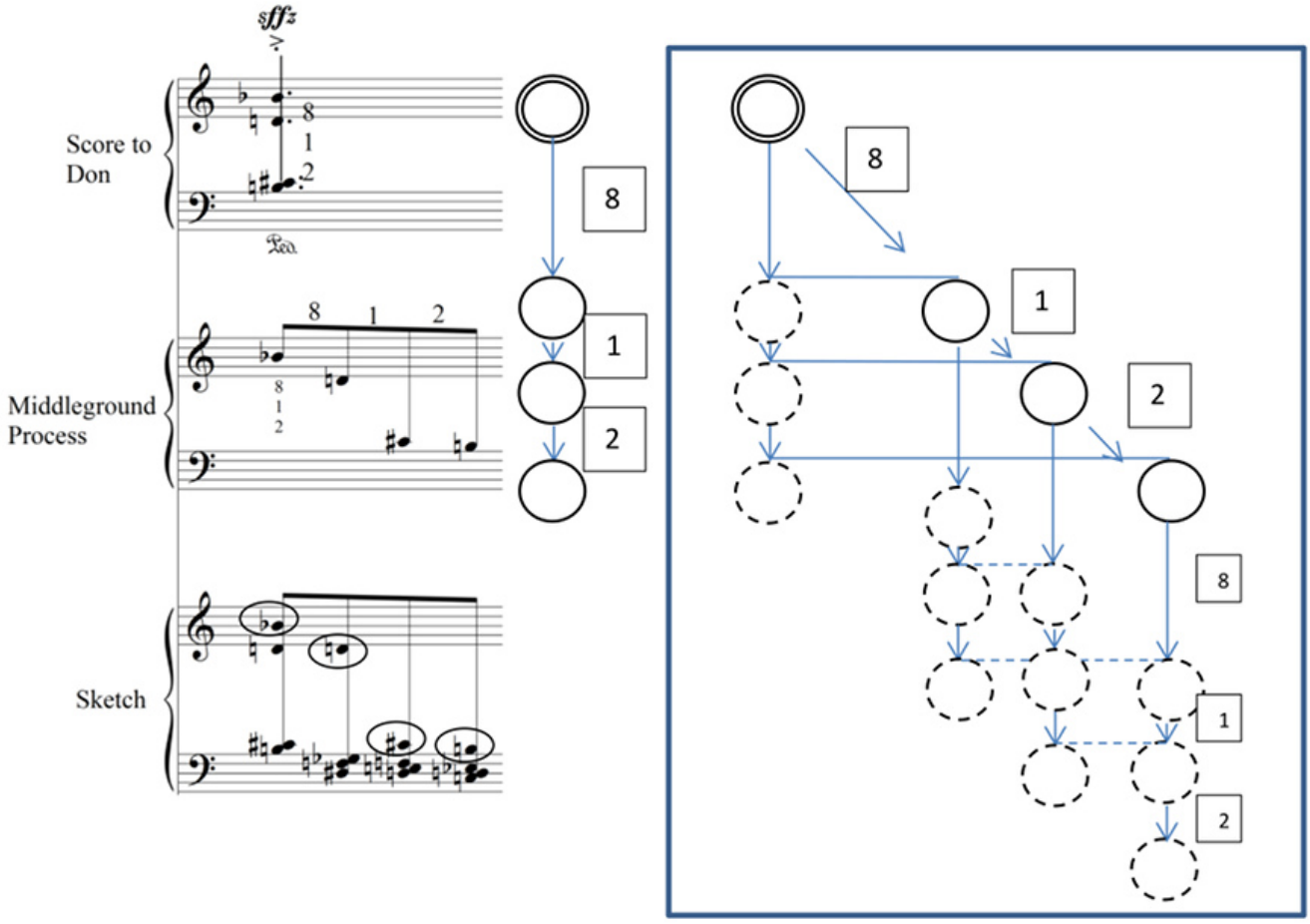
Example 1. Page one of the draft score for *Don* (1st version, 1960), with added sketch markings for *Éclat* (traced reproduction of Mappe G, Dossier 4b,6 (582–564)) Pierre Boulez Collection. Paul Sacher Foundation.



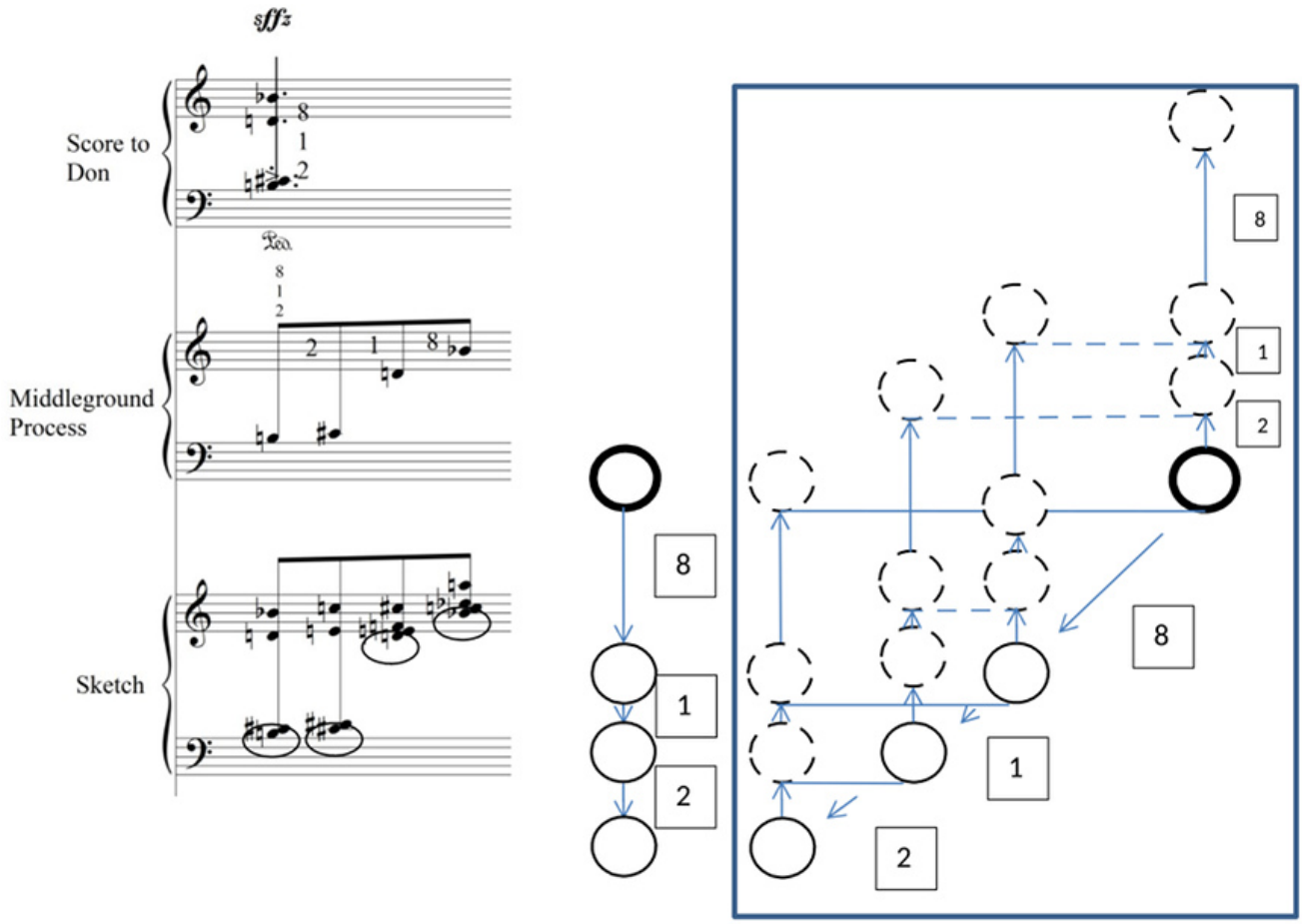
Example 2. Formal structure of the opening piano cadenza of *Éclat*

Flourish		**Chord**	**A**	**a**	**B1**	**b1**	**B2**	**b2**	**B3**	**b3**	**c**	**C**
Figure 1 Librement	Figure 2 Excessivement rapide	Très large	Très rapide	Ralentir jusqu'à	Modéré Extrêmement flexible	Saccadé	Flexible	Saccadé	Flexible	Saccadé	Saccadé…regularité	Très flexible…regularité total
Spiccato	Legato	Tenir très longtemps	Legato, Péd	Spiccato, Accent	Legato, Péd	Spiccato/ Staccato	Legato, Péd	Spiccato/ Staccato	Legato, Péd	Spiccato/ Staccato	Spiccato/ Staccato	Legato
pp……fff	*ffff*	*pppp*	*ppp……p*	*ppp……p*	*mp…mf…mp*	*mf……mp/* *ppp……ff*	*mf……mp*	*mf…mp….mf/* *f….p….f*	*mp……mf*	*mf…mp….mff* *f.p.pp.ff.pp*	*ff……ppp*	*ff……ppp*
C3-A5	E1- C7	A3-B♭4	G3-G5	F♯2-D4	A2-G4	C3-F♯4	F♯3-F4	D3-G♯4	A2-B♭3	D3-F5	F♯4-G5	F♯2- E♭5

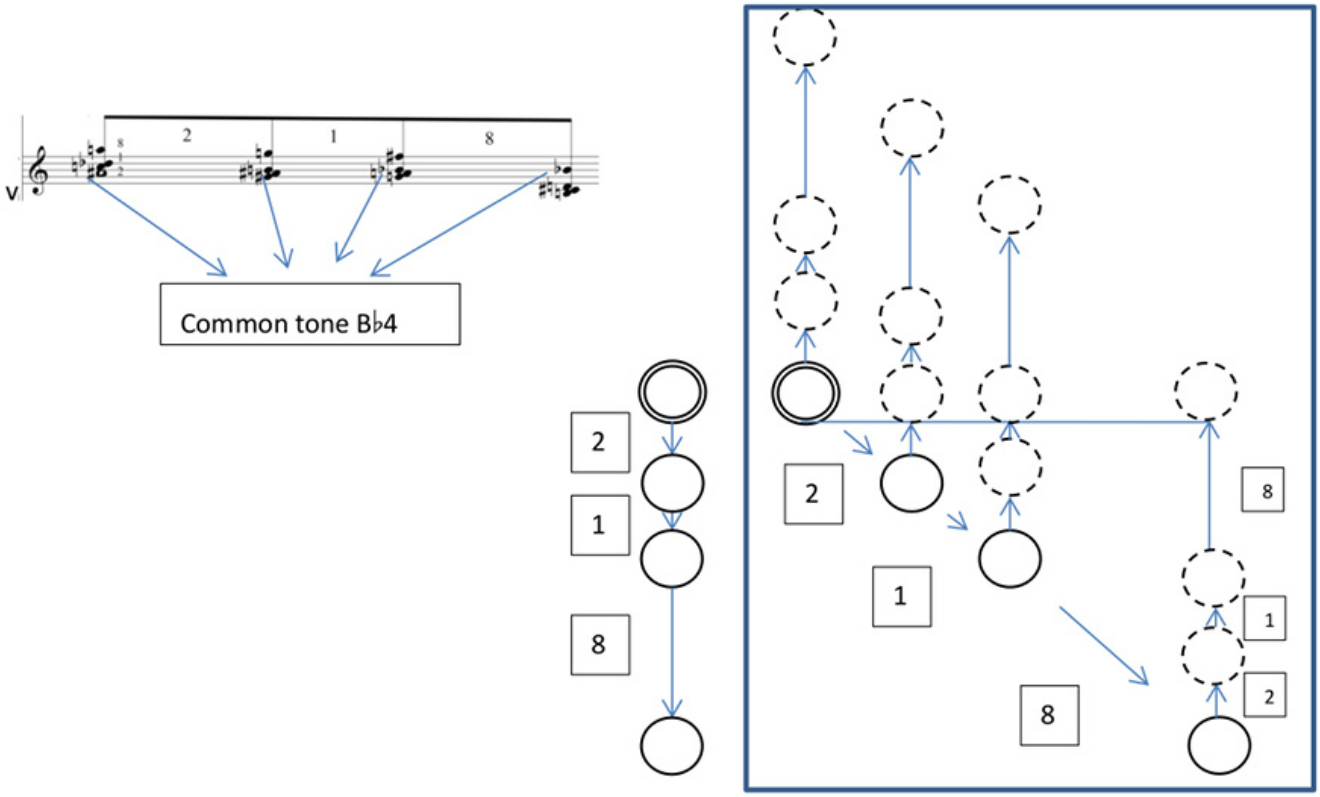
Example 3. Direct pitch-space multiplication from anchor note B♭4: middleground and foreground schemes. When used to generate successive sections of music, it results in middleground emphasis through temporal and registral extremes.



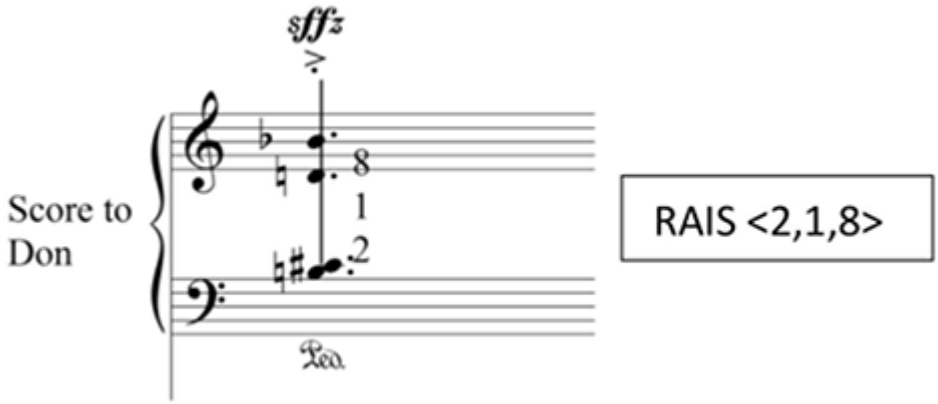
Example 4. Reverse pitch-space multiplication from anchor note B♭4: middleground and foreground schemes. When used to generate successive sections of music, it results in middleground emphasis through temporal and registral extremes.



Example 5. Inverse pitch-space multiplication from anchor note B♭4: middleground and foreground schemes. When used to generate successive sections of music, it results in emphasis on the anchor note through pitch space common-tone relationships.



Example 6. Registral Adjacent Interval Series (RAIS). The chord from *Don* has an RAIS <2,1,8>.

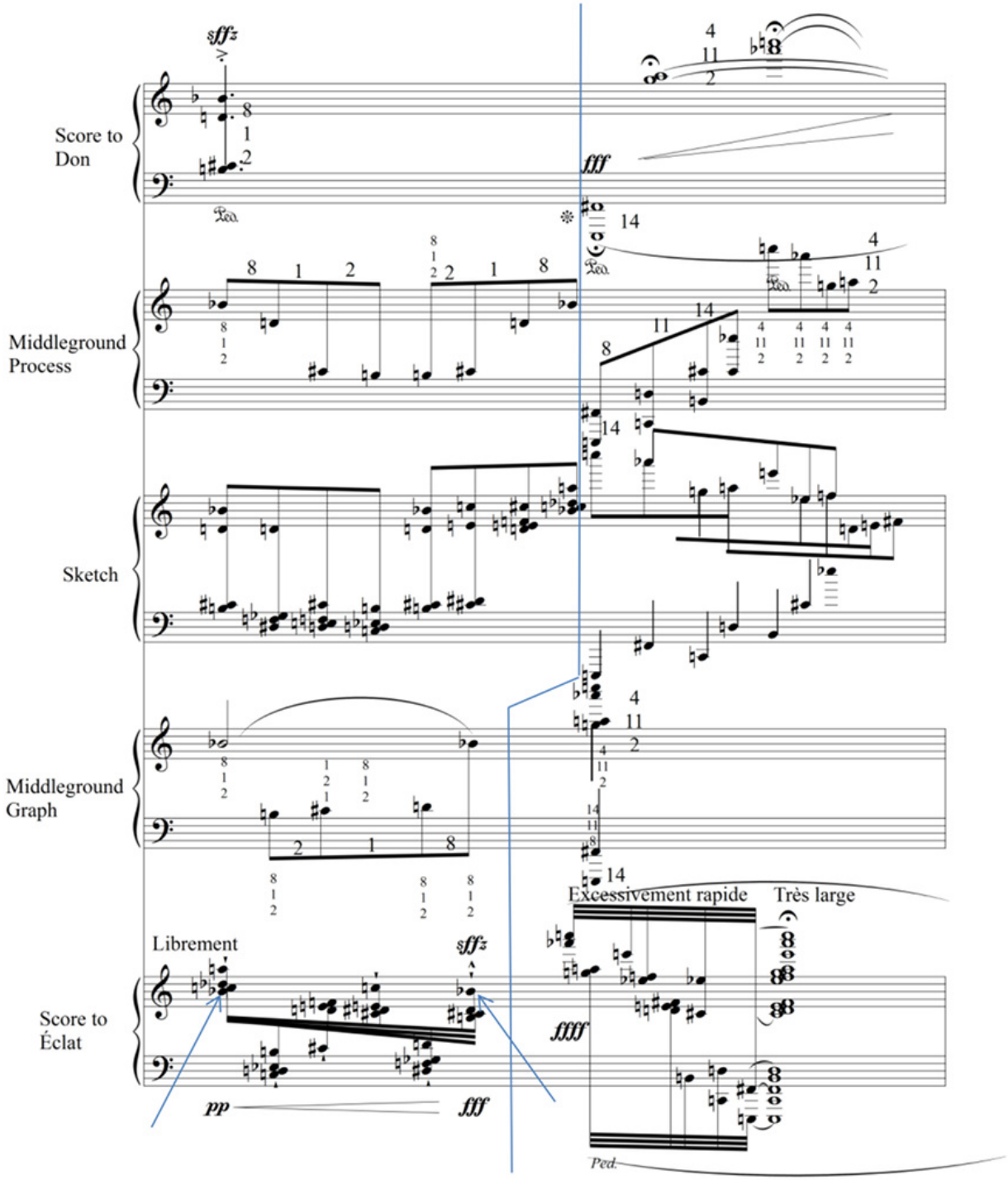


Example 7. Interval Series from the Anchor Note (ISfAN)

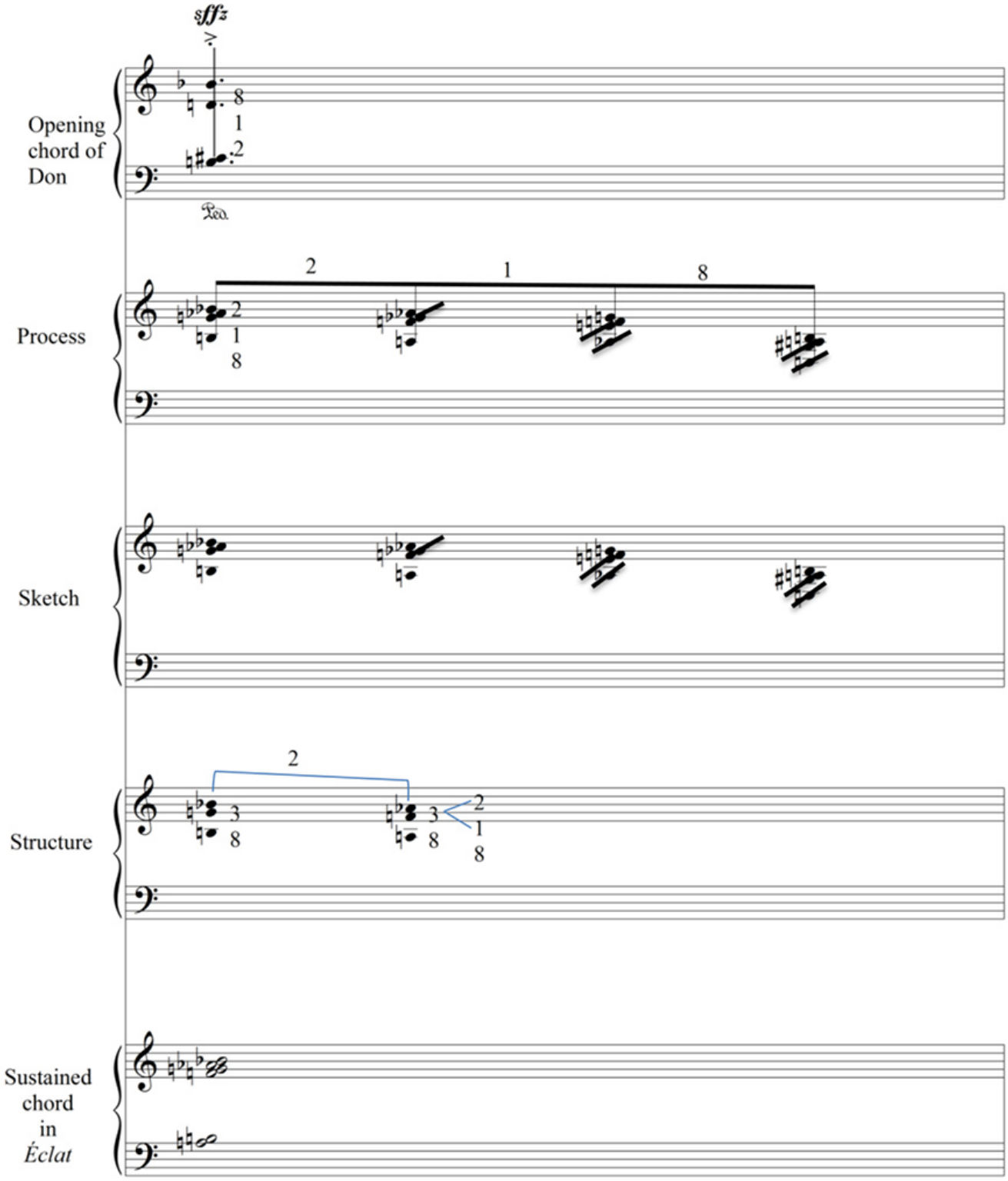
ISfAN B♭4 <*-13,-11,-5,-3,-2*>

ISfAN A3 <*2,8,10,11,13*>

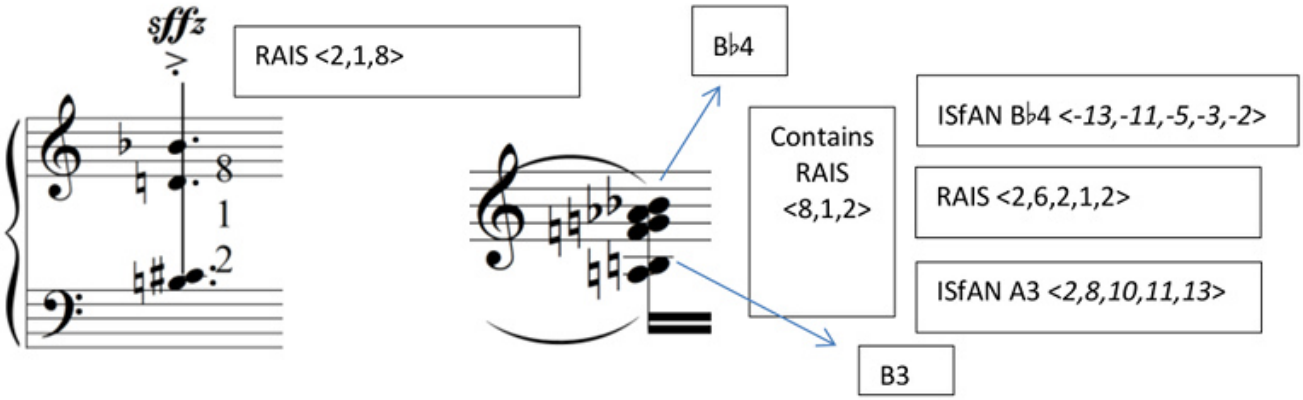
Example 8. Opening of *Éclat*. Background structural tone B♭4 and middleground tones D4, C♯4 and B3 are emphasized in the musical setting of the first figure through placement as registral or temporal extremes (sketch material from Mappe G, Dossier 4b,6 (582–564)). Pierre Boulez Collection. Paul Sacher Foundation.



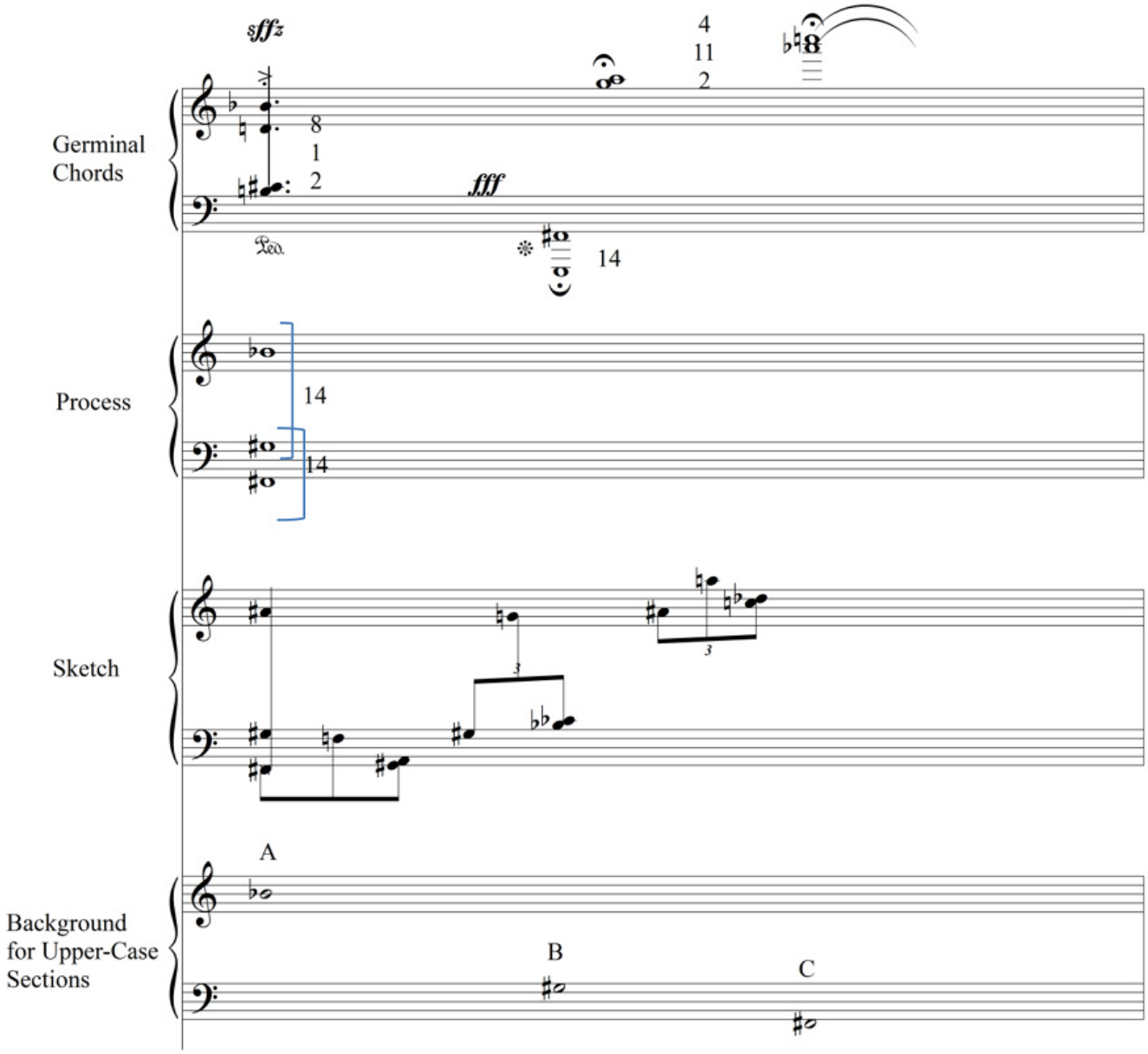
Example 9. Generation of the fundamental chord of *Éclat* (sketch material from Mappe G, Dossier 4b,6 (582–564)). Pierre Boulez Collection. Paul Sacher Foundation.



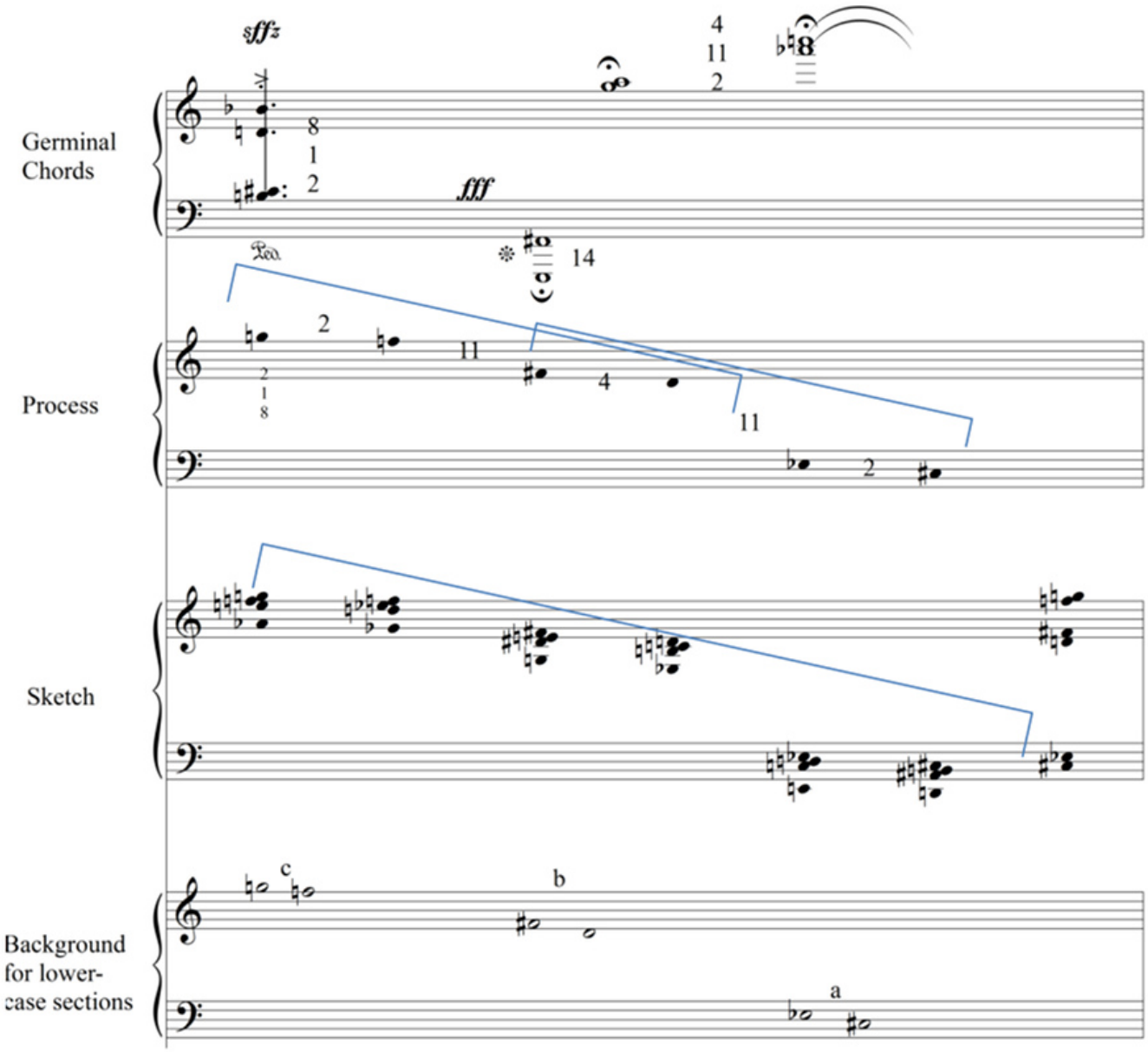
Example 10. Comparison of the generative chord for the first figure and the punctuating sustained chord (the fundamental chord of *Éclat*). The latter embeds RAIS <8,1,2> and creates ISfAN B=4 <-13,-11,-5,-3,-2>. It contains both B=4 and B3, the registral extremes of the opening chord of *Don*.



Example 11. Background structure of uppercase material in the cadenza (sketch material from Mappe G, Dossier 4b,6 (582–564)). Pierre Boulez Collection. Paul Sacher Foundation.



Example 12. Background structure of lowercase material in the cadenza (sketch material from Mappe G, Dossier 4b,6 (582–564)). Pierre Boulez Collection. Paul Sacher Foundation.



Example 13. Summary of Generative Processes

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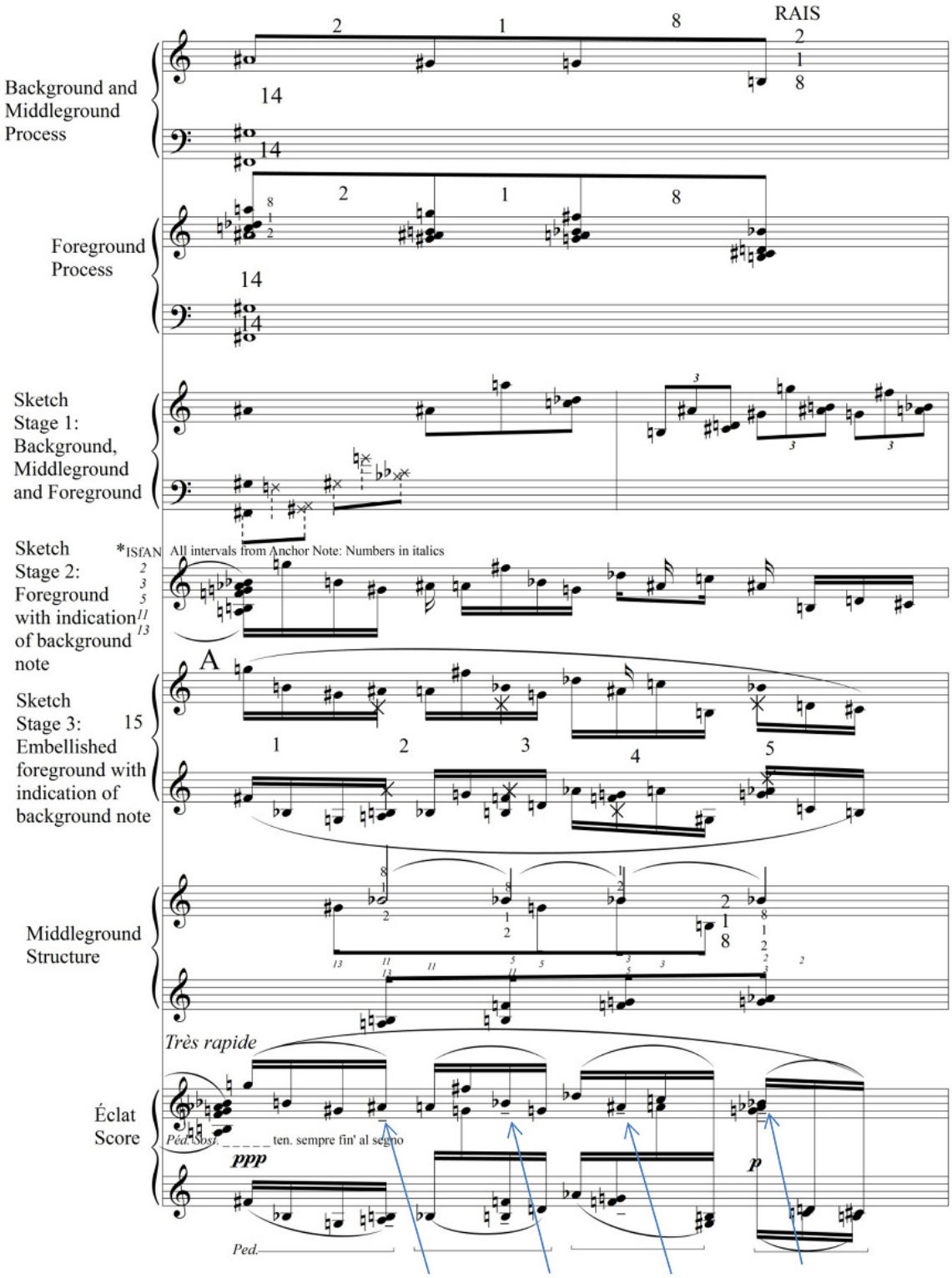
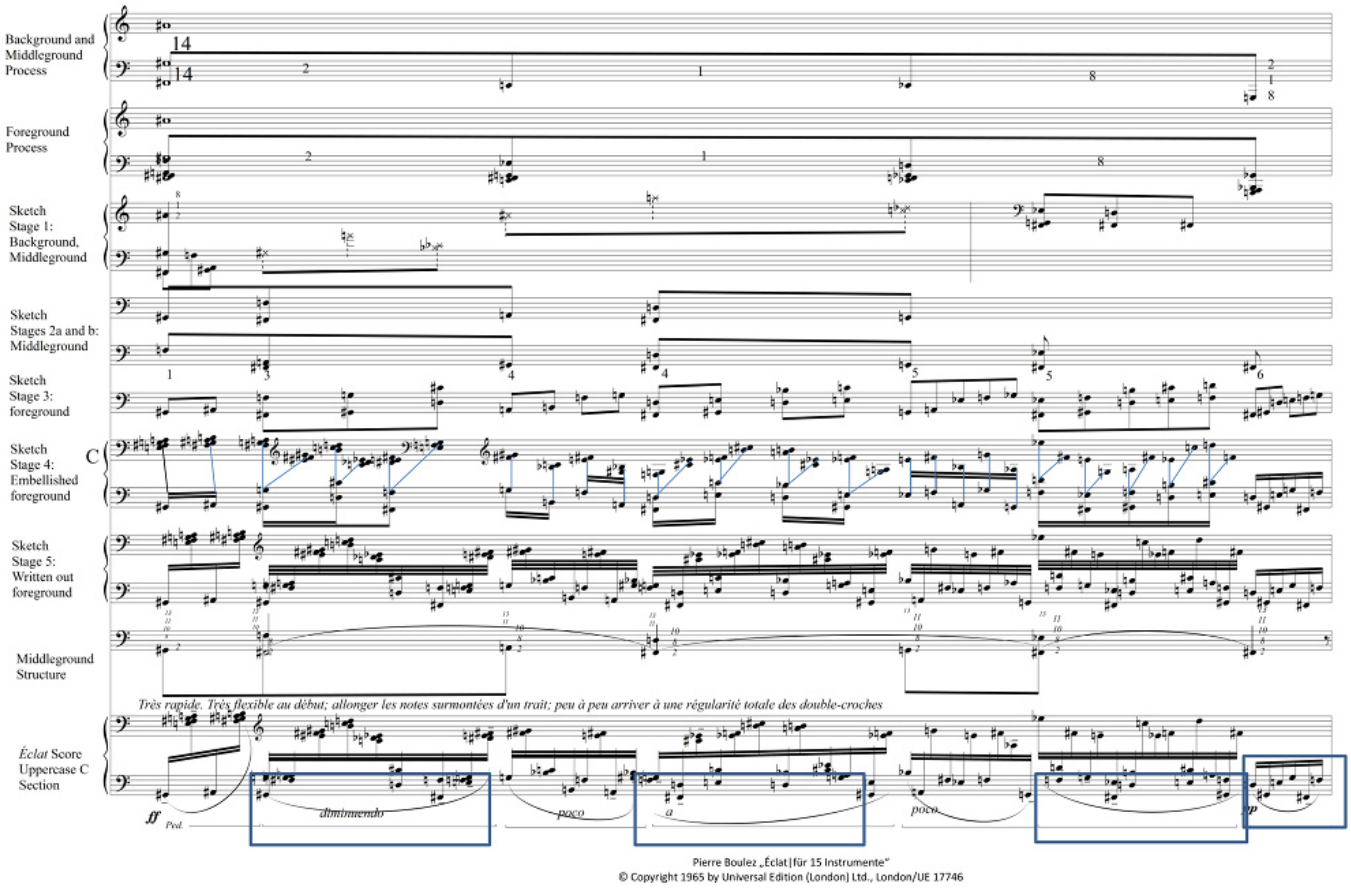
Section	Flourish				Main Chord	A	a	B	b	c	C
	Figure 1		Figure 2								
Articulation	Spiccato		Legato		Tenir très longtemps	Legato, Péd	Spiccato, Accent	Legato, Péd	Spiccato/	Spiccato/	Legato
Generative Process											
Main note- Background	B♭4	B♭4	G5	F♯2	B♭4	B♭4	E♭3/C♯3	G♯3	D4/F♯4	G5/F5	F♯2
Level 1- Middleground and Foreground	RAIS -<2,1,8> (below)	RAIS <2,1,8> (below)	RAIS <2,11,4>	RAIS <14> (below)	RAIS <8,1,2> (below)	RAIS - <8,1,2>	RAIS <2,1,8>	RAIS <8,1,2> below	RAIS <2,1,8>	RAIS <2,1,8> above	RAIS <8,1,2> below
	Direct Pitch Multiplication	Reverse Pitch M	Reverse Pitch M	RAIS + <8,11,14>	Direct Pitch Multiplication	Inverse Pitch M	Inverse Pitch M	Inverse Pitch M	Inverse Pitch M	Inverse Pitch M	Inverse Pitch M
Level 2	Reordering				Eliminate notes	Eliminate notes	Eliminate notes			Eliminate notes	Eliminate notes
Level 3- Embellished foreground						ISfAN *<-13,-11-,5,-3,-2>* bottom to top- noncumulative	Multiplication at interval between anchor notes	Add notes at RAIS <8,1,2> from common tone selectively above and below	Multiplication at interval between anchor notes	Multiplication at interval between anchor notes	Add notes from ISfAN *<-2,-8,-10,-11,-13>* bottom to top
Level 4- Embellished foreground									Adds notes at intervals from ISfAN *<-13,-11,-5,-3,-2>* top to bottom	Adds notes at intervals from ISfAN *<-13,-11,-5-,3,-2>* top to bottom to background notes	Add notes from ISfAN *<2,8,10,11,13>* top to bottom depending on which intervals were used in the previous stage
Structure											
Structural tone emphasis	Emphasizes structural tone through temporal placement		Emphasizes structural tone through temporal placement			Emphasizes common tone through tenuto markings	Emphasizes common tones, through accentuation marks	Does not emphasize common tone, but uses it as a moment to add embellishments. This creates connections through common tones between figures.	Common tones are embedded in recurring figures distinguished by rhythm, articulation, and dynamics	Emphasizes common tones through accentuation marks and register. Uses them as a trigger for embellishments.	Emphasizes common tone through tenuto markings and register. Uses it as trigger for embellishments.
Harmonic structure	Projects embellishment of opening chord of *Don*		Projects embellishment of second, third and fourth chord of *Don*			Projects single embellished main chord built on the structural common tone B♭4	Projects multiple transpositions of main chord. Ends with main chord built on D♭3 anchor note.	No full main chord statement	No main chord statements. Distinctly contrasting harmonic profile due to the interval between anchor notes.	Projects embellished main chord built below G5 anchor note. Ends with main chord built on F5 anchor note.	Projects registrally isolated main chord built on F♯2 multiple times.

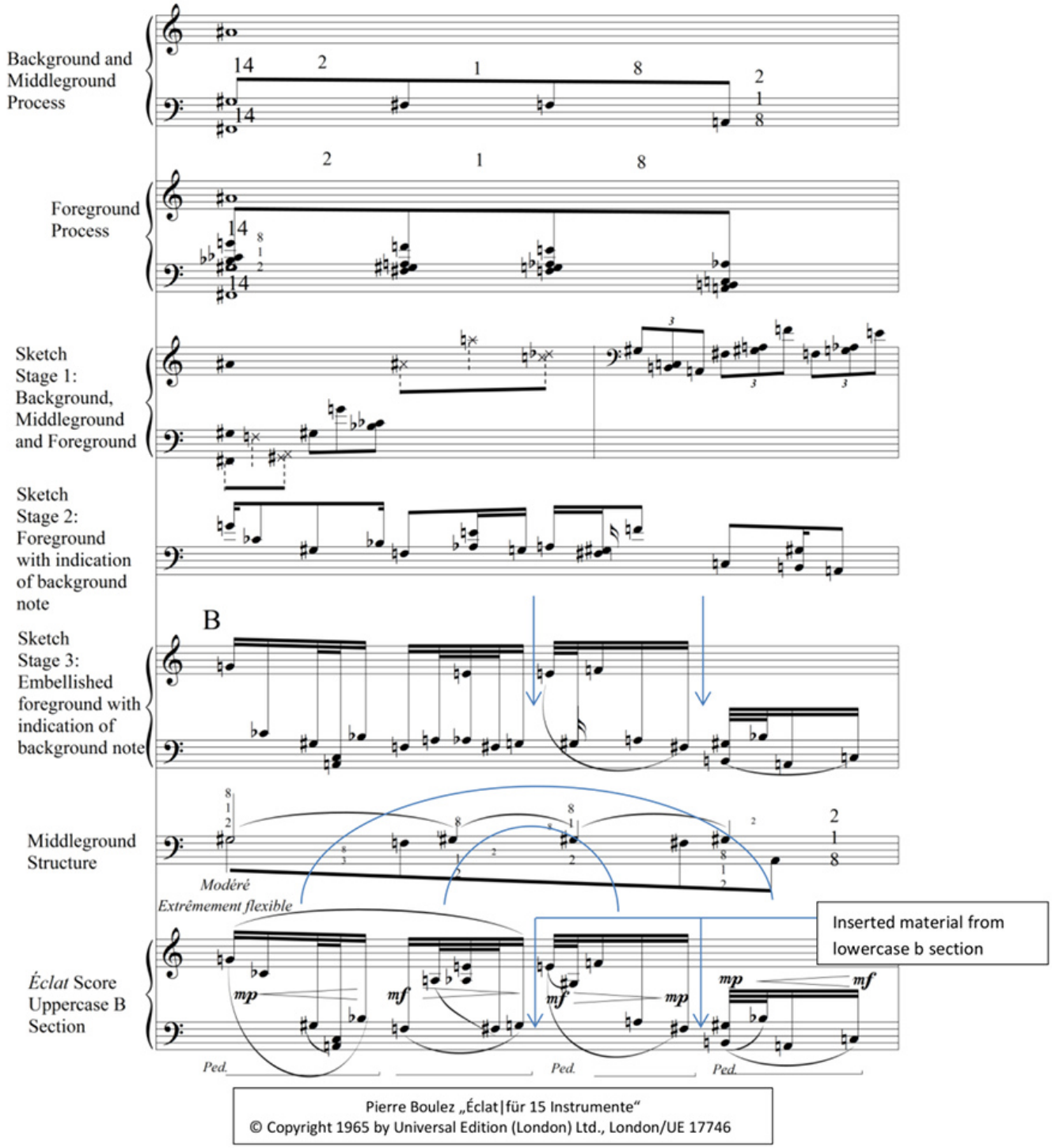
Example 14. Section A of *Éclat*. Background structural tone B♭4 is a common tone that appears within each figure and is given emphasis in the sketches and musical setting (sketch material from Mappe G, Dossier 4b,6 (582–564) and Mappe G, Dossier 4a, 1 (582–516)). Pierre Boulez Collection. Paul Sacher Foundation.



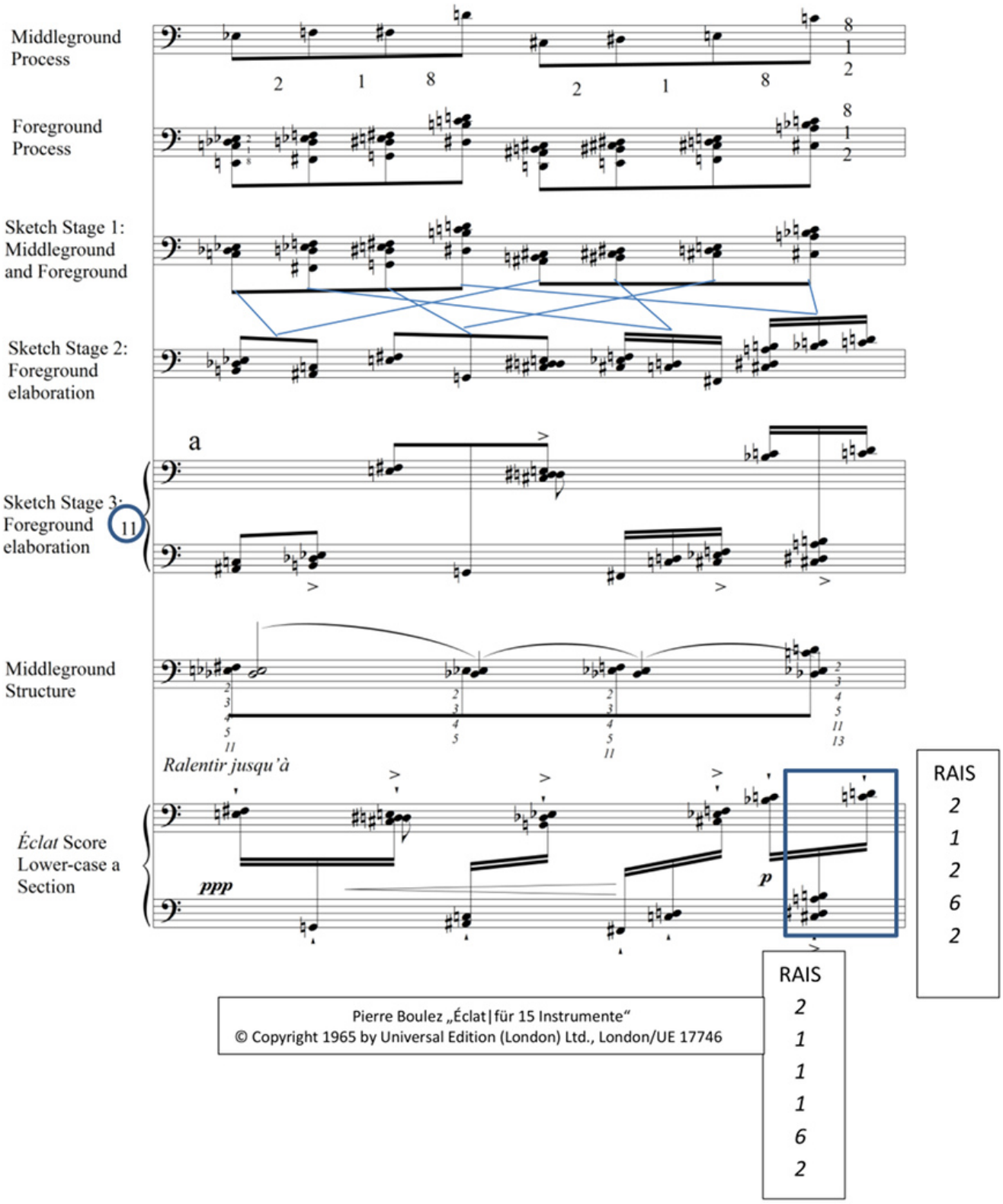
Example 15. Section C of *Éclat*. Background structural tone F♯2 is a common tone that appears within each figure and the anchor note of a transposition of the sustained chord (sketch material from Mappe G, Dossier 4b,6 (582–564) and Mappe G, Dossier 4a, 1 (582–516)). Pierre Boulez Collection. Paul Sacher Foundation



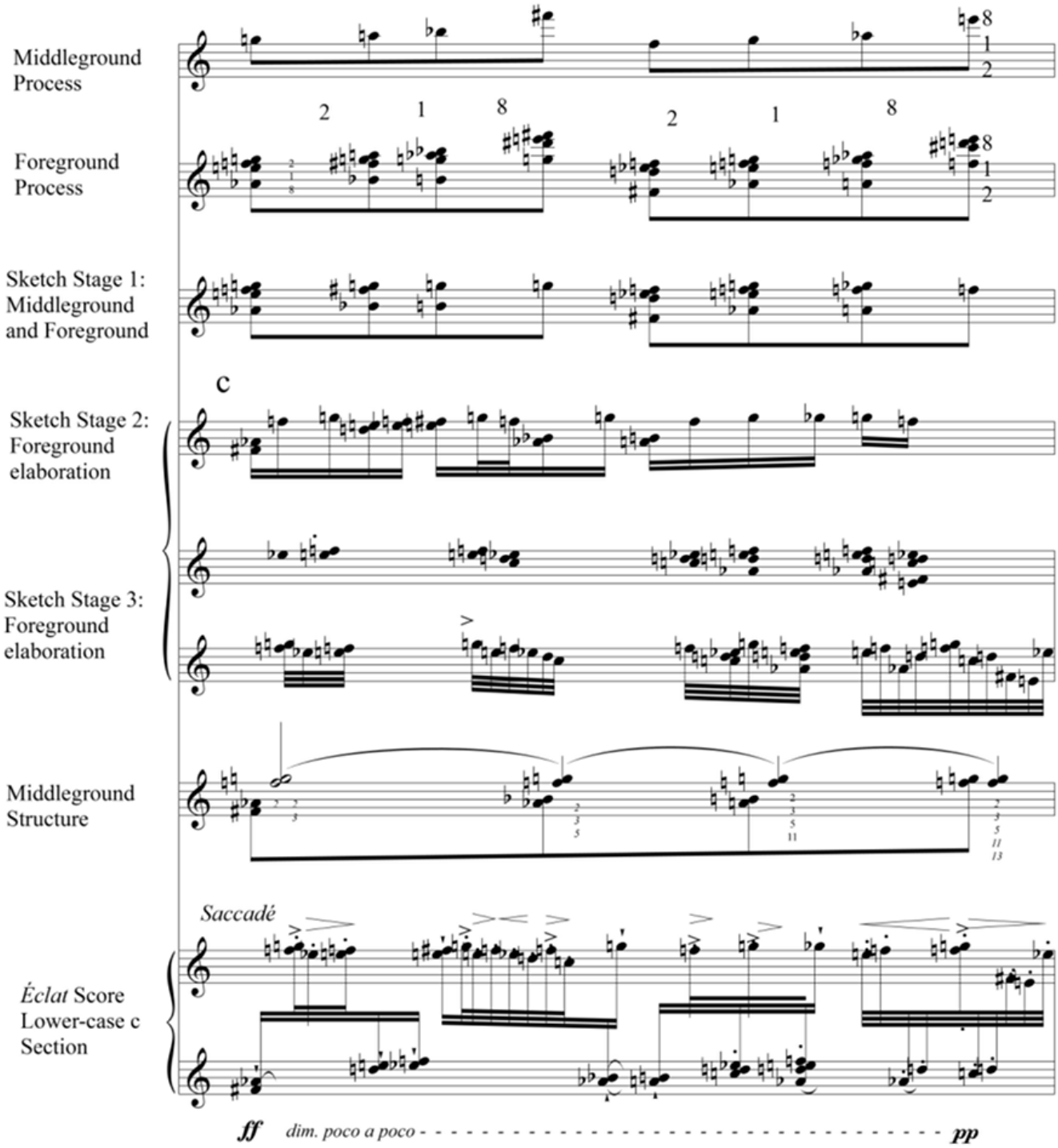
Example 16. Section B of *Éclat*. Background structural tone G♯3 is a common tone that appears within each figure, but is not emphasized (sketch material from Mappe G, Dossier 4b,6 (582–564) and Mappe G, Dossier 4a, 1 (582–516)). Pierre Boulez Collection. Paul Sacher Foundation.



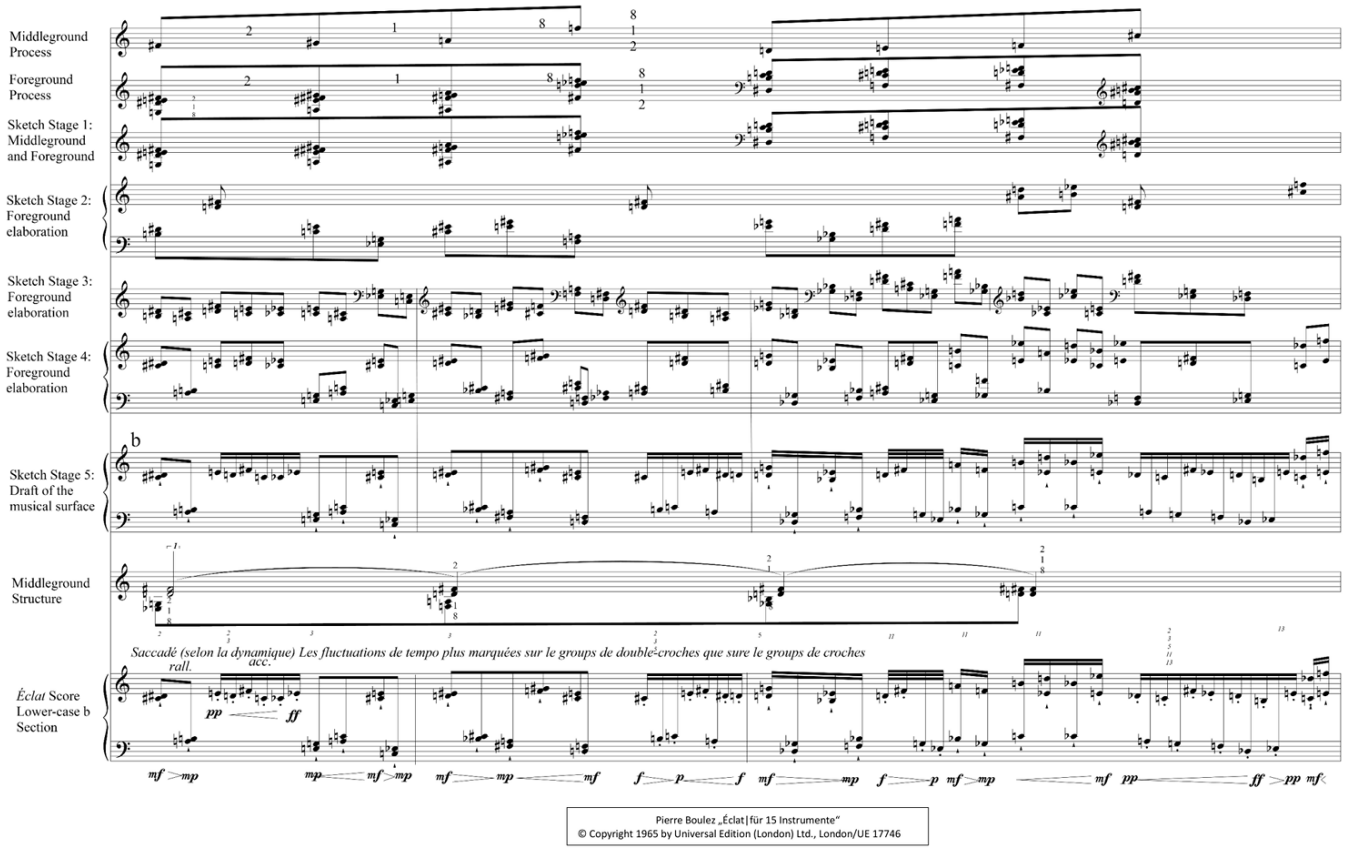
Example 17. Section a of *Éclat*. Background structural tone D♭3 and E♭3 are common tones that appear within each figure and are given emphasis in the sketches and musical setting (sketch material from Mappe G, Dossier 4b,6 (582–564) and Mappe G, Dossier 4a, 1 (582–516)). Pierre Boulez Collection. Paul Sacher Foundation.



Example 18. Section c of *Éclat*. Background structural tones F5 and G5 are emphasized in the musical setting (sketch material from Mappe G, Dossier 4b,6 (582–564) and Mappe G, Dossier 4a, 1 (582–516)). Pierre Boulez Collection. Paul Sacher Foundation.



Example 19. Section b of *Éclat*. Background structural tones D4 and F♯4 are emphasized in the musical setting (sketch material from Mappe G, Dossier 4b,6 (582–564) and Mappe G, Dossier 4a, 1 (582–516)). Pierre Boulez Collection. Paul Sacher Foundation.



Example 20. Generative Processes for the Closing Instrumental cadenza

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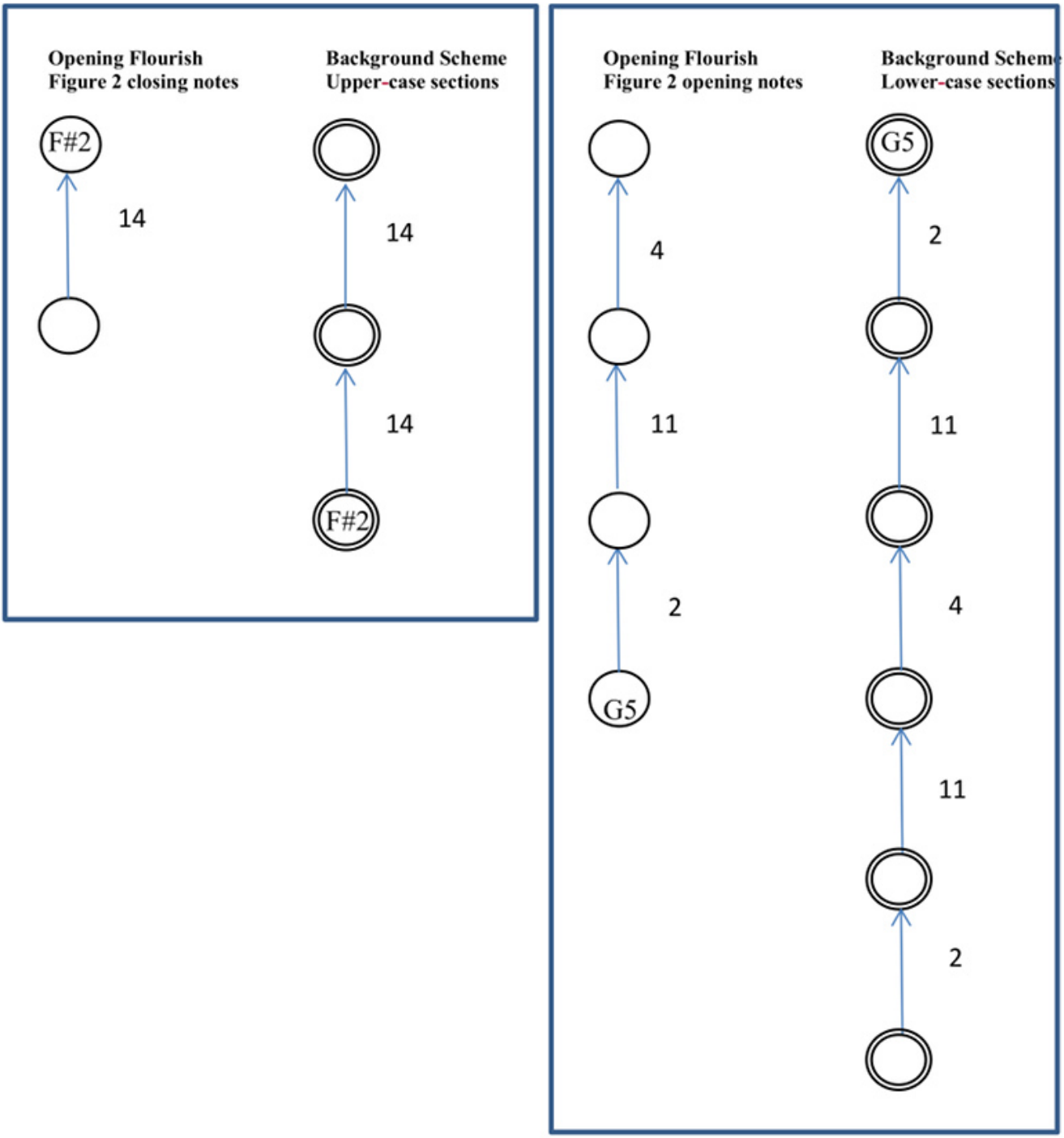
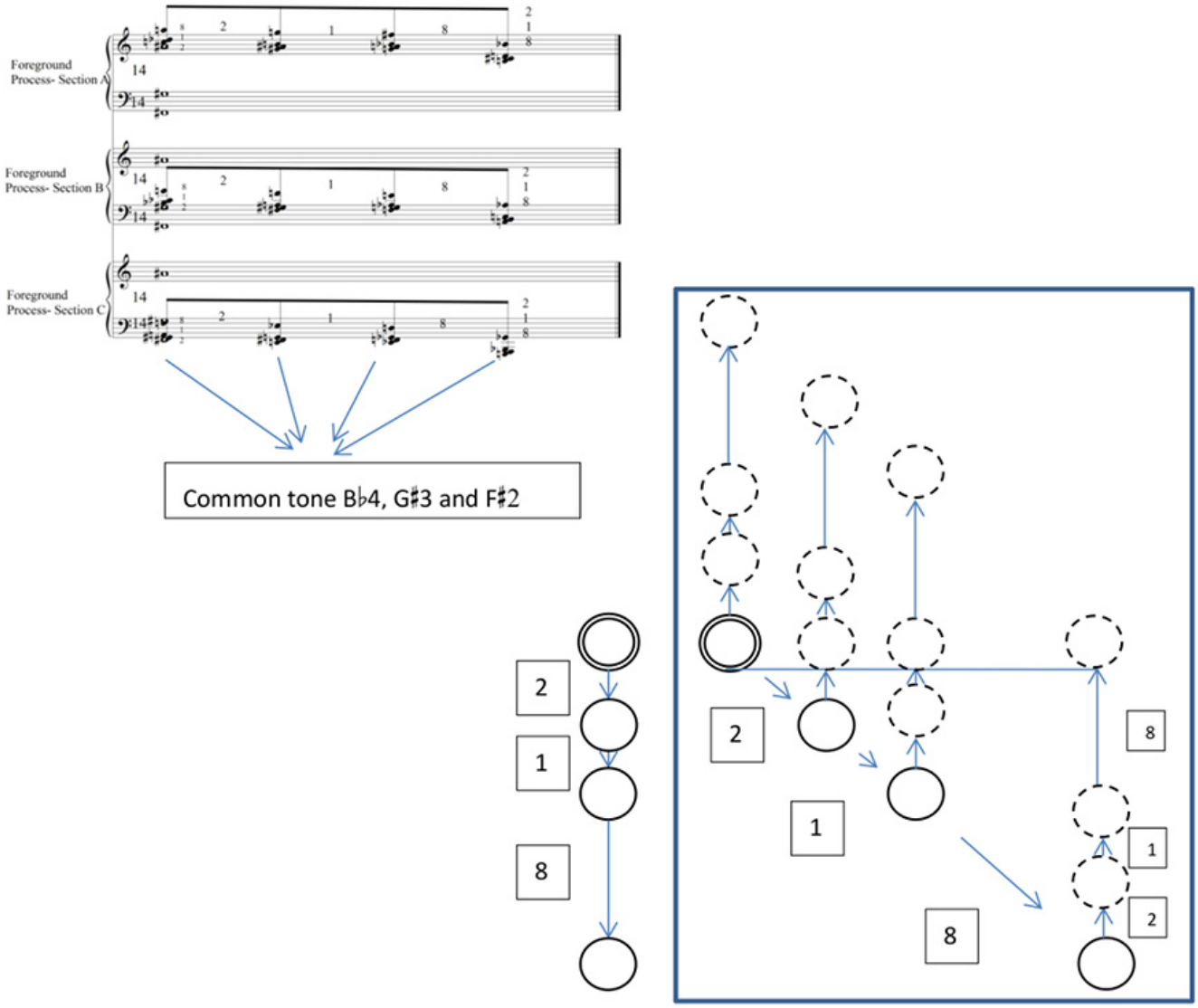
Section	Développement A	Flourish/Figure 2		Flourish/Figure 1		Développement c	Flourish/Figure 1
	Rehearsal 25	Rehearsal 26				Rehearsal 27	Rehearsal 30
	Très rapide/ Legato	Large/Legato		Large	Sec et éclatant/Spiccato	Modéré/Spiccato/Très Saccadé	Inégalement espacé/Extrêmement mordant/Spiccato
Generative Process							
Main note- Background	B♭4	G5	F♯2	B♭4		G5/F5	B♭4
Level 1- Middleground and Foreground	RAIS <8,1,2> below Inverse Pitch Multiplication	RAIS <2,11,4> above	RAIS <14> below	RAIS <2,1,8> below Direct Pitch Multiplication		RAIS <2,1,8> above Inverse Pitch Multiplication	RAIS <2,1,8> below Direct Pitch Multiplication
Level 2	Eliminate notes Retrograde order of corresponding level in section A	Retrograde of frame for second figure of opening flourish		Reordering; quasi-retrograde of first figure of the opening flourish		Eliminate notes	Reordering of chords from first figure or opening flourish
Level 3	ISfAN <-13,-11,-5,-3,-2> top to bottom- cumulative					Multiplication at interval between anchor notes Same as corresponding level in section c	Some chords embellished inverted versions preserving the outer notes. RAIS <8,1,2>
Level 4- Embellished foreground	Applied to notes from stage 2- ISfAN <2,3,5,11,13> bottom to top-cumulative					Adds notes at intervals from ISfAN <-13,-11,-5,-3,-2> top to bottom to notes from Level 3 except for upper notes from Level 2. Upper notes from Level 2 kept in original chordal context.	
Level 5- Further embellishment	Applied to B♭4 background ISfAN <2,3,5,11,13> bottom to top and ISfAN-<-13,-11-,5,-3,-2> top to bottom simultaneously					Notes from Sketch Stage 2 except for background notes G5/F5 are embellished by RAIS <8,1,2> below	
Level 6- Further embellishment						Adds parallel transpositions at ISfAN <-13,-11-,5-,3,-2> top to bottom	
Structure							
Structural tone emphasis	Emphasizes structural tone through temporal placement- starting note and loudest note for each instrument as they take over the melody line. Also sustained in the trombone	Isolates retrograde of frame for second figure in opening cadenza flourish		Isolates frame for first figure in the opening cadenza flourish (last chord)		Emphasizes frame from section c through articulation markings	Ends with slightly altered frame for the first figure of the opening cadenza
Harmonic structure	Projects single embellished main chord built on the structural common tone B♭4 and its pitch-space inverse simultaneously. This is the harmonic content of section A of the opening cadenza embellished by its pitch-space inverse. Background note B♭4 sustained in the trombone	Projects second, third and fourth chord of *Don*		Projects first chord of *Don*	Projects embellishment of opening chord of *Don*	Projects embellished main chord built below G5 anchor note and other notes of the frame for section c.	

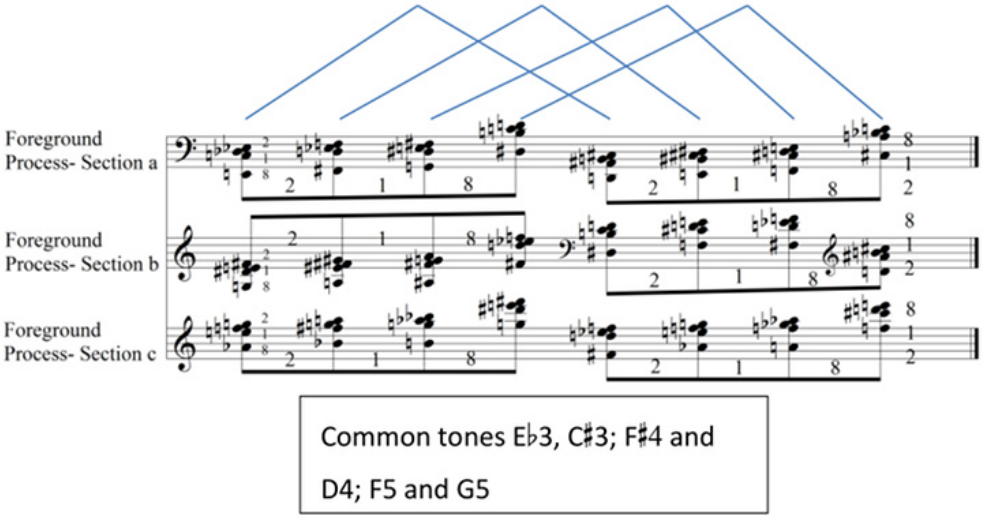
Example 21. Demonstrates the homomorphism between the graphs representing the opening piano flourish and those illustrating middleground structure of the remainder of the cadenza. Anchor notes are functional.

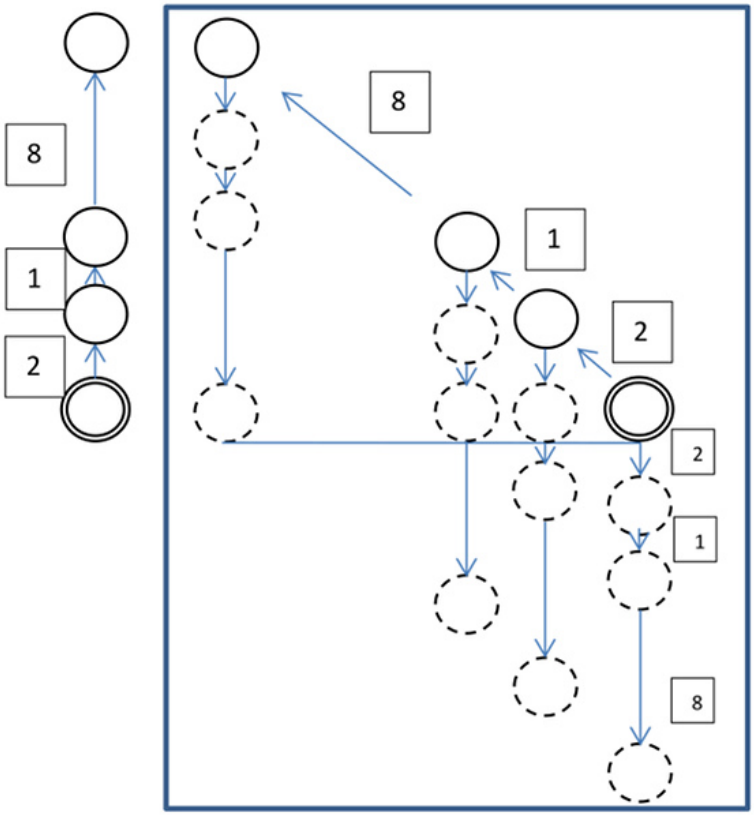


Example 22. A comparison of the processes used to generate all uppercase sections of the cadenza. The networks representing all sections are isographic, shown at the bottom right.



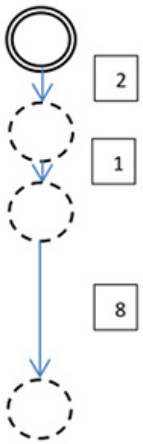
Example 23. A comparison of the processes used to generate all lowercase sections of the cadenza. The networks representing all sections are isographic, shown at bottom right.



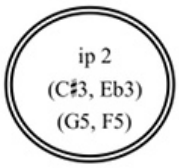


Example 24. A comparison of the embellished foreground structure of the lowercase sections of the cadenza with the structure of the main chord

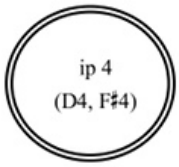
a. Graph that represents all lowercase sections



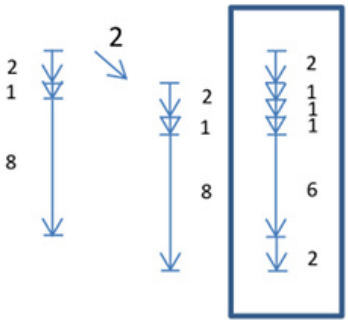
b. Node content for sections a and c



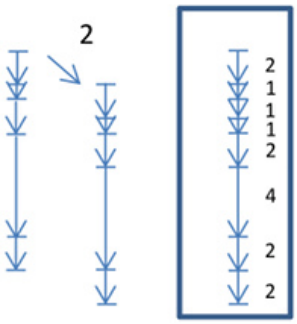
c. Node content for section b



a. Intervallic structure of figures in sections a and c

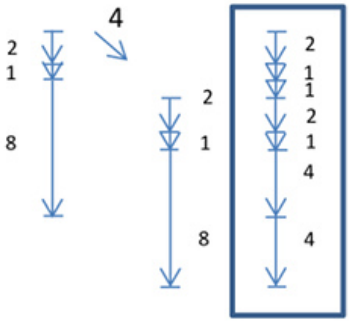


b. Intervallic structure of figures in section c after additional embellishment

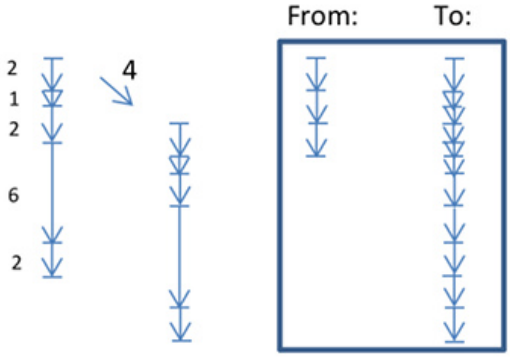


c. Intervallic structure of the main chord

d. Intervallic structure of figures in section b



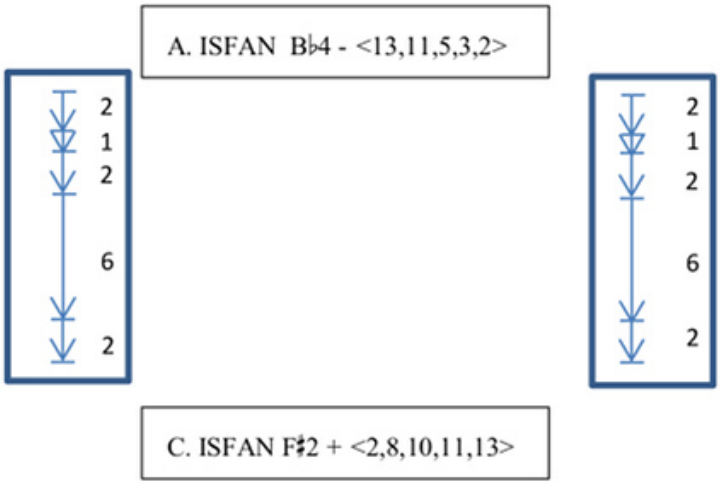
b. Intervallic structure of figures in section b after additional embellishment



Example 25. A comparison of the embellished foreground structure of the uppercase sections of the cadenza with the structure of the main chord

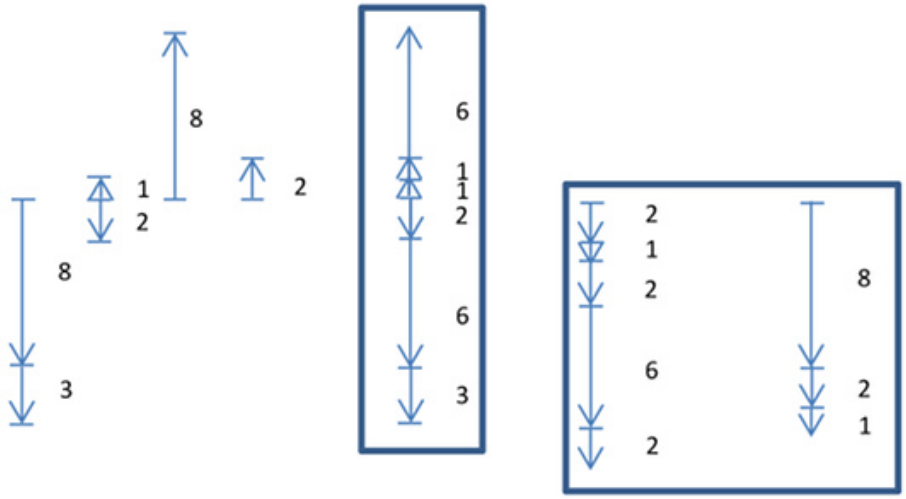
a. Intervallic structure of figures in sections A and C

b. Intervallic structure of the main chord

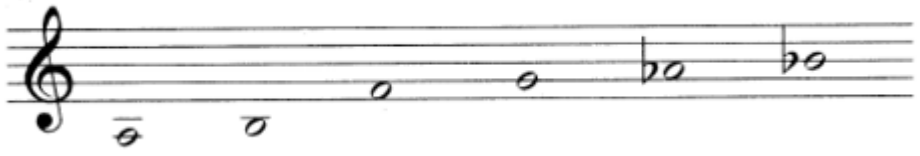


a. Intervallic structure of figures in section B

b. Intervallic structure of the main chord and initial chord of *Don*



Example 26. From Meston's description of the pitch structures of this work (Meston 2001)



Example 27. The pitch classes used in each section are considered as stemming from incomplete statements of the series