

**Macroform, Elements Employed, and Their Relations  
in Pierre Boulez's *Structures II* for Two Pianos**

by Mario Stern

Among the musical manuscripts held at the Paul Sacher Foundation are the sketches and scores of Pierre Boulez's *Structures pour deux pianos*. This work, composed between 1951–52 and 1956/61, starts contemporary with Karlheinz Stockhausen's *Kreuzspiel* for oboe, bass clarinet, piano, and three percussionists (1951) as well as several of his *Klavierstücke* and ends contemporary with Henri Pousseur's *Mobile*, also for two pianos (1957–58). Until now (bearing in mind Boulez's long-term periods of composition and his idea of a "work in progress"), *Structures* has consisted of five parts: three parts of Book I, and two chapters of Book II. The first chapter of Book II, which will be considered here, also consists of five sections: Sections 1, 3, and 5 are formed by what Boulez himself, in his sketches for *Structures*, calls "*structures complexes*," and sections 2 and 4 by "*structures notes simples*."<sup>1</sup>

Now, what are these "*structures complexes*" and "*structures notes simples*"? In the same sketches, Boulez presents them to us without further explanation. But he himself explains it in *Penser la musique aujourd'hui*,<sup>2</sup> as does Josef Häusler in his booklet for the LP recording of *Structures* by Aloys and Alfons Kontarsky.<sup>3</sup> One of the series employed is the following:



Example 1

This series Boulez arranges in a "succession of complexes of variable density":<sup>4</sup>



Example 2

The next step is to “multiply” these complexes, which means applying the intervals of one complex to every note of the other complexes. This is done upwards, downwards, or starting from one of the middle notes in complexes of more than two notes. The result is the one given by Boulez in his sketches and by Häusler in his booklet.<sup>5</sup>

There is still another group of multiplications, based on the intervals formed between the lower notes of the previous complexes. We will call them “transposed complexes.” They, too, are given in the Boulez’s sketches and in Häusler’s booklet.<sup>6</sup> These are the “structures complexes” employed in sections 1, 3, and 5. They are used in a diagonal, vertical, or broken direction (the latter being a combination of diagonal and vertical), and their sequence is given in an abridged form below, with roman numerals representing the transposed complexes:

Part 1:

5×4–4×3–3×2–2×1–1×5 (diagonal)// IV×I–IV×V–IV×IV–IV×III–IV×II (vertical)//  
 IV×I–V×II–V×III–V×IV–V×V (broken)// 4×5–4×1–4×2–4×3–4×4 (vertical)//  
 III×I–IV×II–V×III–V×IV–III×III (broken)// 1×3–1×2–1×1–1×5–1×4 (vertical)//  
 V×I–IV×II–IV×III–IV×IV–IV×V (broken)// 2×1–2×2–3×3–3×4–5×5 (broken)//

Part 3:

III×I–III×II–III×III–III×IV–III×V (vertical)// 3×1–4×2–5×3–1×4 (diagonal)//

Part 5:

3×3–4×4 (diagonal)—

The “structures notes simples” come from the transpositions of the series, *in the order of the series*. Boulez enumerates the transpositions from 1 to 12 for the original and from I to XII for the inverted transpositions. From these he chooses

→	→	←	←		→	←	←	←	→
III	VII	1	9	and	9	1	XII	XII	IX
→	←		→		→	←	→		
VI	VI		5		7	7	10		
←	←	→	→		←	←	←	→	→
VII	III	12	10		5	12	IX	XII	XII

for sections 2 and 4, respectively, which Boulez calls “interruptions” in his sketches.

Now, each of these transpositions of notes has associated with it a series of durations, attack modes, and intensities, taken mainly from two tables in Boulez’ sketches, which give the order number of the notes of each transposition, in the order of the series. *Table 1* is for the original series, *Table 2* for its inversion:

	a	b	c	d	e	f	g	h	i	j	k	l	
1/	1	2	3	4	5	6	7	8	9	10	11	12	\1
2/	2	5	7	9	3	12	4	1	11	6	10	8	\2
3/	3	7	9	10	4	1	11	5	6	8	12	2	\3
4/	4	9	10	12	11	5	6	7	8	2	1	3	\4
5/	5	3	4	11	7	8	9	2	10	12	6	1	\5
6/	6	12	1	5	8	9	2	10	3	4	7	11	\6
7/	7	4	11	6	9	2	10	3	12	1	8	5	\7
8/	8	1	5	7	2	10	3	12	4	11	9	6	\8
9/	9	11	6	8	10	3	12	4	1	5	2	7	\9
10/	10	6	8	2	12	4	1	11	5	7	3	9	\10
11/	11	10	12	1	6	7	8	9	2	3	5	4	\11
12/	12	8	2	3	1	11	5	6	7	9	4	10	\12

*Table 1*

	a	b	c	d	e	f	g	h	i	j	k	l	
	$\alpha$	$\beta$	$\gamma$	$\delta$	$\epsilon$	$\zeta$	$\eta$	$\iota$	$\kappa$	$\lambda$	$\mu$	$\nu$	
I/	1	8	6	11	12	3	10	2	9	7	4	5	\I
II/	8	12	10	9	6	5	11	1	4	3	7	2	\II
III/	6	10	9	7	11	1	4	12	3	2	5	8	\III
IV/	11	9	7	5	4	12	3	10	2	8	1	6	\IV
V/	12	6	11	4	10	2	9	8	7	5	3	1	\V
VI/	3	5	1	12	2	9	8	7	6	11	10	4	\VI
VII/	10	11	4	3	9	8	7	6	5	1	2	12	\VII
VIII/	2	1	12	10	8	7	6	5	11	4	9	3	\VIII
IX/	9	4	3	2	7	6	5	11	1	12	8	10	\IX
X/	7	3	2	8	5	11	1	4	12	10	6	9	\X
XI/	4	7	5	1	3	10	2	9	8	6	12	11	\XI
XII/	5	2	8	6	1	4	12	3	10	9	11	7	\XII

*Table 2*

As an example from the sketches, we give the durations (and some of the intensities or attack modes, especially when the durations remain the same during the whole series) for the transpositions used in section 2, and where they come from:

→  
 III: Durations: / (l-r) [left-right] Iv-XIIα  
 (Intensities: > (u-d) [up-down] Iε-XIIι)

→  
 VI: ↓ 1g-12g

←  
 VII: ↓ XII β-1 β

→  
 VII: 2-----

←  
 VI: \ (l-r) Iβ-XIIμ

←  
 III: ↓ 1h-12h

←  
 I: ✓ (l-r) IXv-IVα

→  
 XII: ↑ XIIε-Iε

←  
 9: < (r-l) I ξ-XII η

→  
 5: > (d-u) [down-up] 12a-1k

→  
 10: 3 -----  
 attacks: / (r-l) 11-12a

(Some of these values are changed by Boulez, either in the sketches themselves or in the score.)

The durations go from 16th-note = 1 to dotted half-note = 12, the intensities from *pppp* = 1 to *ffff* = 12. The modes of attack are more qualitative than quantitative in nature, and are shown, arranged from 1 to 12, in a table preserved in the sketches.

It must be mentioned that there is another 12-tone series, already used in the First Book of this work, a series taken from Messiaen's *Mode des valeurs et d'intensités* (Example 3), from which Boulez also took the values for the different parameters, in the same way as he does from the series in Example 1.



<sup>1</sup> All sketches quoted here are preserved in the Pierre Boulez Collection at the Paul Sacher Foundation.

<sup>2</sup> Pierre Boulez, *Penser la musique aujourd'hui* (Geneva: Gonthier, 1964), pp. 39–41; English edition: *Boulez on Music Today*, trans. Susan Bradshaw and Richard Rodney Bennett (Cambridge, MA: Harvard University Press, 1971), pp. 39–40.

<sup>3</sup> Josef Häusler, "Klangfelder und Formflächen: Kompositorische Grundprinzipien im II. Band der Structures von Pierre Boulez," liner notes for LP recording of Boulez's *Structures pour deux pianos, premier livre et deuxième livre*, by Alfons und Aloys Kontarsky, Wergo WER 60011, 1965.

<sup>4</sup> Boulez, *Penser* (see note 2), p. 40–41; *Boulez on Music Today* (see note 2), p. 39.

<sup>5</sup> Häusler, "Klangfelder" (see note 3), Fig. 4.

<sup>6</sup> *Ibid.*, Fig. 5.

<sup>7</sup> *Ibid.*, p. [2].

<sup>8</sup> *Ibid.*, Fig. 6 and accompanying text.

<sup>9</sup> Boulez, *Penser* (see note 2), p. 14; *Boulez on Music Today* (see note 2), p. 18.