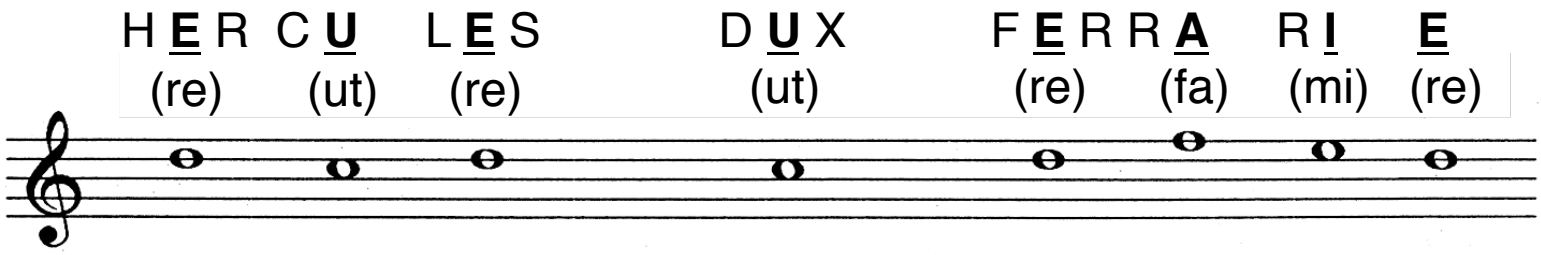
Dodecaphony
(Twelve-Tone Serialism)

Precedents of Dodecaphony

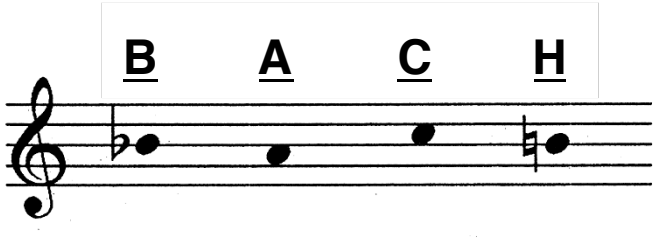
Soggeto Cavato ("Carved Melody")

Josquin DesPres—*Missa Hercules Dux Ferrariae* (c. 1480):



French solfege syllables are used to represent vowel sounds in name.

"Bach" Motive:



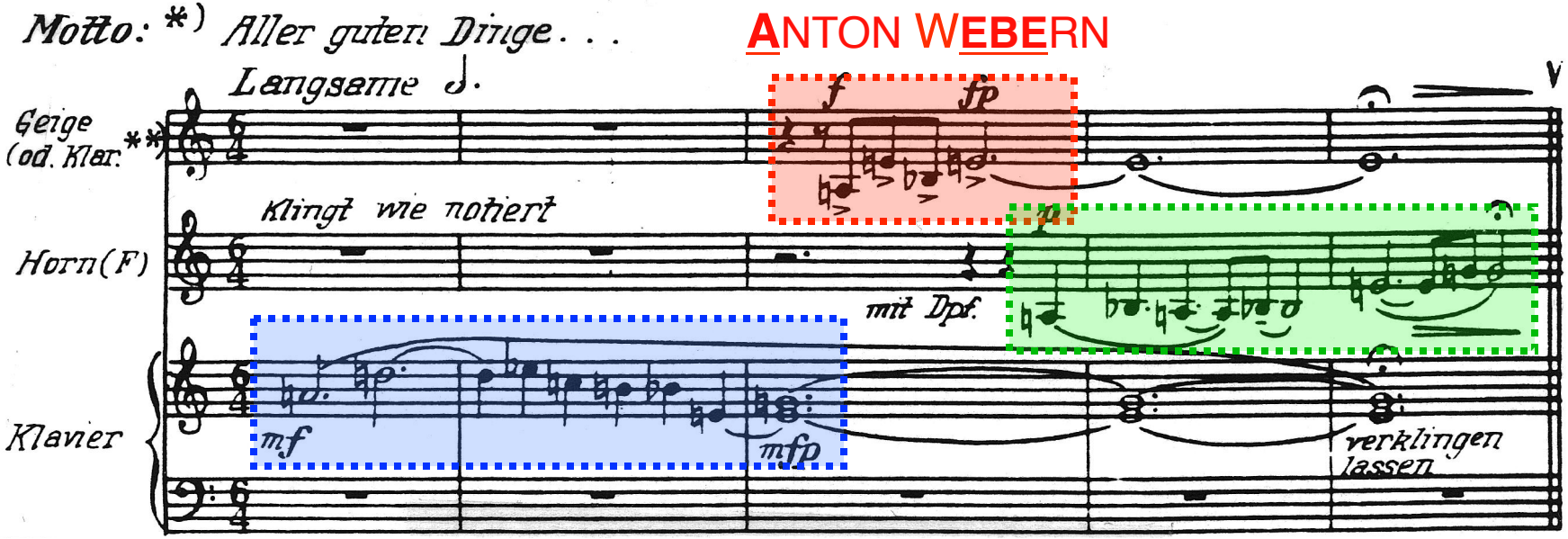
This motive has been used by Bach, Schumann, Liszt, Ives, Schönberg, Shostokovich, et al)

In German, the letter **B** represents **B-flat**, **H** represents **B-natural**, and **S** ("Es") represents **E-flat**.

Precedents of Dodecaphony

Soggeto Cavato ("Carved Melody")

Alban Berg—*Kammerkonzert* (1923-25):



ANTON WEBERN

ARNOLD SCHÖNBERG

ALBAN BERG

Dodecaphony

Definition:

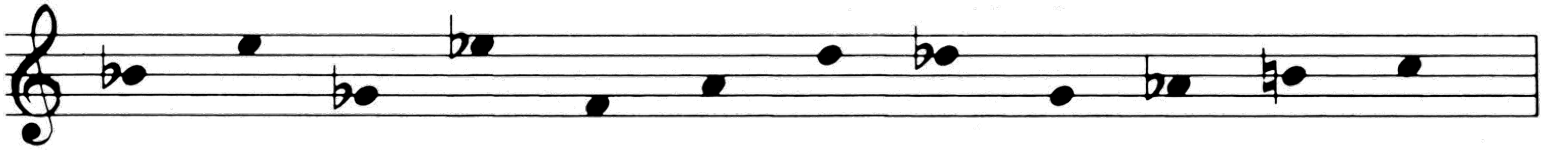
"Method of composing with twelve tones related only to themselves." [Schönberg]

Terminology:

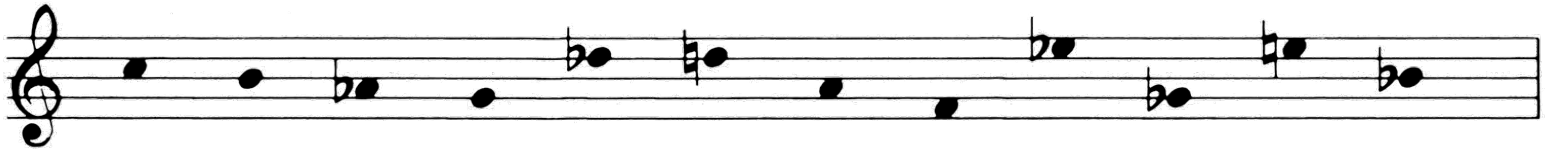
- dodecaphony/twelve-tone composition
- matrix
- permutation (prime, retrograde, inversion, retrograde-inversion)
- combinatoriality
- hexachords, tetrachords, trichords, dyads
- invariance
- partition

Schönberg *Variations for Orchestra*, Op. 31 (1928): tone rows

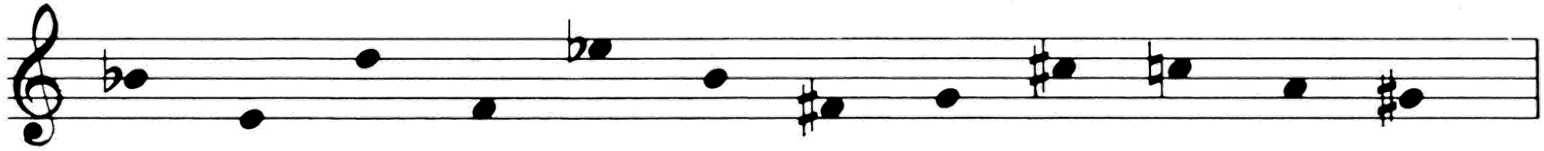
Prime (P):



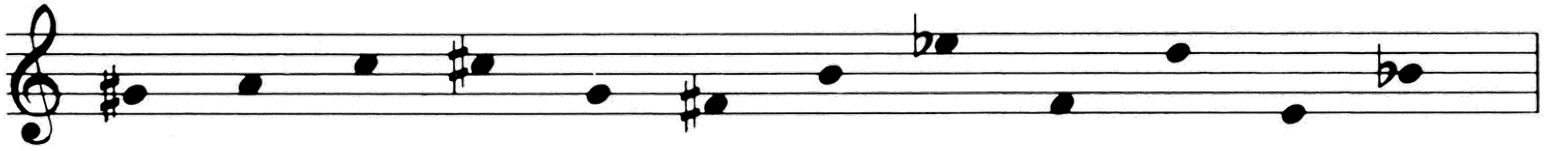
Retrograde (R):



Inversion (I):



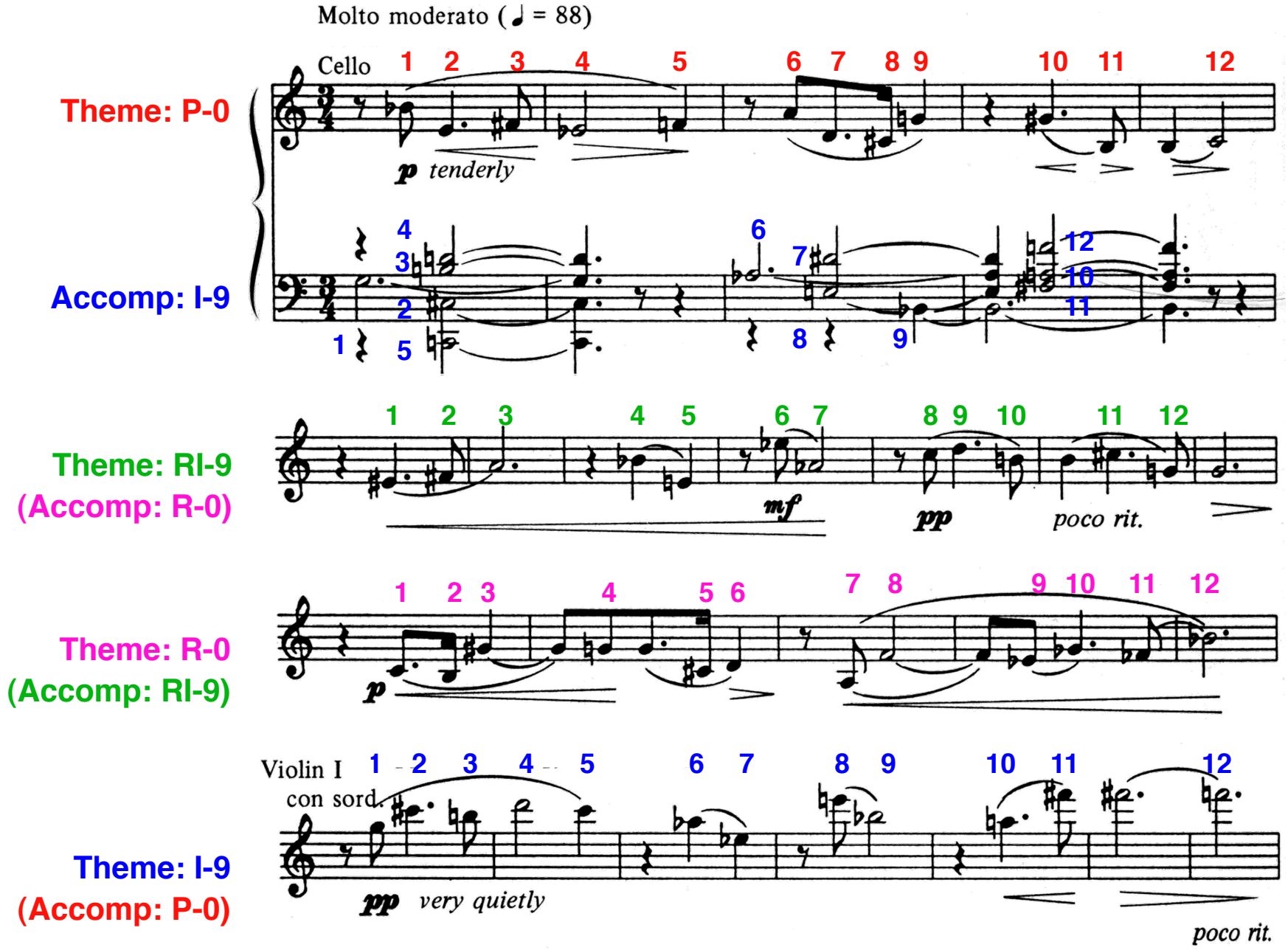
Retrograde-Inversion (RI):



Schönberg *Variations for Orchestra*, Op. 31 (1928): matrix

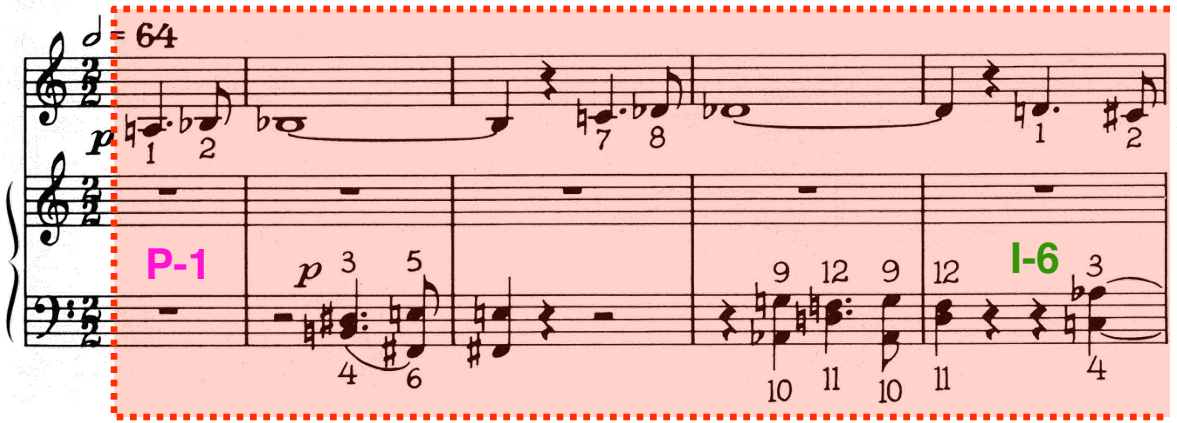
	I_0	I_6	I_8	I_5	I_7	I_{11}	I_4	I_3	I_9	I_{10}	I_1	I_2	
P_0	B♭	E	G♭	E♭	F	A	D	D♭	G	A♭	B	C	R_0
P_6	E	B♭	C	A	B	E♭	A♭	G	D♭	D	F	F♯	R_6
P_4	D	A♭	B♭	G	A	D♭	G♭	F	B	C	E♭	E	R_4
P_7	F	B	D♭	B♭	C	E	A	A♭	D	E♭	G♭	G	R_7
P_5	E♭	A	B	A♭	B♭	D	G	G♭	C	D♭	E	F	R_5
P_1	B	F	G	E	G♭	B♭	E♭	D	A♭	A	C	D♭	R_1
P_8	F♯	C	D	B	D♭	F	B♭	A	E♭	E	G	A♭	R_8
P_9	G	D♭	E♭	C	D	G♭	B	B♭	E	F	A♭	A	R_9
P_3	C♯	G	A	F♯	A♭	C	F	E	B♭	B	D	D♯	R_3
P_2	C	F♯	G♯	F	G	B	E	E♭	A	B♭	C♯	D	R_2
P_{11}	A	D♯	F	D	E	G♯	C♯	C	F♯	G	B♭	B	R_{11}
P_{10}	G♯	D	E	C♯	D♯	G	C	B	F	F♯	A	B♭	R_{10}
	RI_0	RI_6	RI_8	RI_5	RI_7	RI_{11}	RI_4	RI_3	RI_9	RI_{10}	RI_1	RI_2	

Schönberg *Variations for Orchestra*, Op. 31 (1928): main theme

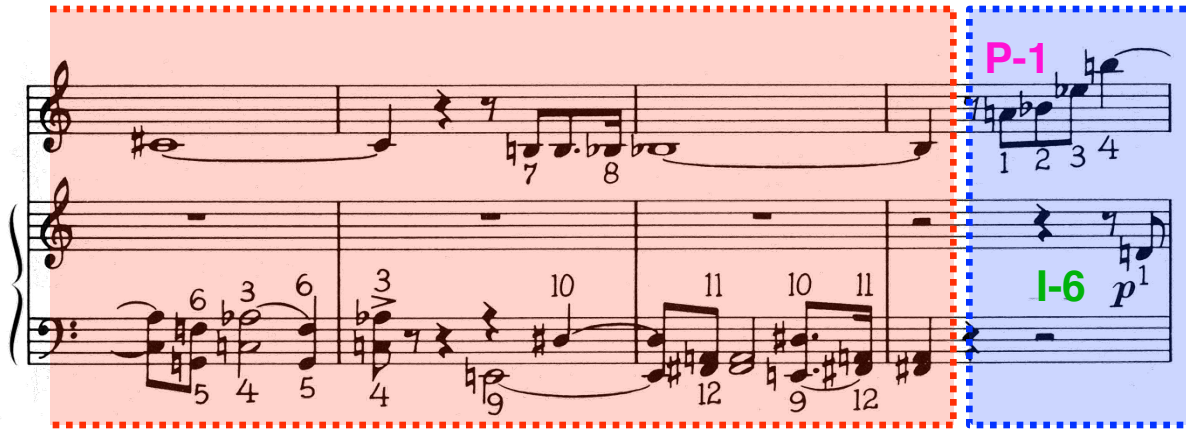


Two Possible Applications of a Tone Row

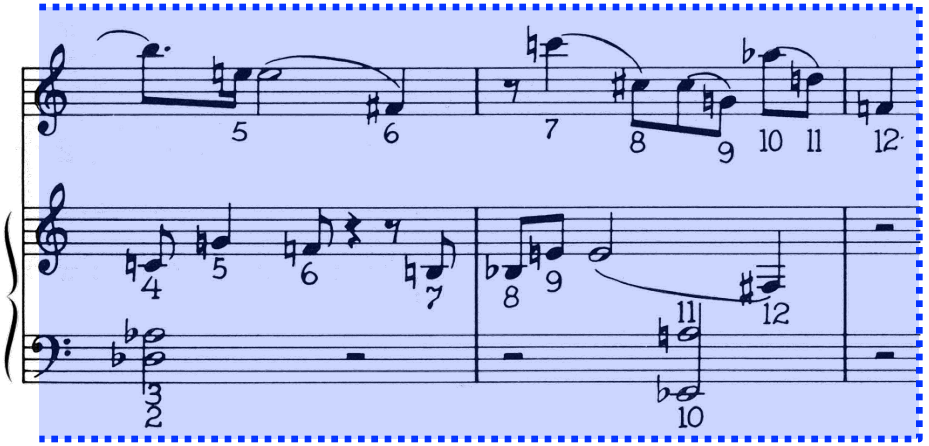
Arnold Schönberg:
Violin Concerto, Op. 36
(1936)



Category One:
one version of the row is used at a time; pitches are distributed between parts (**partitioning**).



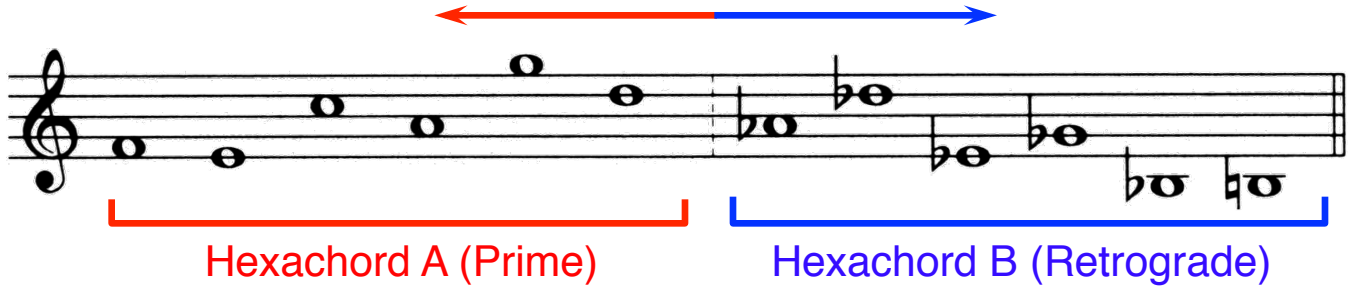
Category Two:
Two or more versions of the row are used simultaneously, usually in separate voices.



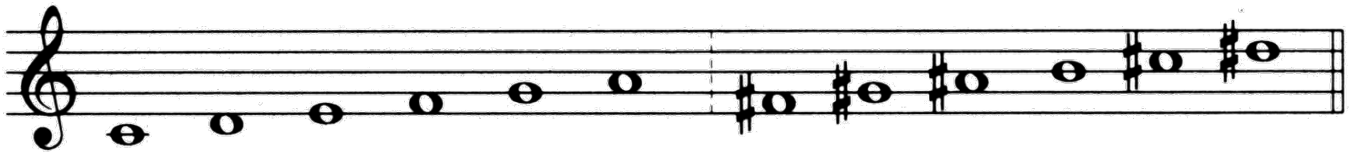
Alban Berg's Use of the Row

Three Versions of the Row in Berg's *Lyric Suite* (1925-26)

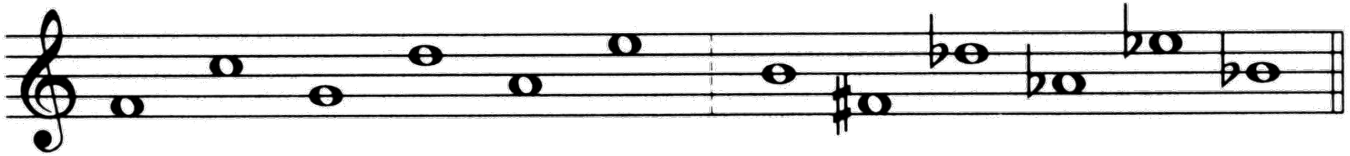
a. Original form:



b. As two scales:



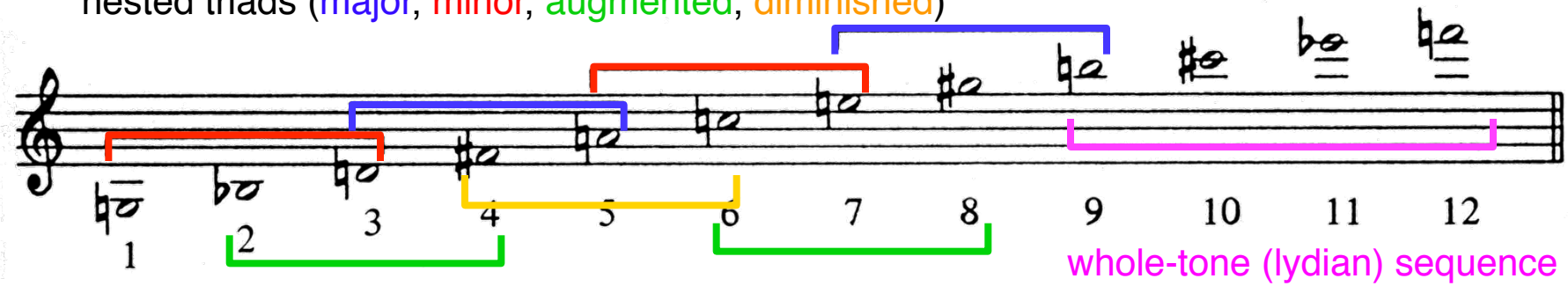
c. As an ascending circle of fifths:



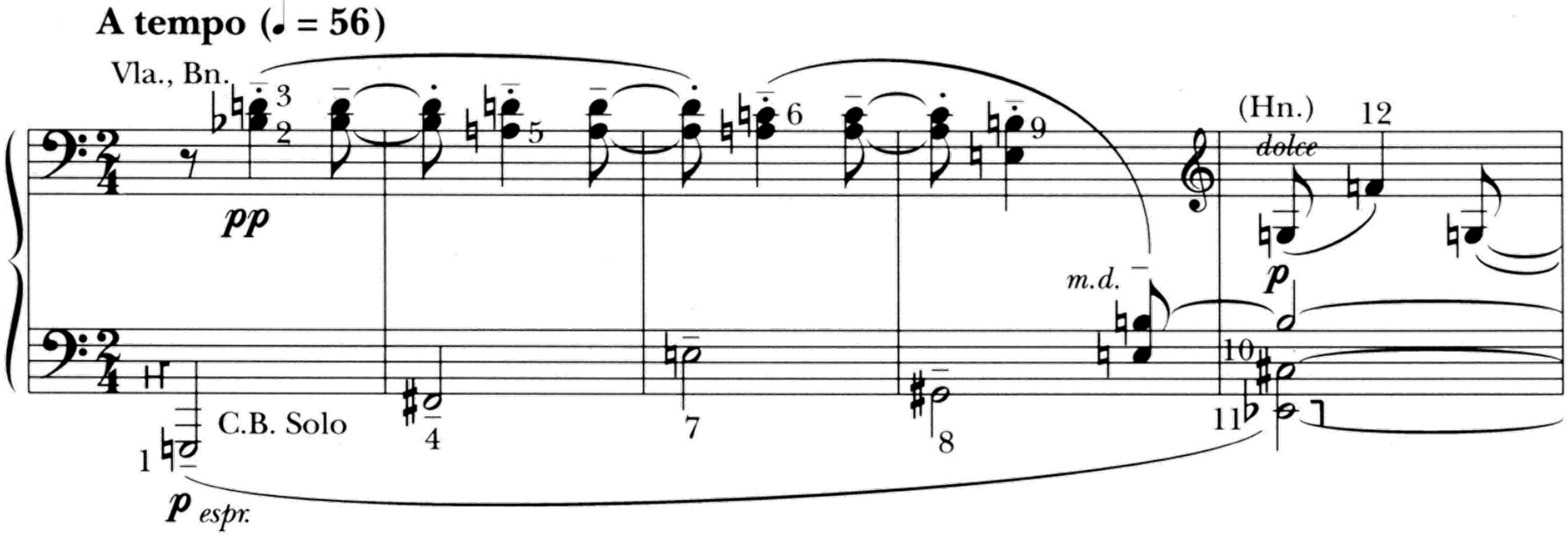
Alban Berg's Use of the Row

Prime Set of the Violin Concerto (1935):

nested triads (major, minor, augmented, diminished)

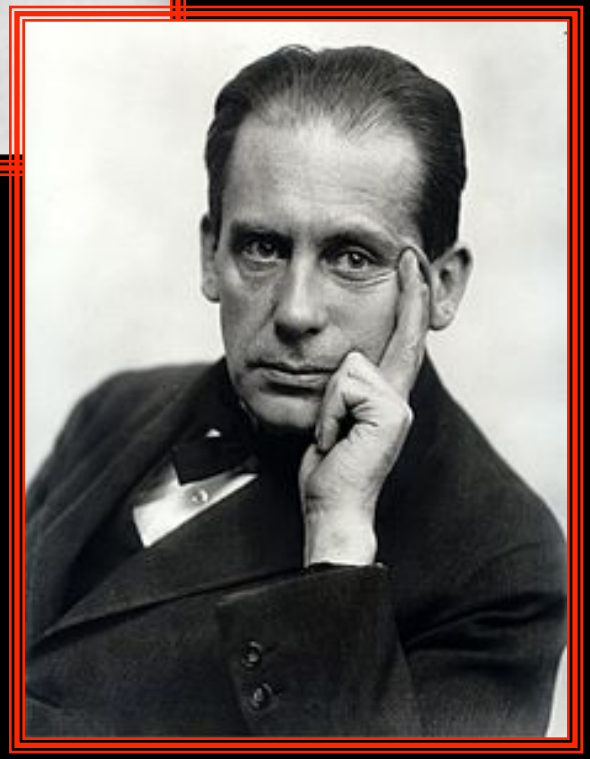


Violin Concerto, First movement, mm. 11-15:



▲ Alma Mahler

▼ Walter Gropius

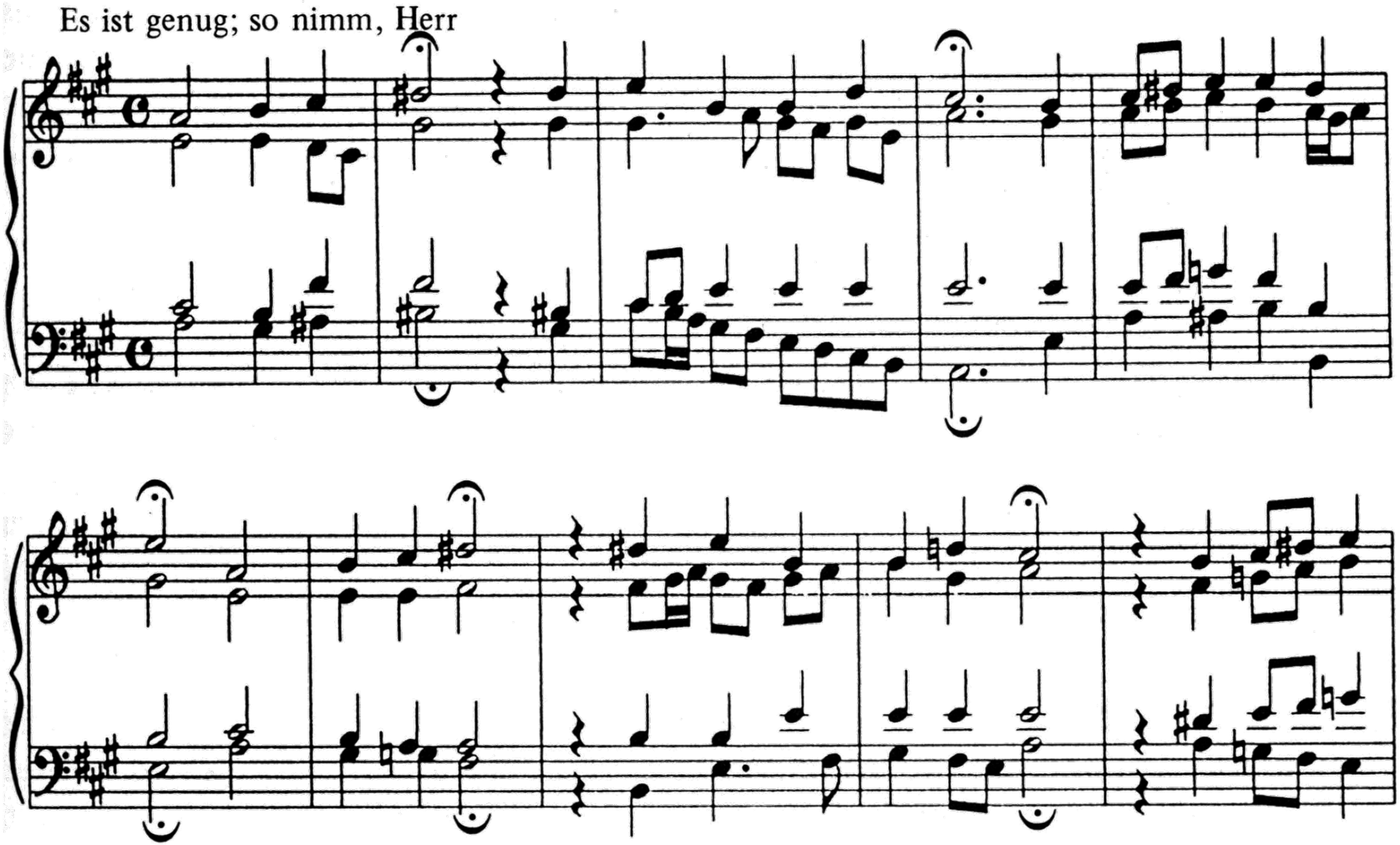


▲ Manon Gropius in 1933, at the age of sixteen.

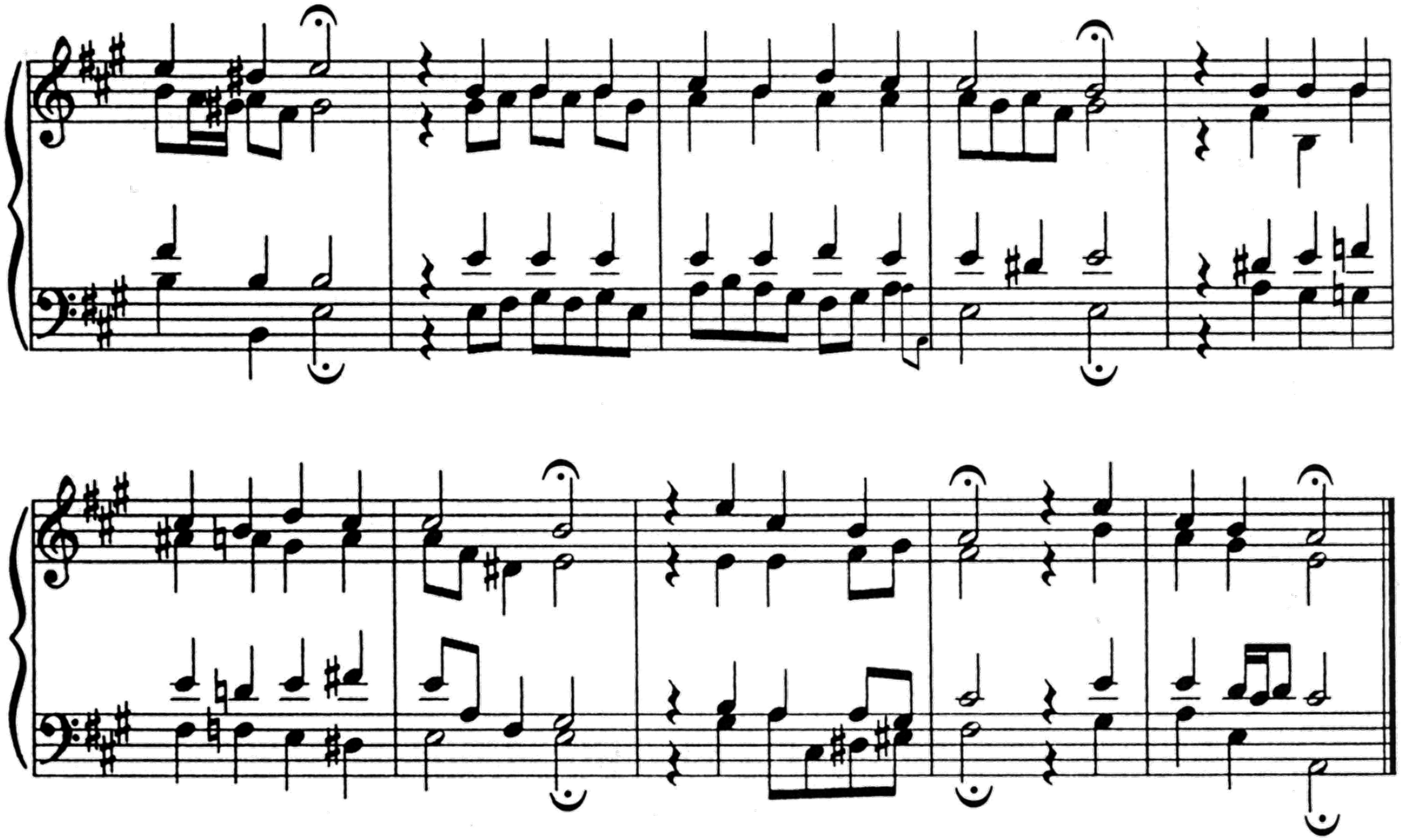
BAUHAUS

▲ Walter Gropius: *Bauhaus*, Dessau, Germany (1925-26)

J.S. Bach: Harmonization of chorale, “Es ist genug so nimm, Herr”

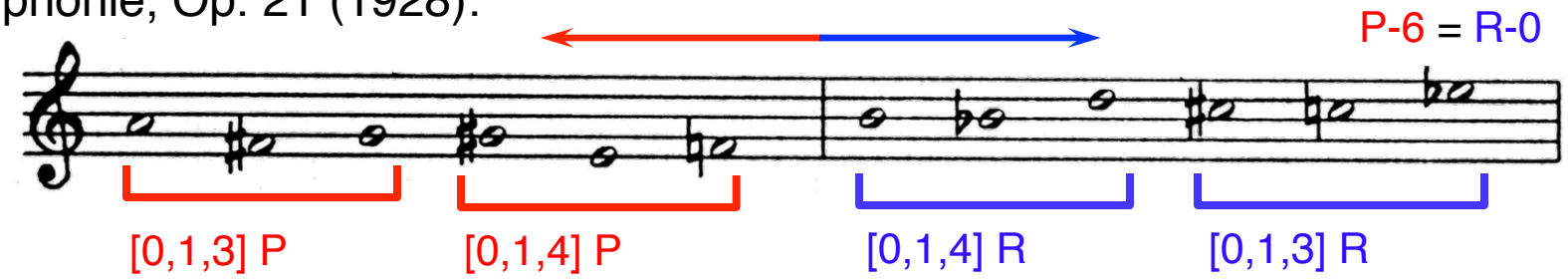


J.S. Bach: Harmonization of chorale, “Es ist genug so nimm, Herr”

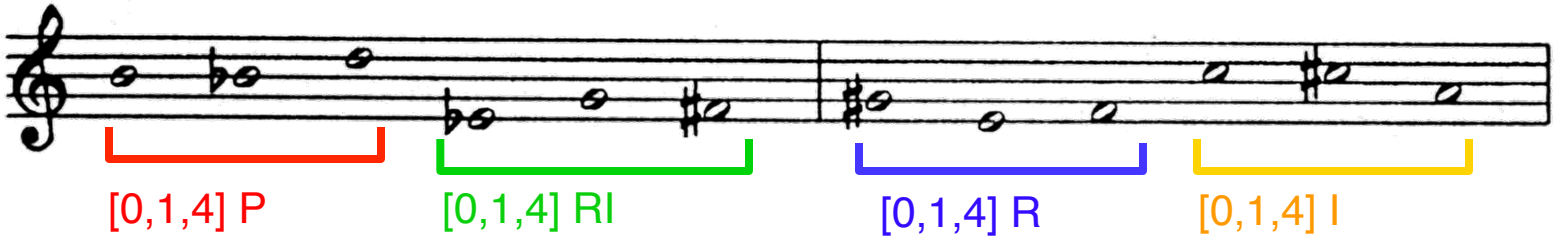


Anton Webern's Use of the Row

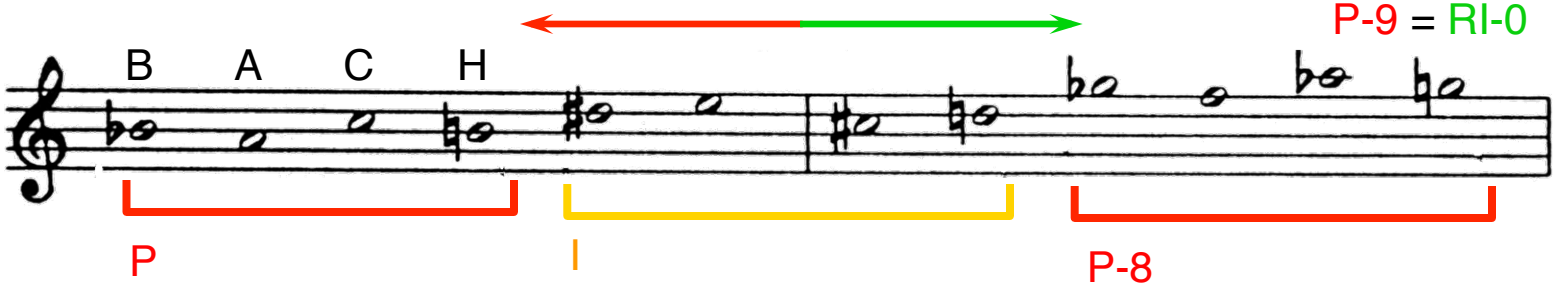
Symphonie, Op. 21 (1928):



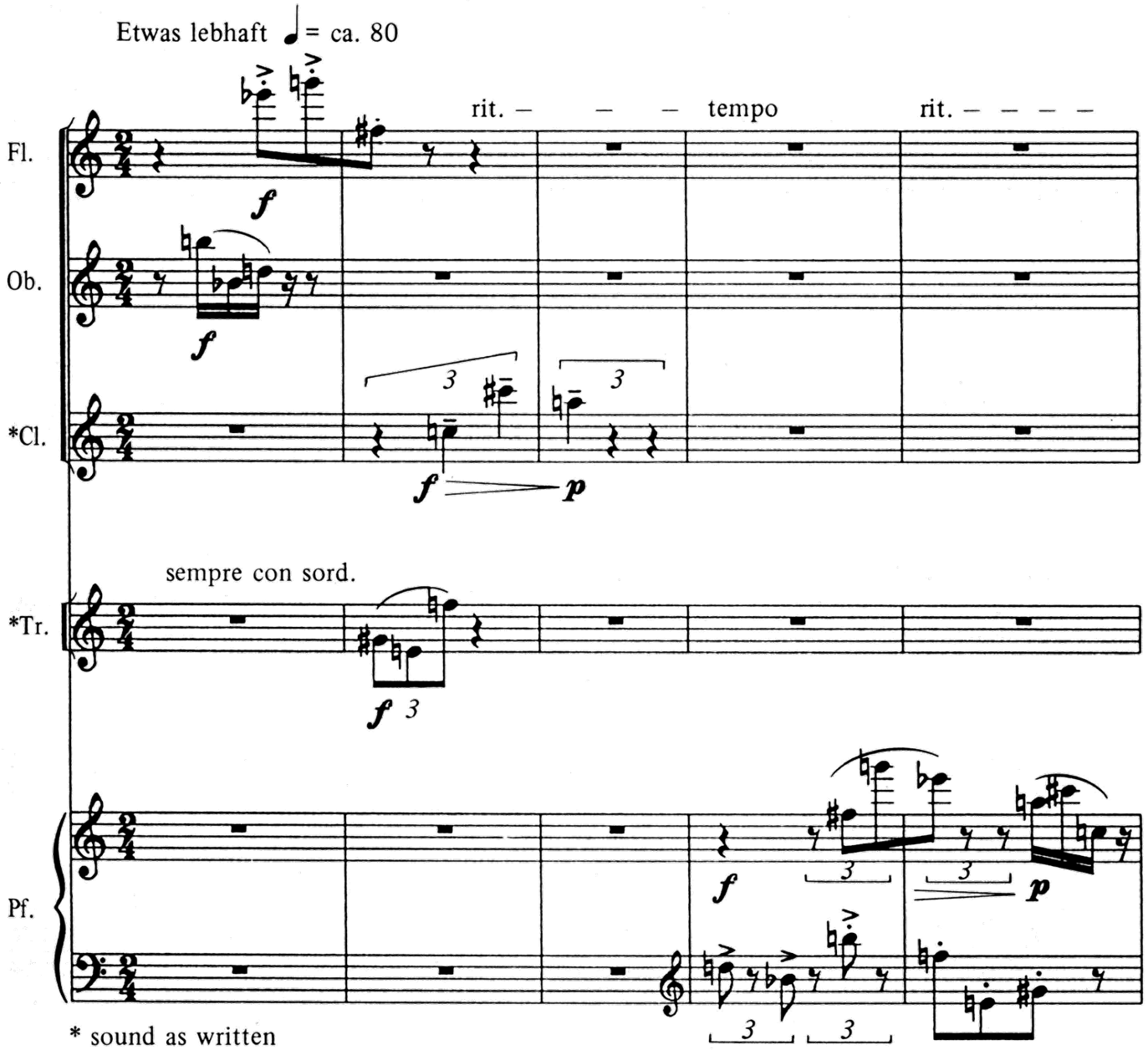
Concerto, Op. 24 (1934):



String Quartet, Op. 28 (1937-38):



Anton Webern: Concerto, Op. 24 (1934)—Movement I

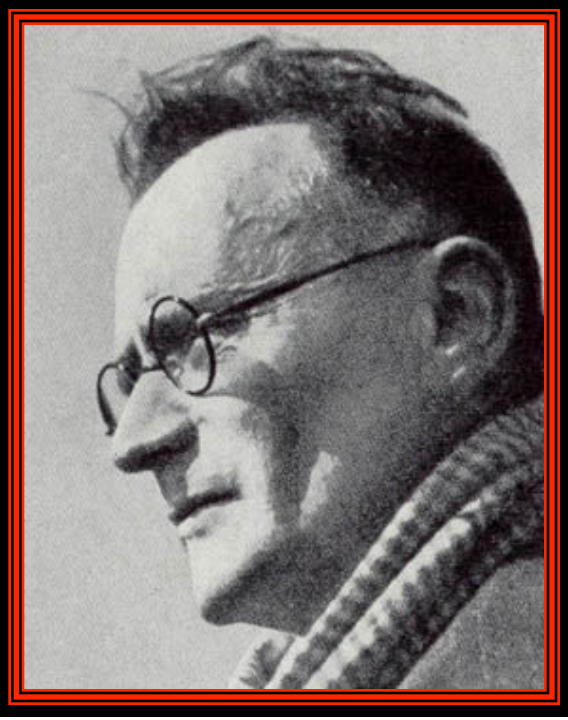


Magic Square

“The sower Arepo keeps the work turning.”

Integral Serialism

Integral Serialism



Anton Webern (1883-1945) was perhaps the most significant influence on the post-WW II generation of composers.

Integral Serialism

Europe after World War II

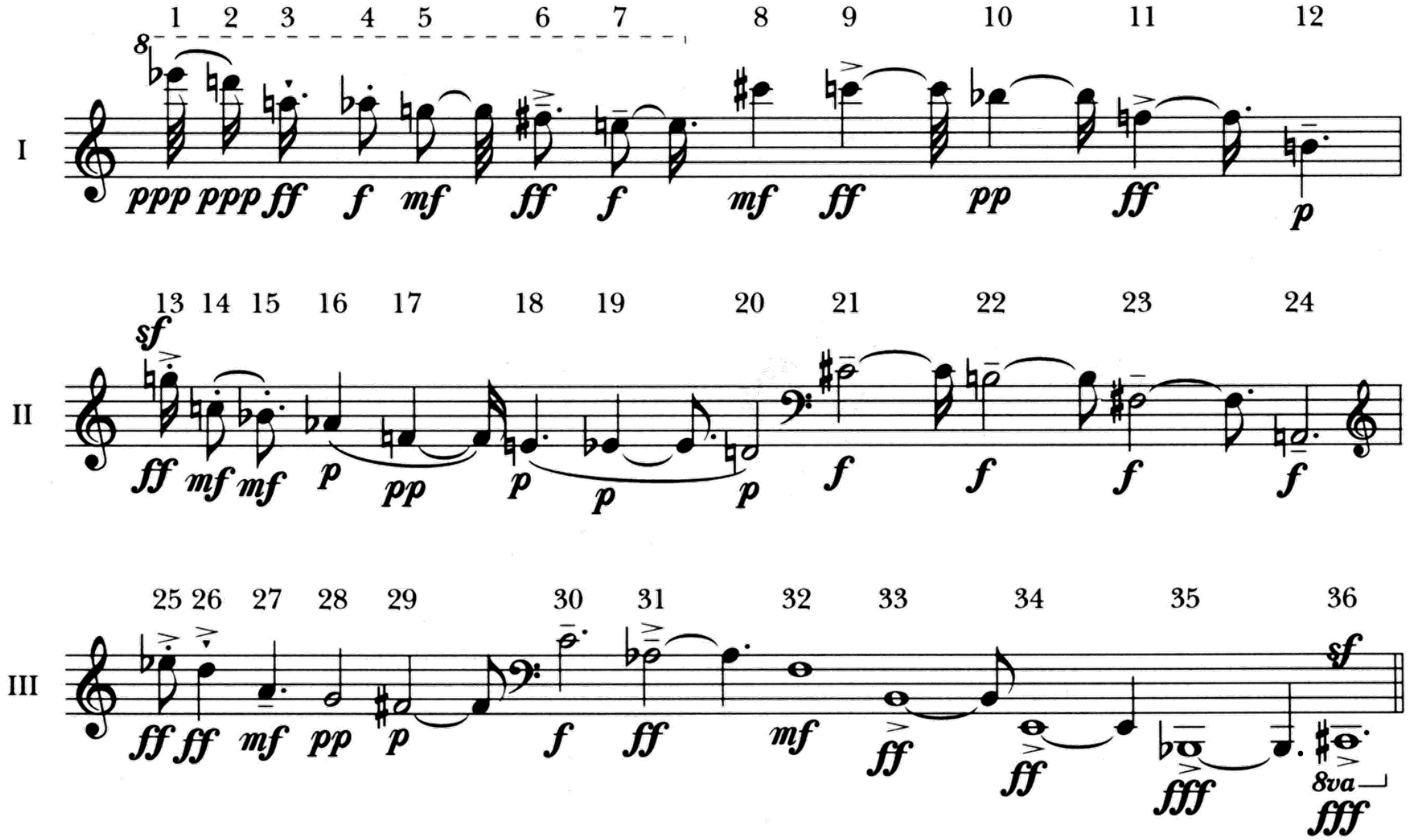
- Many European artists questioned the role of the artist in society following World War II.
- Composers attempted to remove themselves from the artistic process.
- Rational (intellectual) approaches favored over intuition/emotion.
- Unlike American serialists, the Europeans were concerned with the philosophical implications of serialism.

Integral Serialism: Early Examples

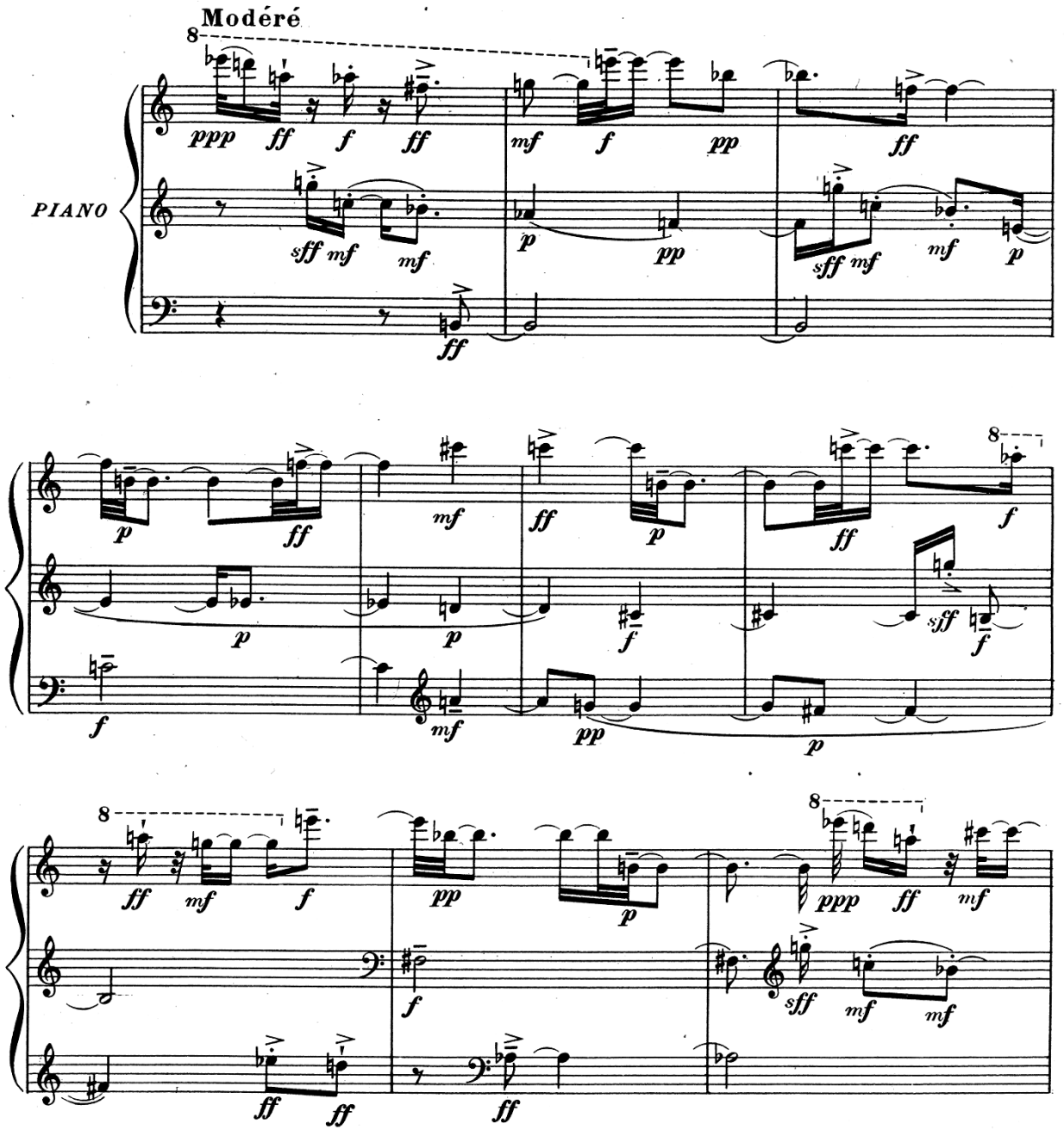
- Webern's late works were the first examples of serialism extending beyond the pitch realm.
- Milton Babbitt: *Three Compositions for Piano* (1947)
- Olivier Messiaen: *Mode de valeurs et d'intensities* for piano (1949-50)
- Karlheinz Stockhausen: *Kreuzspiel* for oboe, bass clarinet, piano, and two percussion (1951)
- Pierre Boulez: *Structures* for two pianos (1952)

Olivier Messiaen and his students at the Paris Conservatoire, including Karlheinz Stockhausen and Yvonne Loriod (c.1950).

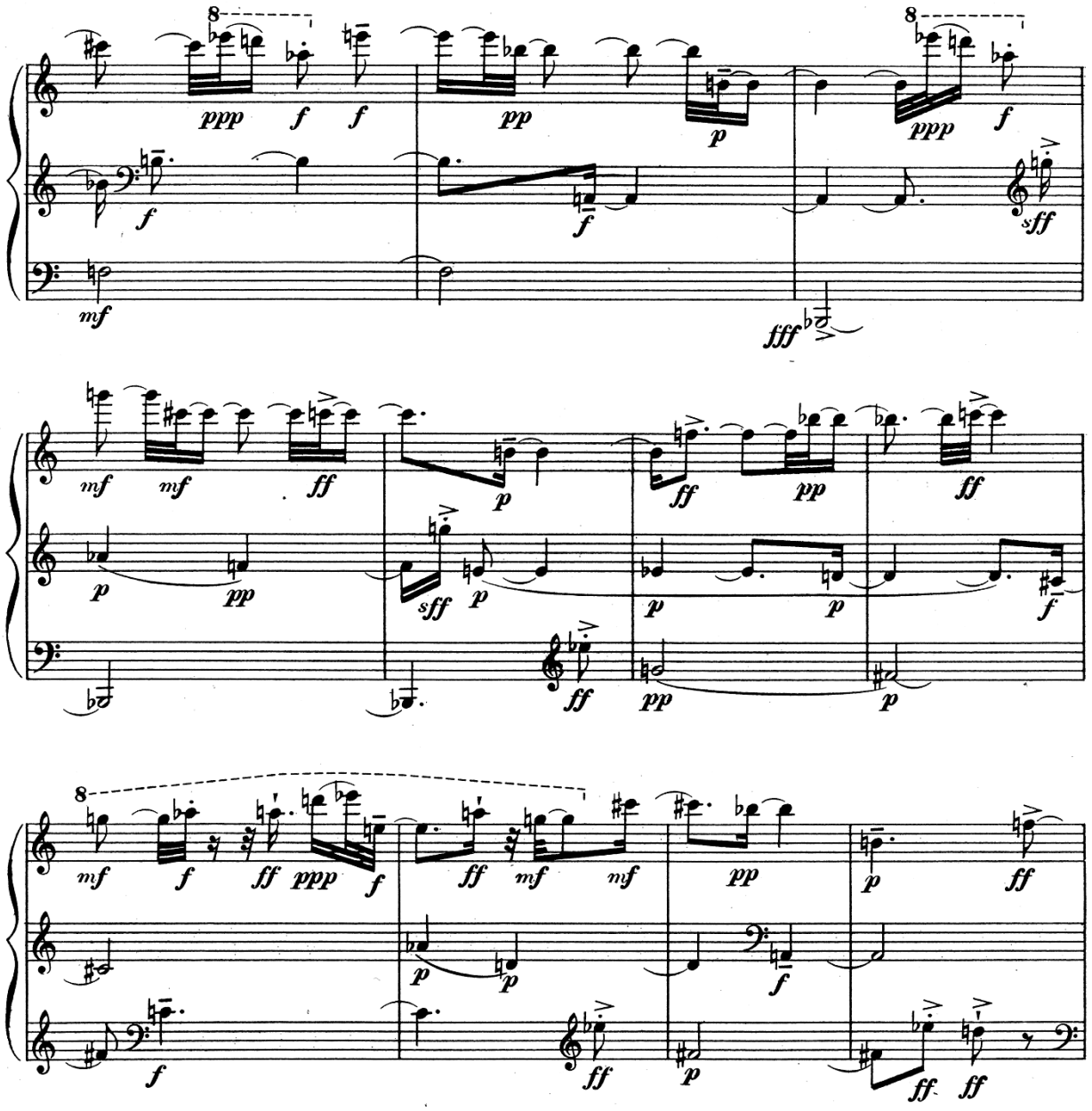
Serial assignments in Messiaen's *Mode de valeurs et d'intensities* (1949-50)



Olivier Messiaen: *Mode de valeurs et d'intensities* (1949-50)

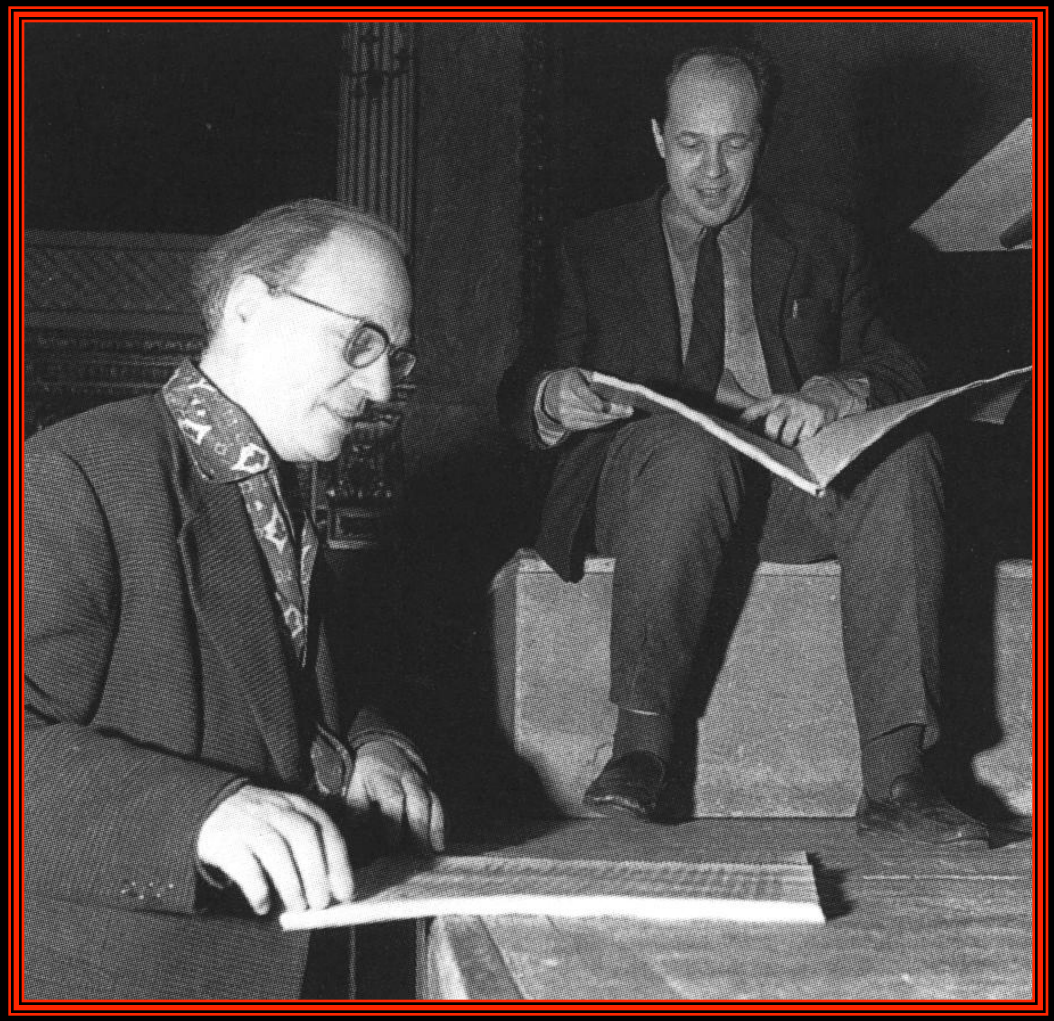


Olivier Messiaen: *Mode de valeurs et d'intensities* (1949-50)



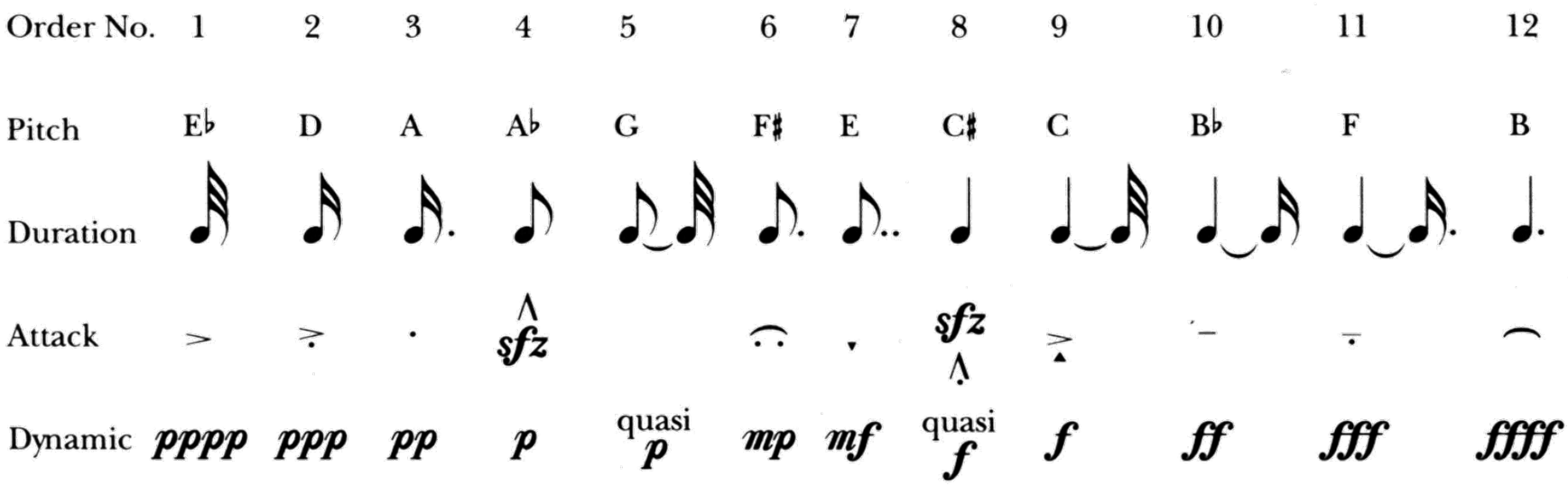
Integral Serialism

Pierre Boulez (b. 1925)

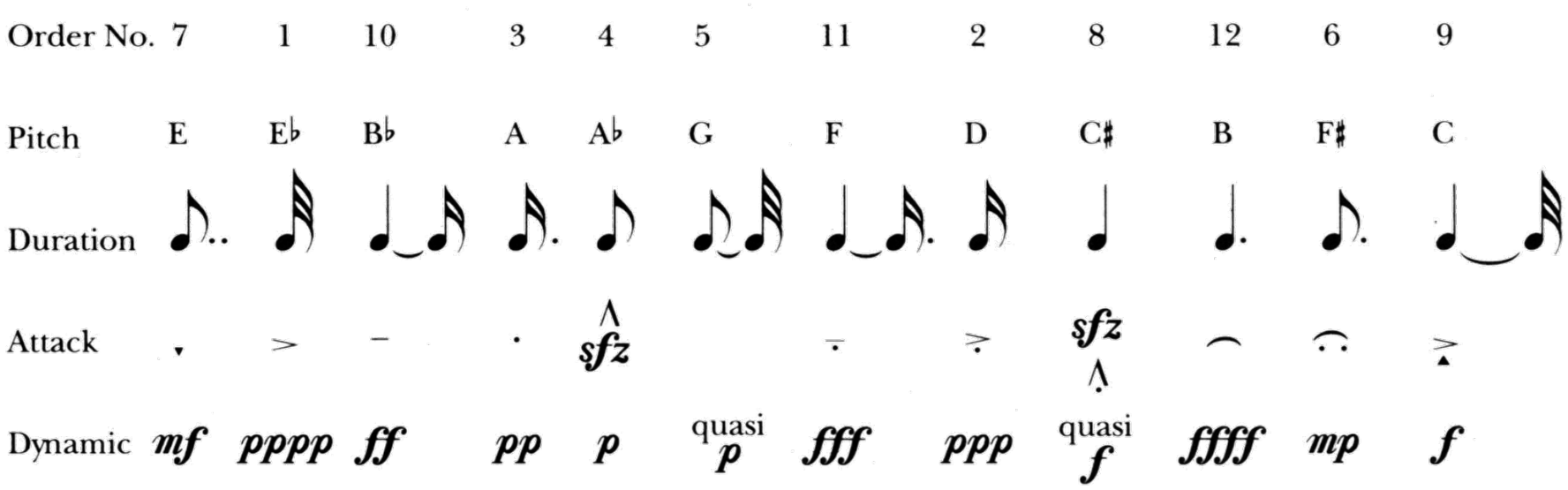


▲ Boulez (right) with former teacher Olivier Messiaen at the Odéon, Paris (1966).

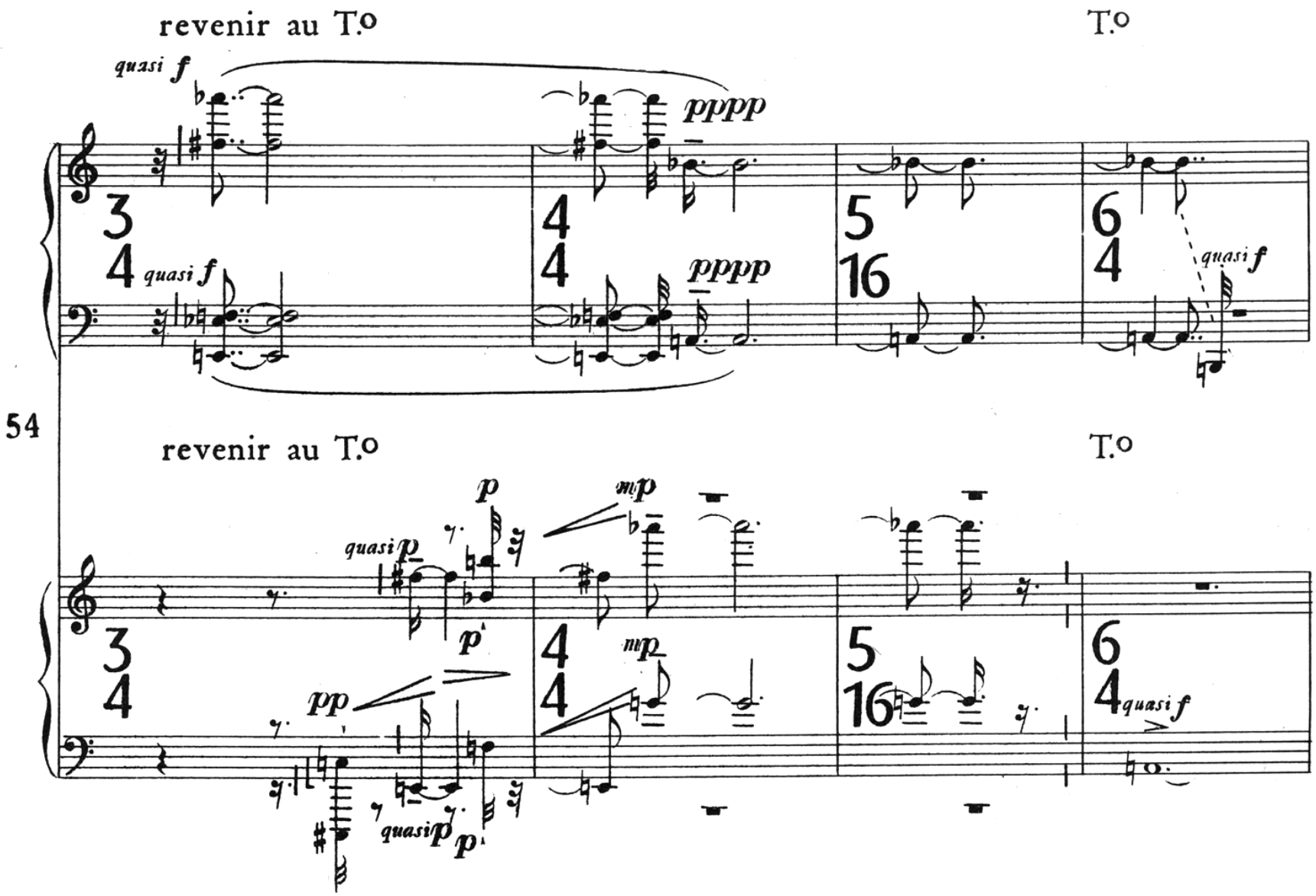
Rows from Pierre Boulez's *Structures I* (1952)



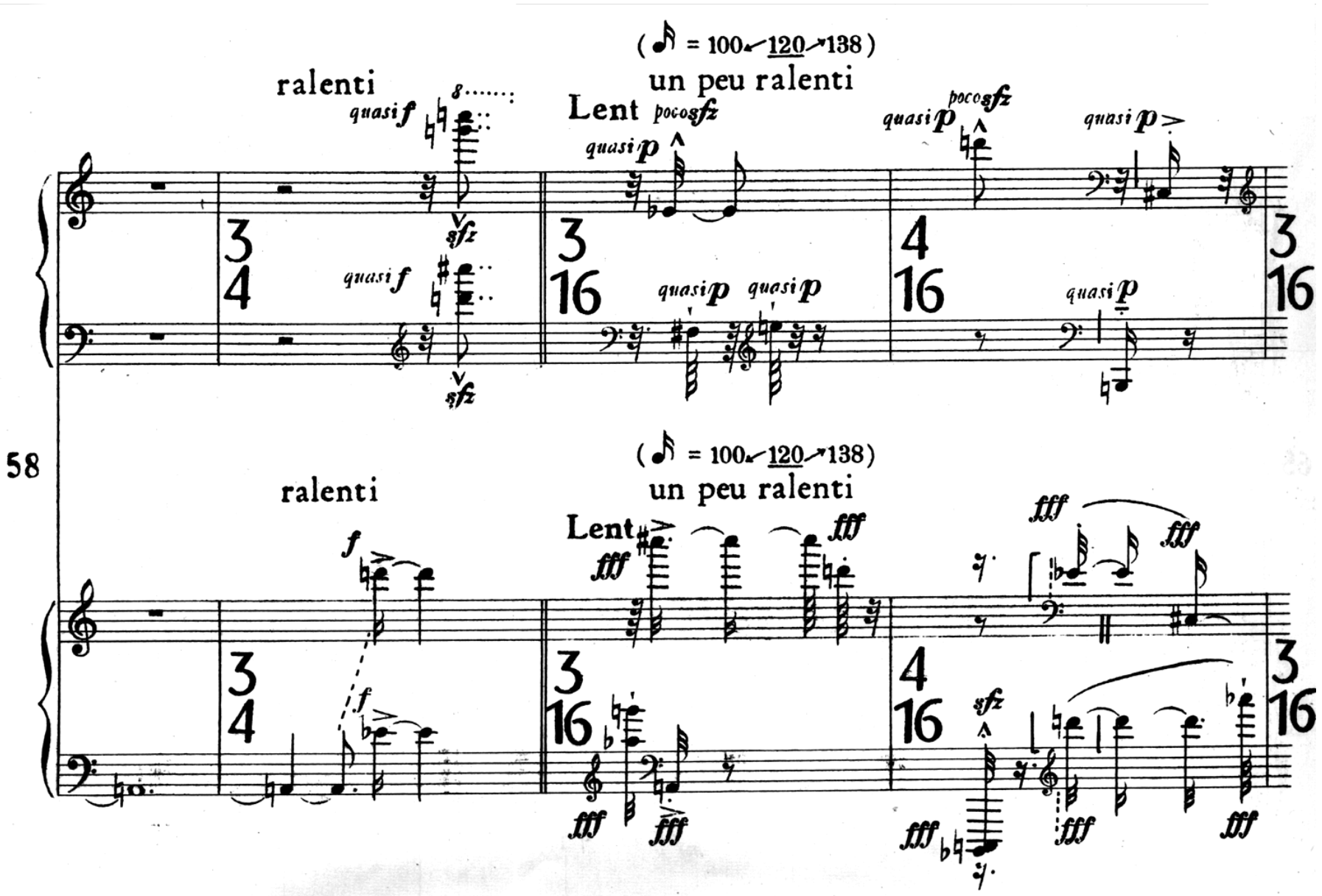
(The absence of an attack at the fifth order number indicates "normal.")



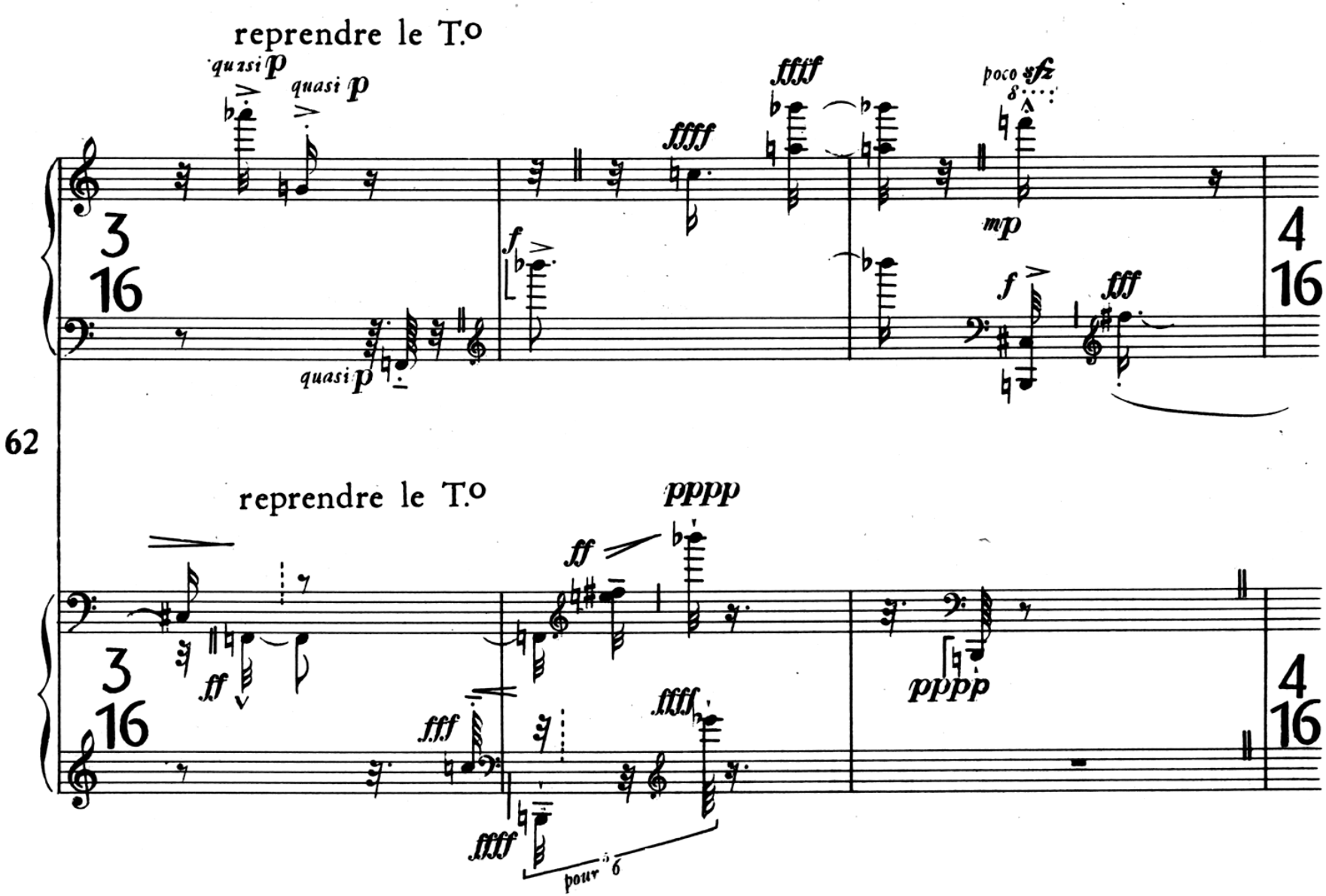
Pierre Boulez: *Structure Ib* (1952)



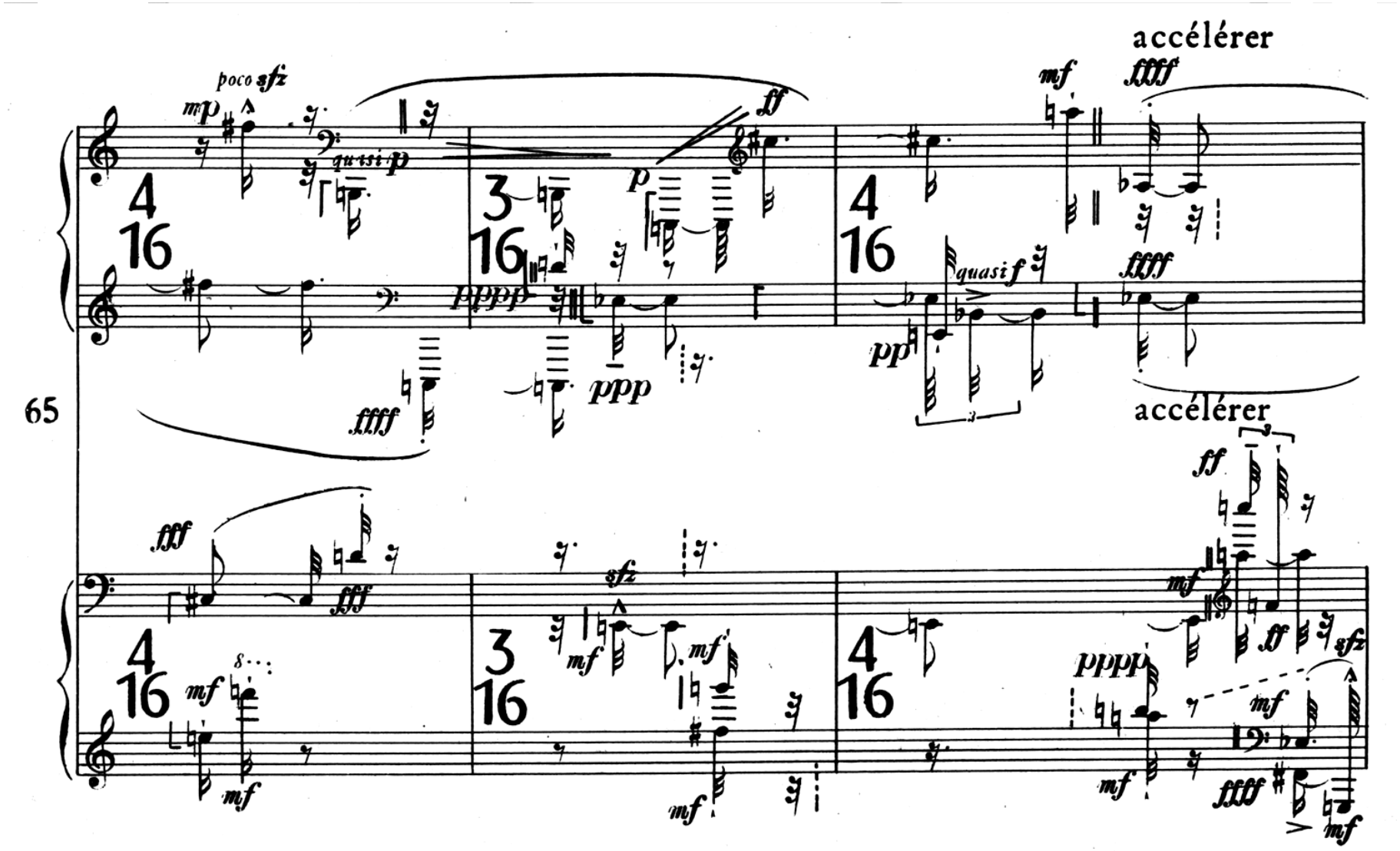
Pierre Boulez: *Structure Ib* (1952)



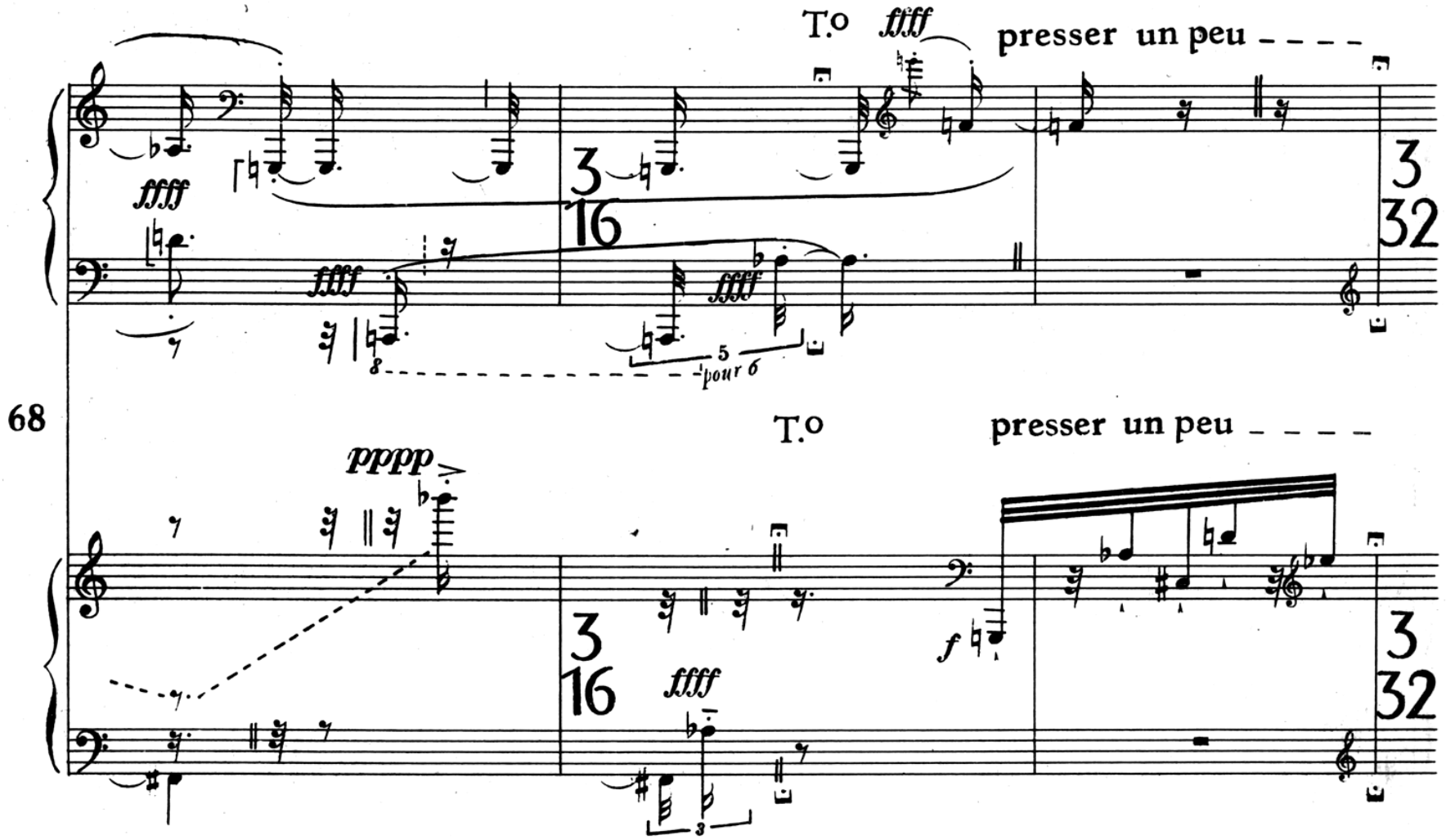
Pierre Boulez: *Structure Ib* (1952)



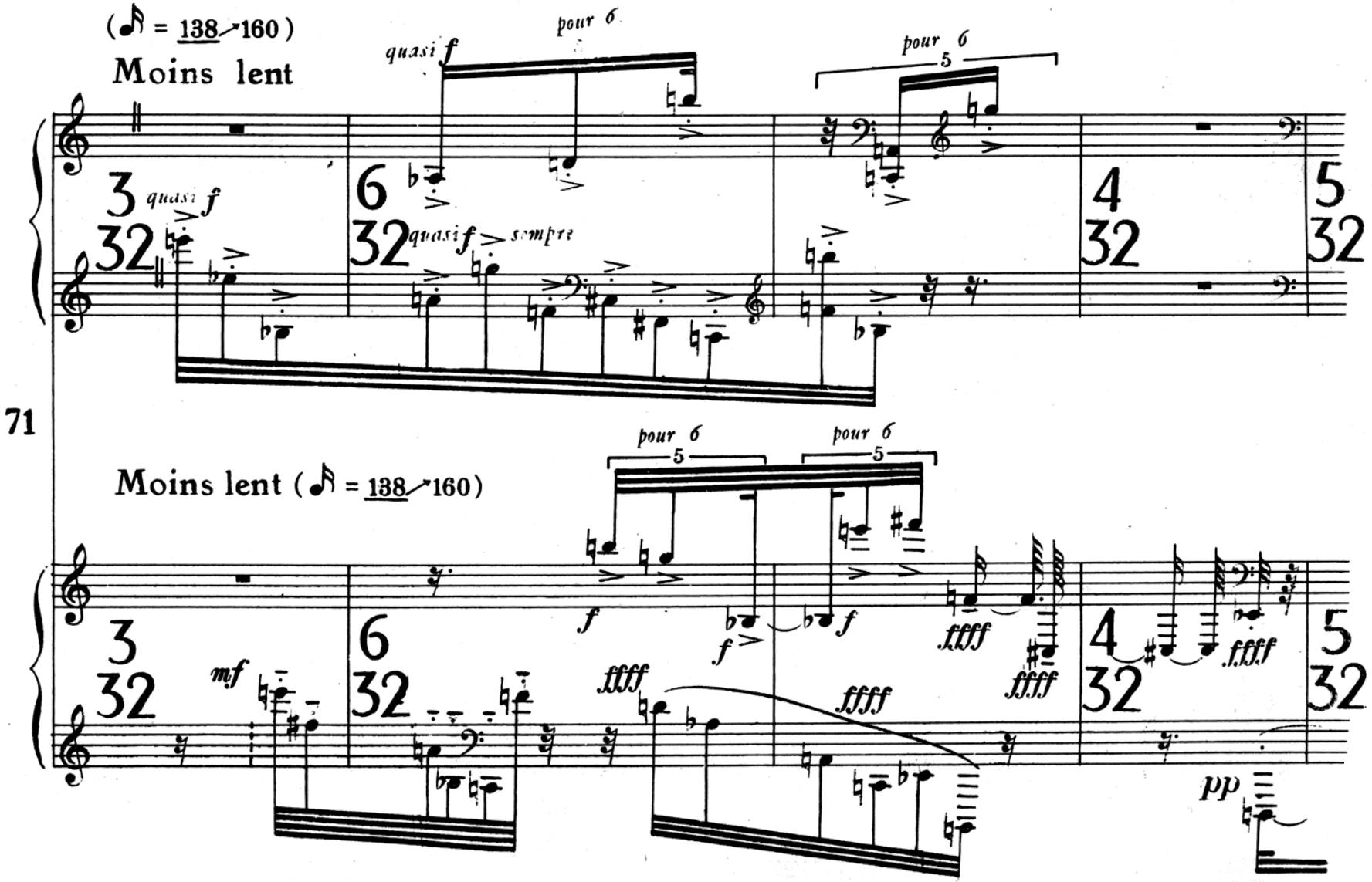
Pierre Boulez: *Structure Ib* (1952)



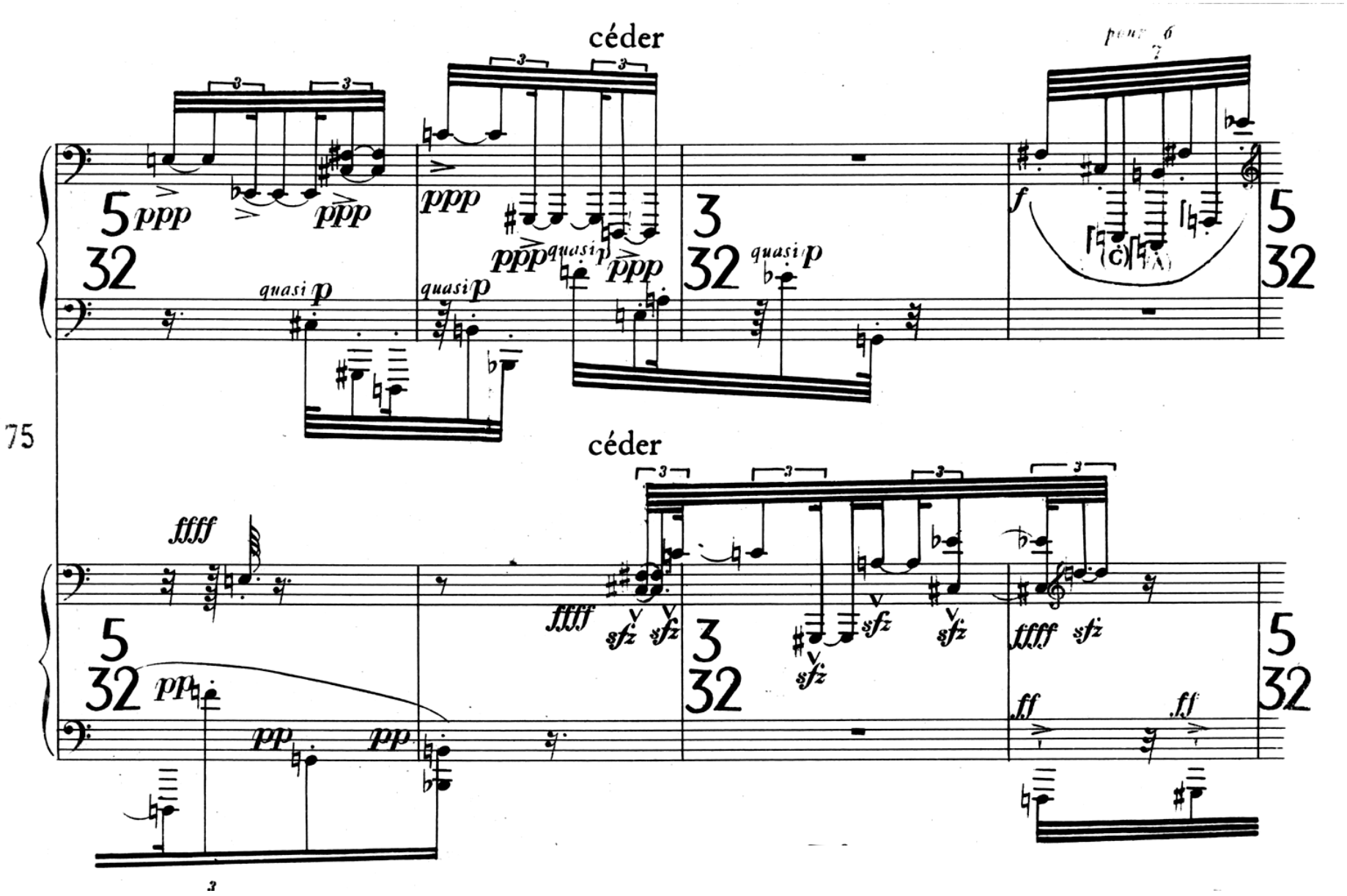
Pierre Boulez: *Structure Ib* (1952)



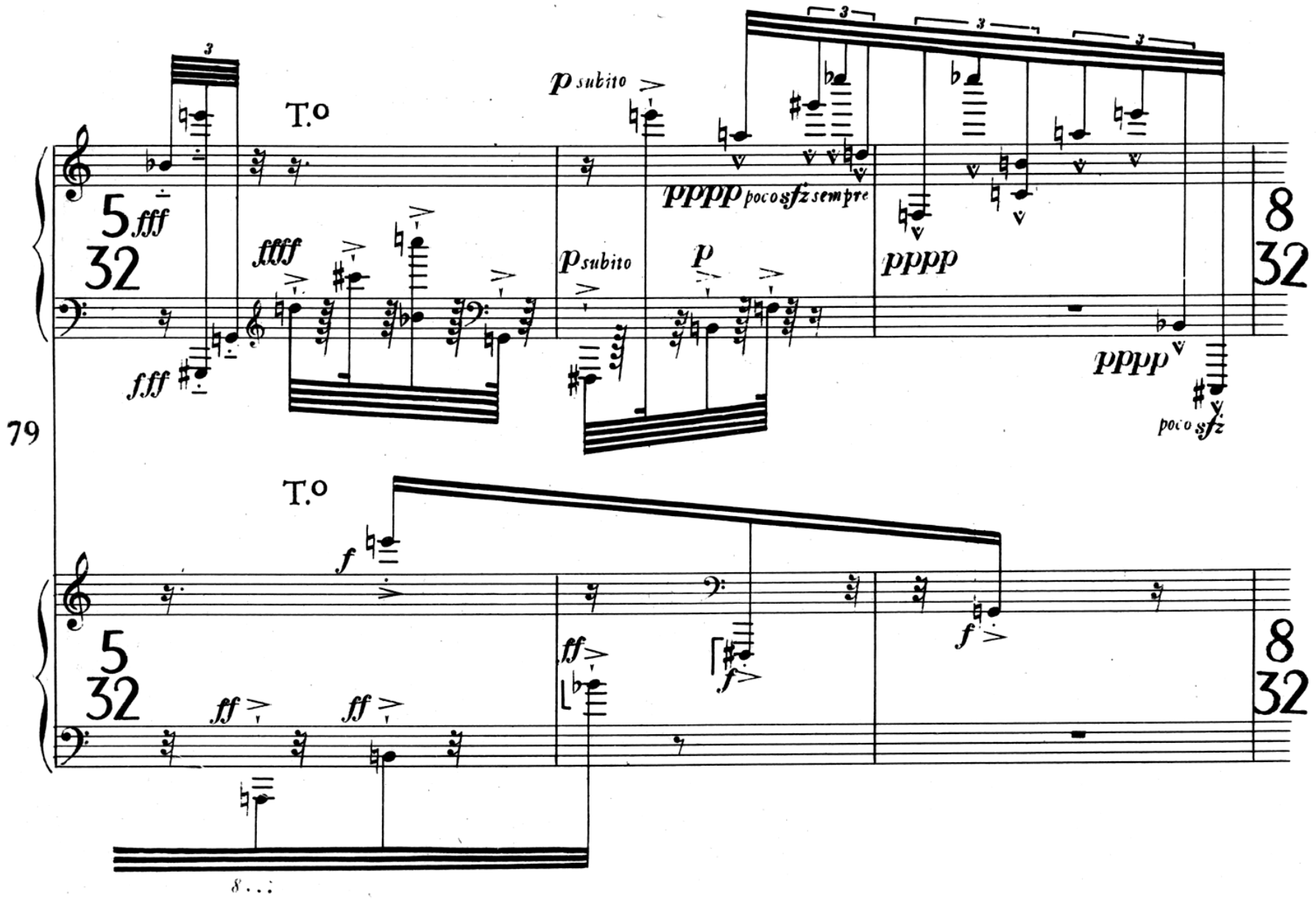
Pierre Boulez: *Structure Ib* (1952)

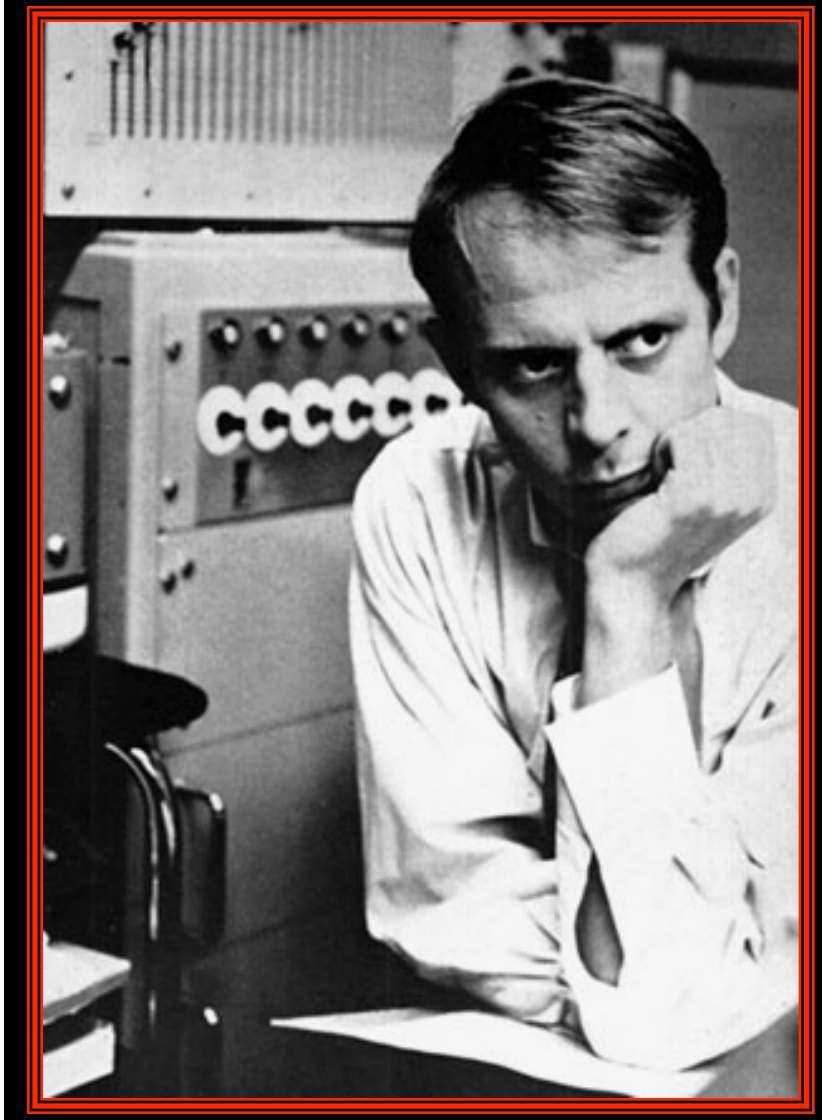


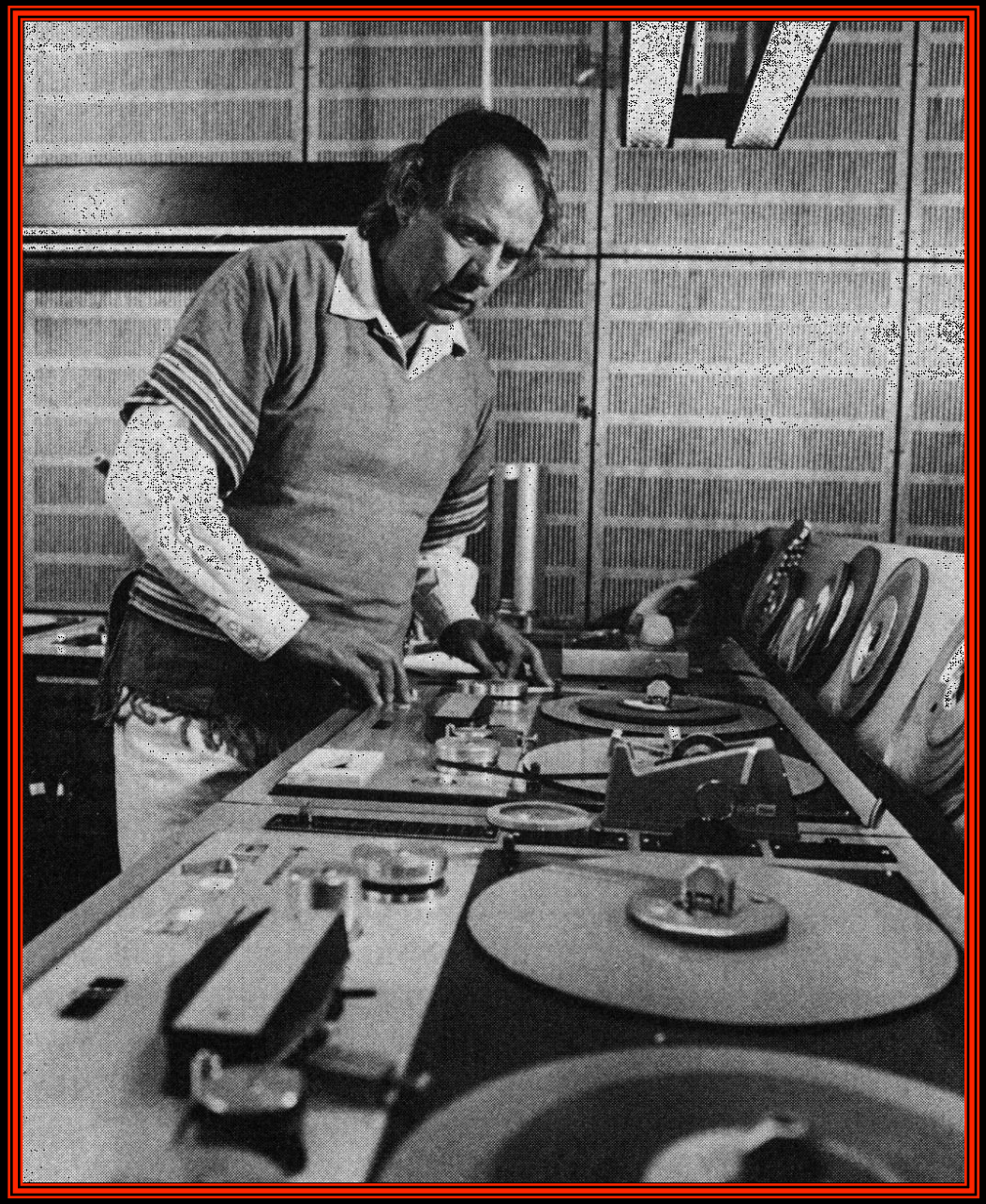
Pierre Boulez: *Structure Ib* (1952)



Pierre Boulez: *Structure Ib* (1952)



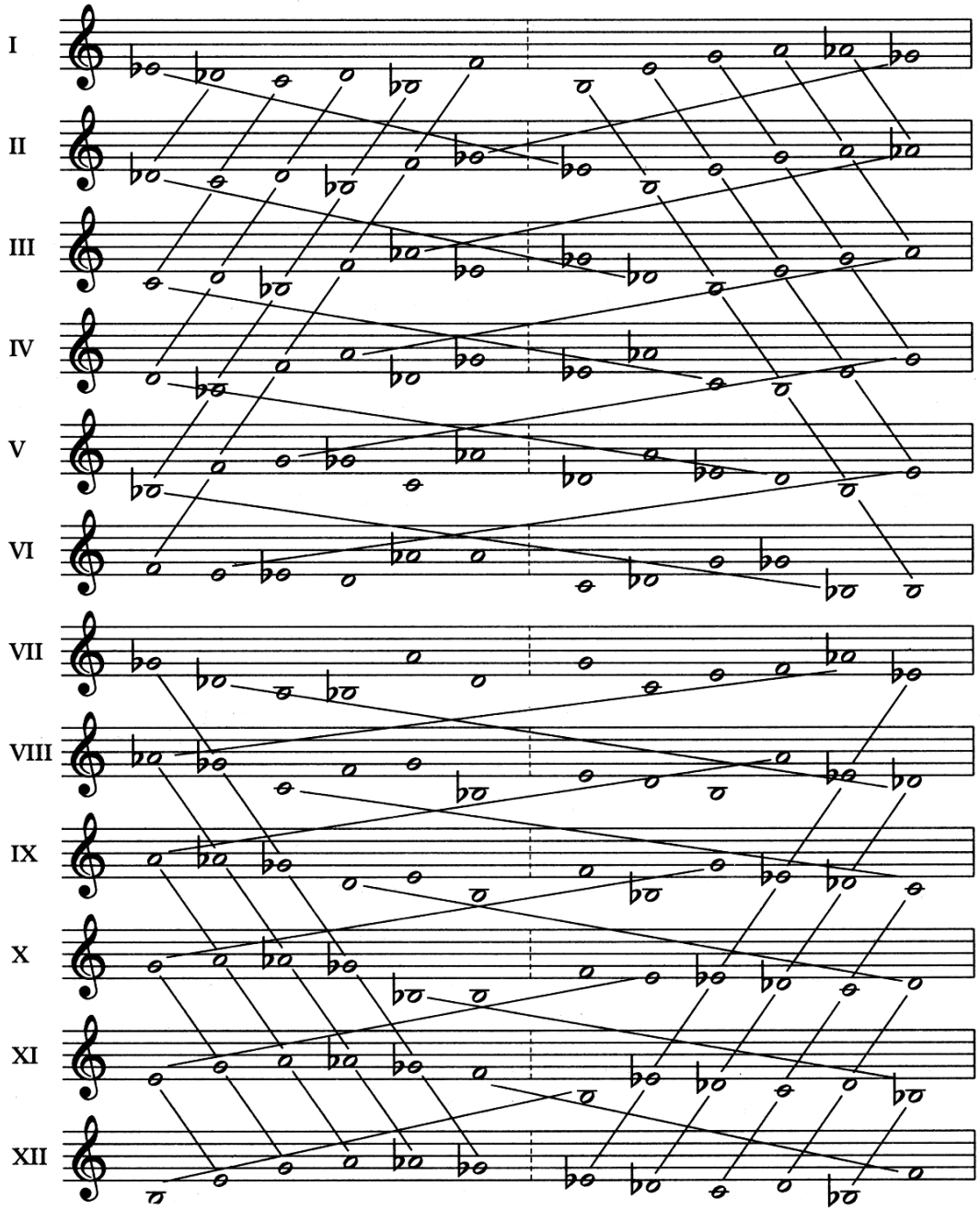




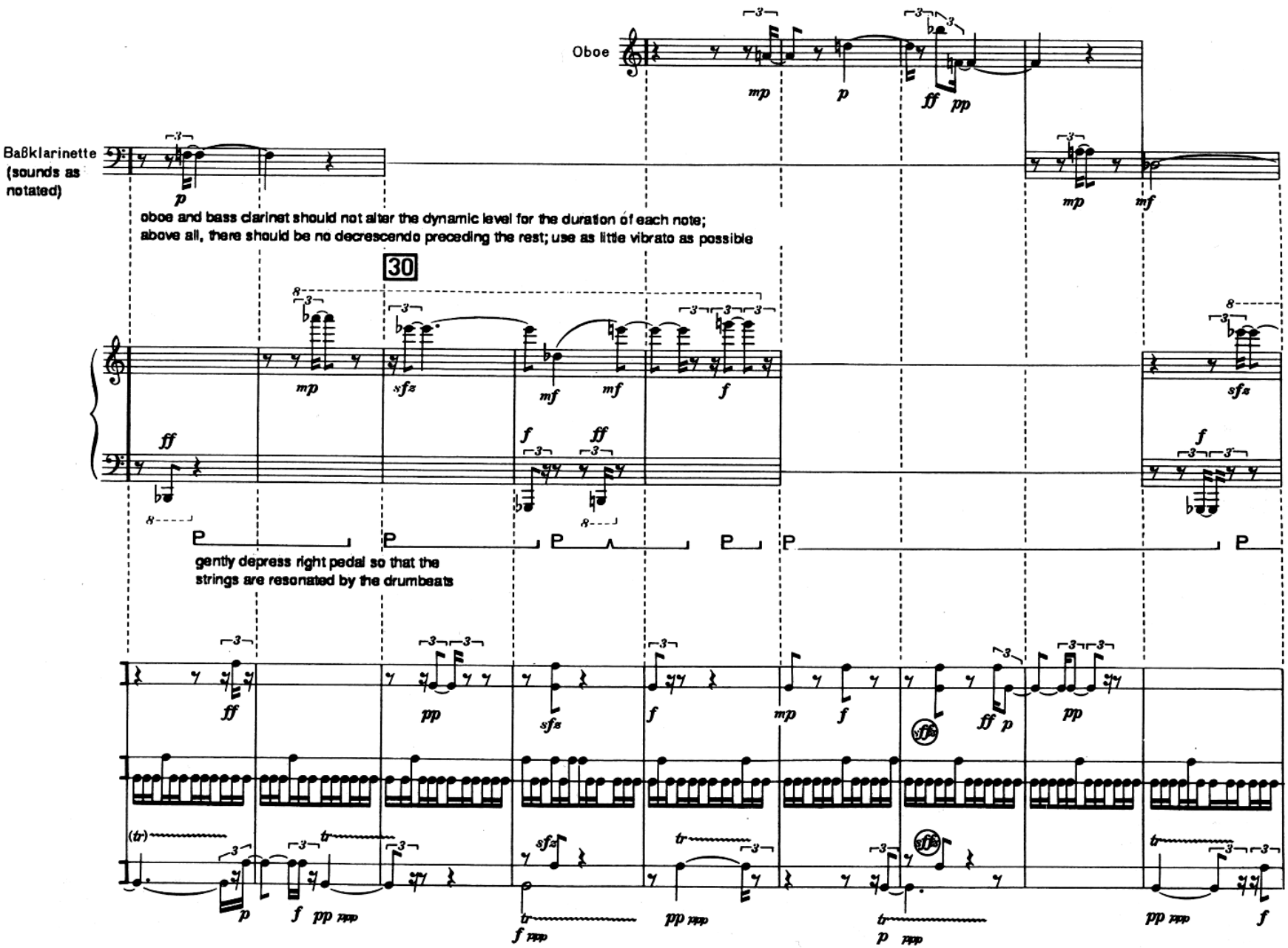
Karlheinz Stockhausen
(1928-2007)

The Beatles: *Sergeant Pepper's Lonely Hearts Club Band*

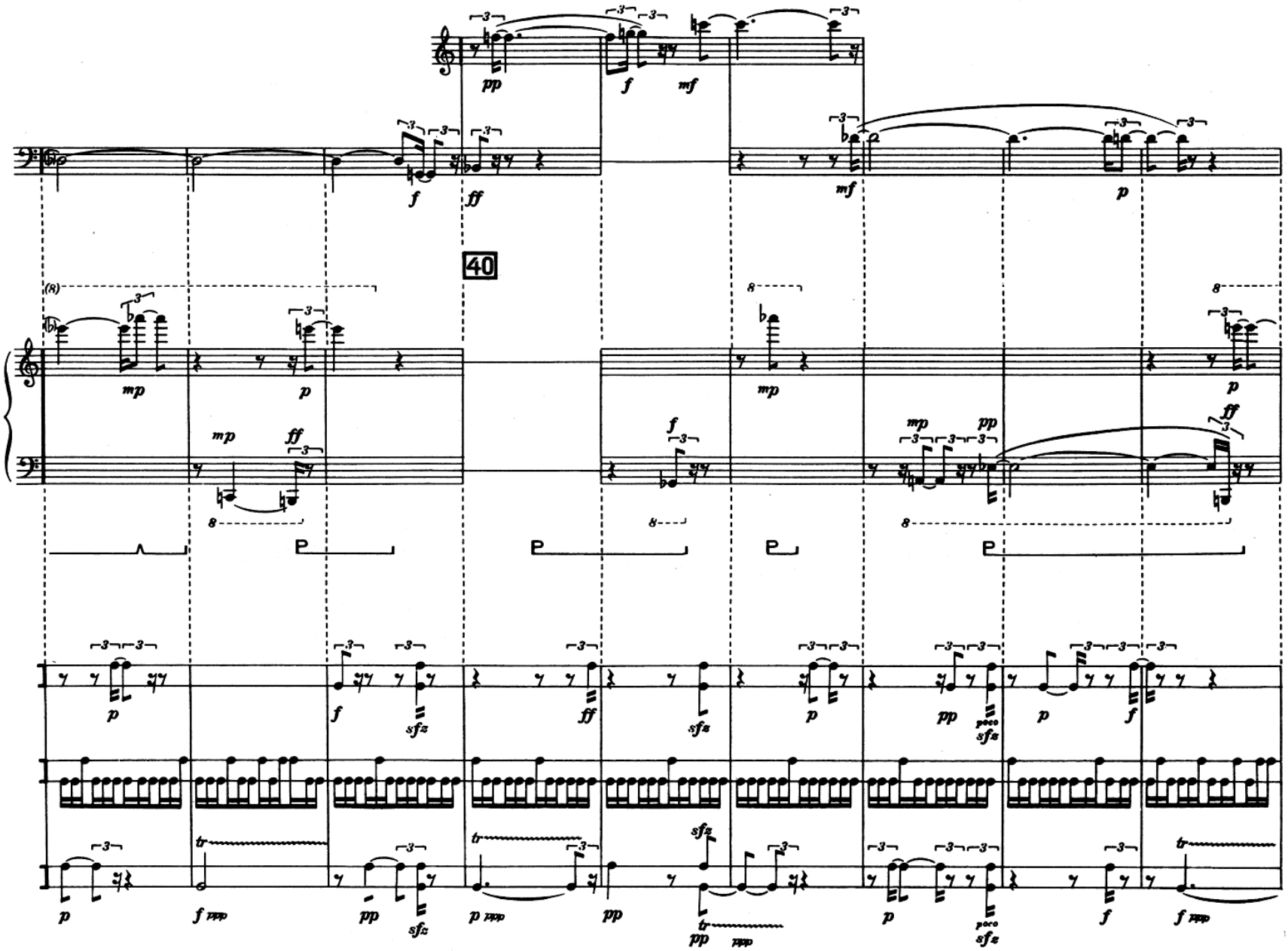
Karlheinz Stockhausen: *Kreuzspiel* (1951)—Rotation of Rows



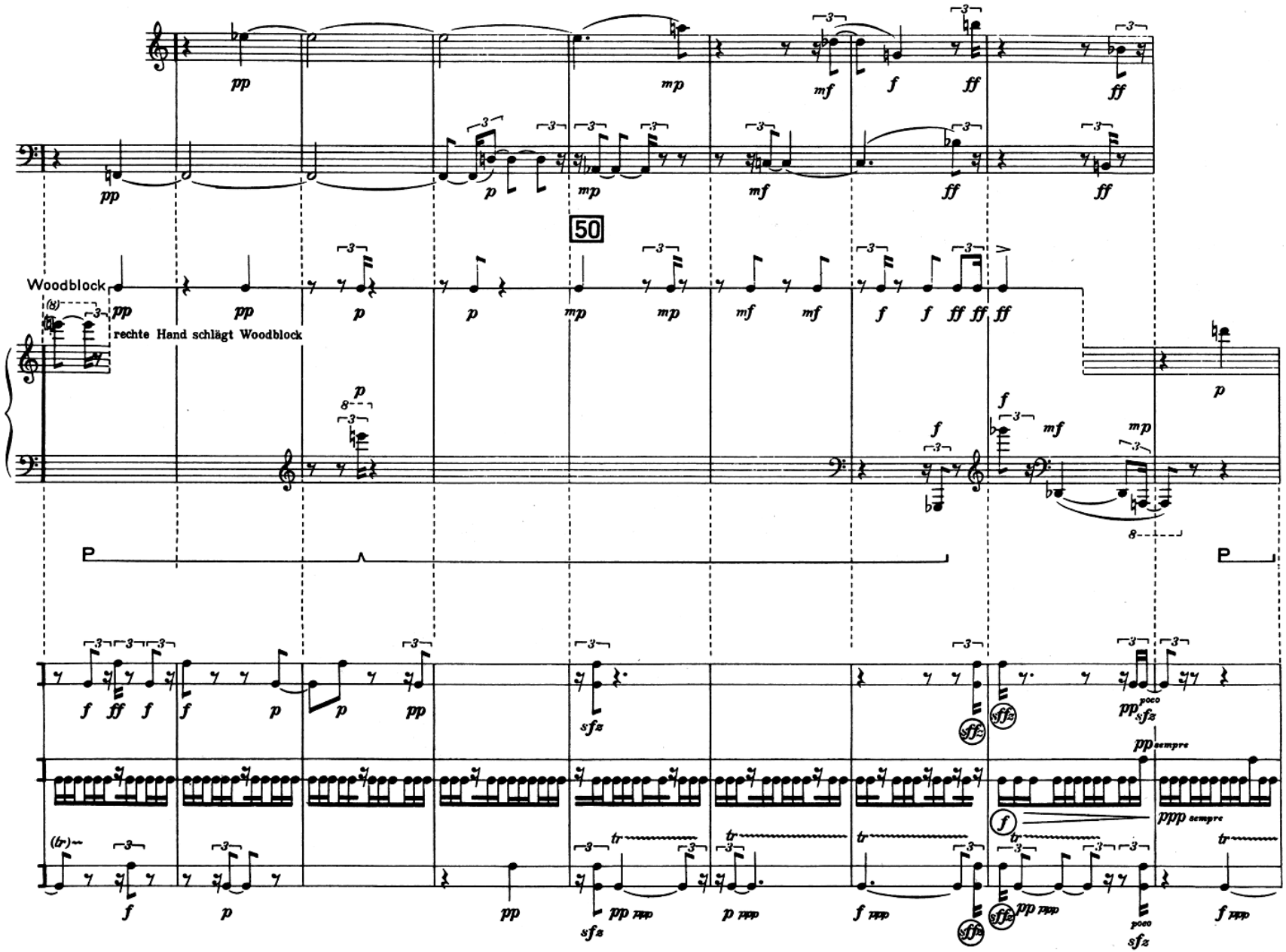
Karlheinz Stockhausen: *Kreuzspiel* (1951)



Karlheinz Stockhausen: *Kreuzspiel* (1951)

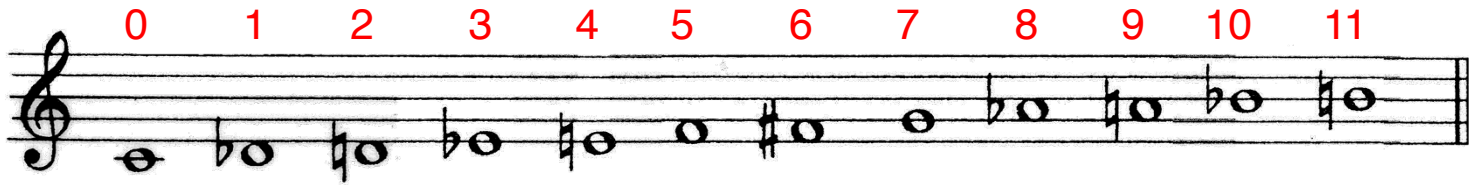


Karlheinz Stockhausen: *Kreuzspiel* (1951)

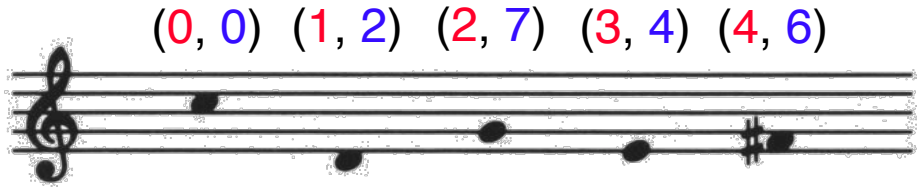


Serial Nomenclature

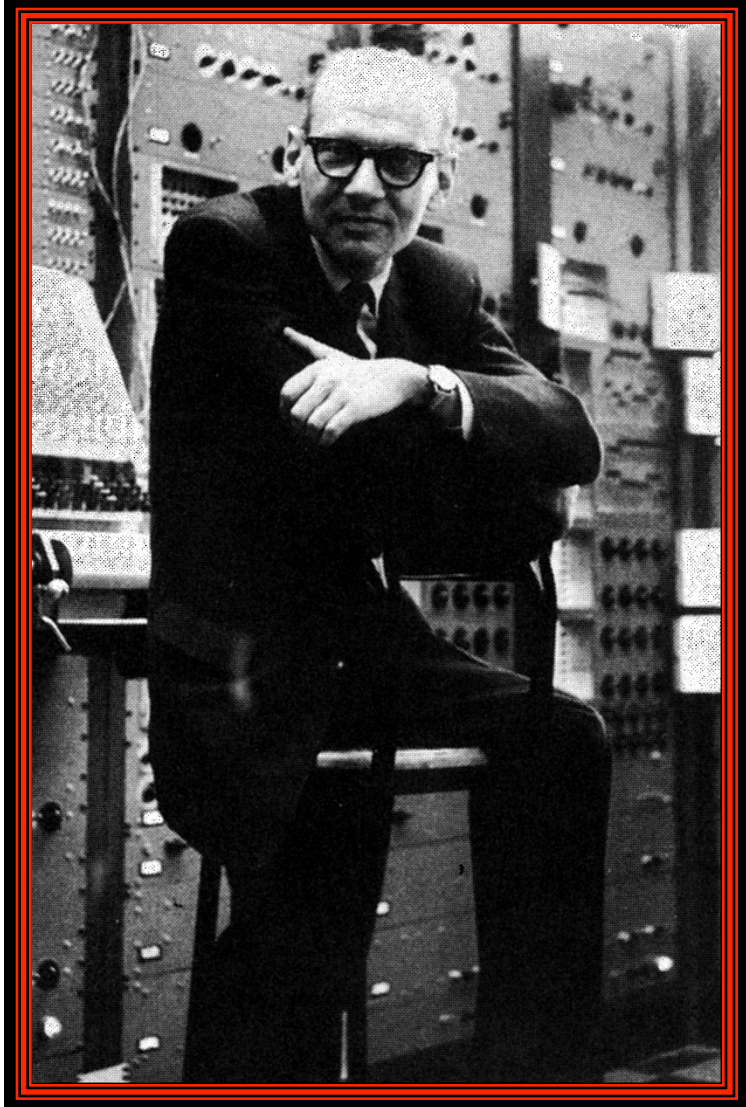
Pitches are labeled with numbers rather than letter names; these **pitch class** numbers do not have the tonal implications inherent to the traditional nomenclature.

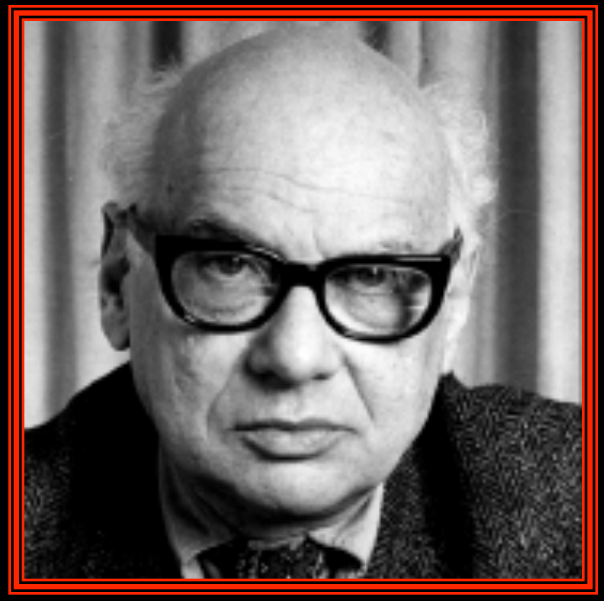


Pitches in a series may be expressed numerically as an **ordered pair**, similar to the x and y coordinates on a two-dimensional graph: the **ordinal** number identifies the placement in the series; the **pitch-class** number identifies the pitch.



Pitches (and placement) are labeled beginning with zero (0), which represents both the first position (in the ordinal number) and the pitch C (in the pitch-class number).

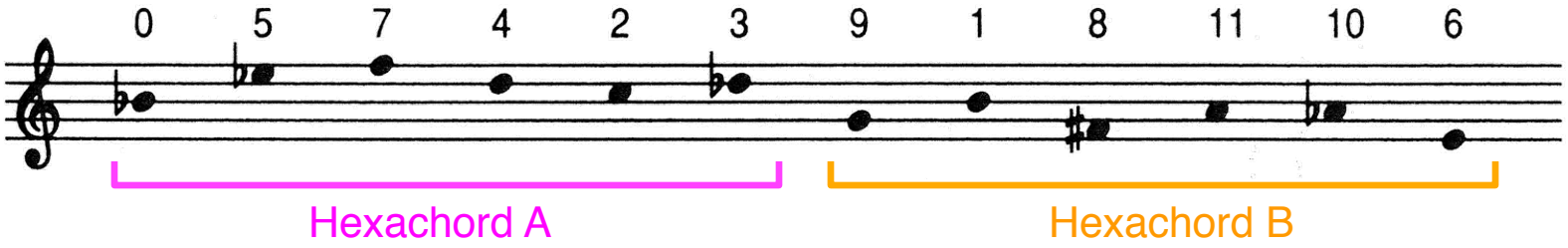




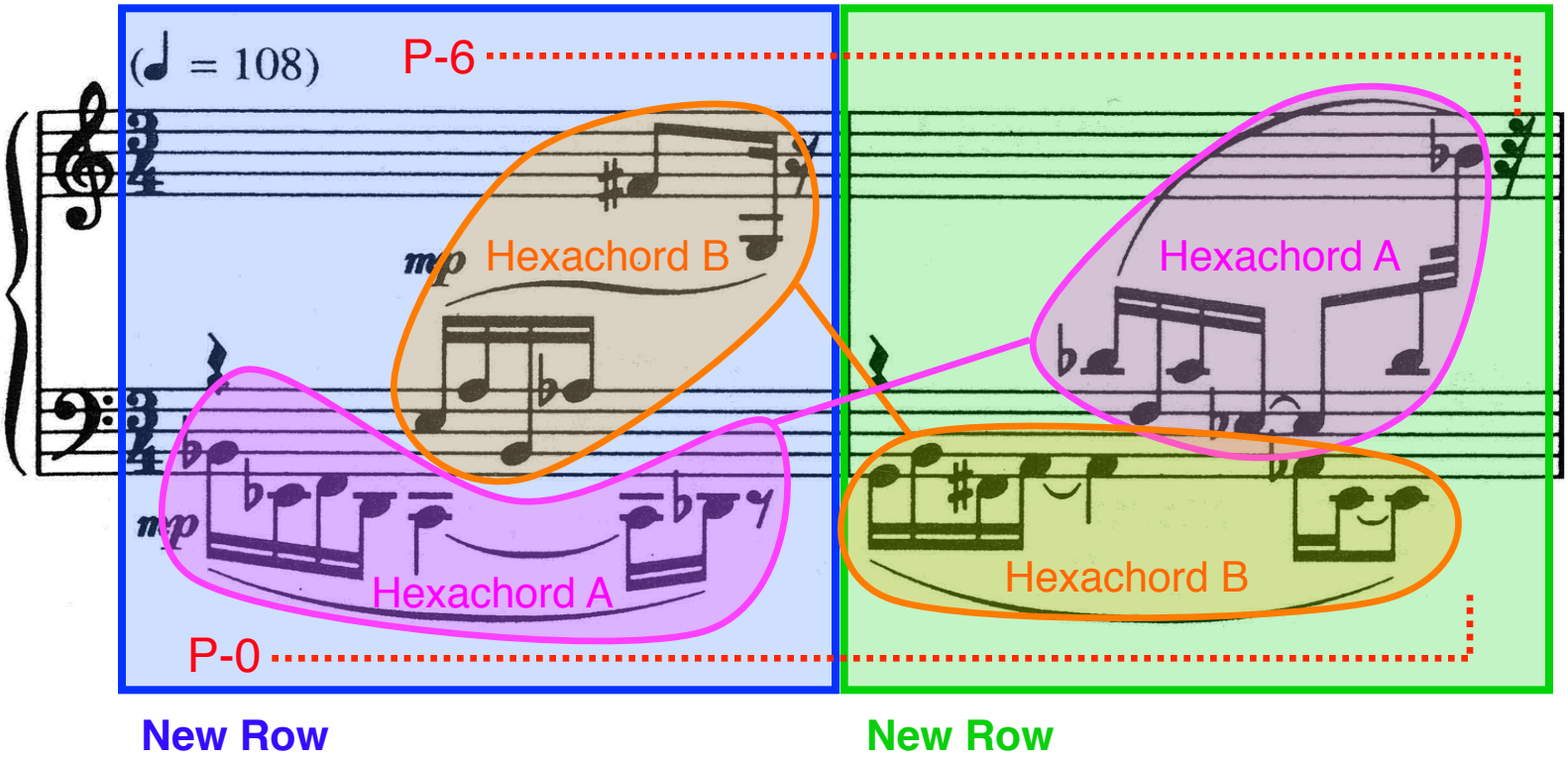
Milton Babbitt (b. 1916)

Milton Babbitt: *Three Compositions for Piano* (1947)

Tone Row (P-0):

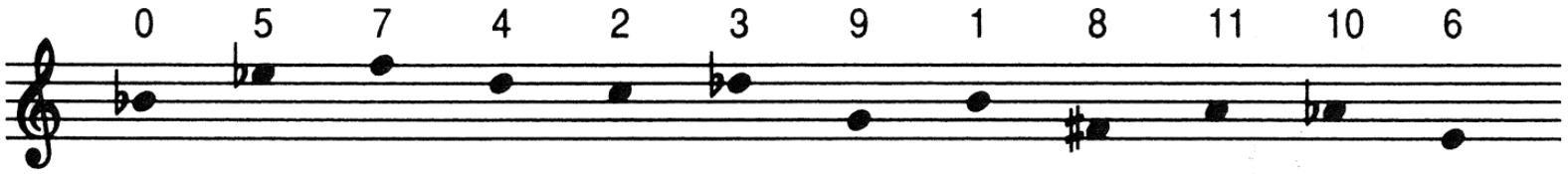


Use of Combinatorial Hexachords:



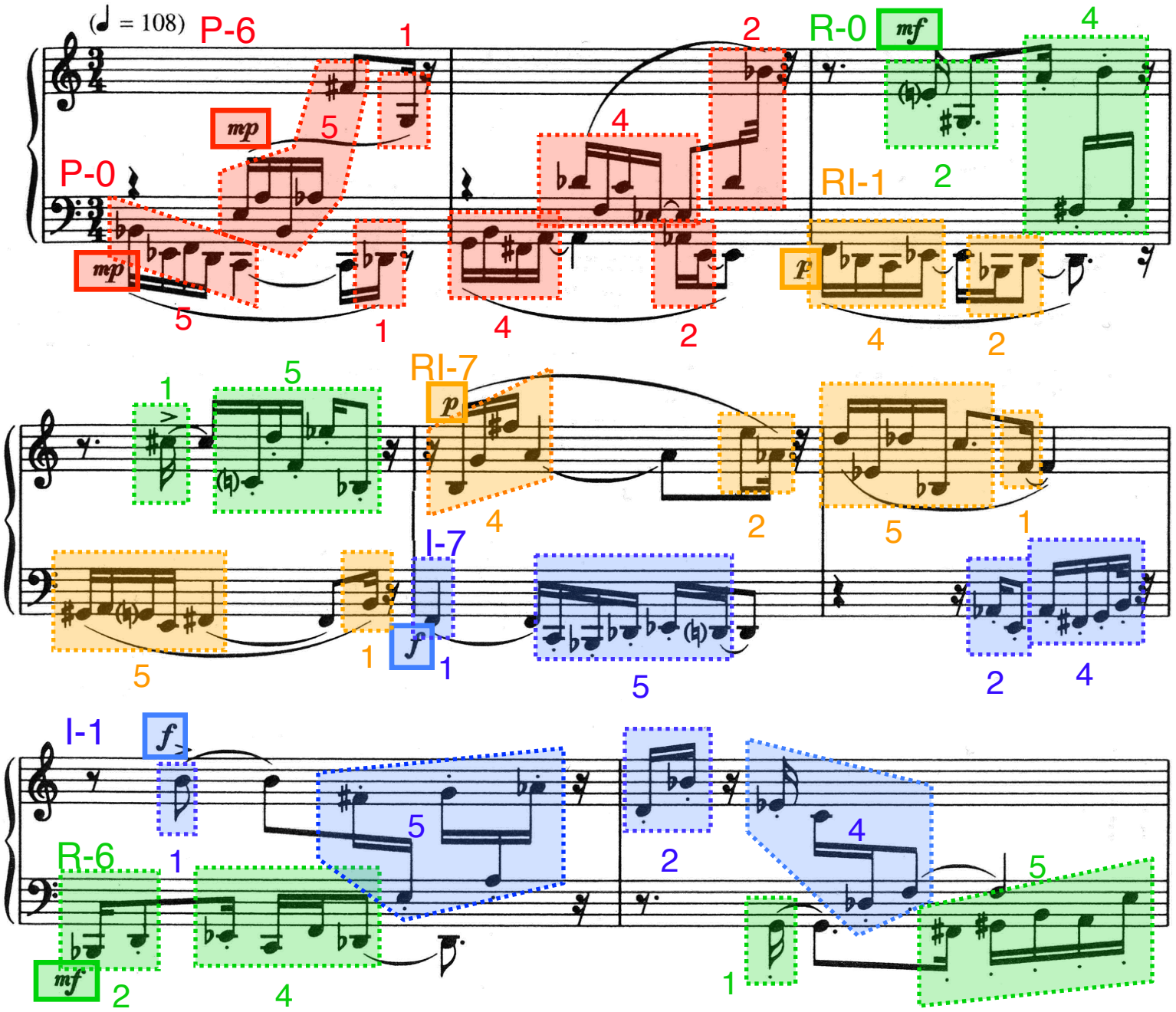
Milton Babbitt: *Three Compositions for Piano* (1947)

Tone Row (P-0):



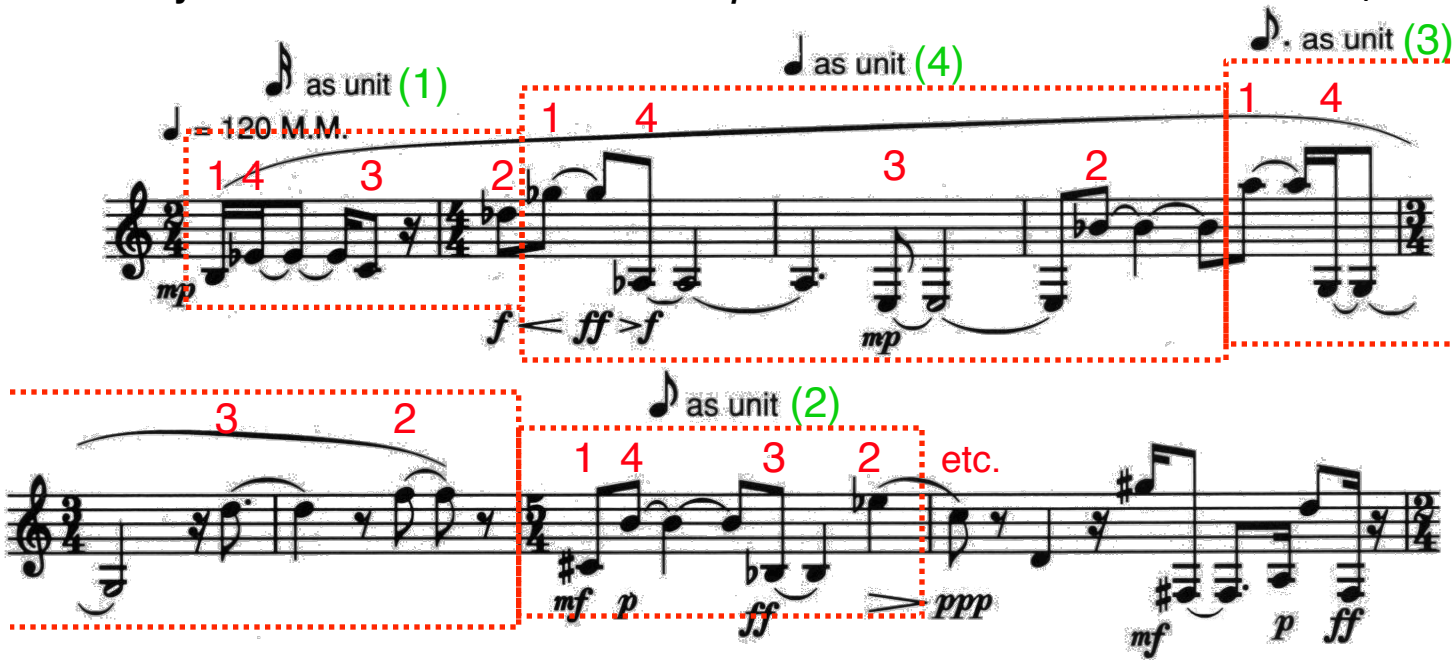
Permutation	Rhythm	Dynamic
Prime (P-0, P-6)	5 + 1 + 4 + 2 (= 12)	*mp*
Retrograde (R-0, R-6)	2 + 4 + 1 + 5	*mf*
Inversion (I-1, I-7)	1 + 5 + 2 + 4 (modulo 6)	*f*
Retrograde-Inversion (RI-1, RI-7)	4 + 2 + 5 + 1	*p*

Milton Babbitt: *Three Compositions for Piano* (1947) — Movement I

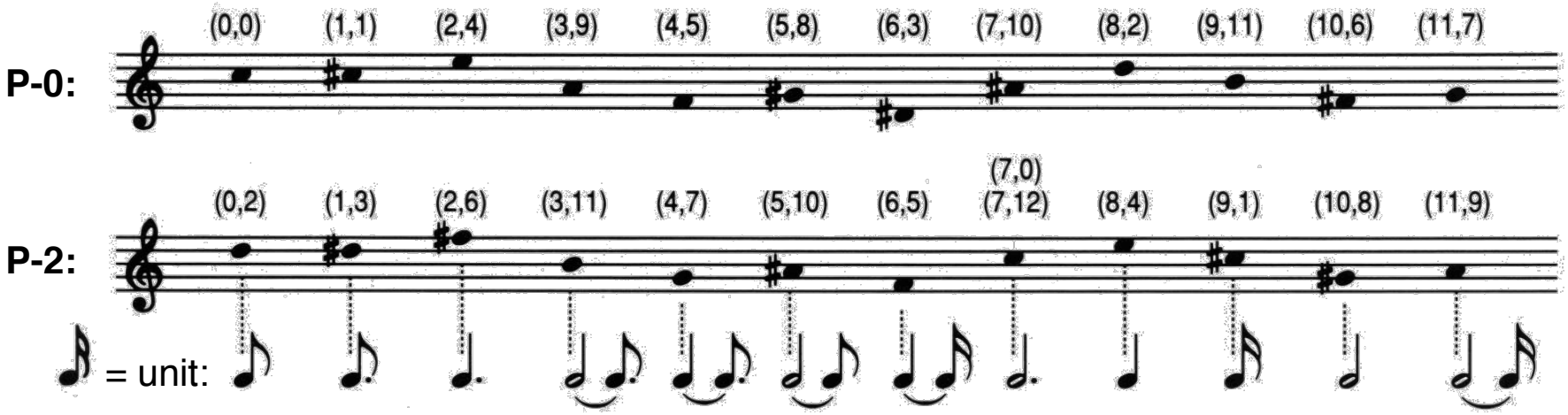


Development of Milton Babbitt's Time-Point System

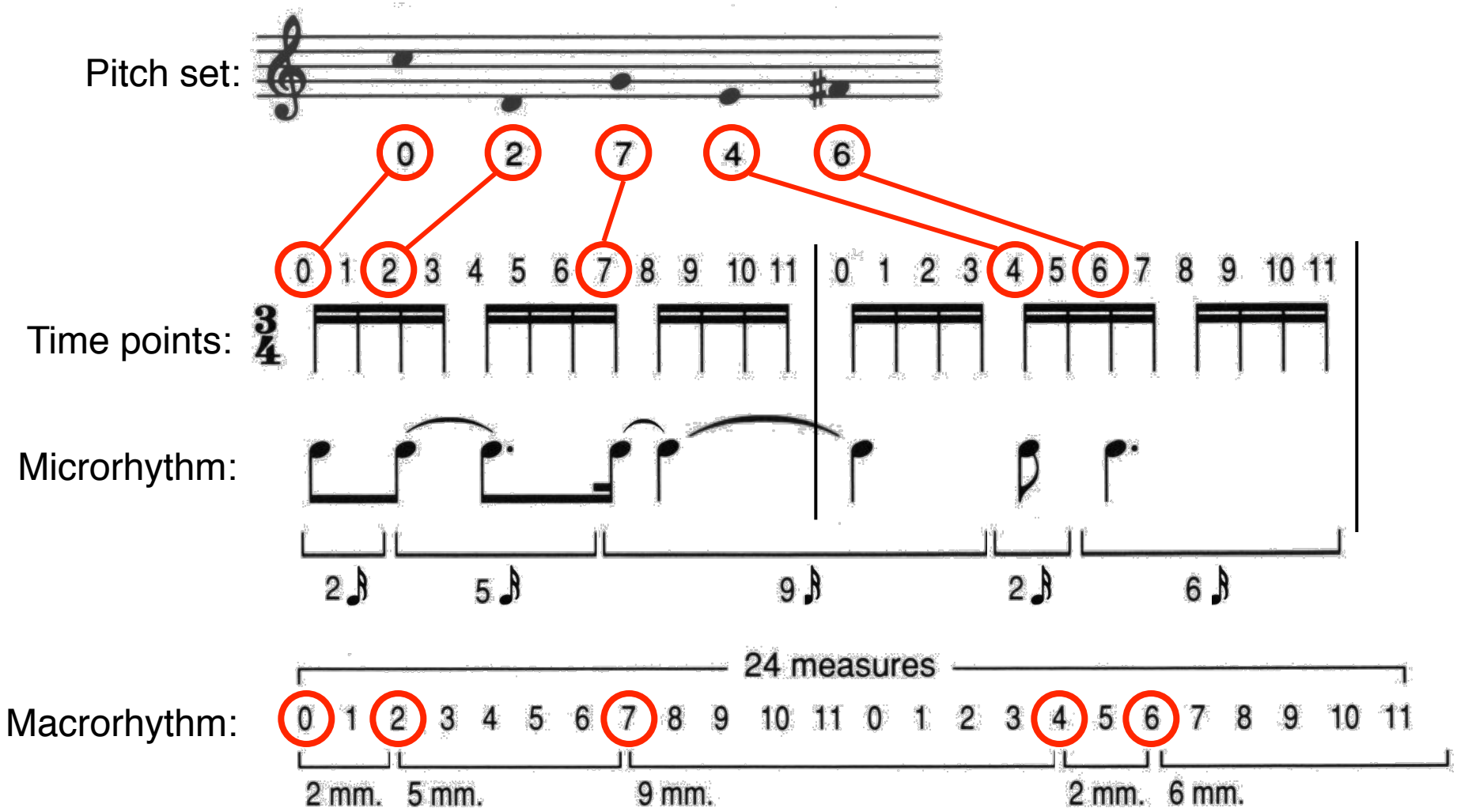
Application of rhythmic cell 1-4-3-2 in *Composition for Four Instruments* (1948):



Rhythms derived from pitch classes in *Composition for Twelve Instruments* (1954):



Development of Milton Babbitt's Time-Point System

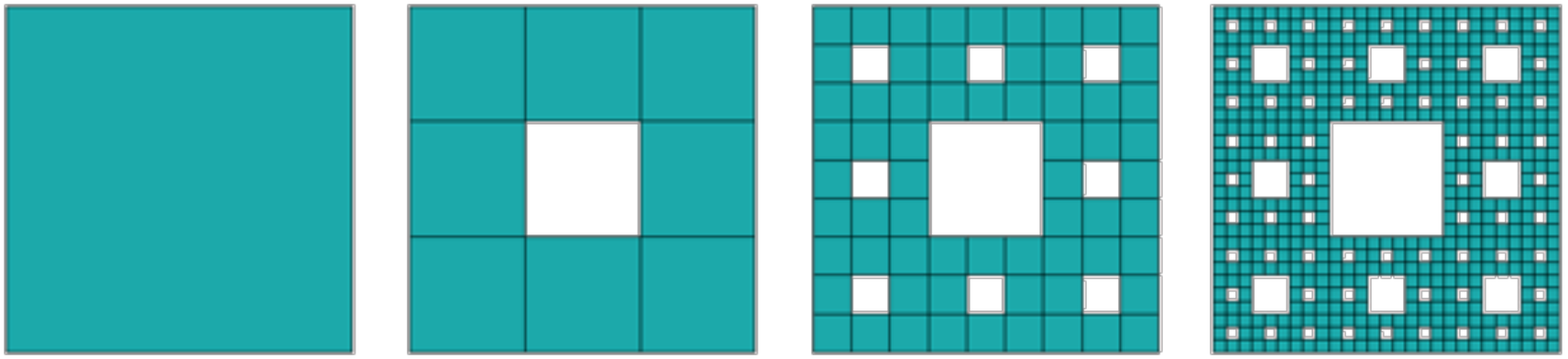


Each group of measures may be distinguished by a significant change in some parameter: e.g., dynamic, timbre, register, texture, density, tempo, etc.

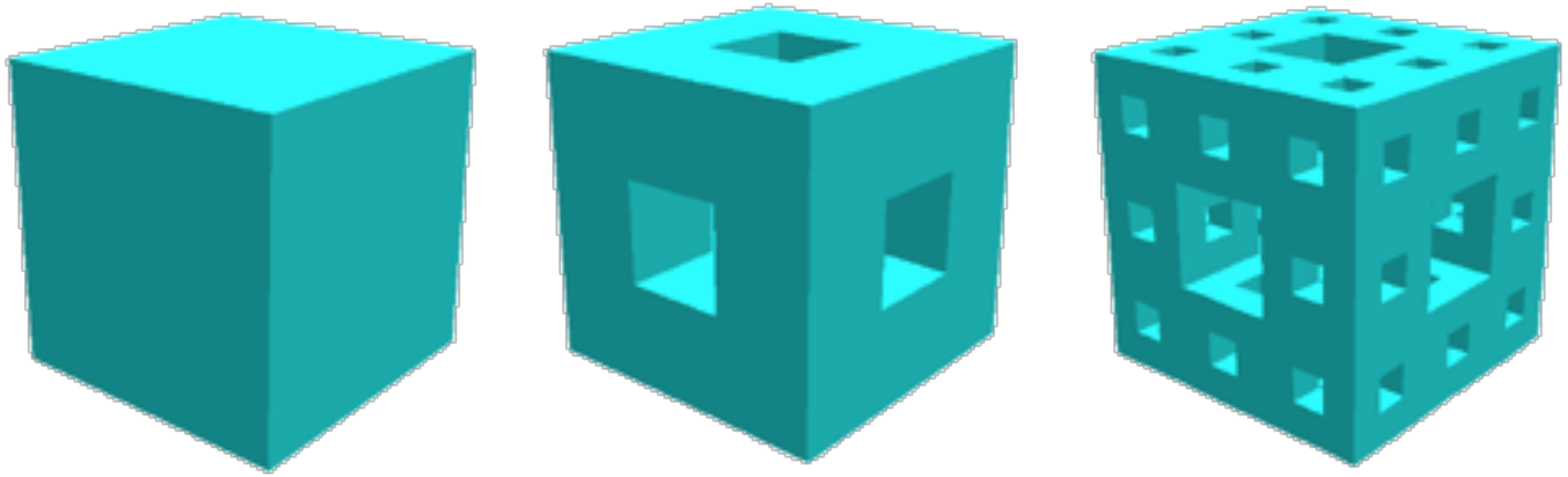
Adapted from Schwartz/Godfrey, *Music Since 1945*,.

Recursive Processes

The Sierpinski Carpet (2-dimensional):

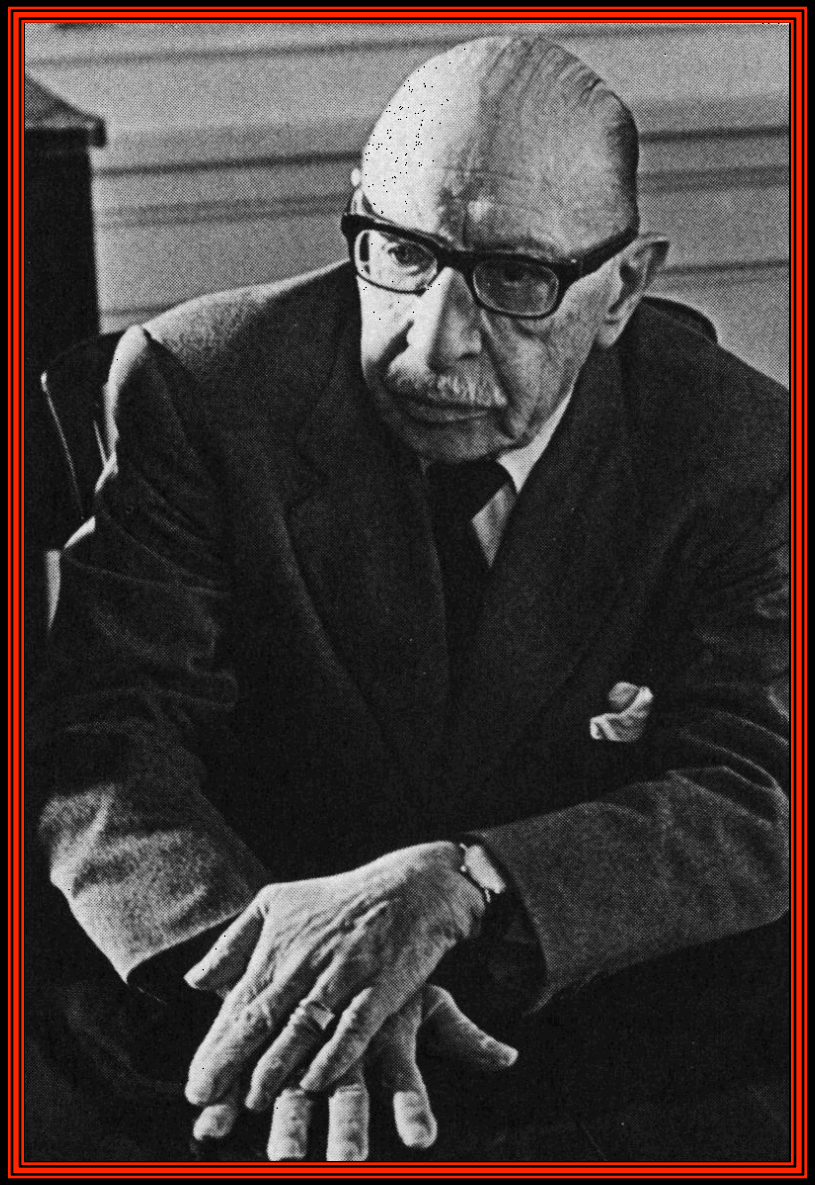


The Menger Sponge (3-dimensional):

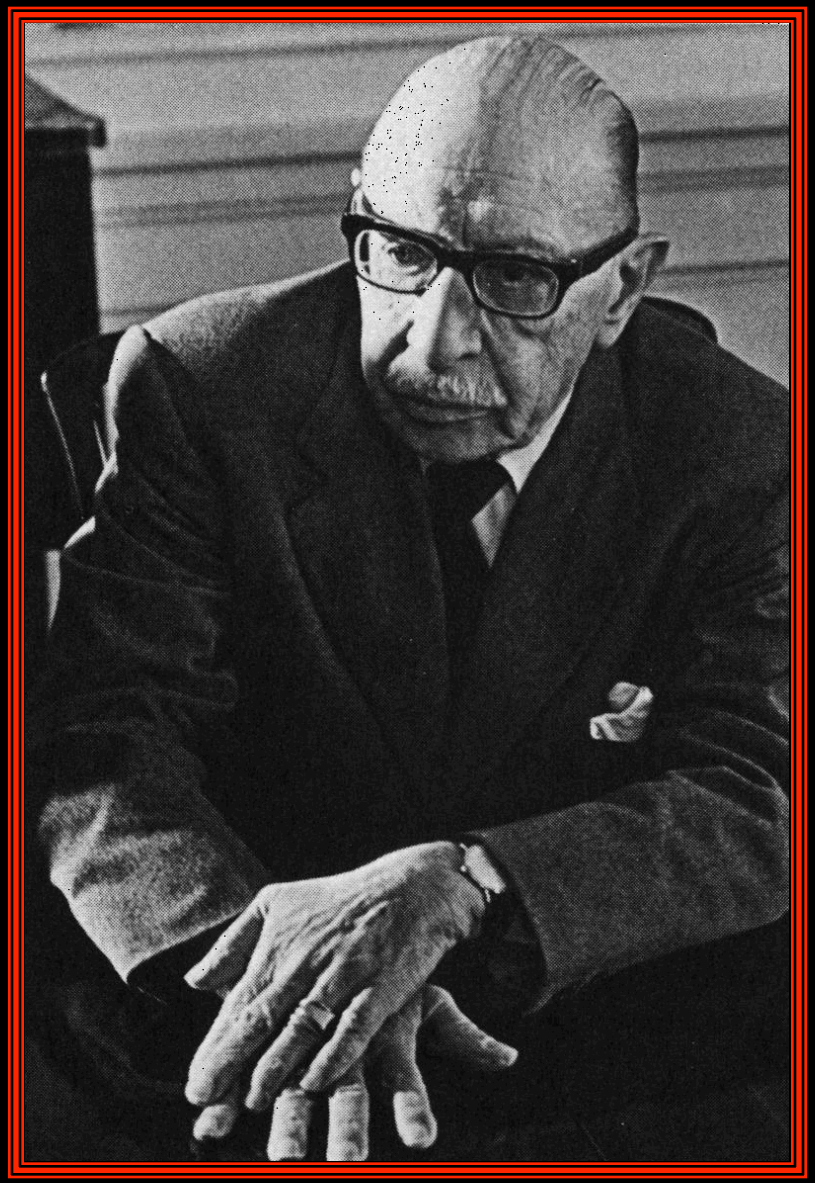


Influences of Serialism

Igor Stravinsky (1882-1971)



Igor Stravinsky (1882-1971)



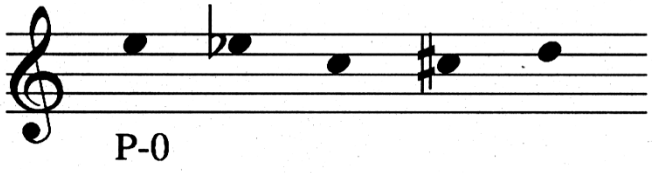
- Completed last "neoclassical" work (*The Rake's Progress*) in 1952.
- Became interested in Webernian-style dodecaphony upon Schönberg's death in 1951.
- Developed his personal serial technique throughout the 1950s.
- Major works from this period include:
  - *Agon* (1952-54): transitional work from neoclassicism to serialism.
  - *Cantata* (1952): first use of serialism.
  - *In memoriam Dylan Thomas* (1954): first completely serial work (5-tone row).
  - *Canticum sacrum* (1955): first use of 12-tone row.
  - *Threni* (1957): first completely 12-tone work.

Igor Stravinsky: *In Memoriam Dylan Thomas* (1954)

- Composed after the sudden death of Welsh writer Dylan Thomas (1914-1953).

- The number 5 is significant in this work: tone row, meter, and instrumentation of *Song*.

5-note row:



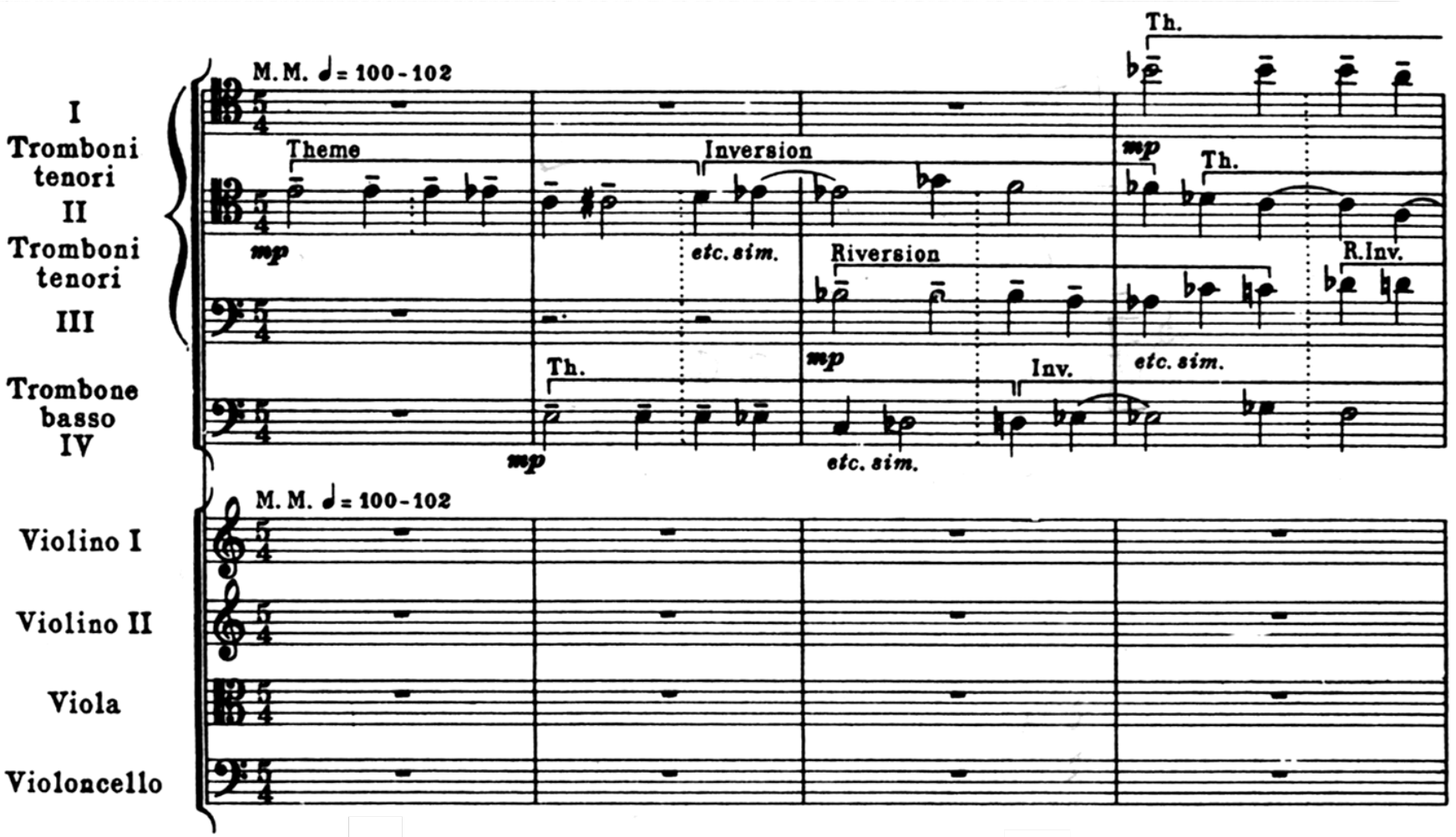
Matrix:

	0, 0	1, 11	2, 8	3, 9	4, 10
0, 0	E	E♭	C	C♯	D
1, 1	F	E	C♯	D	E♭
2, 4	A♭	G	E	F	F♯
3, 3	G	F♯	E♭	E	F
4, 2	F♯	F	D	D♯	E

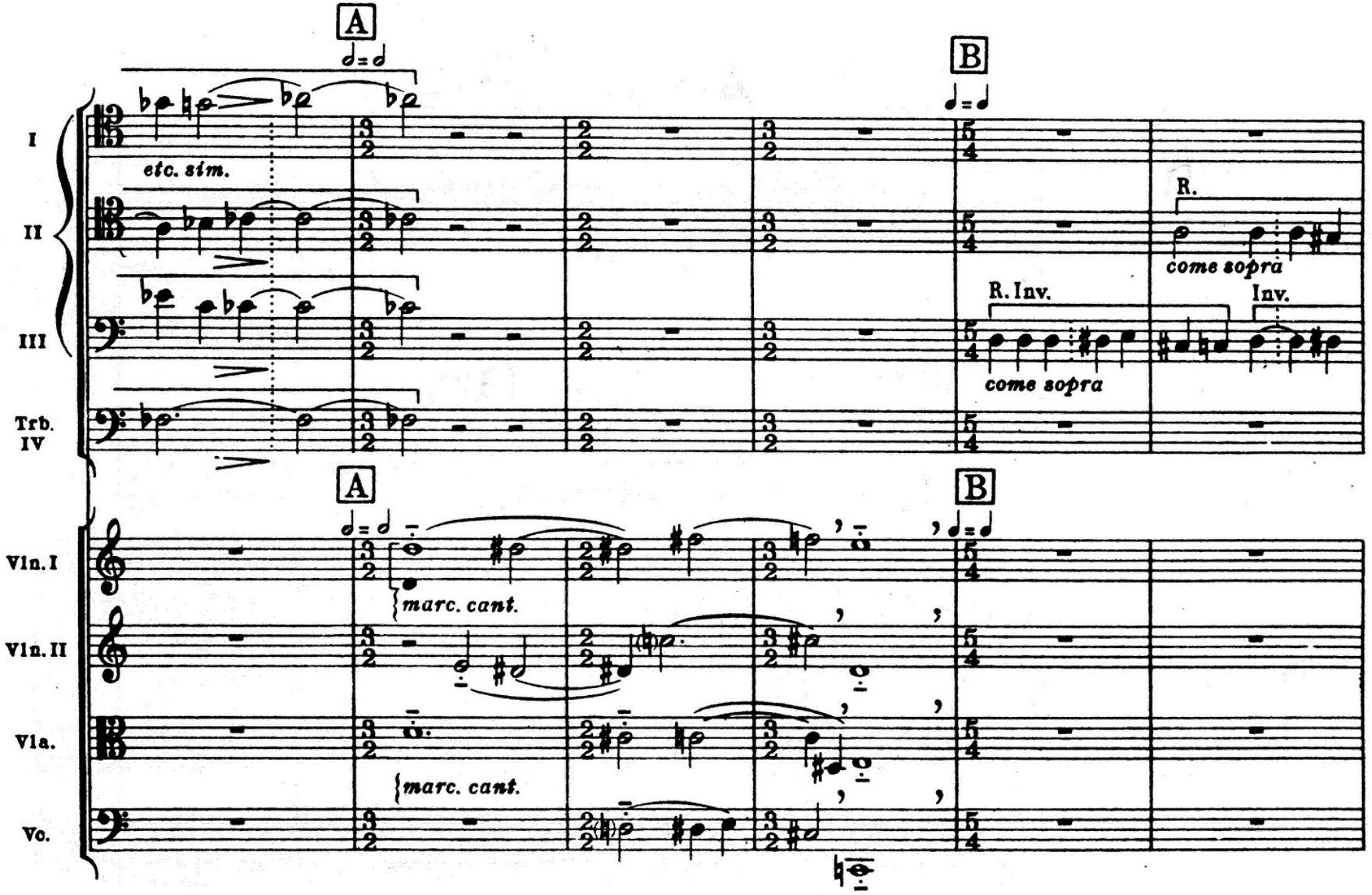
- Structured in three parts: a central *Song* (tenor and string quartet) flanked by two *Dirge-canons* (string quartet and trombone quartet).

- Thomas' poem "Do not go gentle into that Good Night" is the basis of the *Song*.

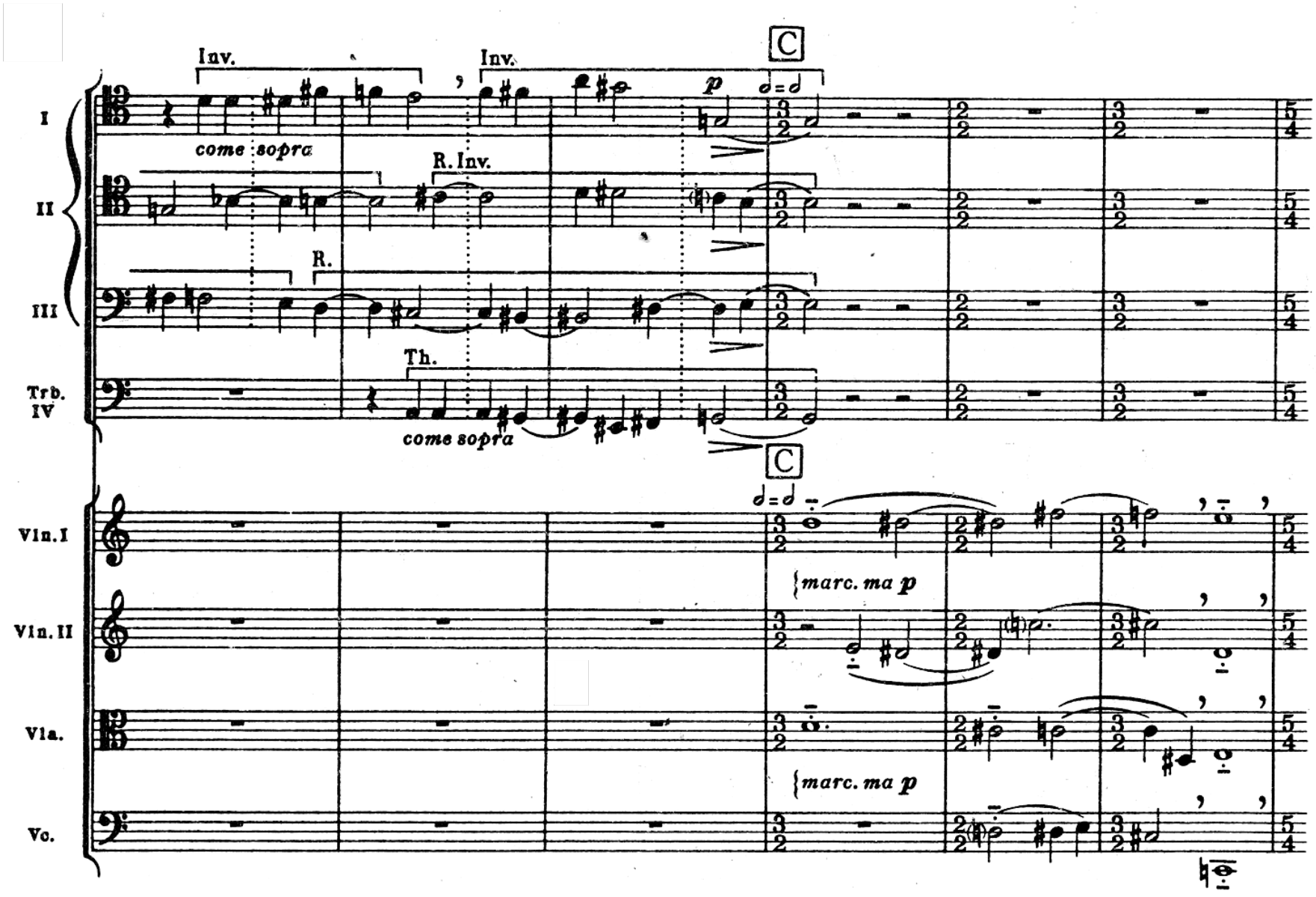
Igor Stravinsky: *In Memoriam Dylan Thomas* (1954)



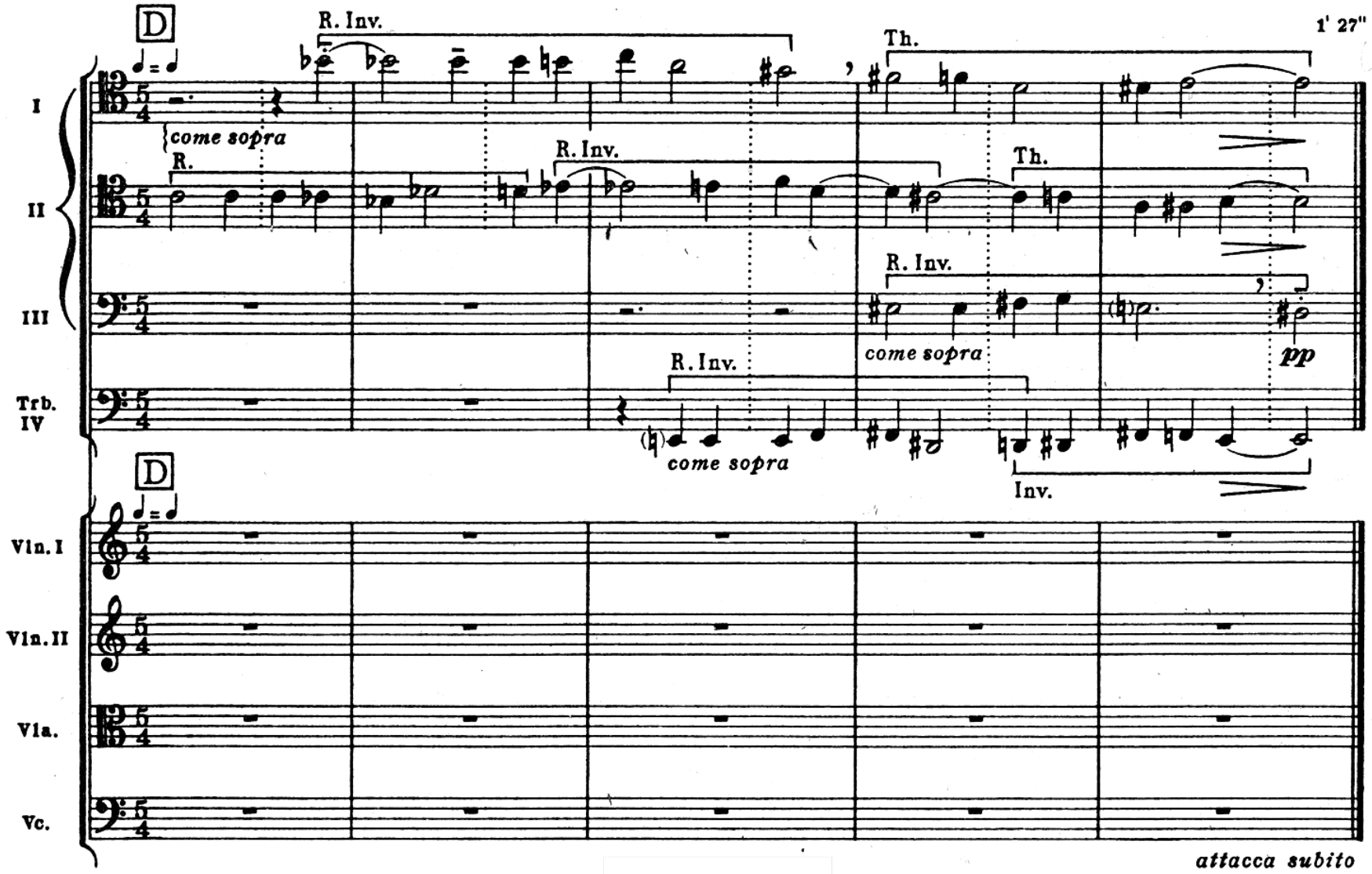
Igor Stravinsky: *In Memoriam Dylan Thomas* (1954)



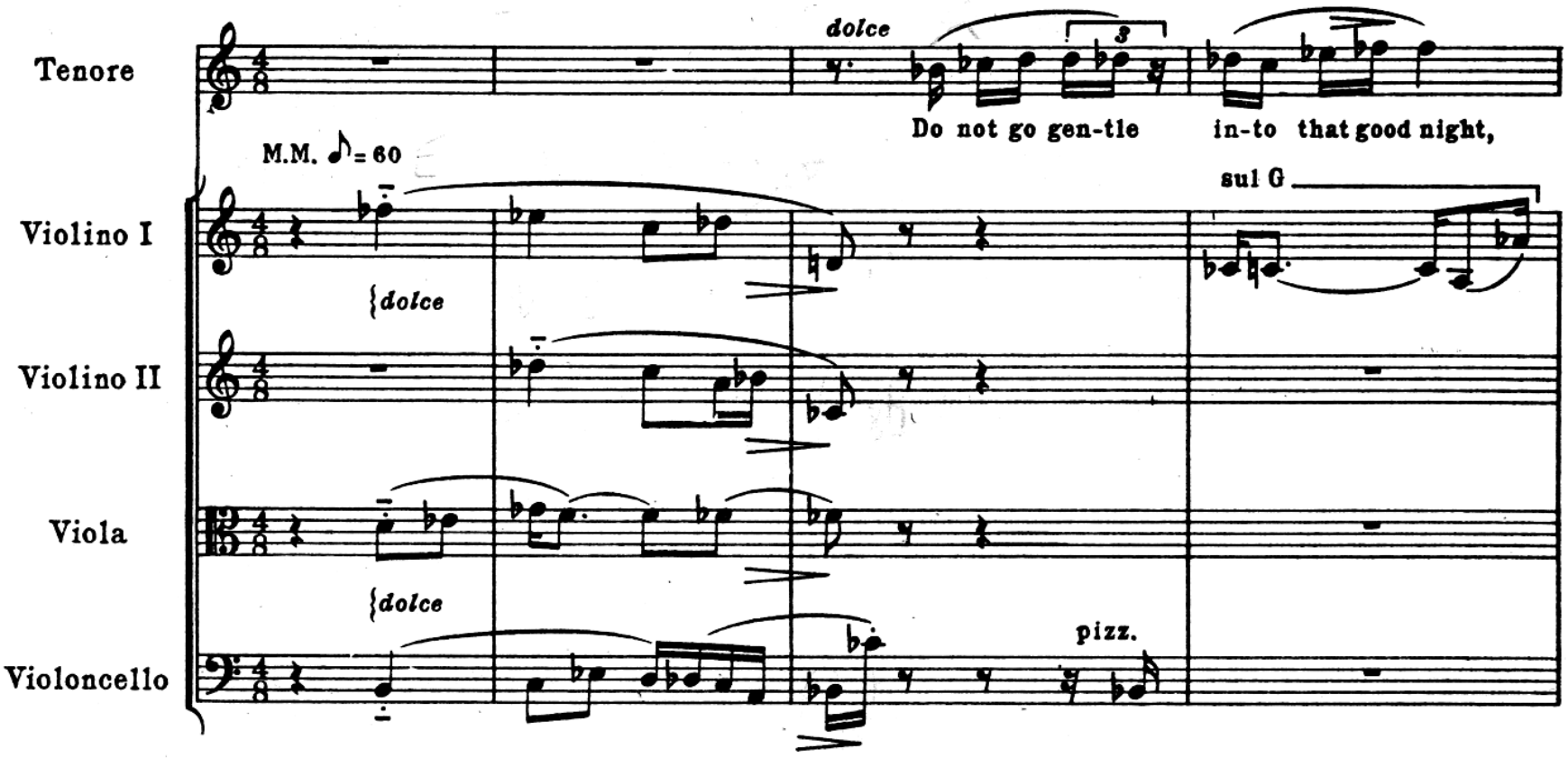
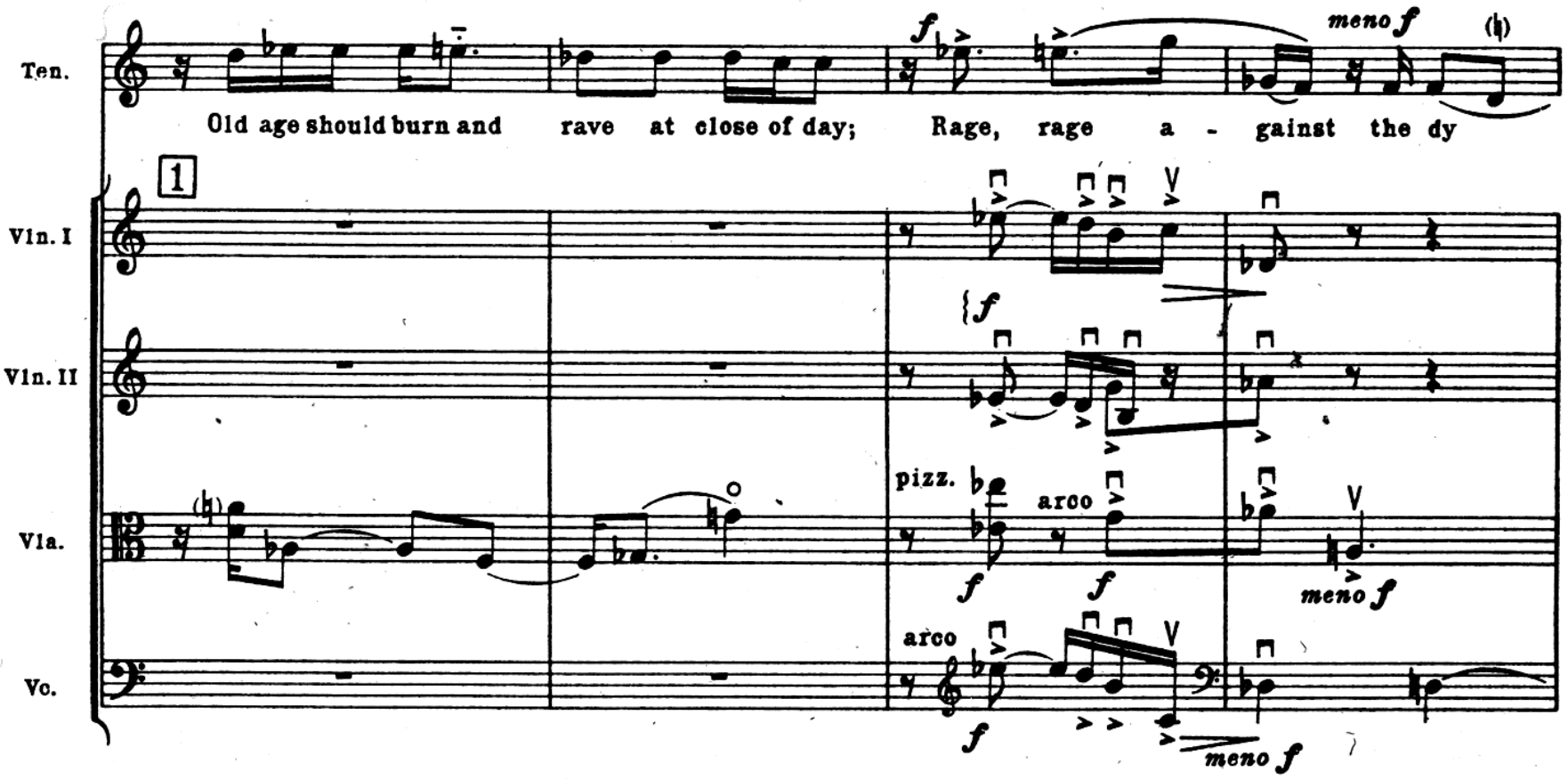
Igor Stravinsky: *In Memoriam Dylan Thomas* (1954)



Igor Stravinsky: *In Memoriam Dylan Thomas* (1954)



Igor Stravinsky: *In Memoriam Dylan Thomas* (1954)



Igor Stravinsky: *In Memoriam Dylan Thomas* (1954)