

Straus Chapter 2 Pitch-Class Sets

Joseph N. Straus, *Introduction to Post-Tonal Theory*, 4th ed. (New York: Norton, 2016), pp. 43-71.

“Pitch-class sets are the basic building blocks of much post-tonal music.
A pitch-class set is an *unordered collection of pitch classes*...a motive from which many
of the identifying characteristics – register, rhythm, order – have been boiled away.”

– Joseph N. Straus, *Introduction to Post-Tonal Theory*

TERMS & CONCEPTS

Pitch-Class Set Pitch-class set, abbr. <i>pc set</i> Set notation: • Staff notation • Letter notation • Integer notation STRAUS NOTATION ex. (B, G$\sharp$, G) or (11, 8, 7) Set type under cardinality¹ Normal Form <i>The most compact way to represent a pc set</i> Normal form algorithm • Rahn algorithm • Brinkman method (p. 45) STRAUS NOTATION ex. [G, G$\sharp$, B] or [7, 8, 11] PC Clockface <i>A geometric model for pc space</i> Polygon notation • Inscribed polygon • Successive-interval array • Cyclic interval array	Transposition Pitch transposition Pitch-class transposition (T_n) • If $T_n(x) = y$, then $y = x + n$, where x & y are pitch classes and n is the transposition number • Algebraic notation: $T_n(A) = B$, where A & B are pc sets • Geometric analogy for T_n • Inverse operation: T_{12-n} Inversion Pitch inversion Pitch-class inversion (I) • Subtraction from 12 (mod 12) • Geometric analogy for pc inversion $T_n I$, I_n & I_y^x • If $I_n(x) = y$, then $y = n - x$, where x & y are pitch classes and the index of inversion is the sum: $n = x + y$ • I_n is its own inverse operation Set Class <i>A family of (usually 24) pc sets related by either T_n or I_n</i> Set class, abbr. <i>sc</i>	Prime Form <i>A numerical name for the set class that begins with 0</i> Prime form algorithm • Rahn algorithm - Short-cut method • Brinkman method (p. 67) STRAUS NOTATION ex. (014) Set Class List <i>List of Set Classes</i> (pp. 378-81) Forte name Set class name • TE substitution:² T=10 & E=11 STRAUS NOTATION ex. (014), sc(014), 3-3, or 3-3 (014) Transformational Network <i>A network of relationships that model musical motion</i> Nodes represent objects Arrows represent operations Isographic networks
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STRAUS NOTATION

	PC set	Normal form	Forte name	Prime form	Set class	IC Vector
Letter	(B $\flat$, A, C, B)	[A, B $\flat$, B, C]	4-1	(0123)	4-1 (0123)	321000
Integer [C=0]	(10, 9, 0, 11)	[9, 10, 11, 0]				

References

- Forte, Allen. 1973. *The Structure of Atonal Music*. New Haven: Yale University Press.
Rahn, John. 1980. *Basic Atonal Theory*. New York: Longman.
Morris, Robert. 1987. *Composition with Pitch Classes: A Theory of Compositional Design*. New Haven: Yale University Press.

¹ Rahn (1980) defines the following *set types* under cardinality: 0-null set, 1-monad, 2-dyad, 3-trichord, 4-tetrachord, 5-pentachord, 6-hexachord, 7-septachord, 8-octachord, 9-nonachord, 10-decachord, 11-undecachord, and 12-aggregate.

² Morris (1980) uses AB substitution, where A=10 & B=11.