



A JOURNAL OF THE SOCIETY FOR MUSIC THEORY

MTO 28.2 Examples: Besada, Xenakis' Sieve Theory

(Note: audio, video, and other interactive examples are only available online)

<https://www.mtosmt.org/issues/mto.22.28.2/mto.22.28.2.besada.html>

6! 1, 2, 3, 4, 5, 6

12
0 1 11 2 10 3 9 4 8 5 7 6

1 2 3 4 5 6 5 4 3 2 1 6
la sib lab dob sol do sol reb fa re mi sib 6

11-1 = 10-11+1 = 2

0 2 4 6 8 10 11 9 7 5 3 1

11-15

op. 33a

5 5 1 2 3 5 2 4 1 6 2

sib fa do si la fa# do# re# sol lab re mi

0 7 2 1 11 8 3 5 9 10 4 6

1 4

Question? Quels sont les séries d'intervalles qui me donnent le total chromatique uniquement?

7-5=2 2-1 12(11+1) 11-8 8-3 2 4 1 6 2 6

0 7 2 1 11 8 3 5 9 10 4 6

12-7=5

infinité de formules?

0, 11, 1, 10, 9, 3, 8, 4, 7, 5, 6

1 2 3 4 5 6 5 4 3 2 1 6

la lab sib ad dob sol do fa reb mi re sib

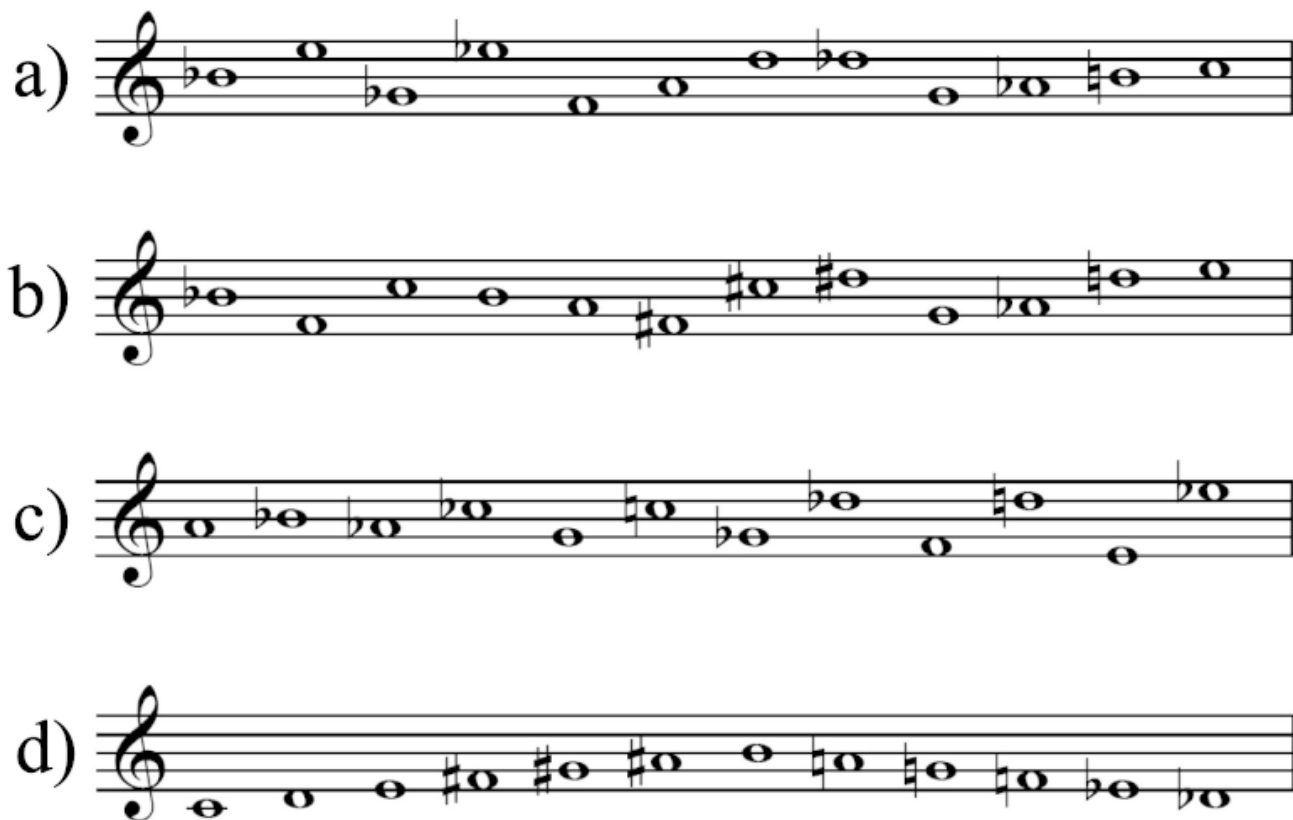
11-1 = 10-11+1 = 2

11-11 = 0

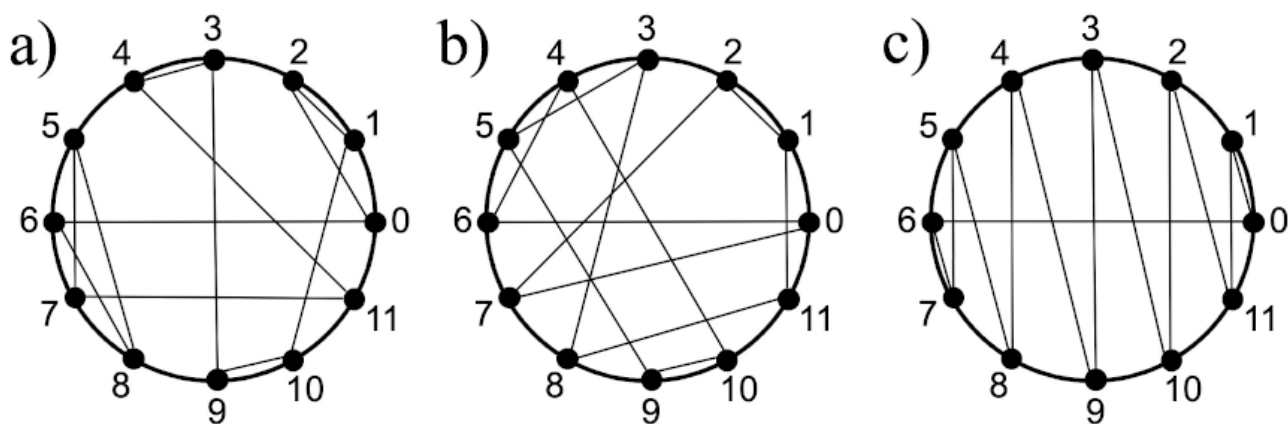
BnF MUS

13

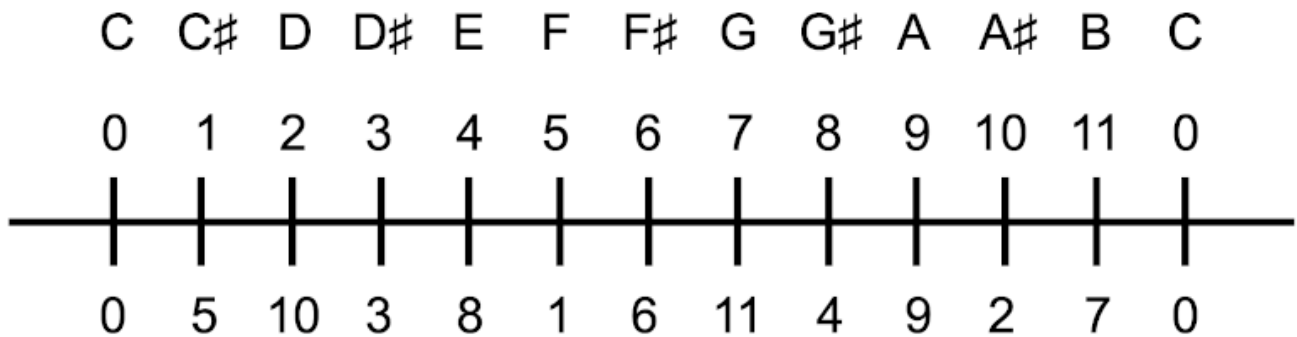
Example 2. Transcription of twelve-tone rows in the *Anastenaria folio* notebook: a) from Schoenberg's *Variationen für Orchester* op. 31; b) from Schoenberg's *Klavierstück* op. 33a; c) same as Nono's row for *Il canto sospeso*; d) two confronted whole-tone scales



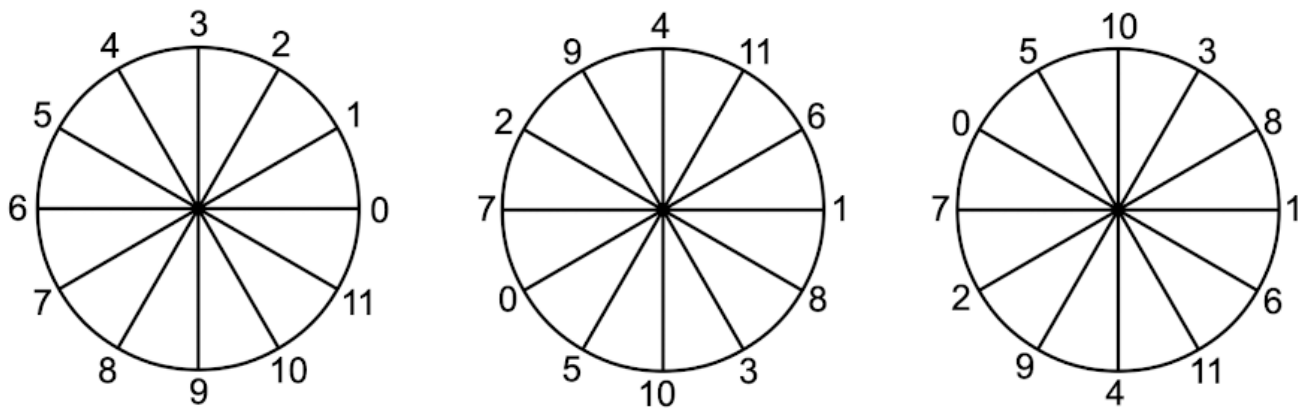
Example 3. Transcription of the circled representations of rows in Xenakis's *Anastenaria folio* notebook: a) from Schoenberg's *Variationen für Orchester* op. 31; b) from Schoenberg's *Klavierstück* op. 33a; c) same as Nono's row for *Il canto sospeso*



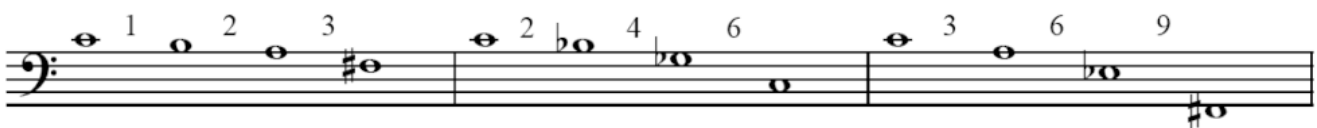
Example 4. Transcription of Xenakis' representation of the equivalence of semitones and perfect-fourth steps. The pitch names are in French in the original manuscript



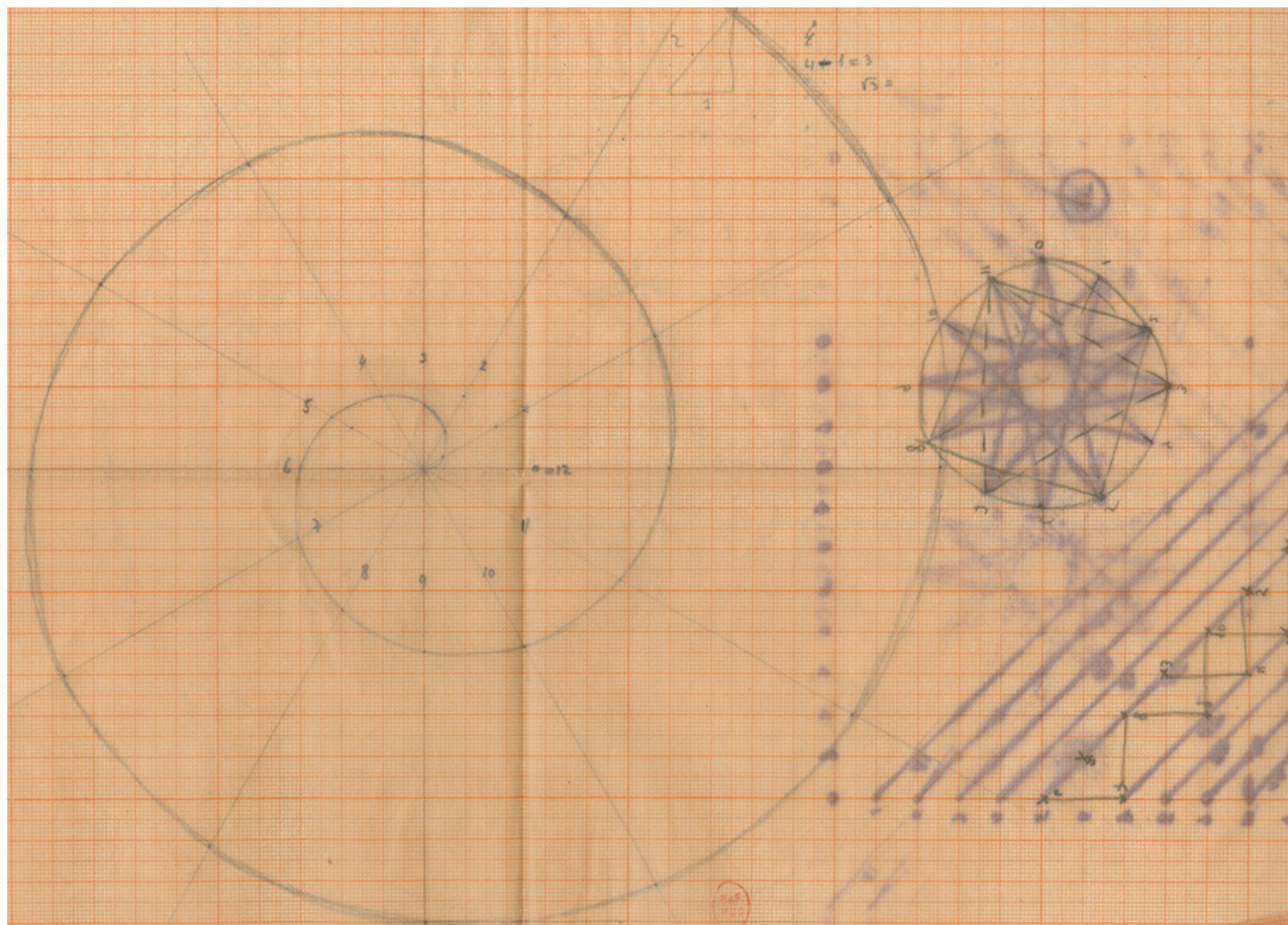
Example 5. From left to right, transcription of Xenakis' circles of consecutive semitones, perfect fourths, and perfect fifths



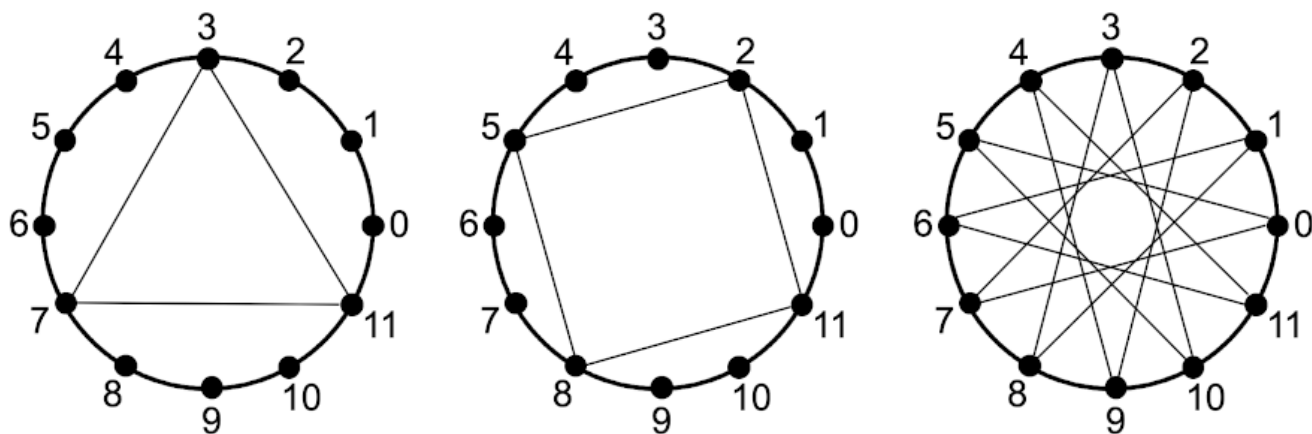
Example 6. Transcription of Xenakis' interval multiplication of a melodic contour



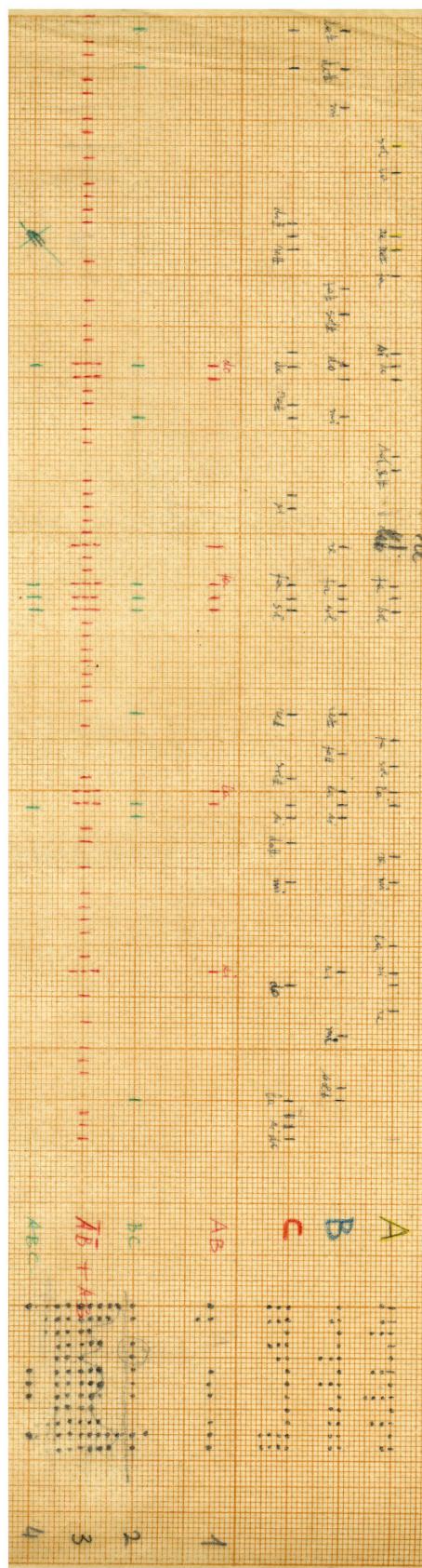
Example 7. Excerpt of Xenakis' translucent graph paper which is kept inside the *Anastenaria folio* notebook. © Xenakis' family, reproduced by permission



Example 8. Unpacking of circled polygons in Xenakis' translucent graph paper

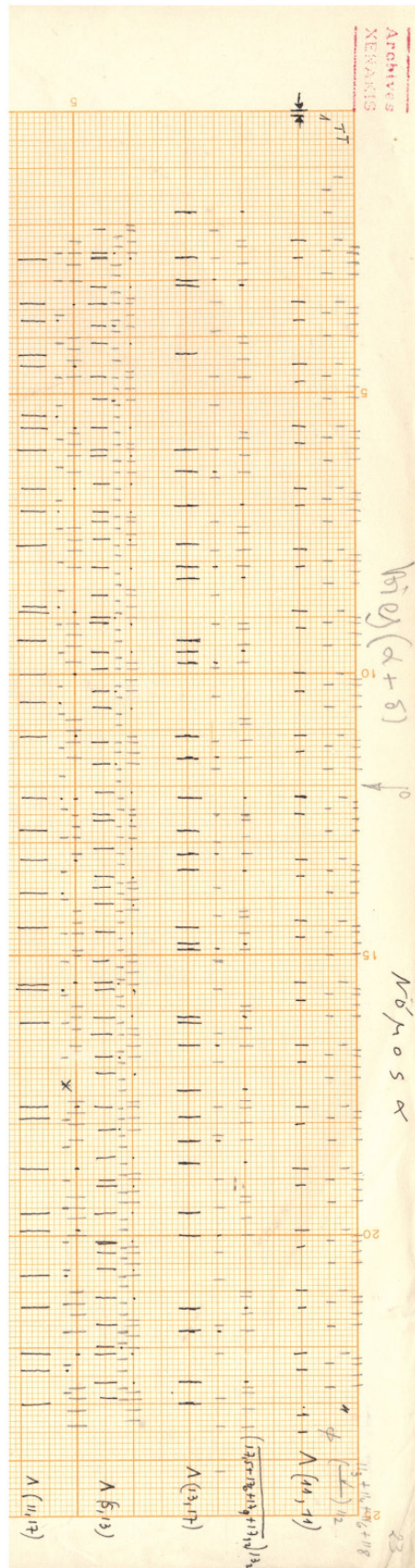


Example 9. Fragment of Xenakis' graph paper for representing pitches of the three main sets for *Herma*; below, the visual outcome of some the derived sets from some Boolean operations with the former ones. © Xenakis' family, reproduced by permission



[illegible]

Example 11. Fragment of Xenakis' graph paper for estimating microtonal pitches for *Nomos Alpha*, derived from complex sieve operations. © Xenakis' family, reproduced by permission.



Example 12. Remapping of Xenakis' sieve $L(11, 13)$ for *Nomos Alpha* onto the piano keys, preceded by its elemental constituents

130 8^{vb} 0 13 26 39 52 65 78 15^{ma}

131 8^{vb} 1 14 27 40 53 66 79 15^{ma}

133 8^{vb} 3 16 29 42 55 68 81 15^{ma}

135 8^{vb} 5 18 31 44 57 70 83 15^{ma}

136 8^{vb} 6 19 32 45 58 71 84 15^{ma}

(133U135U137U139)n112 8^{vb} 2 13 24 79 15^{ma}

137 8^{vb} 7 20 33 46 59 72 8^{va}

139 8^{vb} 9 22 35 48 61 74 8^{va}

112 8^{vb} 2 13 24 35 46 57 68 79 15^{ma}

114 8^{vb} 4 15 26 37 48 59 70 81 15^{ma}

118 8^{vb} 8 19 30 41 52 63 74 8^{va}

(114U118)n139 8^{vb} 9 22 35 61 8^{va}

Sieve $L(11, 13)$ 8^{vb} 0 1 2 6 9 13 14 19 22 24 26 27 32 35 39 40 45 52 53 58 61 65 66 71 78 79 84 15^{ma}

Example 13. Remapping of Xenakis' sieve $L(13, 11)$ for *Nomos Alpha* onto the piano keys

8^{vb} 0 1 2 4 9 12 13 15 20 23 24 26 34 35 37 39 42 45 46 48 52 53 56 57 59 64 65 67 68 70 78 79 81 15^{ma}

[illegible]