

# Post-Tonal Fun Pak for 4/19

## A. Interval Vector

Let's do an interval vector of the first chord from Webern's Four Pieces for Violin and Piano, Op. 7.

**Sehr langsam** (♩ = ca 50)  
mit Dämpfer

**Geige** \*)

**Klavier**

This is an artificial harmonic on violin, makes a very high E♭. A♭ is not a note, it's where you touch the harmonic.

Organize it into a set:

Take an inventory of every interval class in the set. (Look at each pair of pitch classes.)

Organize the total tally of intervals 1-6 into an interval vector:

< , , , , , >

## B. Transposition and Inversion ( $T_n I$ )

Let's work with the first three notes from Schoenberg's Piano Piece Op. 11



We'll put it in a set:

Let's do a  $T_2$  of it:

Basic inversion in post-tonal music is just  $I(x) = \text{mod}12(-x)$ .

Let's do an  $I(\ )$  of our original three-note set:

$T_n I$  inverts and then transposes. So we could say  $T_n I = \text{mod}12(-x + n)$ .

We already have everything we need for this analysis, but for practice let's take the original and invert it two more times.

Let's do a  $T_6 I$  of our original three-note set:

Let's do a  $T_3 I$  of our original three-note set:

Mark our original three notes, the  $T_2$  version and the  $I$  version in this passage. Circle them and give them a PC set label.

Mäßige ♪

# More Inversion

Bartok, "Subject and Reflection"

**Allegro**

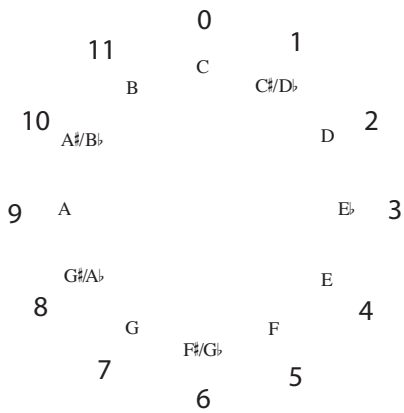
The musical score is for a piano piece in 2/4 time, marked 'Allegro'. It features complex rhythmic patterns with frequent changes in time signature: 2/4, 3/8, 3/4, 2/4, 3/8. The piece includes dynamics such as *f* (forte) and *ben ritmato* (very ritardando). The notation is for a grand piano, with a treble and bass clef.

This is being reflected under  $T_8I$

Let's invert Bb C D Eb F under  $T_8I$ .

| pre-inversion set | multiplied by -1 | add 8 | mod 12 result |
|-------------------|------------------|-------|---------------|
| 5                 |                  |       |               |
| 3                 |                  |       |               |
| 2                 |                  |       |               |
| 0                 |                  |       |               |
| 10                |                  |       |               |

Let's draw the tritone axis of symmetry and the mapping of notes on this clock.



## C. Set Types (aka Tn / TnI types)

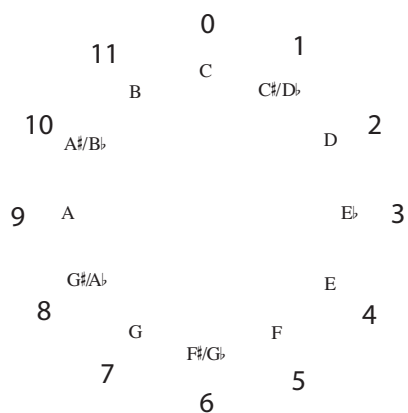
Let's go back to that Webern chord.

**Sehr langsam** (♩ = ca 50)  
mit Dämpfer

**Geige** \*)

**Klavier**

Let's put it on the circle and look at it:



What's the *most compact* span on the circle that has all of our PCs in it?

Let's also mentally invert this set and "count it backwards."

Which one is *most-packed to the left*?

Transpose down to zero if you haven't already. That's the referential set type for this chord.

# George Crumb, "Ancient Voices of Children"

Looking for three-note cells, mostly of set-type [0, 2, 6]

## I. El niño busca su voz

### [The little boy was looking for his voice]

Very free and fantastic in character [♩ = ca. 90]

The score is written for Soprano, Electric Piano, Strings, and Harp. It consists of several systems of music with various performance instructions and dynamic markings.

**System 1:** Soprano part begins with a "tongue click" (marked with a star) and a "piano" instruction. The music features a triplet of notes. Dynamics include *pp* (pianissimo), *mm* (mezzo-moderato), and *ppp* (pianississimo). A section of 15 notes is marked "(accl. - - rit. - - - -)" and "(15 = ca. 4 sec.)". The lyrics "a-i-u-a-i-u-a-i-u-a-i-u" are written below the notes. The section ends with a triplet of notes and a "t.d." (tutti) marking.

**System 2:** Continues the Soprano part with a "hum" instruction. Dynamics include *pp* and *ppp*. The lyrics "Ka-u-um Ka-u-um" are written below. A triplet of notes is marked with "(t.d.)".

**System 3:** Features a "molto rit." (molto ritardando) section of 20 notes, marked "20 = ca. 5 sec.". Dynamics include *ff sub. molto* and *pppp*. The lyrics "u-e-a-i-u-e-a-i-u-e-a-i-u-e-a-i" are written below. The system ends with a triplet of notes and a "Ka" lyric.

**System 4:** Soprano part with dynamics *mp* and *pp*. The lyrics "Ka-i-u-i-a-i-u-i" are written below. The section is marked "(accl. - -)" and "(rit. - - - -)".

**System 5:** Soprano part with dynamics *mp* and *p*. The lyrics "Ka-i-o-e-a-i-e-u" are written below. The section is marked "elegantly" and "al niente".

**System 6:** Electric Piano part with dynamics *ff* and *pp*. The section is marked "(Elect. Pno.)" and "(note strings)". A triplet of notes is marked with "3".

**System 7:** Harp part with dynamics *ff*. The section is marked "(Harp)" and includes a chord diagram: C# D# E# F# G# A# B#.