Twelve-Tone Serialism

Twelve-tone serialism

- In order to avoid the suggestion of tonality, composers needed to develop a system that would allow them to organize pitch in a way that was completely unrelated to tonality—this led to the creation of *twelve-tone serialism*
- Twelve-tone compositions are based on a *tone row* that is chosen by the composer
  - A tone row is a particular ordering of all twelve pitch classes
  - Each pitch is used once, and cannot be used again until all of the other pitches have been used (however, pitches can be repeated before moving on to the next one)
  - In analysis, we number the pitches of the row in the score (from 0-12) and identify each version of the row with a label

Tone row operations

- There are four operations that we can apply to a 12-tone row; these are:
  - transposition (T)
  - retrograde (R)
  - inversion (I), and
  - retrograde inversion (RI)
- *Transposition*
  - We can transpose a row to 12 different levels, starting it on any of the 12 pitch classes
  - These are the twelve *prime forms* of the row, which we name P0, P1, … P11

Tone row operations

- *Retrograde*
  - In retrograde, we reverse the order of pitches in the row
  - There are 12 retrograde forms, one for each transposition of the original row, which we call R0, R1, … R11
- *Inversion*
  - A tone row can be inverted around an inversional axis, moving by the same intervals, but in the opposite direction
  - There are 12 inverted forms of the row, labeled I0, I1, … I11
- *Retrograde Inversion*
  - This is basically the inversion of the row played backwards
  - There are 12 retrograde inversion forms of the original row, labeled RI1, RI2, … RI11

Magic squares

- The 12 forms each of P, I, R, and RI make 48 possible forms of the twelve-tone row
- All of the forms of a row can be effectively represented in a 12x12 matrix sometimes called a "magic square"
- P0 (the original row) is listed across the top of the square
- I0 (the inversion of the original row) should be figured out next, and listed down the first column of the square
- From P0 and I0 we can construct the rest of the matrix fairly easily, transposing the P0 form of the row to P1, P2, etc., listing it in the appropriate rows,
- We also add transposition numbers along the borders of the square