Twelve-Tone Analysis – Dr Ian Percy
Rosetta Stone Two

The octave plays a pivotal role in the fundamentals of tonality and functional harmony (harmonic inversions, voice-leading, cadences, progressions and modulations etc.). Octave displacement is how we cycle through the chord inversions of triadic tonal harmony. The <u>harmonic inversion</u> is essentially an <u>octave displacement</u> that produces alternate intervallic relationships between two identical notes: C to G is a Perfect Fifth, but if we raise the C by an octave, then G to C is a Perfect Fourth. This variable intervallic relationship between two identical notes of tonality needed to be neutralised.

The dodecaphonic (12-tone) system relies upon each note (pitch-class) maintaining a constant individual relationship with any and all of the other eleven notes in the system. Therefore the octave (octave displacement and compound intervals) had to be negated:

Twelve Pitch-Classes: 0123456789TE
0 = 12 = 0 (12 is never used)
Unison = Octave = Unison

The dodecaphonic system utilises mirror-inversions (symmetrical inversion or identical inversion) exclusively and negates the variability of harmonic inversions and the role of the octave through reducing the twelve interval-types to **SIX Interval-Classes** numbered Class 1 through to Class 6:

There are TWELVE Interval-Types:

Unison/Octave	0 semi-tones [0]
minor 2nd	1 semi-tone [0,1]
Major 2nd	2 semi-tones [0,2]
minor 3rd	3 semi-tones [0,3]
Major 3rd	4 semi-tones [0,4]
Perfect 4th	5 semi-tones [0,5]
Tritone/diminished 5th	6 semi-tones [0,6]
Perfect 5th	7 semi-tones [0,7]
Augmented 5th/minor 6th	8 semi-tones [0,8]
Major 6th	9 semi-tones [0,9]
minor 7th	10 semi-tones [0,10]
Major 7th	11 semi-tones [0,11]

There are SIX Interval-Classes: (Note: Prime = 0)

Class One: minor 2nd/Major 7th (1 semi-tone from prime) [01E]

Class Two: Major 2nd/minor 7th (2 semi-tones from prime) [02T]

Class Three: minor 3rd/Major 6th (3 semi-tones from prime) [039]

Class Four: Major 3rd/minor 6th (4 semi-tones from prime) [048]

Class Five: Perfect 4th/Perfect 5th (5 semi-tones from prime) [057]

Class Six: Tritone/diminished 5th (6 semi-tones from prime) [0,6]

Summation:

Twelve pitch-types, twelve pitch-classes, twelve interval-types and **Six** Interval-classes: A transposable system of pitch-organisation.