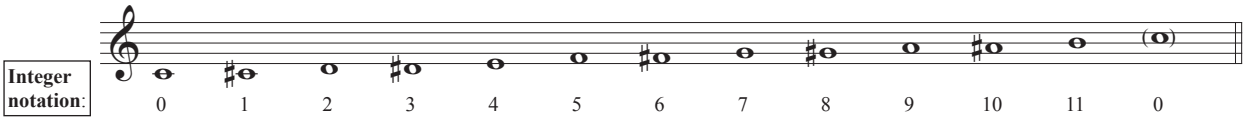
Collections

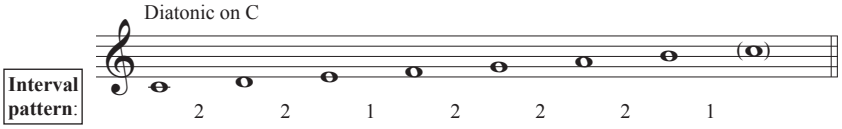
Chromatic (CHROM)

1 distinct collection under T_n



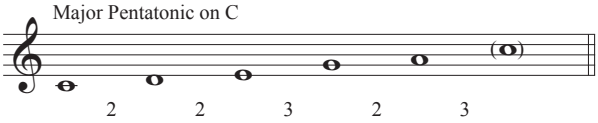
Diatonic (DIA)

12 distinct collections under T_n



Major Pentatonic (PENT)

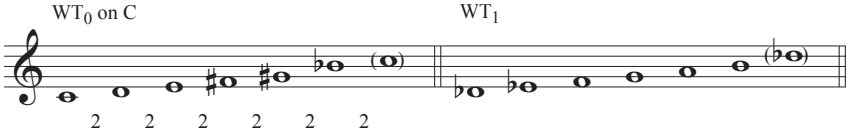
12 distinct collections under T_n



SYMMETRICAL COLLECTIONS

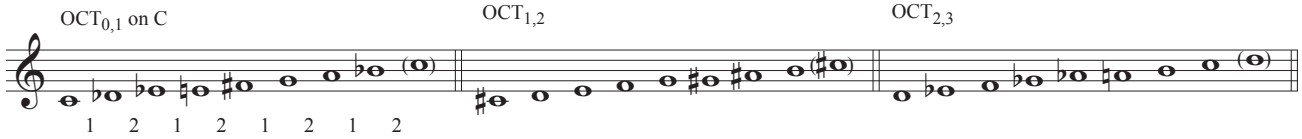
Whole-tone (WT)

2 distinct collections under T_n



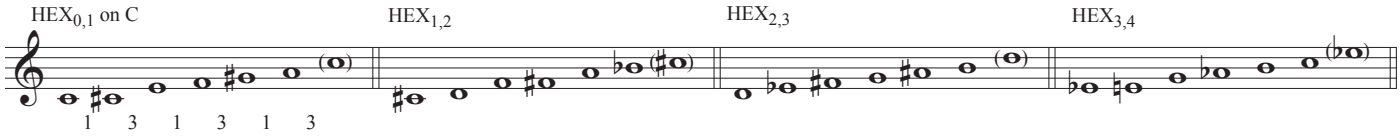
Octatonic (OCT)

3 distinct collections under T_n



Hexatonic (HEX)

4 distinct collections under T_n



Pitch-Class Set Theory

In the mathematical discipline called *set theory*, a *set* is defined as a collection of objects in which order does not matter and duplications are ignored.

In the context of *pitch-class set theory*, a collection refers to an unordered set of pitch classes (called a *pc set*).

Twelve pitch classes are formed under *octave equivalence* and *enharmonic equivalence.*

Each *pitch class* (abbr. *pc*) may be assigned an integer (0-11) which corresponds to an hour on the *pitch-class clock face*; e.g., C=0, C♯/D♭=1, D=2, D♯/E♭=3, E=4, F=5, F♯/G♭=6, G=7, G♯/A♭=8, A=9, A♯/B♭=10, and B=11.

To notate a pc set, we list its *members* within curly braces {} and separate the members by commas as shown here for the whole-tone collection on C: {C, D, E, F♯, G♯, B♭}.

Borrowing the *subset* relation from mathematical set theory, we can say that {C, D, E, G, A} is a subset of {C, D, E, F, G, A, B}.

Borrowing the *complement* relation from mathematical set theory, we can say that the complement of {C, D, E, F, G, A, B} is: {F♯, G♯, A♯, C♯, D♯}, and vice versa.

Reading

Gotham, Mark, et al. 2023. "Collections," in *Open Music Theory*, v2. Available online at: <https://viva.pressbooks.pub/openmusictheory/chapter/collections/>.