POST-TONAL THEORY

22 Feb 2019

MOD12

- Pitch classes run 0-E so there are only 12 possible numbers
- Use a clock face to help if you're confused
  - Pitch going up = clockwise
  - Pitch going down = counterclockwise

ORDERED PITCH-CLASS INTERVALS

To calculate pitch-class intervals, it is best to refer to the *pitch-class clockface* (see **Example 1-8**). We will consider clockwise movement to be equivalent to movement upward, and counterclockwise movement equivalent to movement downward. With that in mind, the ordered pitch-class interval from C♯ to A, for example, is −4 or +8. In other words, from pitch-class C♯, one can go either up eight semitones or down four semitones to get to pitch-class A (+8 and −4 are equivalent [mod 12]). It would be equally accurate to call that interval 8 or −4. By convention, we will usually denote ordered pitch-class intervals by a positive integer from 0 to 11. But, from time to time, we may prefer to identify ordered pitch-class intervals larger than 6 by their negative equivalents: 7 = −5; 8 = −4; 9 = −3; 10 = −2; 11 = −1.

To state this as a formula, we can say that the ordered interval from pitch-class x to pitch-class y is:

$$y - x \ (\textbf{mod } 12)$$

Example 1-12 calculates ordered pitch-class intervals using the formula. Instead of using the formula, however, you will probably find it faster just to envision a musical staff, a keyboard, or a clockface. From the first pitch class, just count upward (clockwise) in semitones to the second pitch class.

EXAMPLE 1-12 Calculating ordered pitch-class intervals.

From C♯ to E♭	= 3 − 1	= 2
From E♭ to C♯	= 1 − 3 = 13 − 3	= 10 (or −2)
From B to F	= 5 − 11 = 17 − 11	= 6
From D to B♭	= 10 − 2	= 8 (or −4)
From B♭ to C♯	= 1 − 10 = 13 − 10	= 3

ORDERED PITCH-CLASS INTERVALS

- FORGET EVERYTHING and do this:

    **for OPCI, start on first pitch on clock and count CLOCKWISE up to second pitch (regardless of which is higher in the music)

    • If it looks like a −1 on the music (goes down m2, it counts as an E in OPCI)—that way any C-B move is the same number.

Unordered Pitch-Class Interval

- What is the smallest interval you can create with those two pitches?

- "Unordered" means it doesn't matter which is higher

- If C and E, could be 4, could be 8… 4=smaller

- If G and D, could be 7, could be 5… 5=smaller

UNORDERED PITCH-CLASS INTERVALS

- 3 + 7 = what's the shortest path between them?

- 4

- Use your clock face and count if uncertain

- A to F

  - OPCI = 8 (m6)
 - UPCI = 4 (M3, shorter distance when inverted)

Four ways of describing intervals

- OPI = +/- exactly how many half steps between specific pitches (C4+C8, may be >12)

- UPI = exactly how many half steps between specific pitches (C4+C8) without +/-

- OPCI = distance using relative position of pitch classes in mod 12 (0-E only)—count clockwise

- UPCI = shortest distance between pitches (invert to make smaller interval) in mod12 (0-6 only)

Interval Class Vector

- Count each UPCI created between each pair of pitches (will be 0-6)
- Mark how many 1s, 2s, 3s, 4s, 5s, 6s there are
- <101102> = one 1, one 3, one 4, two 6

Interval Class Vector
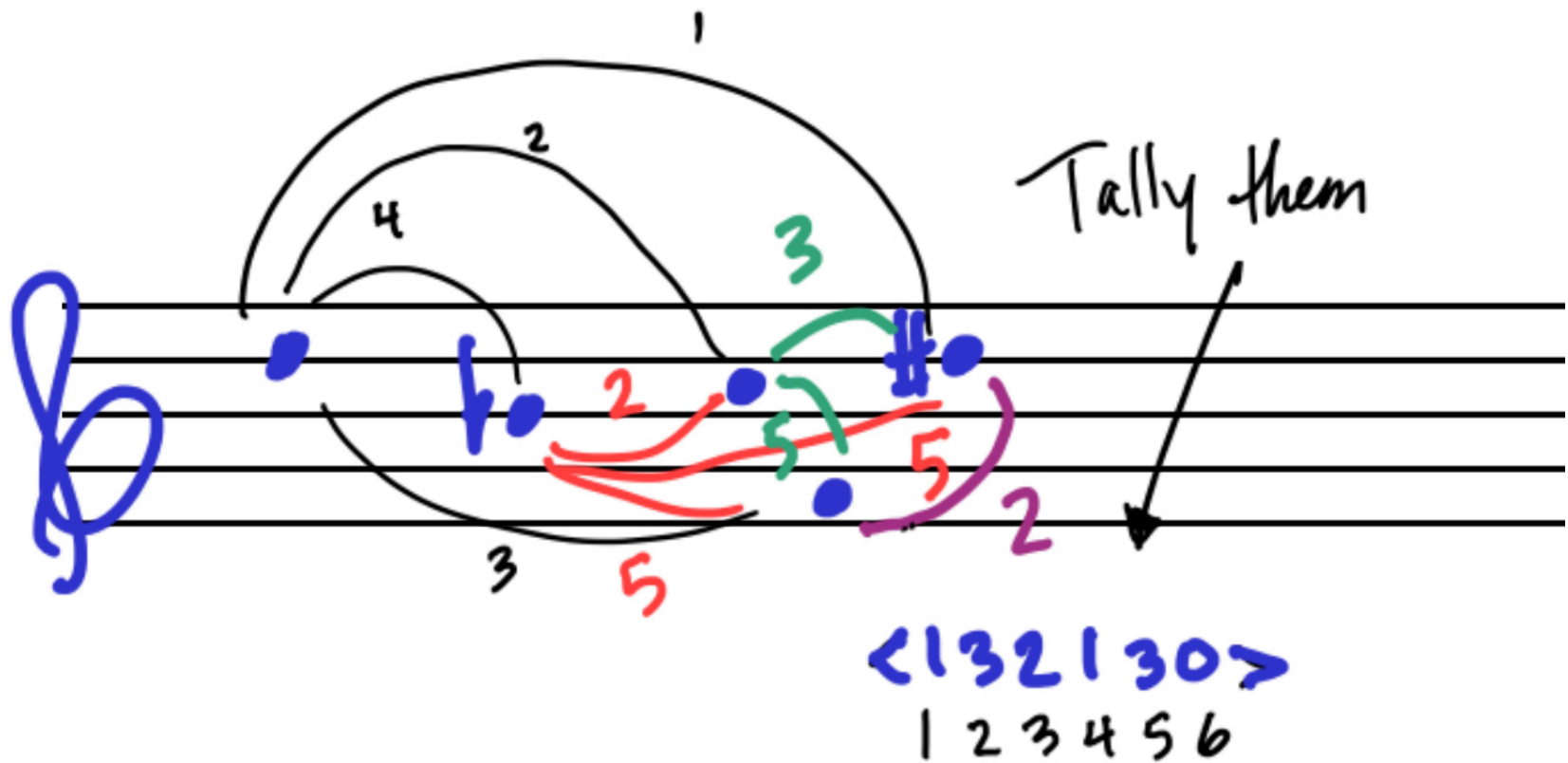
Spacing Intervals

- However your chord is voiced, count OPCI from bottom note up

- So C, D, E (bottom to top) would be [2] [2]

- D, E, C (bottom to top) would be [2] [8]

Spacing Intervals