Music 11, 7/10/06

Scales/Intervals

We already know half steps and whole steps (semitones and tones).

We call these "*seconds*."
Adjacent pitch names are always called seconds, but because the space between adjacent pitch names can vary, there are different types of second:
Major second (M2) = whole step = whole tone
Minor second (m2) = half step = semitone

In a major scale, all the seconds are major seconds (M2) except 2: E-F and B-C are minor seconds (m2).

Inversion

Suppose we take the two notes that make up a second, and "flip" them over—that is, lets put the lower note up an octave, so that it lies *above* the other note. The distance between E-D is now D-E. We say that the "inversion" of E-D is D-E, and the interval that results is *not* a second, but instead a seventh. More specifically, the inversion of a major second (M2) is a minor seventh (m7).

There are two things to remember about inversions:
1. When an interval is inverted, their numbers add-up to 9. M2 and m7 are inversions of each other, and we can see that 2 + 7 = 9.
2. When a major interval is inverted, its quality becomes minor, and vise versa. The inversion of a M2 is a m7. Major has become minor. Likewise, the inversion of a minor second (m2) is a major seventh (M7).

By these rules, we can invert other intervals, like thirds. Study the following chart:

# of semitones	interval name	inversion	# of semitones
1	m2	M7	(11)
2	M2	m7	(10)
3	m3	M6	(9)
4	M3	m6	(8)

Obviously, wider intervals have more semitones between pitches. Since there are so many, it can take a long time to memorize them and count them. Instead, simply memorize the above 2 rules and look at the middle two columns in the above chart.

In music, different intervals have different levels of stability.

Seconds tend to be highly unstable. M2s and m2s desire what we call "resolution." The same can be said for their inversions, m7s and M7s. This instability is often called *dissonance* (as opposed to *consonance*, or harmonious stability).

We can, like we did with the whole tone and semitone, alter intervals. When we alter an interval by adding an accidental to one note, it affects its inversion.

For example, a M2, Eb-F, can be made narrower by naturalizing the Eb. E-F is not a semitone, or m2. *Before* we altered the note, its inversion was a m7 (see the above two rules), but now its inversion is a M7. Remember that when an interval is made narrower, its inversion expands, and when an interval is made wider, its inversion is made narrower….

3rds

On the staff, we can identify thirds easily because they are two notes that are on adjacent lines or spaces (there is a pitch name in-between them). In any key, there are 3 major thirds. All the rest are minor.

If you know thirds, you know sixths by the above 2 rules, right? The interval name = 9 (3 + 6 = 9), and the quality reverses (major becomes minor and minor becomes major).

If an interval is major, and it is made *further* wider, it becomes *augmented*. Ab-B is an augmented second (A2). Gb-B is an augmented third (A3). The inversion of an augmented interval will always be *diminished*. See the following chart, same as above, but this time with augmented and diminished intervals incorporated:

# of semitones		interval name	inversion	# of semitones
2nds:	1	m2	M7	(11)
	2	M2	m7	(10)
	3	A2	d7	(9)
3rds:	2	d3	A6	(10)
	3	m3	M6	(9)
	4	M3	m6	(8)
	5	A3	d6	(7)

Notice that when speaking of intervals, the letter name matters. A d3 and a M2 can sound the same—each is exactly 2 semitones. But if the letter names are adjacent it is a M2, and if they are not adjacent (if one letter name is skipped between them), it is a d3. This is another reason why the above 2 rules are so helpful….

The rest of the intervals next time!