

Music 11, 7/3/06

We have learned:

- the pitches that make a tune
- the notes on the staff
- and the scale that connects the octave.

Remember the Sound of Music?

do, re, mi, fa, sol, la, ti, do...

These are syllables that singers have historically used to learn to sing. With these, a singer could realize “where” on the “scale” they were. It is a very useful tool, when you know what they mean. In the Sound of Music, Maria taught the children the syllables, and when they sang together, they could sing different notes at the same time (“harmonize”), and everyone could hear how the notes fell together in relation to that scale. If you remember the film, notice that the children did not need to learn how to read music notation under this type of instruction (clever, eh?). We will learn more about harmony later, but first we will examine certain properties of the major scale.

### The Major Scale

A scale is a particular series of tones and semitones. The members of the scale are derived from the monochord, whose specific overtones *are* those notes. We derive the major scale from the natural physical phenomena of the vibrating string.

We can produce the scale by plucking different segments of the monochord. The following proportions represent the relationship between certain overtones, or parts of the vibrating string, to the whole, or *fundamental* (some of these terms will be introduced later):

<u>Syllable</u>	<u>note</u>	<u>proportion</u>	<u>scale degree</u>	<u>segment of the monochord</u>
do	octave	2:1	^1	1/2 of the string
sol	fifth	3:2	^5	2/3 of the string
fa	fourth	4:3	^4	3/4 of the string
mi	third	5:4	^3	4/5 of the string
re	second	9:8	^2	8/9 of the string

etc... the other syllables/pitches can be similarly derived, and you get the idea...

We write the scale as a condensed, ascending “tone ladder,” in which each successive note falls on the higher line or space of the staff. The result is a collection of 8 pitches with unique letter names (until we arrive at the octave, which repeats the name of the first note).

Each successive note also has a distinct distance from its neighbors. All the tones are a whole tone apart except E-F and B-C, which are semitones.

The intervallic series in a major scale has a formula:

1      1      ½      1      1      1      ½

If we divide the major scale into 2 segments (2 halves), there is an interesting effect: both halves have the same series:

1      1      ½      (1)      1      1      ½  
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Tone   Tone   Semi-T                      Tone   Tone   Semi-T

(or)    Whole   Whole   Half                      Whole   Whole   Half

Knowing this series, we can build a scale beginning on any note. But before we do that, we need to understand *accidentals*. Accidentals are “#s” and “bs,” and are necessary to adjust the notes of many scales so that their interval series’ reflect that above (since all major scales, no matter what note they start on, have the same interval series).

In order to write a major scale, practice the following 3 steps:

1. Given the first note, fill in all the others to the octave. Place a note on each successive line or space to make a “ladder” of 8 pitches.
2. Divide the scale into two halves, and note what their interval series *should* be: 1, 1, ½, (1), 1, 1, ½.
3. Begin at the bottom of the “ladder” and adjust each note with an accidental in order to make the series work. If my scale begins on E, and I know I need a whole tone between E and F, I must raise F to F#... Remember to only adjust the higher note in each pair because as we ascend the ladder, we are “fixing” notes as they go *up*.

Next class: more on building a scale, and key signatures...