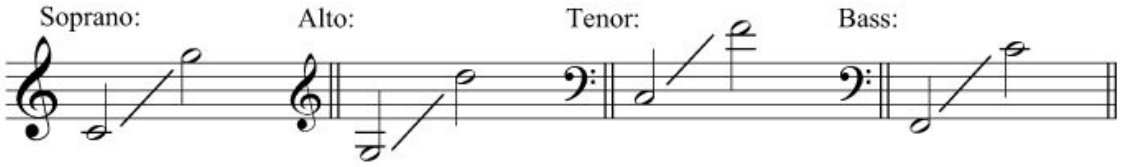
Transposition

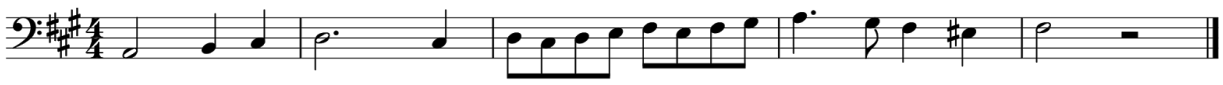
Eamonn Bell - Fundamentals of Music S002 F'16 - Reading due 9/29/16

Here are the ranges of the various voice types. Of course, some people can sing higher and lower than these ranges, but we have to pick notional boundaries somewhere. Professional singers can be expected to have a wider range; amateur choruses or children's choirs will have different ranges. But the ranges below are a start. They tell us what pitches are possible for a voice type. The pitches that are most comfortable lie in the middle of the range. Extremes are possible but not always comfortable (or as loud).



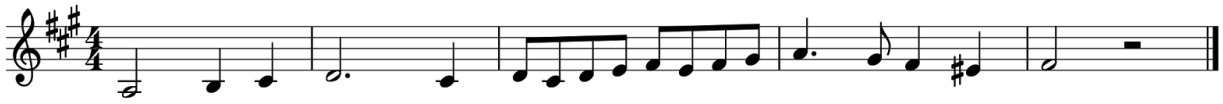
If I (a bass) sing the following melody:

Wonderful Composition for Bass



and I ask an alto to do the same thing - at exactly the same pitch - it would be impossible (see the ranges above). What hope is there for my composition? As a compromise, I could use my knowledge of octave equivalence and ask my singer to sing the pitches that I have written exactly one octave higher. Therefore, the A2 in the first measure becomes A3, as below.

Wonderful Composition for Alto



I have **transposed** the first melody **up one octave** to obtain the second**.** The second is a **transposition** - **up one octave** - of the first. It's important to note something about how we specify the transposition. We include:

- a direction (up)
- and an interval of transposition (an octave)

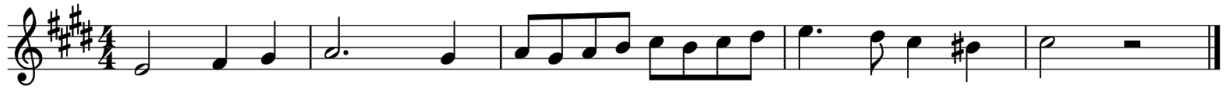
(Indeed this is a case where we silently mean a perfect octave, every time we mention the word octave)

The interval of transposition is not just the interval between the first pitch of the source melody and the first pitch of the transposed version of that melody, it is **the interval formed between all corresponding notes in the source and the transposed version**. This is is core to the notion of transposition. Accordingly, the interval between the B2 in the first melody and the B3 in the second melody is an octave, between C#3 and C#4, etc.

Question: Call the first melody the ‘source’ and the transposed melody the ‘target.’ Now that we know that the interval of transposition (in this case an octave) is to be found between all corresponding notes taken from the source and the target (first with first, second with second, etc.), what does this necessarily entail about the relationship between the melodic intervals of the source (i.e. the intervals between successive notes) and the melodic intervals of the target? Would this be the case if the interval of transposition was not an octave?

I am looking for the broadest possible audience for my composition. I realize that the transposition for the altos just won’t be comfortable (or possible) for many sopranos. So I decided to transpose it **up** a **perfect fifth**

Wonderful Composition for Soprano



Does my transposition check out? Sure, it starts on the pitch that’s a perfect fifth above A3, which is a great start. And all subsequent pitches are a perfect fifth higher than how they appear in the version for altos.

What else has changed? I’ve modified the key signature, too. The key signature for the bass and alto versions indicated A major (or F# minor); the key signature for the version that has been transposed up a perfect fifth indicates the key a perfect fifth higher, indicating E major (or C# minor). I am being evasive on the matter of precisely what key each version is in until we develop a more refined sense of key.

However, think about how the F# harmonic minor scale differs from the A major scale: it has a raised seventh scale degree (E#) which is not shared with the A major scale. We could say that the existence of the E# in the source melody is evidence in favor of considering the melody to be in the key of F# minor (A major’s relative minor)

Importantly, that E# in the alto version has now become a B# in the soprano version. So it maintains that suggestive function, alluding to C# minor (E major’s relative), since B# is the leading tone (the raised seventh) of our C# harmonic minor scale, just as E# is to F# in the source case.

Note that what required an accidental in the source requires an accidental in the target. This is a good rule of thumb for transposition.

Note also that we haven't opted for any enharmonic spelling of B# (think for a second what that would be) here. In light of our discussion above, we can think of at least two reasons for that.

Firstly, were the B# written as C, the core notion of transposition would be violated. To check, consider the interval between the corresponding notes in the source and the target in this counterfactual. The interval between E# and C is (E - F - G - A - B - C) a sixth of some quality. What quality? This is a good time to apply the inversion "trick". Instead of imagining the interval between E# and C consider the interval between C and E#. Now, it's a third (C - D - E) of what quality? Does E# appear in the major scale starting on C? No. So it's not a major third. Rather, it's one half tone higher than it ought to be, hence augmented. And the "trick" asks us to ask what inverts into augmented (diminished), hence E# - C is a diminished sixth. And not a perfect fifth, as the core notion of transposition maintains.

The other reason is more prosaic but more in the spirit of why enharmonic equivalents are not interchangeable with each other. Basically if the B# were spelled C in the soprano version, we'd miss the allusion towards the relative minor that the melody makes (indeed in all versions). In the original, E# signals a relationship (that of the leading tone moving to the/a tonic - of the relative, mind); in the transposed version, so too does B#. Melodic moves like this signal a change of key context, something we will return to in later weeks in our discussion of key and modulation.