

Intervals 2

Music Fundamentals

14-119-T

With two or more notes, we can develop a language to describe harmonic function. But what is harmony in music? The answer can best be answered by looking at the results of harmonic function. One pitch, for example, has no results beyond the pitch itself. For instance, if you play a **C4** (middle C) on the keyboard, how many ways can you describe the aural effect? You can speak of the frequency (pitch), the octave of the pitch, the timbre (ie., it's a piano playing the **C**), and possibly even the rhythm. However, if you play a **C4** followed by a **D4**, you can speak about other aspects. In addition to the elements above, you can now speak about the relationship between these two notes. Since a context has been given to the **C4** (ie., **C4** comes before **D4**), you can now discuss the intervallic relationship between the two pitches, which results in the aural perception of a *dissonance/consonance* level.

Dr. McFerron, Why Does Your Music Sound Terrible?:

Generally, *dissonance* is a term used to describe a conflict or tension between pitches which wants to resolve to a *consonance*, or a point of resolution. Due to its subjectivity, *dissonance* requires a context to make this determination, generally through a harmonic progression. In other words, the harmonic progression is the context for discussing the dissonance/consonance level. For these terms, it is necessary to take into account the resolution, or even expected resolution. As you can see, the discussion of dissonance and consonance is rather philosophical. A friend of mine uses an analogy to explain this to beginning music students:

Most popular movies have a form of dissonance and consonance in the story line. For example, imagine a movie (he mentions one, but I'm not sure about © issues), where the hero is lost on a desert island (guess which 2001 movie). Everyone that he knows presumes he's dead, including his fiancé. During the movie, there are many levels of dissonance that are resolved. One example is when he escapes the island on a raft he made. He must brave the break of the waves as he leaves the lagoon of his somewhat non-violent island. The waves crash into his raft and nearly destroy him. The tension builds in the music, sound, and the hero's dialog (his screaming and grunting) until finally, the hero breaks through the waves, at which point everything is calm. The dissonances are the moments of him caught in the violent waves. When he finally gets to calmer waters, we realize that the dissonance is less than the breaking waves, but more than the island from where he came. After all, he's stuck on a raft in the middle of the ocean, and he will not be able to return to the safety of his island!

For an example of a somewhat dissonant interval, see **dissonant1.mp3** linked to this lecture. This MP3 file consists of a tritone (6-1/2 steps) resolving to a perfect 5th (7-1/2 steps). By itself, the tritone sounds unstable, and we are relieved when it is resolved. **Dissonant1.mp3** is a piano sound. **Dissonant2.mp3** is an elongated sine wave. I've chosen to use a sine wave because it is the simplest waveform.¹ With this example, I have sustained the lower note, and resolved the upper note. The tritone is **C4** and **F4#** in this example. It resolves to the interval of a perfect 5th, in this case **C4** and **G4**. As you can see, **C4** is common to both intervals this example.²

¹ All sounds, even very complex sounds, are created by the addition of thousands of sine waves. This is known as Fourier's Law.

² Do not get confused! C4 to G4 is a Perfect 5th, but so is C# to G#, or A to E, and many more. Remember that an interval is a "relationship" between pitches. There are seven 1/2 steps in a P5 [See Figure 1].

As you can see, these terms are very subjective. For example, we could say that two notes are dissonant, and that we expect them to resolve to a consonant, or less dissonant. The level of dissonance is the subjective element. What you think is harsh, or in need of resolution, is probably different than what I think is dissonant. More accurately, you may think something is very harsh, where I may think that something is moderately harsh.

Why My Music Sounds Terrible:

Another term, used almost exclusively in the 20th century, is *discord*. This term is a more accurate to our discussion, because it deals with only the conflict of two or more notes. It does not speak to the resolution of the two pitches. Although still subjective, we could say that playing a **C** and **Db** simultaneously is very discordant. We are not speaking of its resolution, but simply of the two notes, similar to how we would speak of one note.

More on Intervals:

We have already discussed the number of 1/2 steps in intervals. To help further understand intervals, refer to the chart below [see figure1].

This chart shows the number of possible Perfect 5th possible (not including extended enharmonics that use double-sharps and double-flats). The same chart could be generated for every interval and memorized; however, we will see in the next lecture that it will be much easier to recognize intervals at sight. Memorization can be helpful, and is often necessary in music. Yet, if we memorized everything in music, we would have to study many years just to simply cover the basics of music. Music theory provides you with the skills to “figure out” the answers. Music is a language. For an example, imagine having to memorize every possible scenario to form a sentence in German. Wouldn't it be easier to simply know where to put the noun and how to conjugate a verb? Instead of having to memorize *habe, hast, hat, haben, habt, haben, and haben*, wouldn't it be easier to understand the rules for conjugation? Obviously it would. This is exactly why it is important for you to understand “how” to recognize musical material. Just like language, soon you will know that D to A is a P5, or that E to G is a minor 3rd. With practice, you will begin to incorporate your knowledge of this language without having to go through the process of counting 1/2 steps, or visualizing keys on a keyboard. You will simply know.

Figure 1

Possible Perfect 5th intervals (extended enharmonics not included. Eg., C-double sharp to G-double sharp). Remember that the P5 consists of seven 1/2 steps.

Note Names (enharmonics in parenthesis)

A-E
Bb-F (A#-E#)
B-F# (Cb-Gb)
C-G
C#-G# (Db-Ab)
D-A
D#-A# (Eb-Bb)
E-B (Fb-Cb)
F-C (E#-B#)
F#-C# (Gb-Db)
G-D
G#-D# (Ab-Eb)