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DISSONANCE DEPENDS ON THE CONTEXT… AND THE CULTURE

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With music, it is well-known that that two notes that are adjacent to each other such as C and C# that when played together, can sound dissonant. This is especially significant in the lower frequency region (below or near middle C) where the fundamental frequency difference between these C and C# can be on the order of only 15 Hz. Musical note spacings (and its harmonics) should be on the order of at least 25 dB for there to be no dissonance. This is one of the reasons why frequency lowering can be problematic when it comes to amplified music- unintentionally causing some harmonic elements of one note to be too close to another note that is played at the same time.

But perhaps this is too simplistic of a conclusion?

We have all been to birthday parties where the guest of honor is the recipient of the "Happy birthday song". One person may have a fundamental frequency of 125 Hz, and another, 128 Hz, and yet another person has a fundamental frequency of 233 Hz. When singing together, many of the harmonics may be only several Hz apart, yet it sounds pretty good- context can be everything.

Context can also be affected by cultural elements. For example, in Hindustani Vedic music it is commonplace to have "quarter tones" where two adjacent notes may only have a frequency difference of 6 or 7 Hz, especially in the lower frequency region. The same can be said of Celtic music where bagpipes have a drone whose harmonics may only be several Hz away from the fundamental or an harmonic of the melody. One may not like the sound of bagpipes but nobody would use the word "dissonant" to describe their sound… well, maybe they would, but that's merely a personal preference.

But using pure tones or single musical notes can be problematic.

The following audio file (#1) is in an ABA format where the A part is the note A (440 Hz) on a violin, and the B part is a slight detuning of all harmonics above 1500 Hz but by only ½ of one semi-tone. Compared with the A part, the B part sounds dissonant and "out of tune".

Dissonant Sound Example

Harmonic complexity can also be an issue that can make a dissonant sound appear to be quite nice. This next audio file (#2) shows the two notes, C and C# which are adjacent to each other on the piano keyboard. Around middle C these two notes are only about 15 Hz apart, and indeed when played together, sound dissonant. However, when these two dissonant notes are played as part of a more complex chord, they sound quite nice. For example, the C# major 7 chord is made up of C#, C, F, and G#. It still has both C and C#, but also F and G# added in- together the chord sounds quite good. The file shows several examples of the C and C# notes played simultaneously and then again, along with F and G#. All together they make up the very

pleasant-sounding C# maj 7 chord. In fact, this would be the case for all Major 7^{th} chords in music where a second – ½ semitone above the root key- is played concurrently with the root of the chord and all sounds quite nice

Audio file 2 C and C#

Context and complexity can go a long way towards making, what one person may consider dissonant, but another person may consider to be not only acceptable, but can improve the musicality.