Subject: Re: Beat frequencies and Hetrodyning
Posted by Paul C. on Mon, 12 May 2003 00:22:06 GMT
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I have used this principle in my arranging for saxophone quartet, R&B horn sections, theater pit orchestra, etc, for many years. The difference frequency produced by a combination of notes, properly chosen and placed in a chord, can reinforce the root note of the chord, or fall an octave or more below.The players must have good ears for tuning, so that their intervals ring (as the barbershop guys say), that is, tune to exactly Pythagorean intervals... those that are NOT of the tempered scale of the piano, where each semitone is a 12th root of 2, but instead, whole number ratios (Pythagorean tuning). This is the tuning that sounds correct to the ear.For example, a C major chord is composed of the notes C, E, and G. If we assign a low note C as the frequency of X, then a C an octave higher would be 2X. An octave above that would be 4X. An octave above that would be a C whose frequency is 8X.The other notes would have other whole note ratios. The G between the C (=4X) and C (-8X) would have a frequency of 6X. The note E would have a frequency of 5X. So, these three notes of the C major chord would be C (4X), E (5X), and G (6X). The difference frequency between the C and E would be 5X - 4X = 1X. That 1X is a C two octaves down. This is IF the notes are played in tune such that they "ring". The difference between the G and the E would be 6X - 5X = 1X, again, reinforcing that low C, 1X.The difference between the G and the C would be 6X - 4X = 2X. That would be a C one octave below the C (4X). So, with all these notes beating together, you produce two subharmonics, which are both harmonically related to the root of the chord (C, 4X), one and two octaves below the root. So, when this chord is played well in tune, to whole number ratios (Pythagorean tuning), the chord can obtain great depth to the overall sound.Did I lose anyone?The E