

C.) Cents:

All musical scale(s) have fundamental problems, as seen from above. That’s just the reality of the way things are – causes problems playing music in different keys!

Create an interpolated musical scale, known as the tempered scale with 12 equally-spaced semitones for 12 notes of this musical scale – divide up the octave into 1200 cents. Then define 100 cents as = 1 tempered semitone. Then one octave = 12 tempered semitones.

D.) Meantone Tuning:

Pythagorean major 3^{rds} are too sharp! Flatten them slightly.
 Pythagorean minor 3^{rds} are too flat! Sharpen them slightly.

See p. 141-3 in *Acoust. Found. of Music* for details of how this is accomplished.

E.) The Just Scale:

Major triad – add major third (4:5) to minor third (5:6) – creates 3 notes with interval (frequency ratio) 4:5:6!

F	A	C					
		C	E	G			
				G	B	D	
$\frac{2}{3}$	$\frac{5}{6}$	1	$\frac{5}{4}$	$\frac{3}{2}$	$\frac{15}{8}$	$\frac{9}{4}$	

FIG. 7. Building the just scale.

F.) The Just Diatonic Scale:

Note:	C	D	E	F	G	A	B	C
Frequency:	1	$\frac{9}{8}$	$\frac{5}{4}$	$\frac{4}{3}$	$\frac{3}{2}$	$\frac{5}{3}$	$\frac{15}{8}$	2
Interval:		$\frac{9}{8}$	$\frac{10}{9}$	$\frac{16}{15}$	$\frac{9}{8}$	$\frac{10}{9}$	$\frac{9}{8}$	$\frac{16}{15}$

FIG. 8. The just diatonic scale.