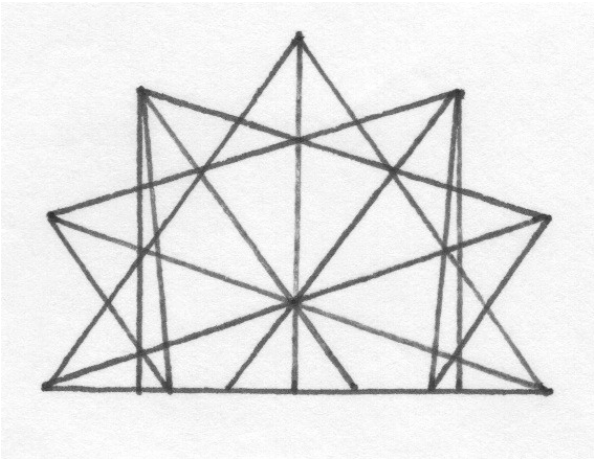
The Spectrum of Meantone Temperaments



Siemen Terpstra

www.siementerpstra.com

The Spectrum of Meantone Temperaments:

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Table showing the deviation in the musical Fifth (in Cents) for various systems of equal-temperament which are close analogues of meantone temperaments

-7.2 -7.0 -6.8 -6.6 -6.4 -6.2 -6.0 -5.8 -5.6 -5.4 -5.2 -5.0 -4.8 -4.6 -4.4 -4.2 -4.0 -3.8 -3.6

1/3 19-E.T. -7.218										1/4 31-E.T. -5.181	← The best Meantone scales region				1/5 43-E.T -4.281	→	1/6 55-E.T. -3.773	
(2/6 38-E.T.) -7.218			Lucy -6.462		2/7 50-E.T. -5.955					(2/8 62-E.T.) -5.181		2/9 74-E.T. -4.658			(2/10 86-E.T.) -4.281	2/11 98-E.T. -3.996	(2/12 110-E.T.) -3.773	
(3/9 57-E.T.) -7.218			3/10 69-E.T. -6.303			3/11 81-E.T. -5.659				(3/12 93-E.T.) -5.181	3/13 105-E.T. -4.812	3/14 117-E.T. -4.519	(3/15 129-E.T.) -4.281	3/16 141-E.T. -4.083	3/17 153-ET -3.916	(3/18 165-ET) -3.773	
(4/12 76-E.T.) -7.218			4/13 88-E.T. -6.5		(4/14 100-E.T.) -5.955		4/15 112-E.T. -5.526			(4/16 124-E.T.) -5.181	4/17 136-E.T. -4.896	(4/18 148-E.T.) -4.658	4/19 160-ET -4.455	(4/20 172-ET) -4.281	4/21 184-ET -4.129	(4/22 196-ET) -3.996	4/23 208-ET -3.878	(4/24 220-ET.) -3.773
(5/15 95-E.T.) -7.218			5/16 107-E.T. -6.628		5/17 119-E.T. -6.157		5/18 131-E.T. -5.772	5/19 143-E.T. -5.452		(5/20 155-E.T.) -5.181	5/21 167-E.T. -4.949	5/22 179-E.T. -4.748	5/23 191-E.T. -4.573	5/24 203-ET -4.418	(5/25 215-ET) -4.281	5/26 227-ET -4.158	5/27 239-ET -4.047	5/28 251 -3.947	5/29 263 -3.856	(5/30 275-E.T.) -3.773

-7.2 -7.0 -6.8 -6.6 -6.4 -6.2 -6.0 -5.8 -5.6 -5.4 -5.2 -5.0 -4.8 -4.6 -4.4 -4.2 -4.0 -3.8 -3.6

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The association between various closed-cycle equal temperaments and various open-cycle meantone temperaments:

Equal-temperament (Best)	Deviation of fifth	Associated Syntonic Comma meantone		Pure division of SC (21.506c)
(7)	−16.241 c.	1/2 sc	.. (Source)	10.753 c.
19	−7.218	1/3 sc	.. Salinas	7.169
31 *	−5.181	1/4 sc	.. Aron	5.377
43 *	−4.281	1/5 sc	.. Sauveur	4.301
55 *	−3.773	1/6 sc	.. Silbermann	3.584
(67)	−3.448	1/7 sc	..	3.072
(79)	−3.221	1/8 sc	..	2.688

Add twelve consecutively

The 'fit' of the sequence breaks down at either end; hence the use of brackets. A second order sequence may be generated within the above sequence:

(2)	−101.955	2/3 sc	..	14.337
7 × 2 = (14)	−16.241	2/4 = 1/2 sc	..	10.753
26	−9.647	2/5 sc	..	8.602
19 × 2 = 38	−7.218	2/6 = 1/3 sc	..	7.169
50 *	−5.955	2/7 sc	.. Zarlino	6.145
31 × 2 = 62	−5.181	2/8 = 1/4 sc	..	5.377
74 *	−4.658	2/9 sc	..	4.779
43 × 2 = 86	−4.281	2/10 = 1/5 sc	..	4.301
98	−3.996	2/11 sc	..	3.910
55 × 2 = 110	−3.773	2/12 = 1/6 sc	..	3.584
122	−3.594	2/13 sc	..	3.309
67 × 2 = (134)	−3.448	2/14 = 1/7 sc	..	3.072

A third order sequence may also be generated:

(9)	−35.288	3/5 sc	..	12.904
7 × 3 = (21)	−16.241	3/6 = 1/2 sc	..	10.753
33	−11.046	3/7 sc	..	9.217
45	−8.622	3/8 sc	..	8.065
19 × 3 = 57	−7.218	3/9 = 1/3 sc	..	7.169
69	−6.303	3/10 sc	..	6.452
81	−5.659	3/11 sc	..	5.865
31 × 3 = 93	−5.181	3/12 = 1/4 sc	..	5.377
105	−4.812	3/13 sc	..	4.963
117	−4.519	3/14 sc	..	4.608
43 × 3 = 129	−4.281	3/15 = 1/5 sc	..	4.301
141	−4.083	3/16 sc	..	4.032
153	−3.916	3/17 sc	..	3.795
55 × 3 = 165	−3.773	3/18 = 1/6 sc	..	3.584
177	−3.650	3/19 sc	..	3.396
189	−3.542	3/20 sc	..	3.226
67 × 3 = (201)	−3.448	3/21 = 1/7 sc	..	3.072

This process can be carried on, but yields only mediocre systems. However, there are other such sequences by 'additive twelves:'
5, 17, 29, 41, **53**, 65, 77, 89, 101, 113, 125....
10, 22, 34, 46, 58, 70, 82, 94, 106, **118**....