THE SEPTENDENE

as derived by relative rotations of the $\left[\frac{9}{8}\ \frac{10}{9}\ \frac{16}{15} \right]$ tetrachord

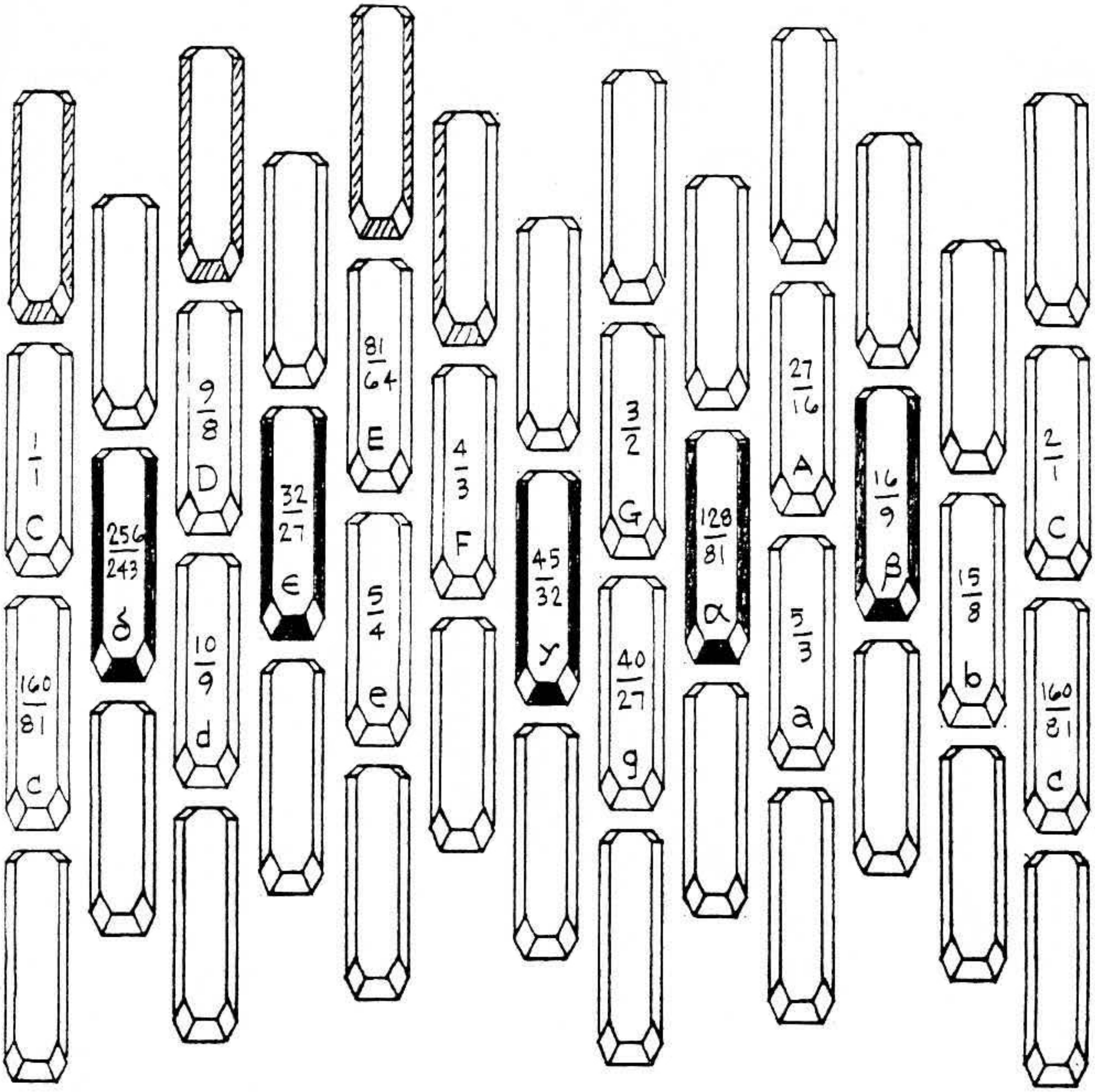
9/8	9/8	10/9	16/15	9/8	10/9	16/15
9/8	9/8	10/9	16/15	9/8	10/9	16/15
9/8	10/9	9/8	16/15	9/8	10/9	16/15
9/8	10/9	16/15	9/8	9/8	10/9	16/15
9/8	10/9	16/15	9/8	9/8	10/9	16/15
9/8	10/9	16/15	9/8	10/9	9/8	16/15
9/8	10/9	16/15	9/8	10/9	16/15	9/8
9/8	10/9	16/15	9/8	10/9	16/15	9/8
10/9	9/8	16/15	9/8	10/9	16/15	9/8
10/9	16/15	9/8	9/8	10/9	16/15	9/8
10/9	16/15	9/8	9/8	10/9	16/15	9/8
10/9	16/15	9/8	10/9	9/8	16/15	9/8
10/9	16/15	9/8	10/9	16/15	9/8	9/8
10/9	16/15	9/8	10/9	16/15	9/8	9/8
9/8	16/15	9/8	10/9	16/15	9/8	10/9
16/15	9/8	9/8	10/9	16/15	9/8	10/9
16/15	9/8	9/8	10/9	16/15	9/8	10/9

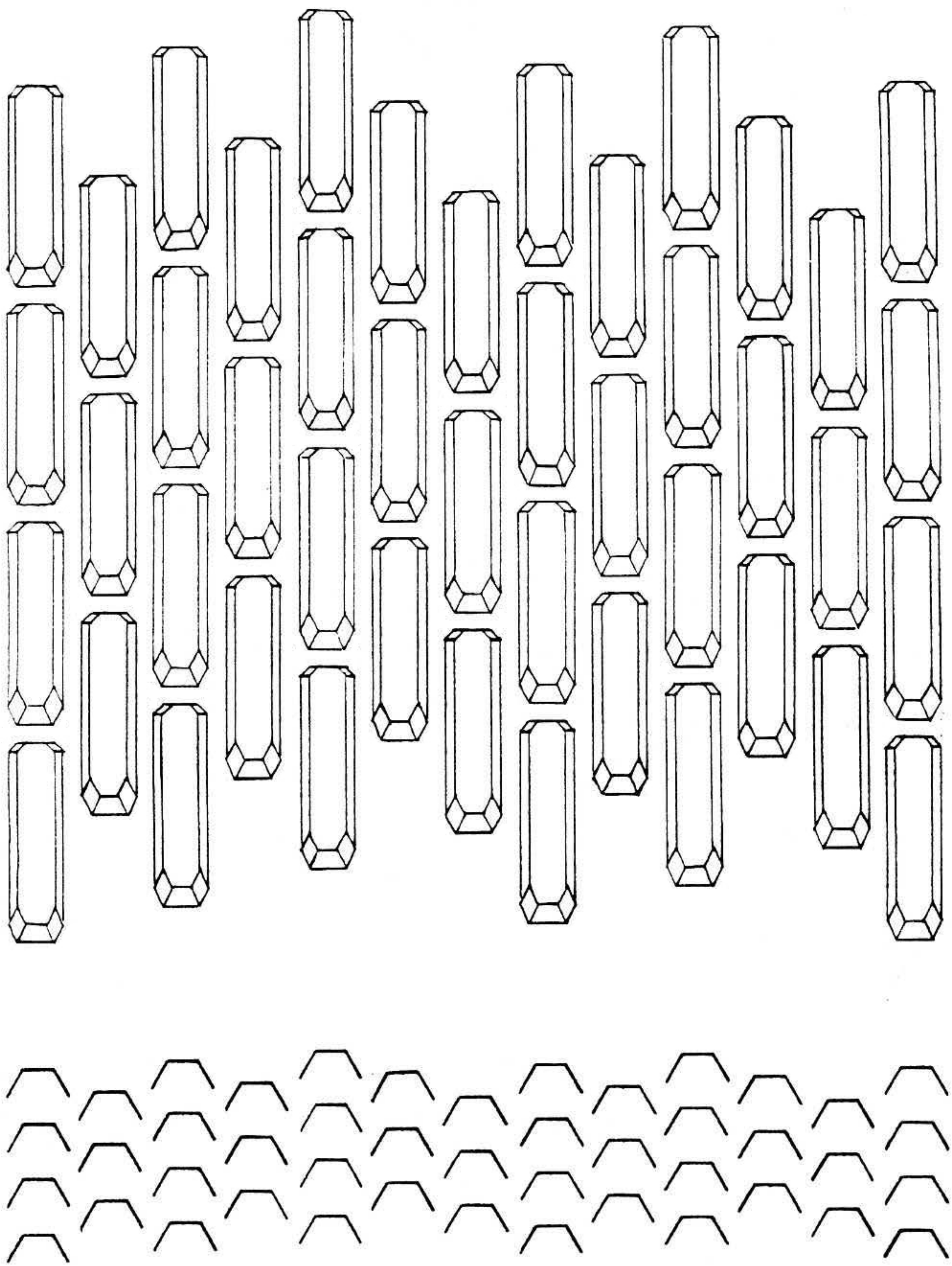
Cents	Ratio
0.	1/1
46.	256/243
93.	10/9
104.	9/8
150.	32/27
197.	5/4
208.	81/64
254.	4/3
301.	45/32
347.	40/27
358.	3/2
404.	128/81
451.	5/3
462.	27/16
508.	16/9
555.	15/8
601.	160/81
612.	2/1

Skhismas

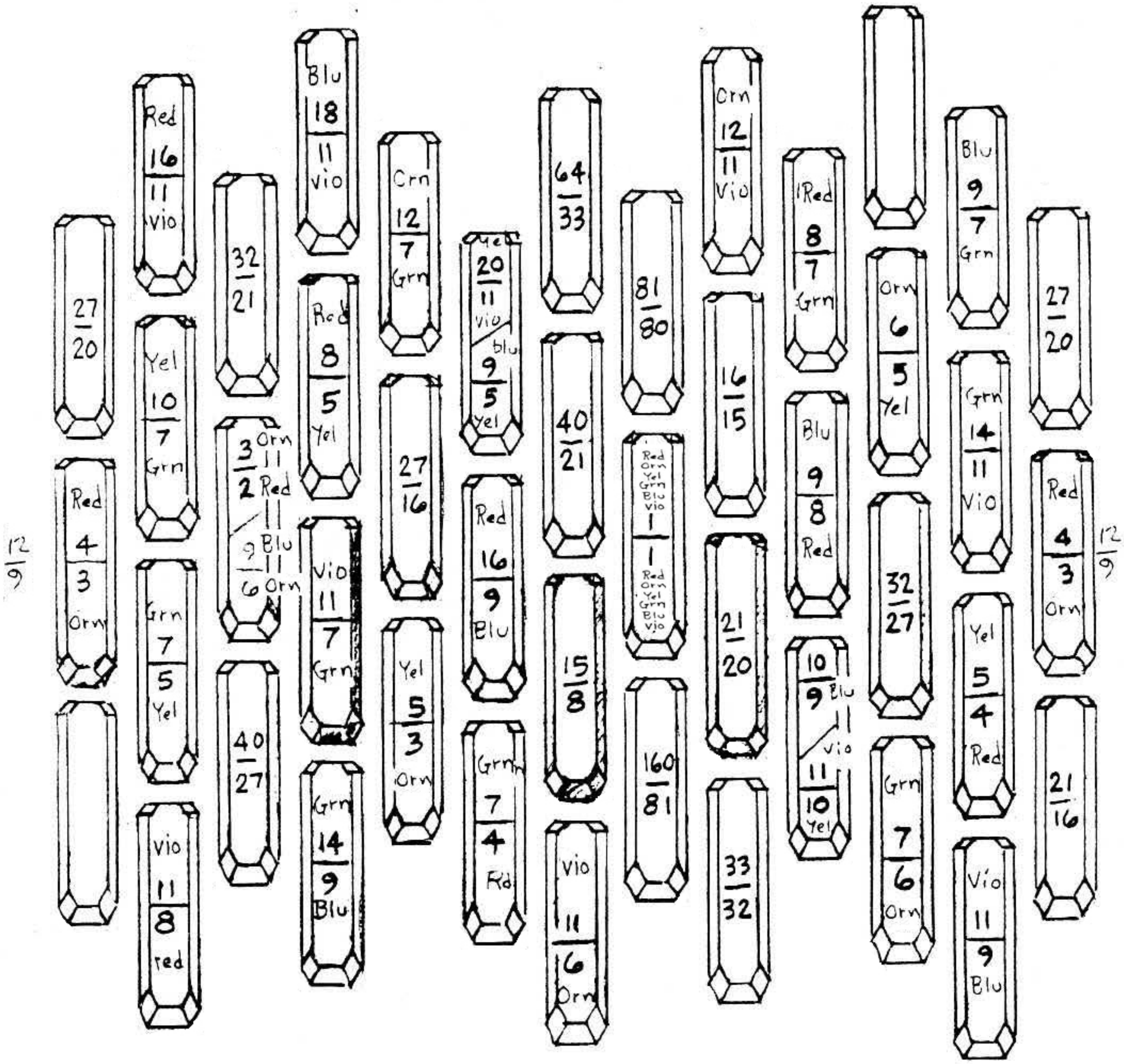
46	47	11	46	47	11	46	47	46	11	46	47	11	46	47	46	11
256/243	135/128	81/80	256/243	135/128	81/80	256/243	135/128	256/243	81/80	256/243	135/128	81/80	256/243	135/128	256/243	81/80

Septendene centered on the Bosanquet





Foreshortened Bosanquet Keyboard
to $\frac{1}{2}$ its original depth, showing
the Partch ratios
issued by Erv Wilson 1977

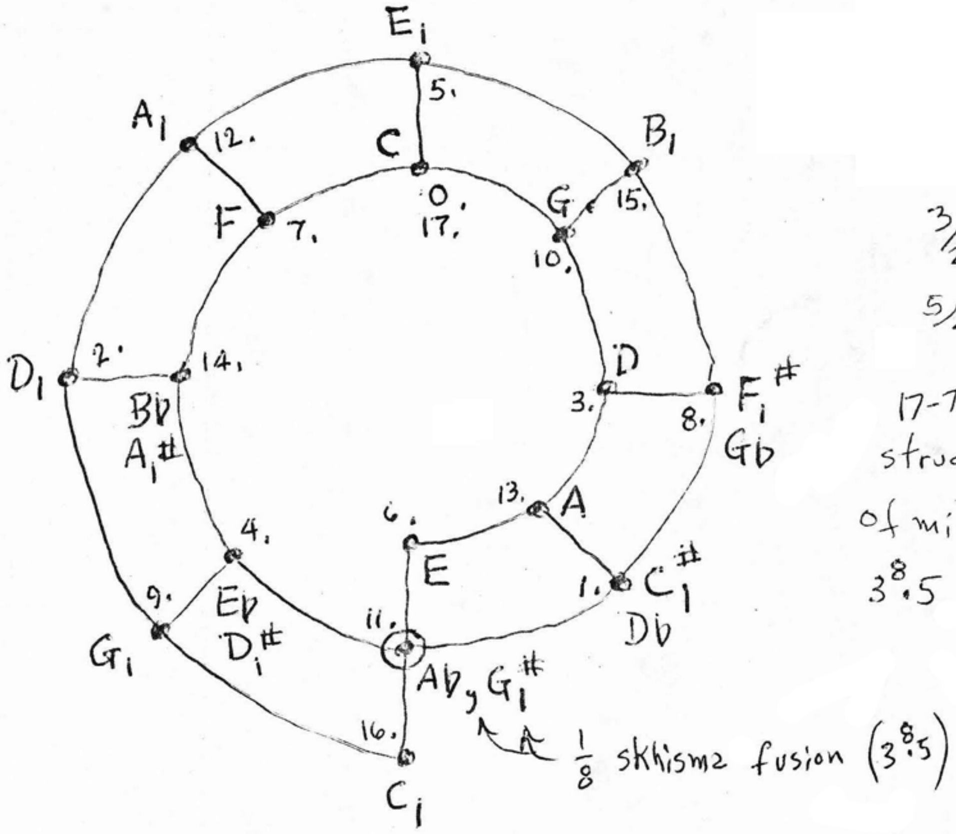


1210 Poinsettia Dr
Sep 23, 72

C. Ivor darreg

Dear John,

A couple of interesting examples of the micro-comma $3^8 \cdot 5$ (.001628), first in fusion, and second in articulation (at least theoretically!).



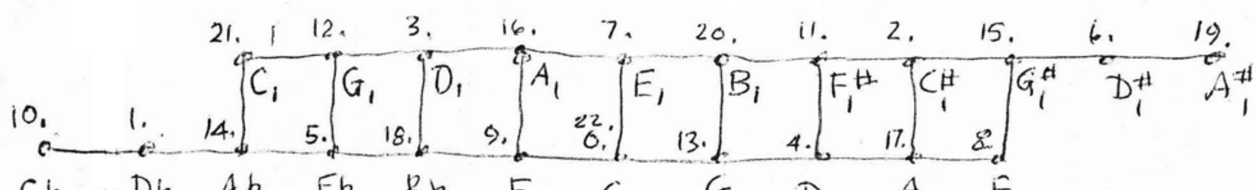
← $\frac{1}{8}$ skhisma fusion ($3^8 \cdot 5$)

$3/2$ = 10 units
$5/4$ = 5 units

17-Tone constant structure by fusion of micro-comma, $3^8 \cdot 5$ (.001628)

This may also be viewed as a chain of alternating Major & minor 3rds, beginning and ending with Major 3rd, fusion of 1st and last tones ($3^8 \cdot 5$)

Parallel 22-tone constant structure



$3/2$ = 13 units
$5/4$ = 7 units

The comma $3^8 \cdot 5$ appears 5 places

In a musical circumstance the $3^8 \cdot 5$ occurs most readily as the difference between the Chromatic Semitone 135/128 (.076816) and the Pythagorean Semitone 256/243 (.075187), (=.001629 done this way)

A system taking the $3^8 \cdot 5$ (approx) as its smallest unit might be appropriate, and a continuation of the idea of using the comma as the smallest unit.

+.000006
of skhisma

A division of 612 has a unit of .001634.
The 256/243 — 46 units, 135/128 — 47 units, 81/80 — 11 units yielding a whole tone with 104 units. Which is nice. But the system gives efficient 7's & 11's as well. From your tables:

3/2 =	357.997	+.003
5/4 =	197.020	-.020
7/4 =	494.101	-.101
9/8 =	103.994	+.006
11/8 =	281.172	-.172

The distribution of efficiency is interesting because 3 is the most efficient, and 5, 7, , 11, (& 13) become less efficient in that order, (which is probably the way it should be.)

The number 612 factors into $2^2 \times 3^2 \times 17$. This makes it useful as a reference system. The 12-tone system occurs on degrees:

0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
0.	51.	102.	153.	204.	255.	306.	357.	408.	459.	510.	561.	612.

Divisions of 2, 3, 6, 9, 4, 18, 36, 34, 51, 68, 153, 102, 306, 17 — what have I missed? The 17-tone degree is 36 units. We have an interesting comparison of Fifths:

12T	357 units
"Perfect"	358
17 T	360

It is a strange coincidence that the difference between the Perfect Fifth (.584962) and the 12T Fifth (.583333), .001629, is identical to the 385 microcomma .001628. (The last place is questionable.)

Harry mentions the notable cycle 306, which, however, neglects to give us efficient 5's & 11's.

The 612 Tone Fifth is ,5849673
The Perfect Fifth ,5849625
difference .0000048

The defects of the Eikosany (1.3.5.7.9.11) in 612 range from +.009 for 1.3.9 to -,293 for 5.7.11. (1.3.9 is the only member with a positive defect.) The center of this defect range is -,142, and it would be desireable for the base member to have approx that defect. (440) 1.5.11 has a defect of -,192, & (264) 1.3.11 has a defect of -.169 which is only a little nearer the center. In the event of a table of pitches to 612 my preference would be a base of 264.

What would such a set do besides give us a slithering glissando of 12-tone scales? (51 to be exact!) Well, it would also give us a slithery gliss of of 36 17-tone scales! Its usefulness; however, does not lie in the area of equal division. What we would get is a highly accurate set of 11-limit pitches in a full spectrum of keys. About the worst thing that could happen would be superimposing the 11/8 6 times with a falsity at the last place about equal to that of the 12T Fifth. (6 x -.172 = -1.032 units), A highly workable circumstance. 51 pitches to a sheet, 12 sheets, easily reproduced & utilized. A set of factored, just equivalents might be listed parallel. Thats a Tricky job. Notation & Keyboards !? Clue; 612 is twice the pythagorean cycle 306.

The comma $3^4/5$ divides into 11 parts. Flatting the Fifth by one part 1/11 comma gives 12-tone equal temperament. By 2/11 comma we have the temp. between 1/5 & 1/4 comma:

F	C	G	D	A	E	B	F#
+2/11	0	-2/11	-4/11	-6/11	-8/11	-10/11	-12/11

Flatting by 3/11 comma we have the temperament nearer the 1/4 comma than the 1/3 comma:

F	C	G	D	A	E	B
+3/11	0	-3/11	-6/11	-9/11	-12/11	-15/11

Sharping by 2/11 comma gives us the 17 Tone Div.

Sharping by 1/11 comma gives a Fifth a little over 29T.

Sharping by 3/11 comma is Just under 22T. But gives a ~~M3~~ 5/4 much too Flat. (at the 9th Fifth) 8 skhisma to be exact.

~~Hm.~~ Surprising because I've erred!

Sharping by 4/11 comma gives the 5/4 1 skhisma (1/11 comma) sharp. Sharping by 3 8/9 skhismas is indicated.

Further subdivision of 612 would give a series of skhismic ~~tem~~ tunings (or temperaments, since it would be cyclic). The 1/8 skhisma tuning is close enough to 1/9 that compromise could be made. Well its something to kick around.

Yours,
Erv