THE HELIXSONGS, AND A BAGPIPE SCALE

The HelixSongs are a set of structures made of the combination of two intersecting harmonic series, each spanning an octave.

Originally the HelixSongs were made into instruments using (but not limited to) 2 inch aluminum tubing. There are three rows of tubes with an upper and lower harmonic series and a middle row where the tones found in both series are placed.

This middle row also contains the starting and ending point of each series which need not start with 1 or its octave multiples. In fact, the one based on F uses harmonics 6 to 12.

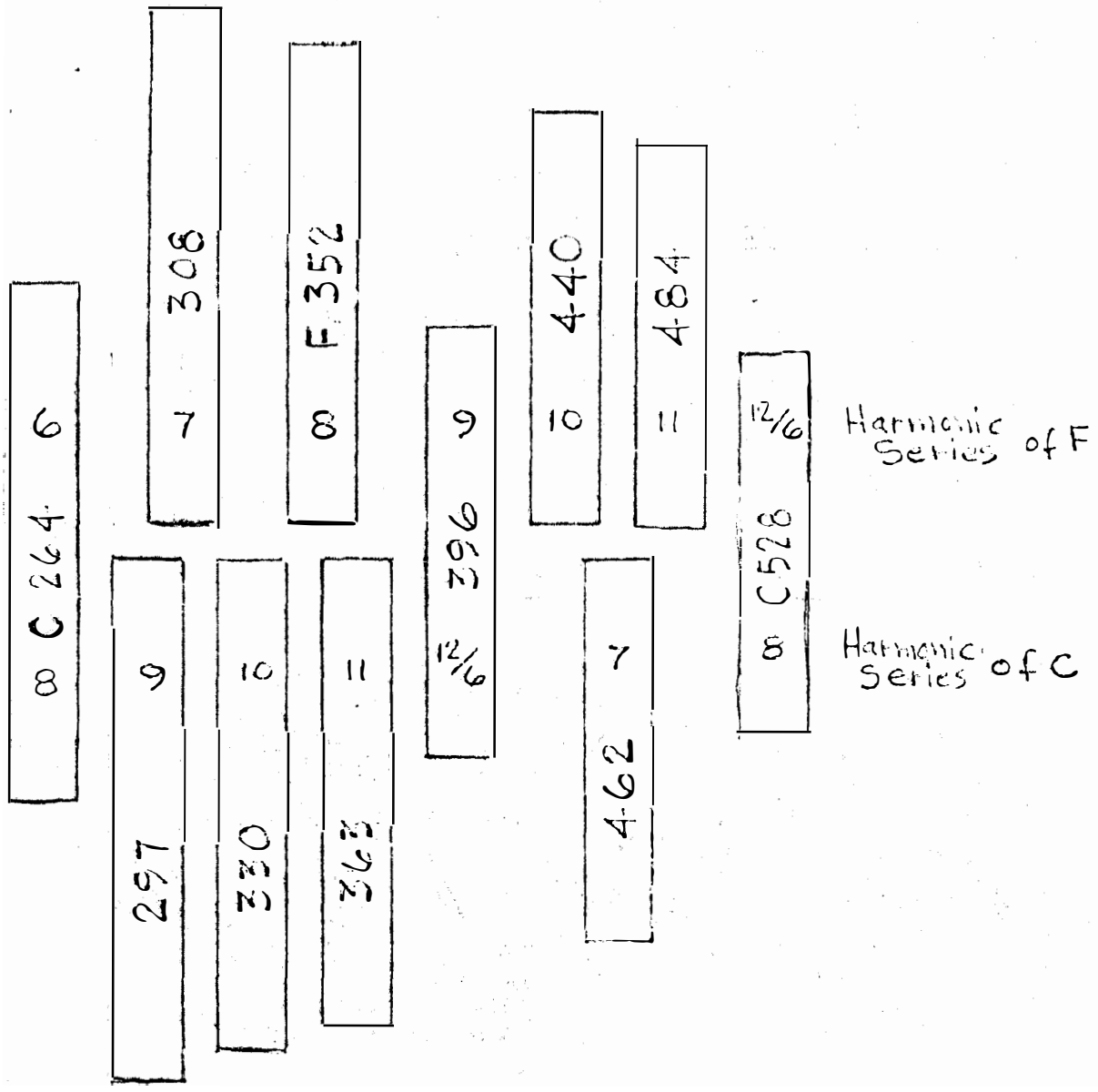
Later HelixSongs show different sections of the harmonic series in combination but still beginning and ending on a shared middle row tone.

The 11-limit and 17-limit HelixSongs in this paper contain two harmonic series that intersect at points that are a 3/2 apart. Wilson also includes an example where the harmonic series intersect at a tritone (10/7).

While the HelixSongs are presented in a harmonic context and the Diaphonic Cycles (see http://anaphoria.com/diaphonicset.pdf) in a subharmonic context, both can be realized in either form. They can be considered complementary opposites of each other.

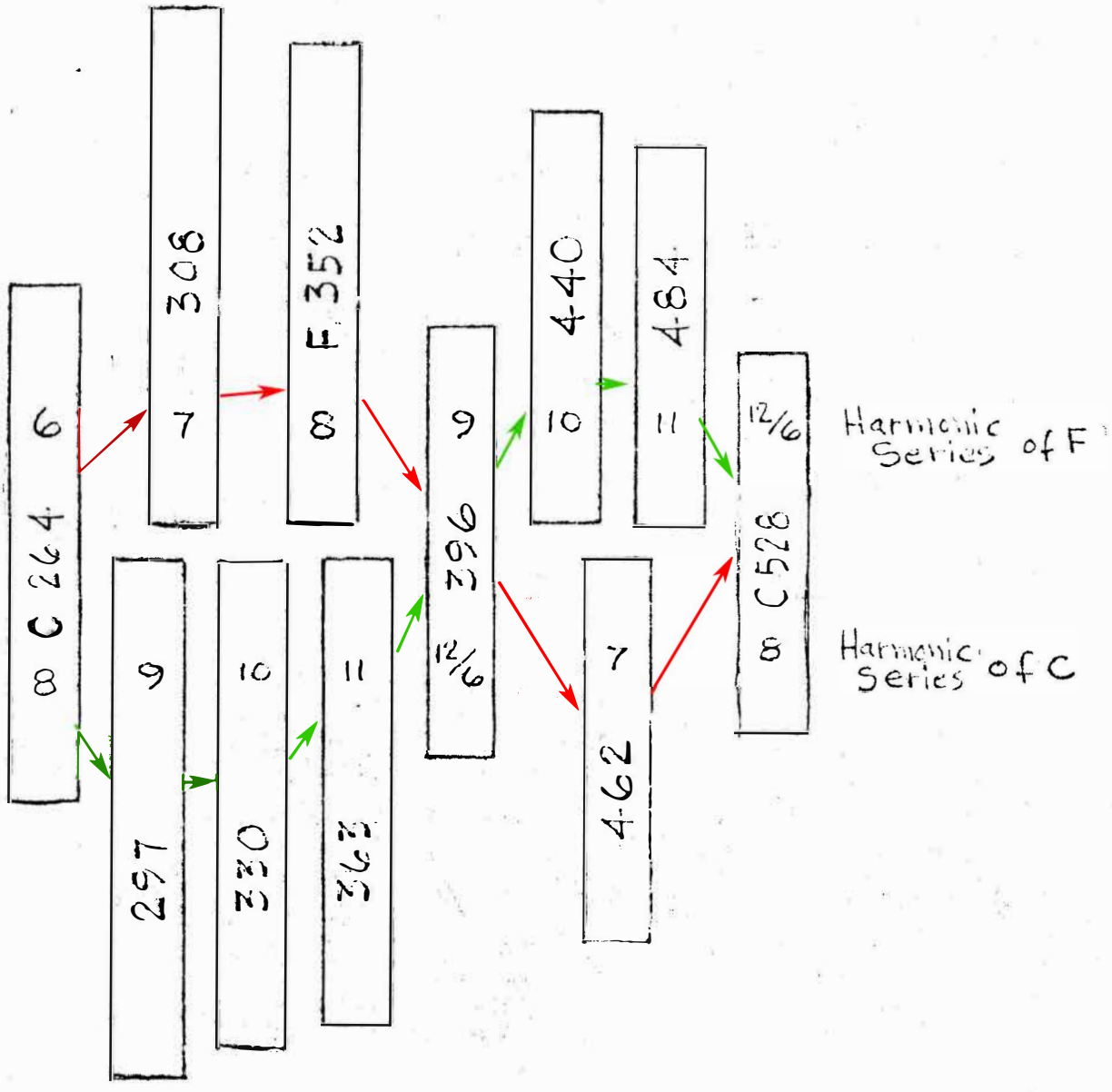
"Helix Song" · Musical Instrument

Harmonic, 11-Limit



"Helix Song" Musical Instrument

Harmonic, 11-Limit



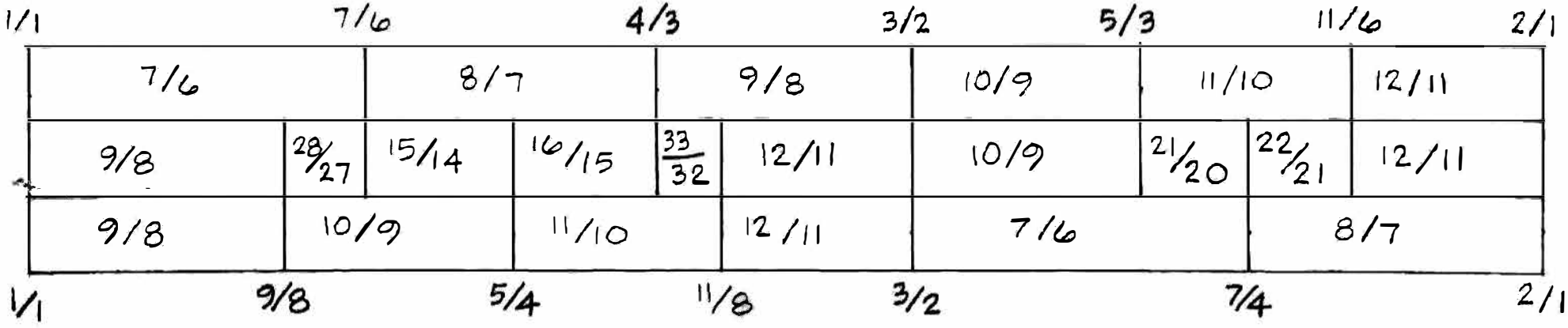
"Helix Song" Musical Instrument

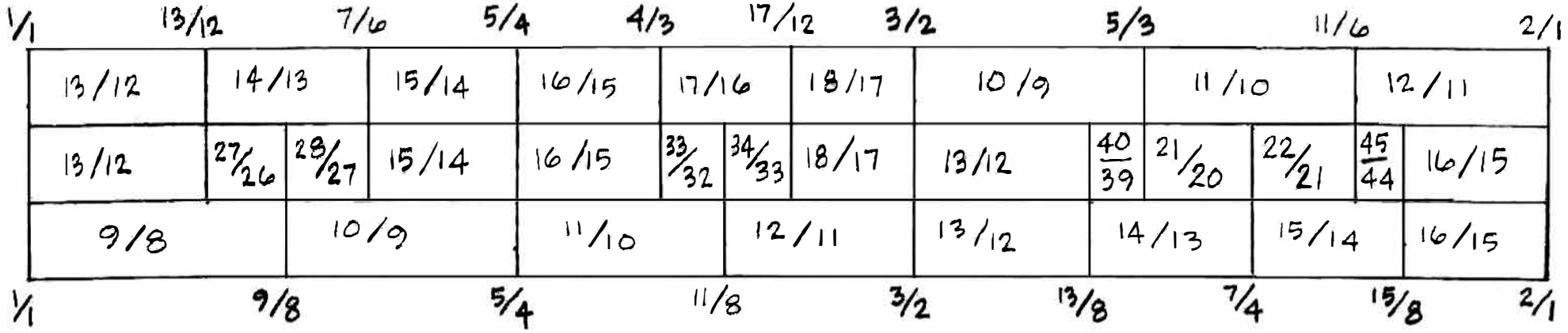
Harmonic, 17-limit

"Helix Song" Musical Instrument

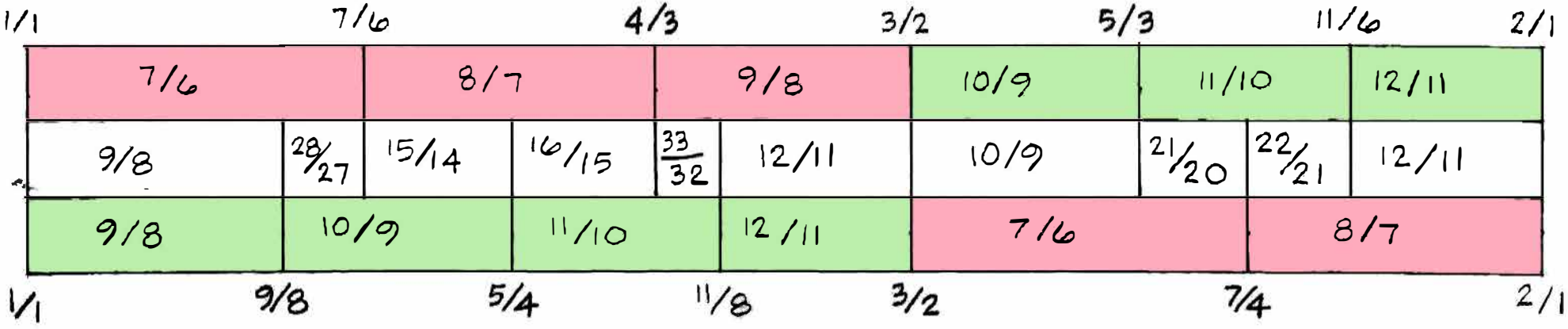
Harmonic, 17-limit

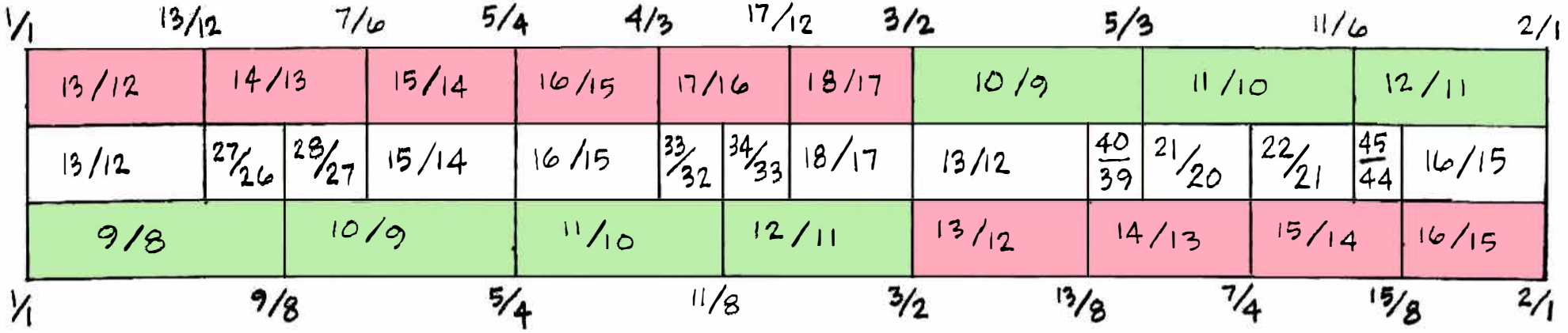
2 Forms of the Helix Smg E.W. 4-14-90





2 Forms of the Helix Smg E.W. 4-14-90





Helix Song

(in the harmonic genus
where Diaphonic Cycles of 12 & 17 tones
intersect on the frequency ratio 10/7)

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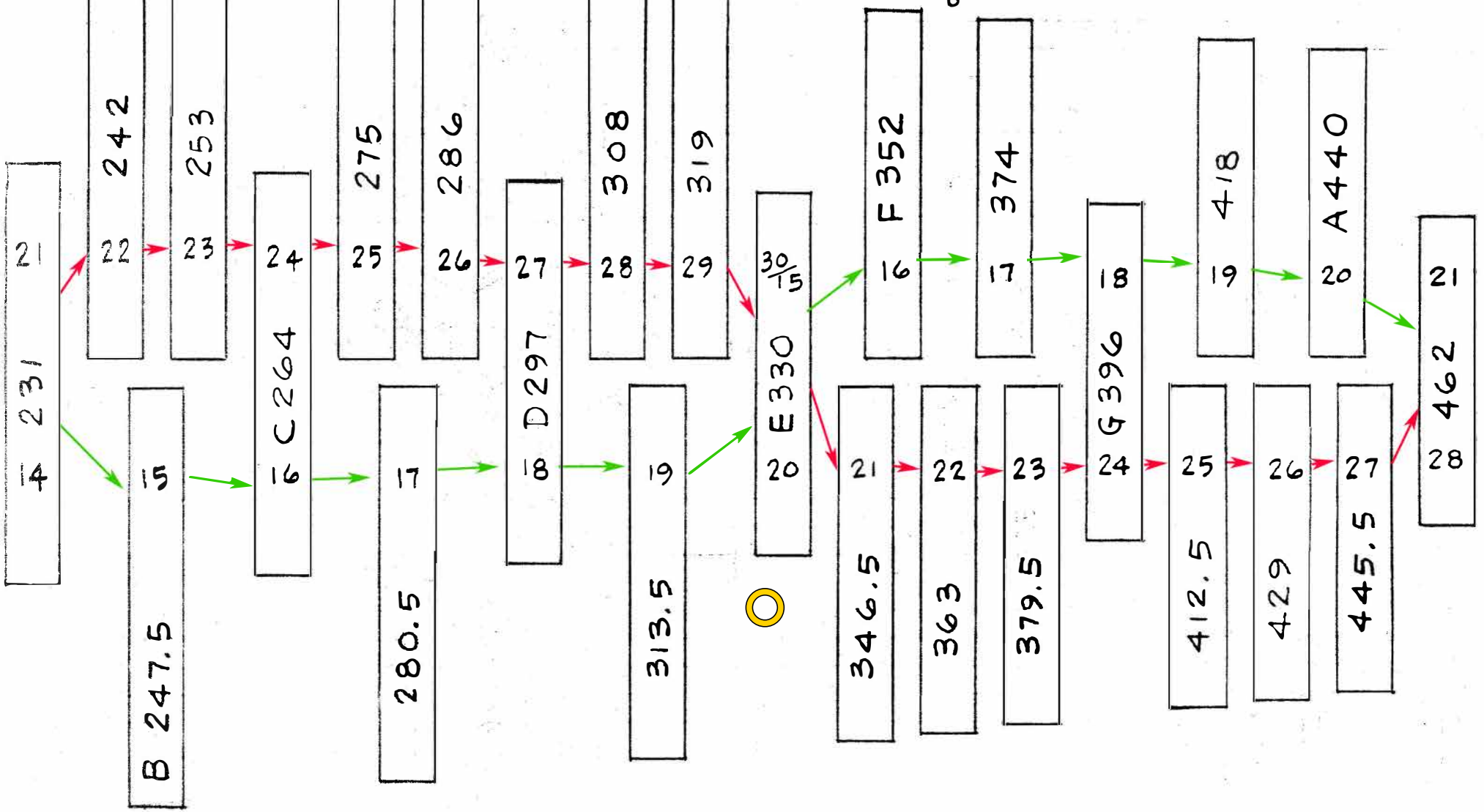
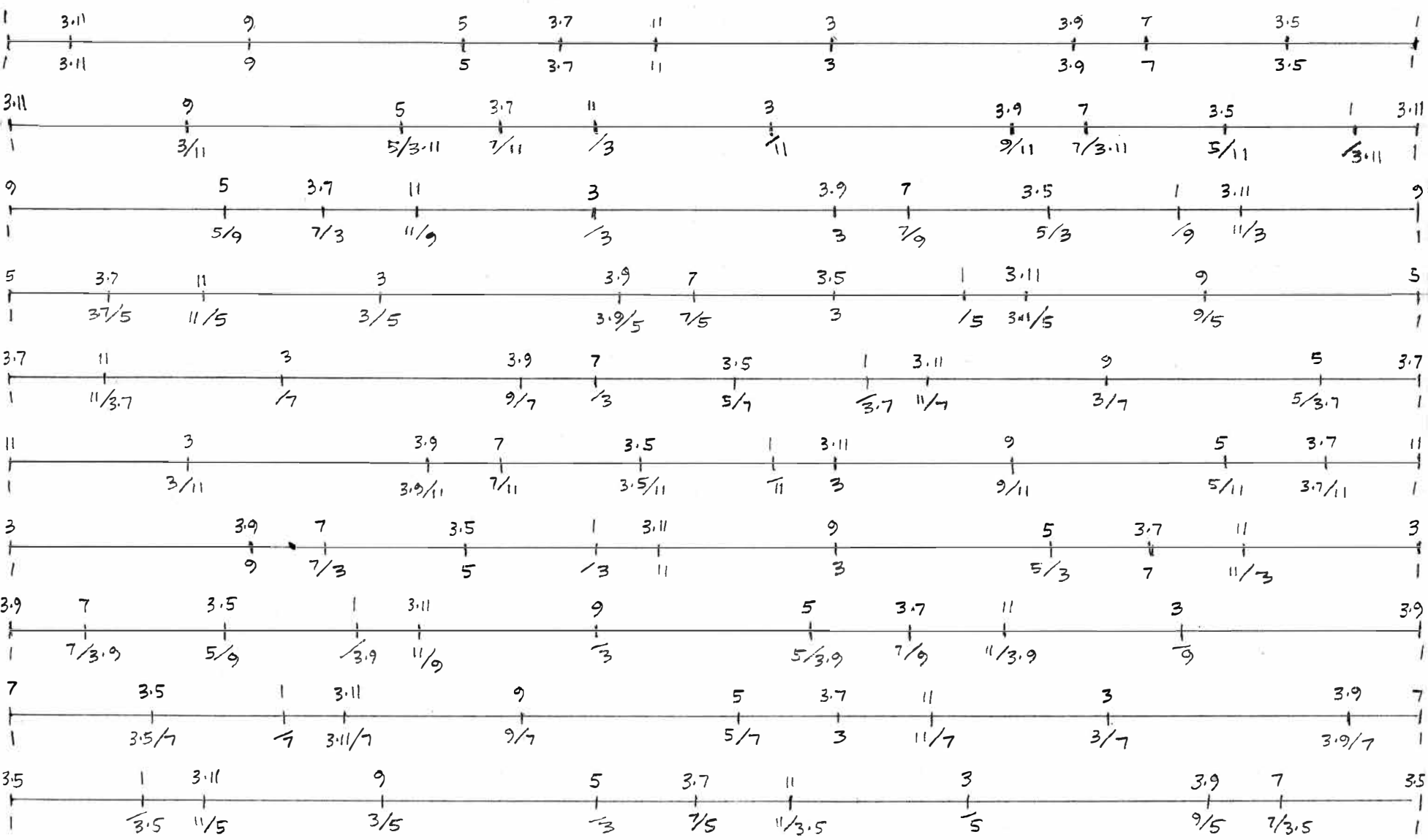


21/20	22/21	23/22	24/23	25/24	26/25	27/26	28/27	15/14	16/15	17/16	18/17	19/18	20/19										
21/20	64/63	33/32	34/33	69/68	24/23	25/24	76/75	39/38	40/39	81/80	28/27	22/21	45/44	46/45	24/23	25/24	51/50	52/51	27/26	28/27	57/56	58/57	30/29
16/15	17/16	18/17	19/18	20/19	21/20	22/21	23/22	24/23	25/24	26/25	27/26	28/27	29/28	30/29									

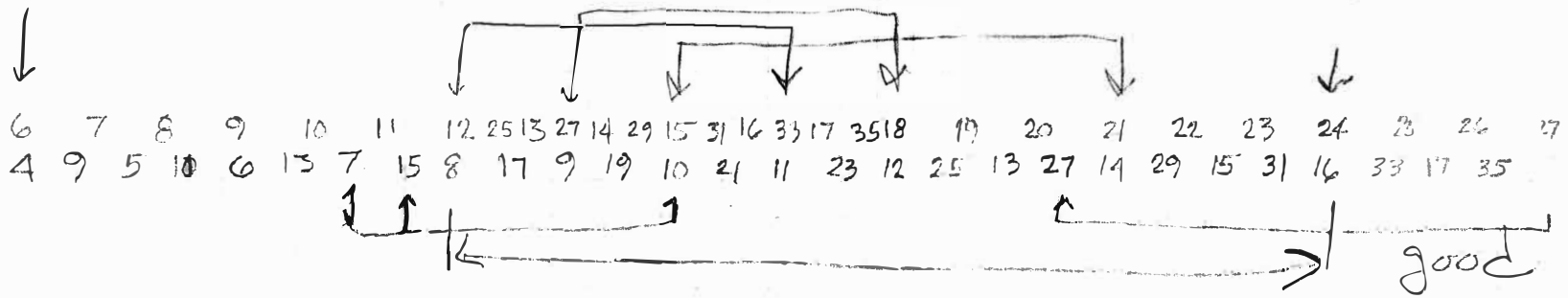
21/20	22/21	23/22	24/23	25/24	26/25	27/26	28/27	15/14	16/15	17/16	18/17	19/18	20/19										
21/20	64/63	33/32	34/33	69/68	24/23	25/24	76/75	39/38	40/39	81/80	28/27	22/21	45/44	46/45	24/23	25/24	51/50	52/51	27/26	28/27	57/56	58/57	30/29
16/15	17/16	18/17	19/18	20/19	21/20	22/21	23/22	24/23	25/24	26/25	27/26	28/27	29/28	30/29									

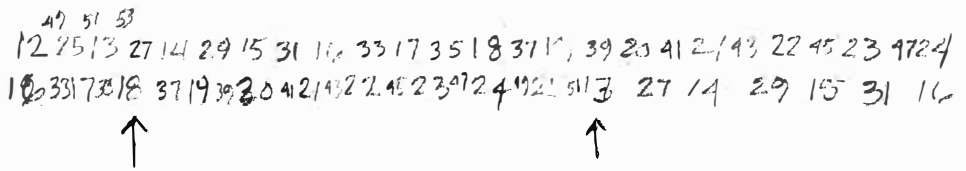


54 intervals

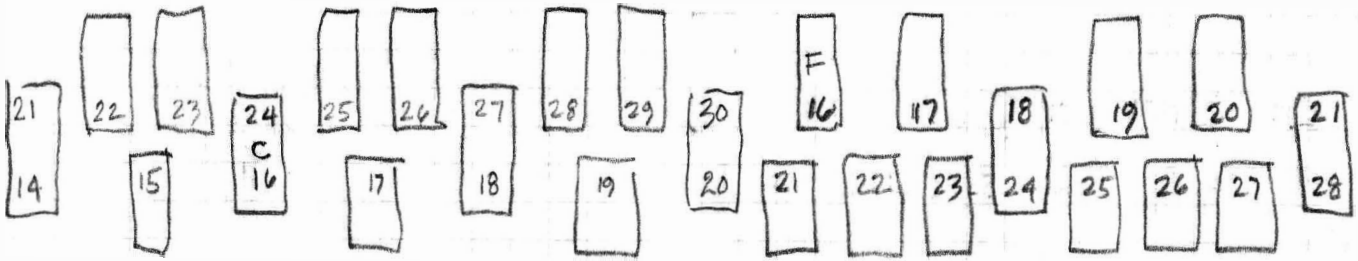
3 4 5 6
4 5 6 7 8

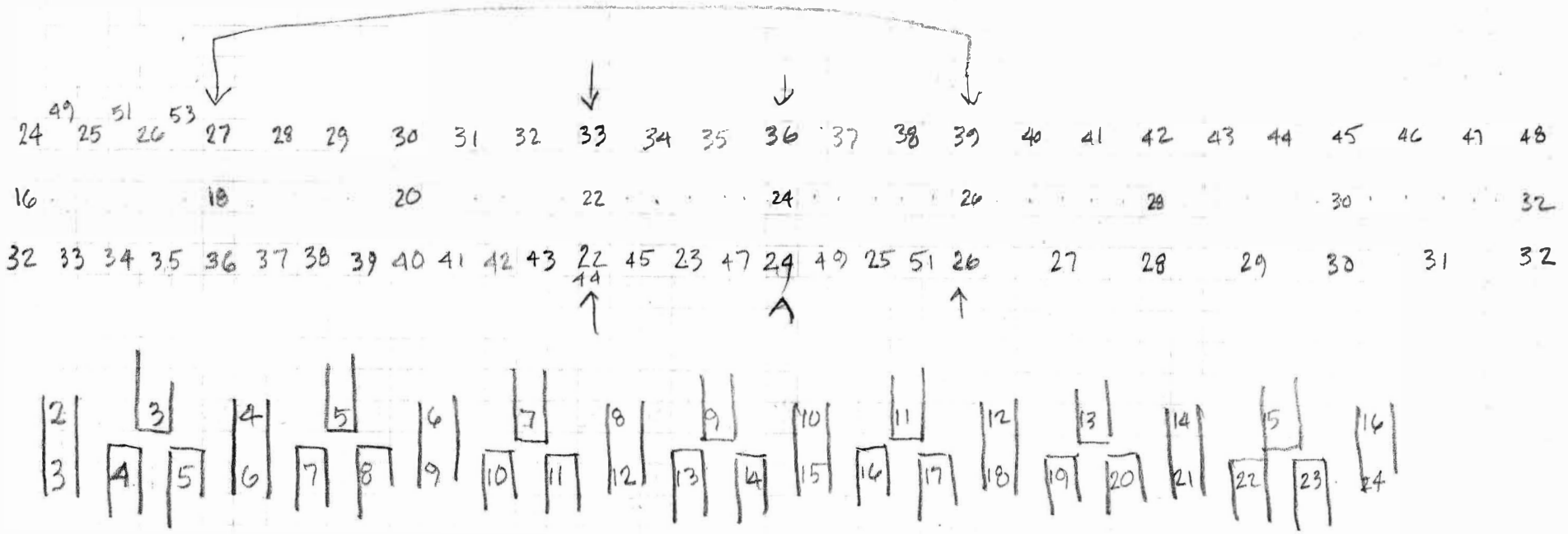
3 7 4 9 5 11 6 7 8 9 10 11 12
4 5 6 7 8 9 10 11 12 13 14 15 16





Yes!



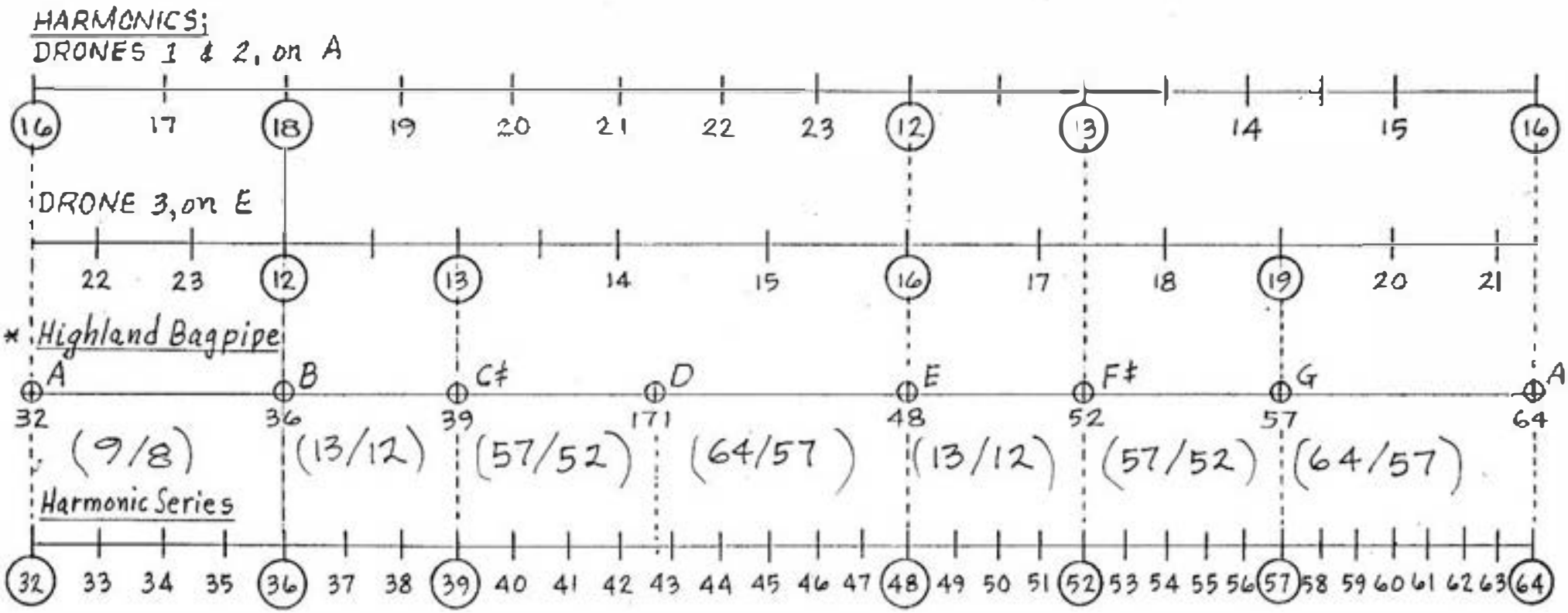


4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33

A Tuning For The Highland Pipes

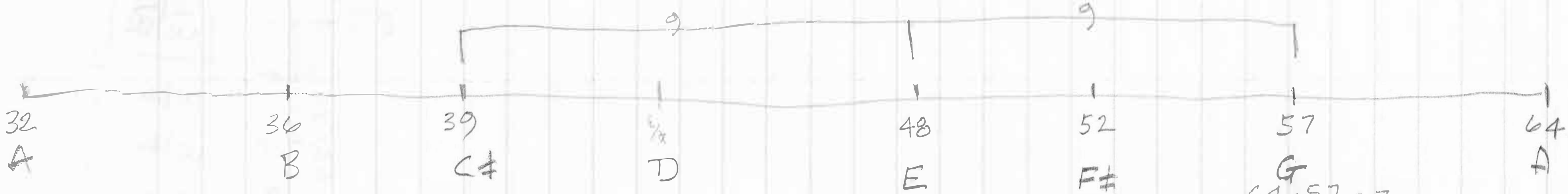
based on the harmonics of the drones



* This is a theoretical scale. For actual measurements refer to Theodore Podnos(?) p. 37-39.

The 19/16 (at B-D and E-G) compares epimorically with 32/27; $\frac{19}{16} \times \frac{27}{32} = \frac{513}{512}$, (.002815 8ve.).

P39/3 another Scottish Chanter



64 − 57 = 7
57 − 48 = 9
48 − 39 = 9
39 − 32 = 7
57 − 39 = 18
57 + 39 = 96 (÷2 = 48)

6 13 19 32
18, 39, 57, 96

embraced in Fibonacci rapport

See Avicenna p. 190