Proportional Triads in Mos (13 Jul 97) Upgrade

(after Callum Johnston's bagpipe scale)

+4 +1 +5 +2 +6 +3 0 +4

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17/0

| S | L | S | L | S | S | L |

a $\frac{a+b}{2}$ b

(Proportional major)

also:

+4 +1 +5 +2 +6 +3 0 +4

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18/0

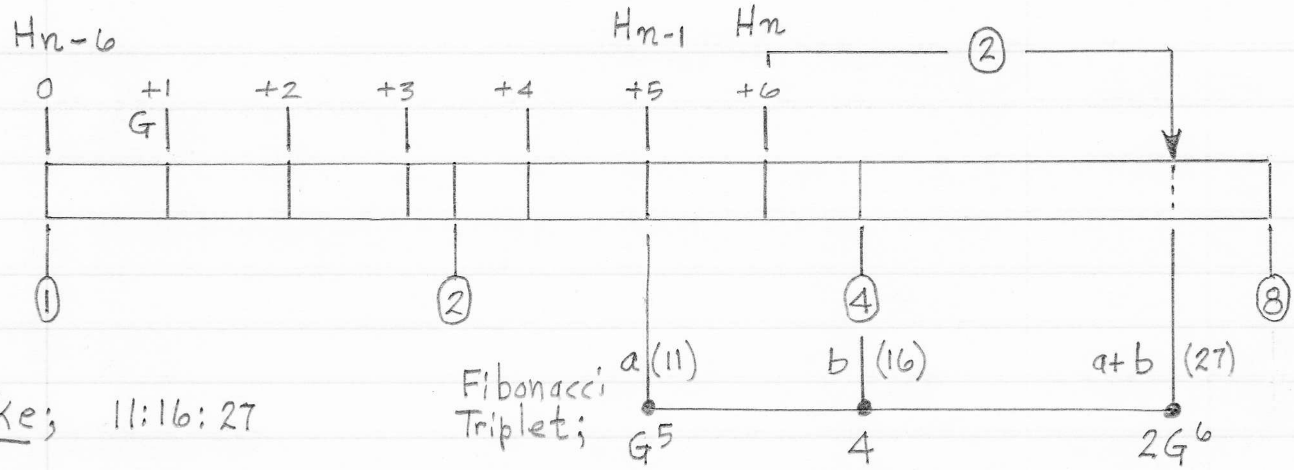
| L | S | L | S | L | L | S |

a $\frac{2ab}{a+b}$ b

(Sub-contrary, Proportional minor)

P2

27Sep97.EW



Like; 11:16:27

$$(4H_{n-6} + H_{n-1})/2 = H_n \quad \Rightarrow \quad G = ((4+G^5)/2)^{(1/6)}$$

Proportional Triads in MOS continued (after Callum Johnston's bagpipe scale)

15 Jul 97 P. 2a

ababab b

0 +1 +2 +3 +4 +5 +6

0 1 2 3 4 5 6 7 8 9 10/0 1 2 3 4 5 6 7 8 9 10/0 1 2 3 4 5 6 7 8 9 10/0

(1) L | S | L | S | L | S | S (2) L | S | L | S | L | S | S (4) L | S | L | S | L | S | S (8)

or | L | L | L | L | L | L | S |

a $\frac{a+b}{2}$ b a+b

proportional triad

$(LS)^5 + 4 = 2(LS)^6$

(7) L = 1.148···

(8) S = 1.071···

this ⟹

$L^6 = (L^5+4)/2$

$L = \sqrt[6]{(L^5+4)/2}$ ✓

iteration

guess start 1.231144413···

1.225720656···

1.225248496···

1.225087753···

1.225033063···

1.225014458···

1.225008130

1.225005978

1.225005246

1.225004997

1.225004912

1.225004883

1.225004873

1.225004870

1.225004869

1.225004868

1.2250048682 3

1.2250048681 9

1.2250048681 7

1.2250048681 7

Decimal approx. 1.2250048681 7

Log_2 .292787482510 GEN

Zig-zag Pattern

0/1, 1/1, 1/2, 1/3, 1/4, 2/7, 3/10, 5/17, 7/24, 12/41, 17/58, 29/99, 41/140, 53/181, 65/222, 77/263

! → 7/24

1/x Pattern

	.292···
← 3	.415
→ 2	.407
← 2	.456
→ 2	.189
← 5	.275
3	.636
1	.571
1	.749
1	.334
2	.993
1	.0065
? 152	.682

$G = ((4+G^5)/2)^{(\frac{1}{6})}$

Like 40:49:58 and 20, 29, 49

or 39:48:57

or 22:27:32

note; this gen gives a good $\frac{11}{8}$ at -36.

Recurrent Sequence $(4 \cdot A_{n-6} + A_{n-1}) = A_{n-1}$

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9 Aug 97 E.W.
P. 2b

19 29
~~57~~ ~~58~~
~~39~~ ~~40~~
13 20

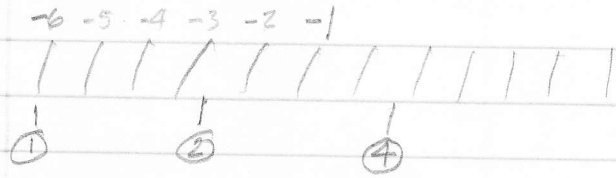
~~$N = (N-1) + N-6$~~

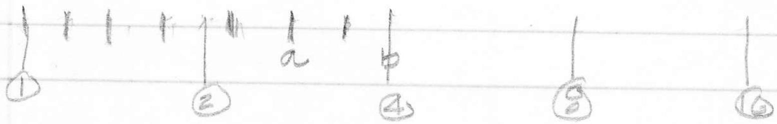
~~$A_n = A_{n-1} + A_{n-6}$~~

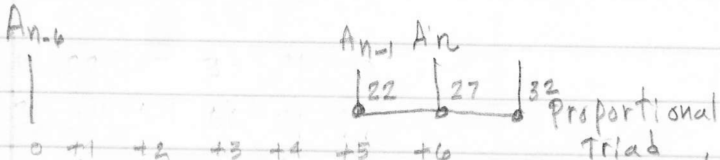
$A_n =$ 4.

380
377

$$2 \cdot A_n = 4 \cdot A_{n-6} + A_{n-1} \qquad G = ((4 + G^5)/2)^{\frac{1}{6}}$$







0 +1 +2 +3 +4 +5 +6

Seed 72 88 108 132 162 198 243 288

←— ×4 —→

$$((72 \times 4) + 198)/2 = 243$$

recurrent sequence: $(4 \cdot A_{n-6} + A_{n-1})/2 = A_n$

$$\Rightarrow \quad G = ((4 + G^5)/2)^{(\frac{1}{6})}$$

$$= 1.22500486816\cdots$$

$$\text{Log}_e \; .29278748249 8\cdots$$

(Zalzalian)
17-Tone converging MOS: 72 88 108 132 162 198 243 297.5 364.75 446.375 547.1875 669.59375 820.796875 1005.3984375 1,232.19921875 1,508.84960938 1,848.79980469

(Highlandian)
also try: seed 64 78 96 117 144 175.5 ~~216~~ ~~363.25~~ ~~324~~ 215.75 263.875 323.9375

15 Jul 97

P. 3

ababab b

Proportional Triads in MOS (continued)

0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10 0

0 1 2 3 4 5 6 7 8 9 10 11/0 1 2 3 4 5 6 7 8 9 10 11/0 1 2 3 4 5 6 7 8 9 10 11/0

| S | L | S | L | S | L | L 2S | L | S | L | S | L | L 4   8

or | S | S | S | S | S | S | L |

a $\frac{2ab}{a+b}$ b

sub-contrary proportion ↑ ↑ ↑

1/x pattern

.276...

←	3.	619
→	1	.615
←	1	.624
→	1	.600
←	1	.664
→	1	.504
←	1	.982
→	1	.017
	56	.131

$$S = \sqrt[6]{\frac{2(S^5)4}{S^5+4}}$$ ⟸ this

Zigzag Pattern

0/1, 1/1, 1/2, 1/3, 1/4, 2/7, 3/11, 5/18, 8/29, 13/47, → 21/76, 34/123

56 places!

Iteration

1.212326067... guess start
1.211718285...
1.211412159...
1.211257826...
1.211179983...
1.211140711...
1.211120895...
1.211110897...
1.211105851...
1.211103305...
1.211102020...
1.211101372...
1.211101045...
1.211100880...
1.211100796...
1.211100754...
1.211100733...
1.211100722...
1.211100717...
1.211100714...
1.211100713...
1.211100712...
1.21110071189

$$G = (8-4G)^{\left(\frac{1}{6}\right)}$$

= 1.21110071153...

1.21110071171
1.21110071162
1.21110071158
1.21110071156
1.21110071155
1.21110071154

Decimal approx. 1.21110071154

MOS gen Log_2 .276318840257...

16 Jul 97 E.W.

P. 4a
LSLSS

0 +1 +2 +3 +4

0 1 2 3 4 5 6 7/0 1 2 3 4 5 6 7/0 1 2 3 4 5 6 7/0

| L | S | L | S | S | L | S | L | S | S | L | S | L | S | S |

(1) (2) (4)

→ | L | L | L | L | S |

a $\frac{a+b}{2}$ b a+b

Proportion

1/4 Pattern
.418...

←	2	.387
→	2	.583
←	1	.712
→	1	.403
←	2	.478
→	2	.089
	11	.180
	5	.544
	1	.836
	1	.194
?	5	.131

ZigZag Pattern

0/1, 1/1, 1/2, 1/3, 2/5, 3/7, 5/12, 8/19, 13/31, 18/43, → 31/74, 44/105

11 places

354/845 ← !

385/919

5 places

$L = \sqrt[4]{(L^3+4)/2}$ ⇦ (Please see P. 4b)

Iteration:

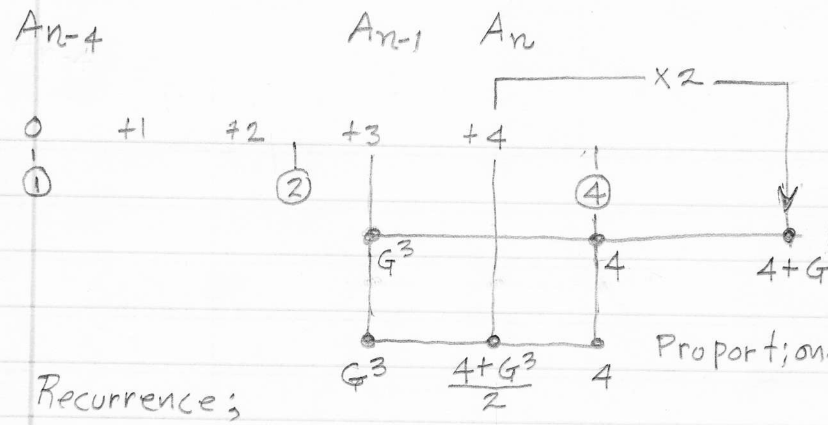
1.334839854 guess
1.336351425...
1.336774913..
1.336893659...
1.336926963...
1.336936305...
1.336938925...
1.336939660...
1.336939866..
1.336939924..
1.336939940..
1.336939944..
1.336939946..
1.3369399459 6
1.3369399460 6
1.3369399460 9

decimal approx 1.3369399460 9

$\log_2$ .418934662571

(like 1/5 comma meantone)!

2/9 ?



Recurrence;

$$4A_{n-4} + A_{n-1} = A_n$$

$$\Rightarrow G = ((4+G^3)/2)^{(\frac{1}{4})}$$
$$= 1.33693994609\ldots$$

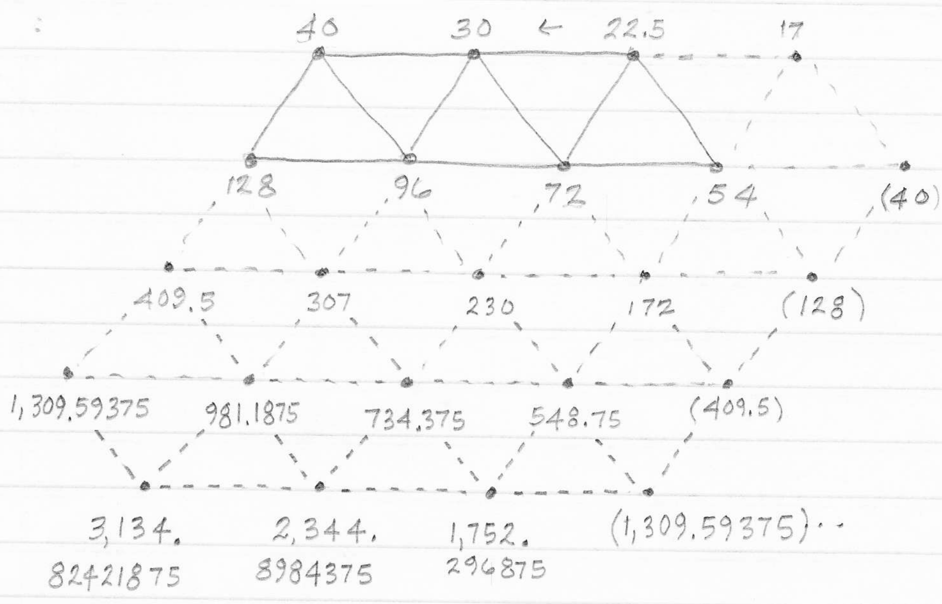
	A_{n-4}			A_{n-1}	A_n
Example Seed;	54	72	96	128	172

$\text{Log}_2 = .41893466257 1\ldots$
similar to 2/9-comma tuning

etc (3.90625) (5.375) (7) (9.375)
(12.5) (17) (22.5) (30) (40) – interesting – try starting at 2×22.5 = 45 60 80 108 etc

(43)

(30)(40) 54 72 96 128 172 230 307 409.5 548.75 734.375 981.1875
1,309.59375 1,752.296875

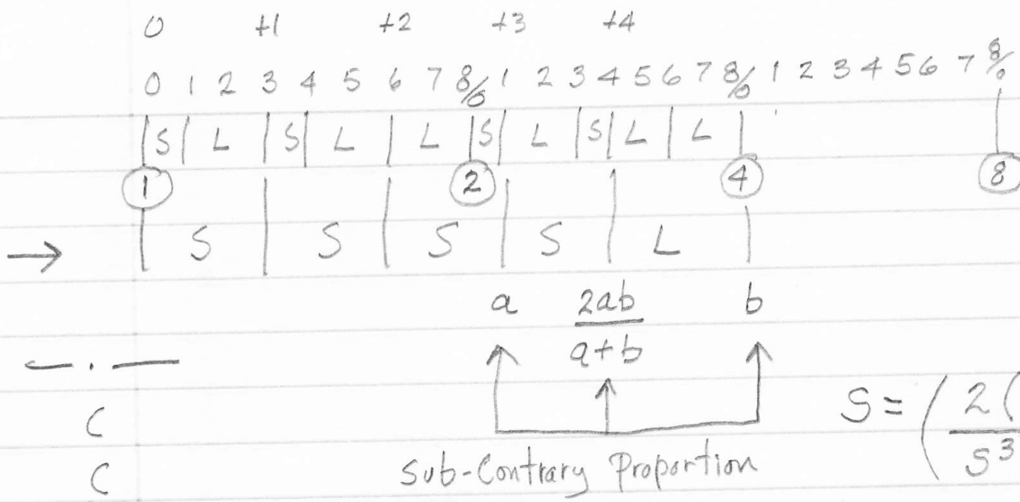


19-Tone Scale where $4A_{n-4} + A_{n-1} = A_n$

16 Jul 97 E.W.

P.5a

SLSLL



$$S = \left(\frac{2(S^3)4}{S^3 + 4} \right)^{\left(\frac{1}{4}\right)}$$ ⇦

$$((S^3 \cdot 2 \cdot 4)/(S^3+4))^{(1/4)}$$

dec. approx = 1.29559774253 ...

Log$_2$ = .373617859474 ...

—.—

C

C

RCL 1

y^x

3

×

2

×

4

)

÷

(

RCL 1

y^x

3

+

4

)

)

y^x

(

1

÷

4

)

=

STO 1

—.—

iterate

1/4 Pattern

.373...

← 2	.676
→ 1	.478
← 2	.091
→ 10	.929
← 1	.075
13	.271
3	.687
1	.453

0/1

Zig-Zag Pattern

1/1

1/2

1/3

2/5

3/8 ← ! amazing

4/11

7/19

10/27

13/35

16/43

19/51

22/59

25/67

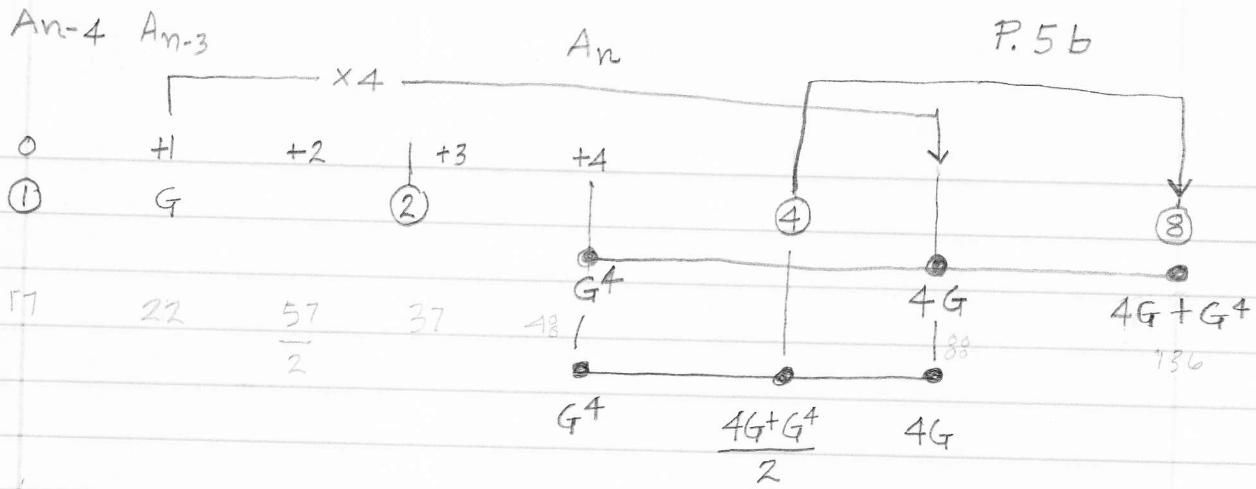
28/75

31/83

→ 34/91

65/174 → 13 places

P. 5b



$8A_{n-4} - 4A_{n-3} = A_n$ 12 17 22

$\Rightarrow G = (8-4G)^{\left(\frac{1}{4}\right)}$

$= 1.29559774252$

3.59375

4.65625 6.03125 7.8125 10.125 13.125 ←

$\text{Log}_2 = .373617859462$

NO GOOD ? this does not converge, at least not in → This direction

Seed: 17 22 28.5 37 48 62 80 104 136 176 224 288 384 512 640 768 1024

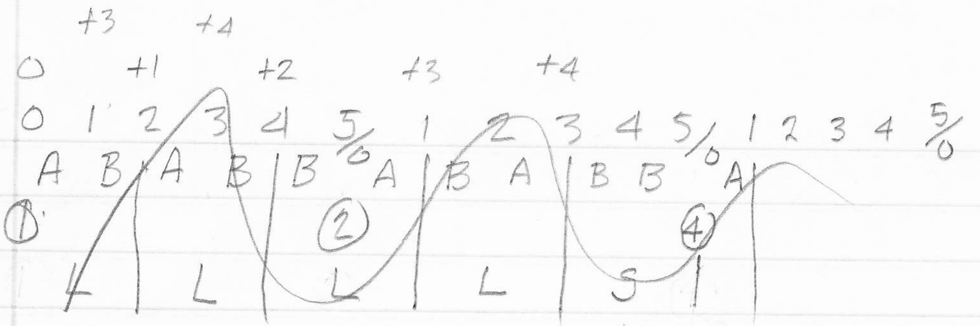
is converging ← this way. 24 31 40 52 68 72 28 36 48 64 80 96 128

in reverse, however! Recalcitrant

1536 2048 2048

$(A_{n-4} + (4A_{n-1}))/8 = A_n$, ← This runs the whole thing backwards!

(Continuing) <u>Notes on Meta-Meantone</u> 16Jul97 E.W
P.6a



0 +1 +2 +3 +4
0 1 2 3 4 5 6 7/0 1 2 3 4 5 6 7/0 1 2 3 4 5 6 7/0
| L | S | L | S | S | L | S | L | S | S | L | S | L | S | S | NO
| L | L | L | L | S | |

a $\frac{a+b}{2}$ b

YES 16Jul97 E.W.
LSLSS

① ② ④ ⑧
0 +1 +2 +3 +4
0 1 2 3 4 5 6 7 8 9 10 11 12/0 1 2 3 4 5 6 7 8 9 10 11 12/0 1 2 3 4 5 6 7 8 9 10 11 12/0
|S| L | L |S| L | L | L |S| L | L |S| L | L | L |S| L | L |S| L | L | L |
| L | S | L | S | S | | a $\frac{2ab}{a+b}$ b subcontrary proportion
→ | L | L | L | L | S |

C	RCL1
C	+4
2x	)
C	)
RCL 1	y^x
×	(
2	1
×	÷
4	4
)	)
)	=
÷	STO 1
(	iterate
2	
×	
RCL 1	

1/x pattern
.420...
← 2 .379
→ 2 .637
← 1 .569
→ 1 .755
← 1 .323
→ 3 . 088
11. 320 0/1
3 .125
8 .096

Please see P.6b ↖ ⇦ this

$$*L = \sqrt[4]{\frac{2(L\cdot 2\cdot 4)}{2L+4}}$$

$$\left(\left(2(L\cdot 2\cdot 4)\right)/\left(2L+4\right)\right)^{\left(\frac{1}{4}\right)}$$

decimal approx = 1.338213318975...
Log 2 = .420307968965...

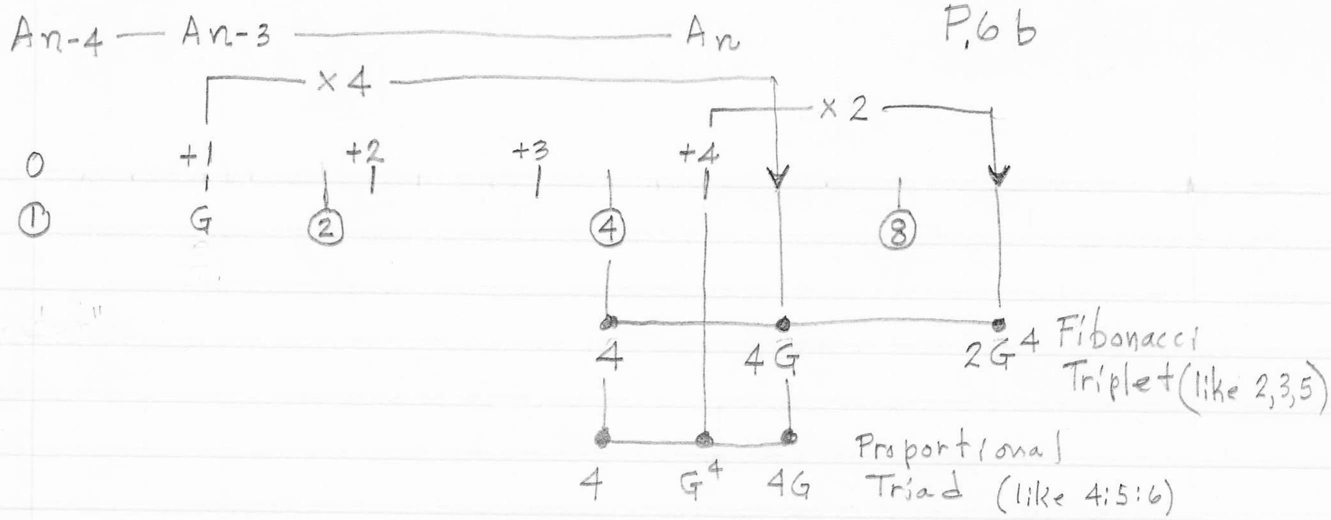
~~ZigZag pattern~~
1/1
1/2
1/3
2/5
3/7
5/12
8/19
13/31
21/50 → 29/69 → 37/88
11 places

Ref; <u>Linear Tuning of the 4"5"6" Arithmetic Mean</u> (+4=5), 1989, E.Wilson

compare with Harrison's π tuning.

Notes on Meta-Meantone

17 Aug 97 – E.W.
P.6b



Recurrence:

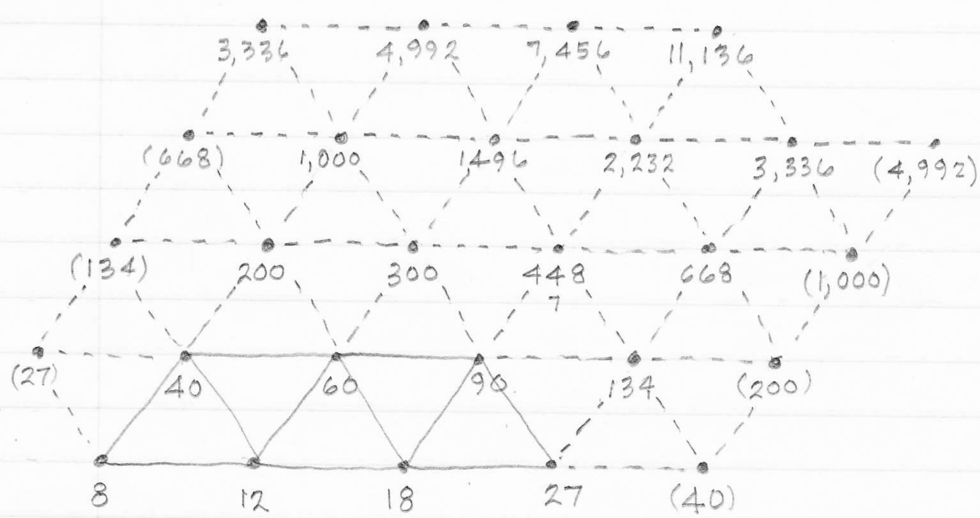
$$(4A_{n-4} + 4A_{n-3})/2 = A_n$$
$$= 2A_{n-4} + 2A_{n-3} = A_n$$

$$G = ((4+4G)/2)^{\left(\frac{1}{4}\right)}$$
$$\Rightarrow \; = (2+2G)^{\left(\frac{1}{4}\right)}$$
$$= 1.49453018048$$
$$\log_2 = .57969203103 4$$

example

Seed: 8 12 18 27 40 60 90 134 200 300 448 (7) 668 1,000 1,496

2,232 3,336 4,992 7,456 11,136

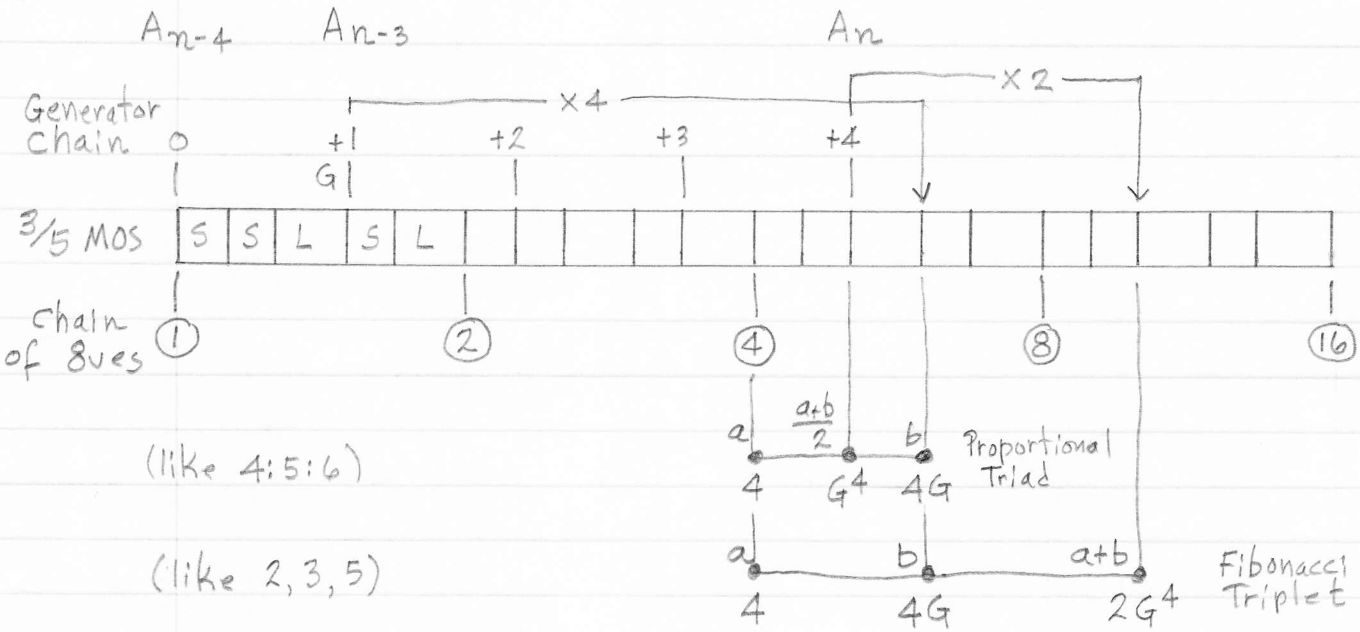


19-Tone Scale where: $2A_{n-4} + 2A_{n-3} = A_n$ (Meta-Meantone)

Notes on Meta-Meantone

18 Aug 97 - E.W.
p. 6c

This sheet clarifies p. 6b



Recurrence:

$$(4A_{n-4} + 4A_{n-3})/2 = A_n$$

$$(=)\ 2A_{n-4} + 2A_{n-3} = A_n$$

$$\Rightarrow \quad G = ((4 + 4G)/2)^{(\frac{1}{4})}$$
$$= (2 + 2G)^{(\frac{1}{4})}$$
$$= 1.49453018048$$
$$\log_2 = .57969203103 4$$

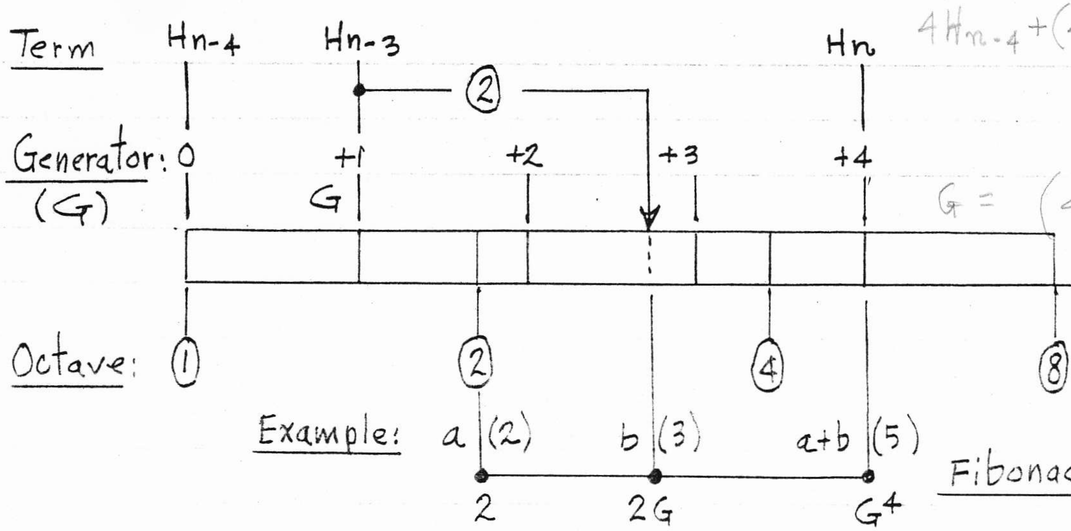
	A_{n-4}	A_{n-3}	A_{n-2}	A_{n-1}	A_n								
Example Seed:	8	12	18	27	40	60	90	134	200	300	448	668	etc

Please see p. 6b

$G = (2 + 2G)^{(\frac{1}{4})}$, Meta-Meantone

10·OCT·97-E.W.

$4H_{n-4} + (4H_{n-4} - (2H_{n-3})) = H_n$ (p 6d)



Fibonacci Triplet

Save

$G = (4 + (4 - (2G)))^{(\frac{1}{4})}$

$= 1.49595350624$

$\log_2 = .581065337419$

1	.720
1	.387
2	.583
1	.712
1	.403
2	.478
2	.089
11	.180

Recurrence Relation:

$2H_{m-4} + 2H_{m-3} = H_m$

G Paraphrase:

⇨ $G = (2 + 2G)^{(1/4)}$

$= 1.49453018048$

$\log_2 = .57969203034$

Example re-seed:

8 12 18 27 40 60 90 134 200 300 448 668 1000 1496 2232 3336 4992 7456 11136 etc, *

1/N Pattern

		.57969...
←	1	.725
→	1	.379
←	2	.637
→	1	.569
←	1	.755
→	1	.323
←	3	.088
	11	.320
	3	.123

Zig-Zag Pattern

0/1 1/1

1/2 ← 1/1

1/2 → 2/3

3/5 ← 2/3

4/7 ← 3/5

4/7 → 7/12

11/19 ← 7/12

11/19 → 18/31

29/50 ← 18/31 (25/43)

40/69 ← 29/50

51/88 ← 40/69 ← ! (43/74 ← !)

51/88 → 11 places (61/105 — 11 places)

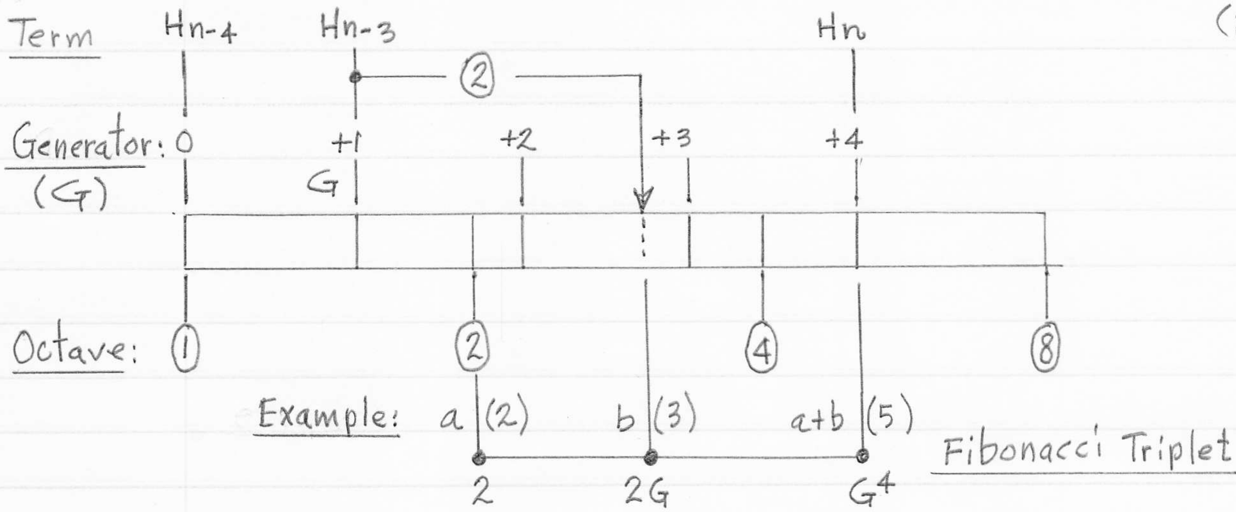
Ref: Linear Tuning of 4-"5"-"6" Arithmetic Mean (+4 = "5"), 1989, Erv Wilson

* 1, 1, 1, 1, 4, 4, 4, 10, 16, 16, 28, 52, 64, 88, 160, etc NLIS.

$G = (2 + 2G)^{(\frac{1}{4})}$, Meta-Meantone

10·OCT·97-E.W.

(p 6d)



Recurrence Relation:

$$2H_{n-4} + 2H_{n-3} = H_n$$

G Paraphrase:

$$\Rightarrow G = (2 + 2G)^{(1/4)}$$
$$= 1.49453018048$$
$$\log_2 = .579692031034$$

Example re-seed:

8 12 18 27 40 60 90 134 200 300 448 668 1000 1496 2232
3336 4992 7456 11136 etc, *

1/N Pattern

		.57969... 0/1
←	1	.725
→	1	.379
←	2	.637
→	1	.569
←	1	.755
→	1	.323
←	3	.088
	11	.320
	3	.123

Zig-Zag Pattern

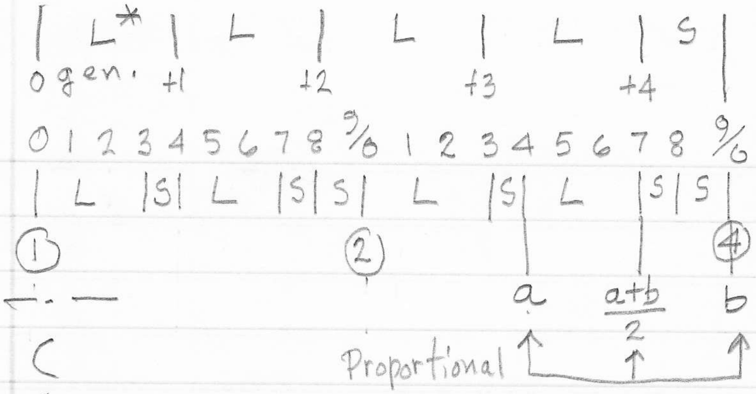
1/1 → 1/2 → 2/3 → 3/5 → 4/7 → 7/12 → 11/19 → 18/31 → 29/50 → 40/69 → 51/88 → 11 places

! → 51/88

Ref: Linear Tuning of 4-"5"-"6" Arithmetic Mean (+4 = "5"), 1989, Erv Wilson

* 1, 1, 1, 1, 4, 4, 4, 10, 16, 16, 28, 52, 64, 88, 160, etc NLIS.

(Continuing) Notes on Meta-Mavila



LsLss

Please see P. 7b

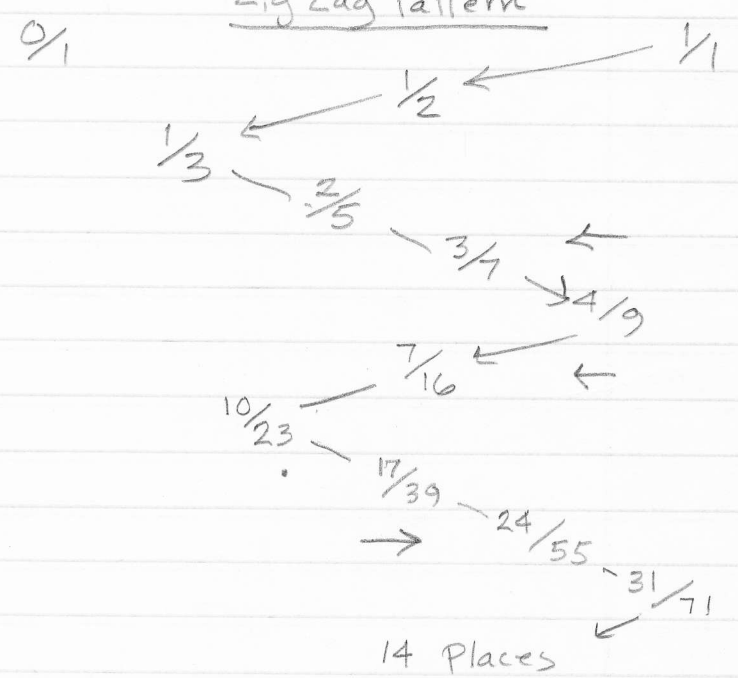
$$\text{gen.}^{*} L = \left((2 \cdot L + 4)/2\right)^{\left(\frac{1}{4}\right)}$$

decimal approx. = 1.35320996420...

$\log_2$ = .436385705396...

Keystrokes		1/x pattern .436...
(		
(		
2		
×		
RCL 1		
+		
4		
)		
÷		
2	2	.291
)	3	.429
y^x	2	.325
(	3	.068
1	14	.688
÷	1	.452
4	2	.209
)	4	.782
=	1	.277
STO 1		

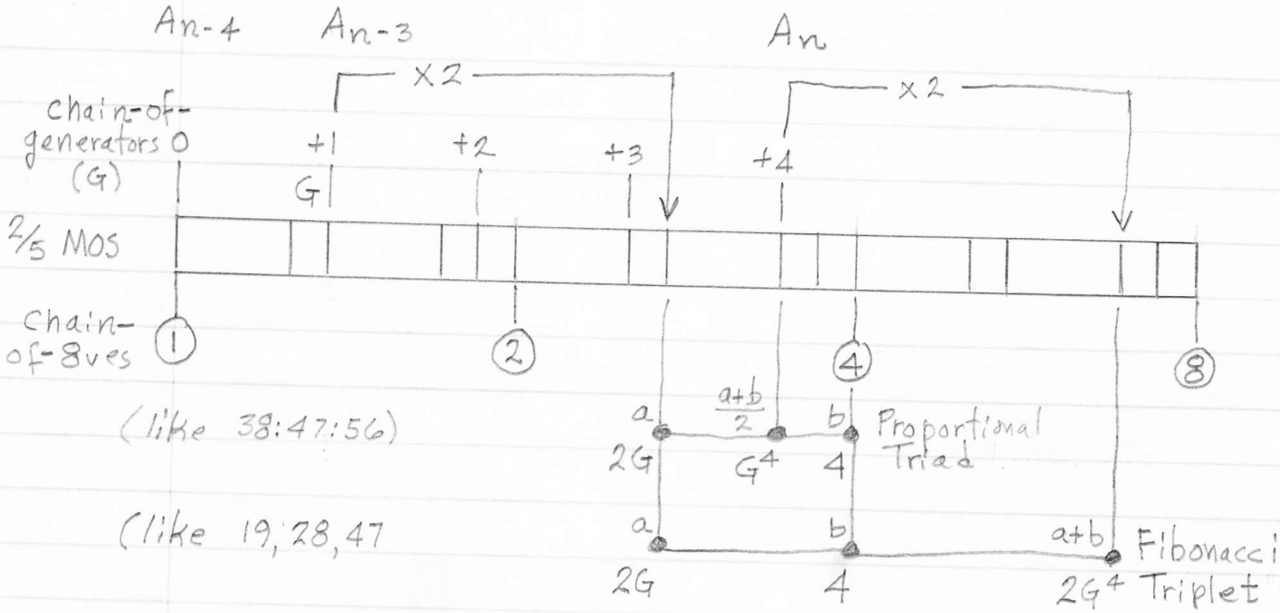
ZigZag Pattern



Ref; Linear Tuning of 4-"5"-"6" arithmetic mean (-3 = 5), 1989 Erv Wilson

Notes on Meta-Mavila

18 Aug 97 - E.W.
P. 7b



Recurrence;

$(4A_{n-4} + 2A_{n-3})/2 = A_n$

$= 2A_{n-4} + A_{n-3} = A_n$

$\Rightarrow$

$G = ((4+2G)/2)^{(\frac{1}{4})}$

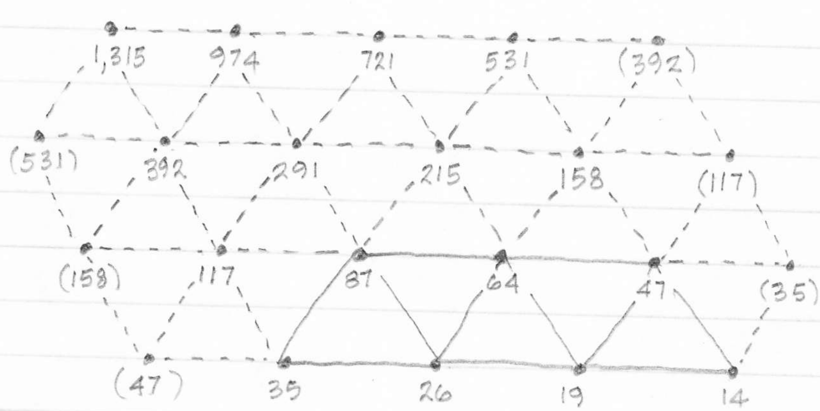
$= (2+G)^{(\frac{1}{4})}$

$= 1.35320996420\cdots$

$\text{Log}_2 = .436385705396\cdots$

Example

Seed: 14 19 26 35 47 64 87 117 158 215 291 392 531 721 974 1,315
1,783 2,416 3,263 4,413 5,982 8,095 10,939 14,808 20,023 27,129



16-Tone Scale where; $2A_{n-4} + A_{n-3} = A_n$ (Meta-Mavila)

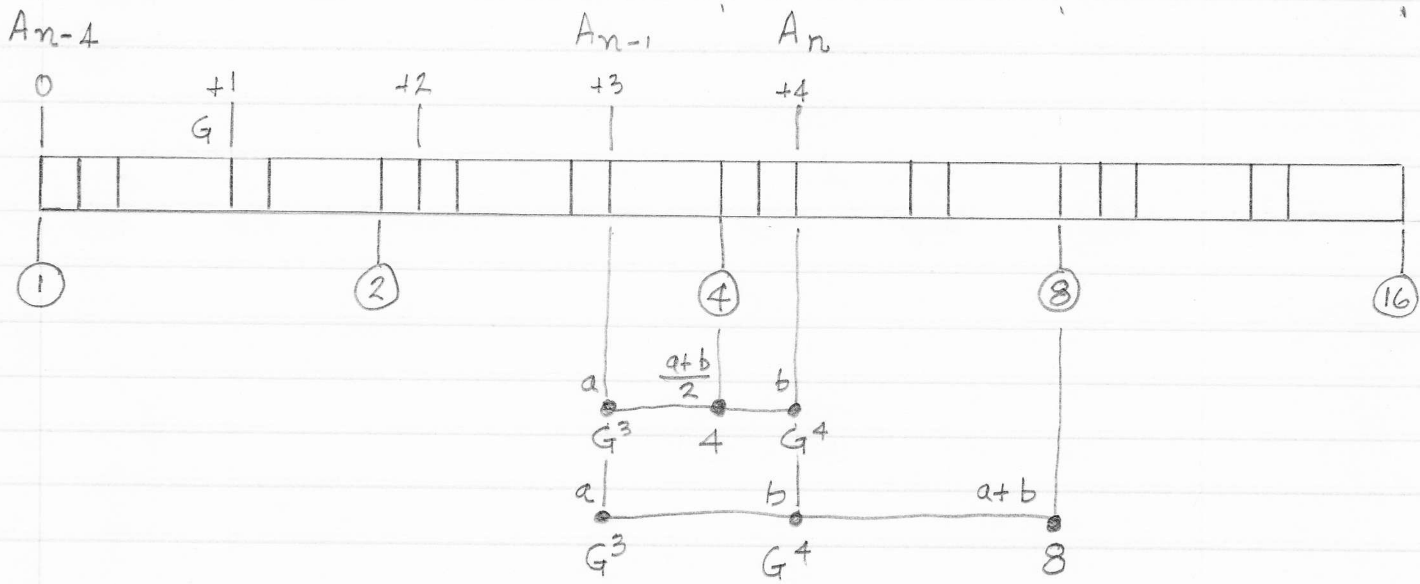
See also; On Complementary Proportional Triads, 1995 by Erv Wilson

Notes on Meta-Mavila

19 Aug 97 - E.W.

P.7c

This is an interesting try, - see P.7b for an elegant approach, and fundamental.



$$8A_{n-4} - A_{n-1} = A_n$$

~~$(8-G^4)^{(\frac{1}{3})}$~~ No compute

$\Rightarrow G = (8-G^3)^{(\frac{1}{4})}$ OK

$= 1.47796724301\cdots$

$\text{Log}_2 = .563614294605\cdots$

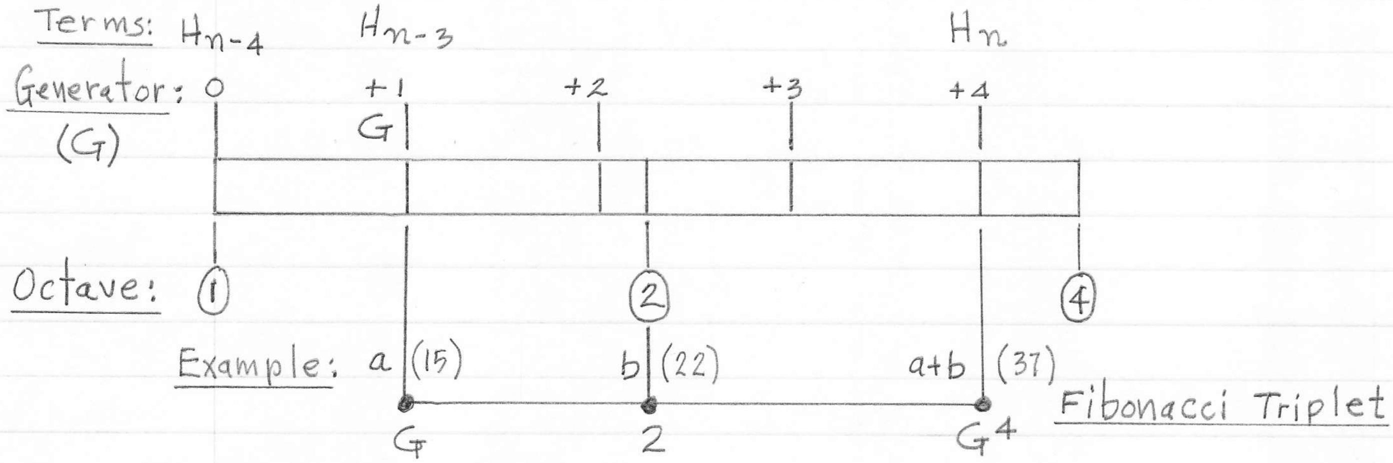
32 47 70 104 152 224 336 496 720 1,072

32 47 70 104 152 224 (21) 31 45 67

$G = (2+G)^{(1/4)}$, Meta-Mavila

10·Oct·97 – E.W.

(P. 7d)



Recurrence Relation:

$$2H_{n-4} + H_{n-3} = H_n$$

(1, 1, 1, 1, 3, 3, 3, 5, 9, 9, 11, 19, 27, 29, 41)

– NLIS –

G Paraphrase:

$\Rightarrow$ $G = (2+G)^{(1/4)}$

$= 1.35320996420 \cdots$

$\log_2 = .436385705396$

Re-Seed Example:

6, 8, 11, 15, 20, 27, 37, 50, 67, 91, 124, 167, 225, 306, 415, 559, 756, etc.

1/N Pattern

		.43638···
←	2	.291
→	3	.429
←	2	.325
→	3	.068
	14	.688
	1	.452
	2	.290
	4	.782
	1	.277

0/1

Zig-Zag Pattern

1/1 → 1/2 → 1/3 → 2/5 — 3/7 → 4/9 → 7/16 → 10/23 → 17/39 → 24/55 → 31/71

14 places

Ref. Linear Tuning of 4–"5"–"6" Arithmetic Mean (−3 = 5), 1989, Erv Wilson

16 Jul 97 E.W.
P.8
AB

0 +1

① ② ④

0 1 2/0 1 2/0

| A | B |

a $\frac{a+b}{2}$ b

a $\frac{2ab}{a+b}$ b

$A = (1+2)/2 = 3/2$

$A = (2\cdot 1\cdot 2)/(1+2) = 4/3$

---

0 +1 +2

ABB

0 1 2 3/0 1 2 3/0

| A | B | B | A | B | B |

→ ① L | ② L | S ④ |

a $\frac{a+b}{2}$ b

$L = ((L+4)/2)^{(\frac{1}{2})}$ ⇐

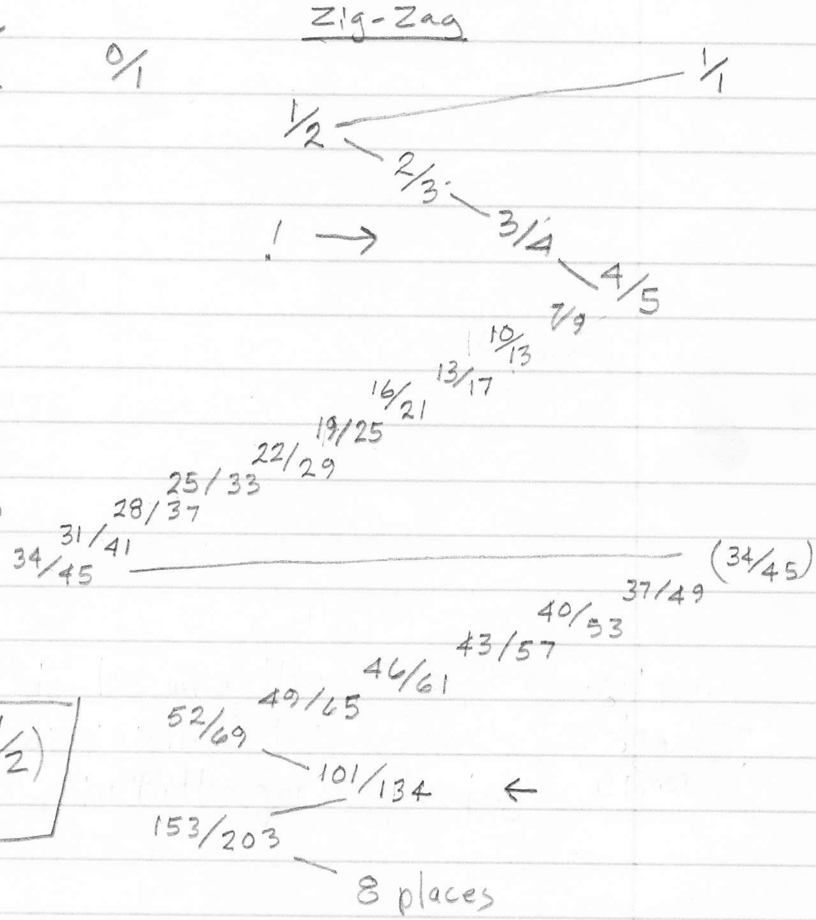
1.68614066164 ⋯ = dec appr.

.753724894160 ⋯ = $\log_2$

— — —

	1/4 Pattern .753⋯
(	
(	← 1. 326
RCL 1	→ 3. 060
+	← 16 .529
4	→ 1 .890
)	← 1 .123
÷	8 .120
2	8 .290
)	3 .440
(	2
y^x	
(	
1	
÷	
2	
)	
=	
STO 1	
(iterate)	

0/1

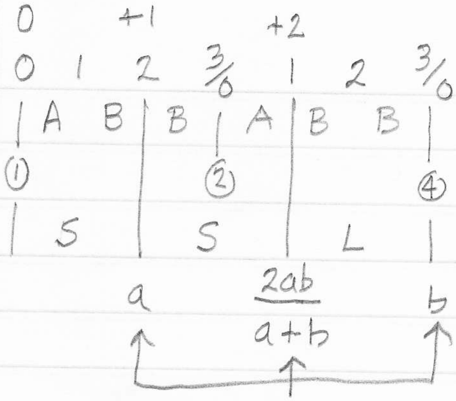


ref

$G = ((4+G)/2)^{(1/2)}$

Unusual definition of the diminished triad!
16:27:38 or nearly so.

16 Jul 97 E.W.
P. 9a
ABB

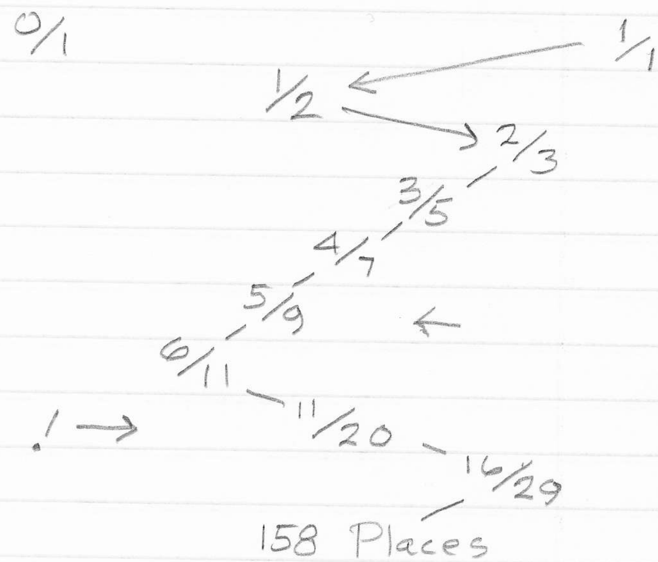


$S = ((2 \cdot S \cdot 4)/(S+4))^{(\frac{1}{2})}$

aprox. dec. 1.4641016151 4...

Log₂ .55001568652 6...

		1/x pattern	
(		.550...	
(	←	1	.818
2	→	1	.222
×	←	4	.498
RCL1	→	2	.006
×		158	.922
4		!	



)
÷
(
RCL 1
+
4
)
)
y^x
(
1
÷
2
)
=
STO 1

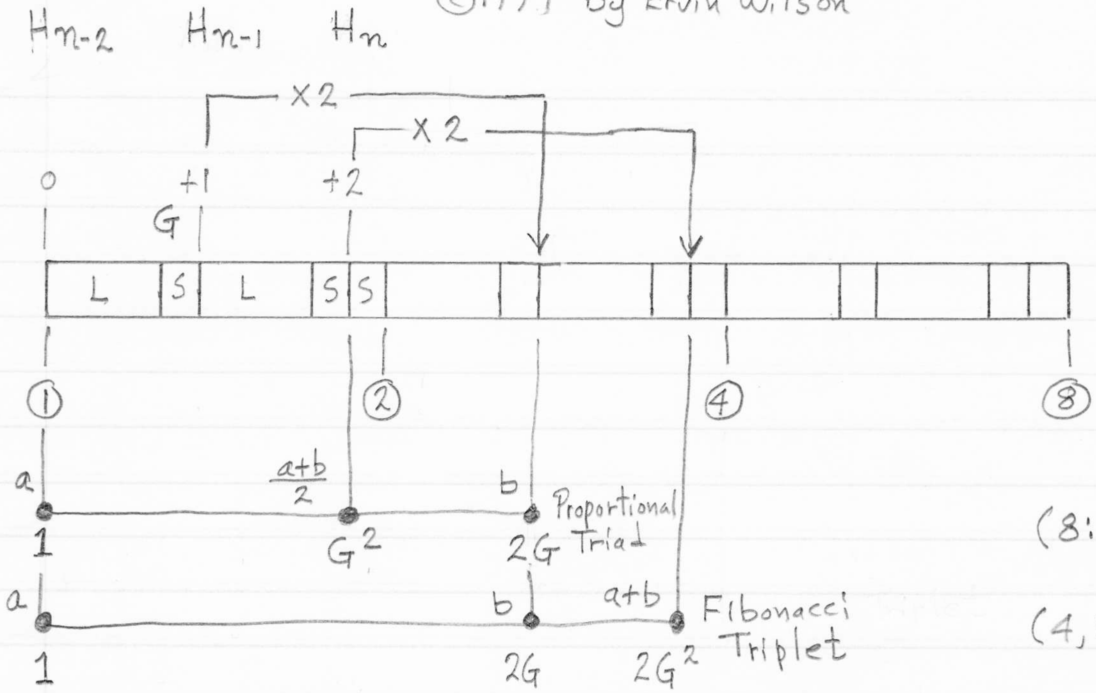
Note; (1 ÷ 1.4641016151 4) × 2 = 1.36602540378...
(which is the Octave complement), the first
Pélog Phi I ever solved. see ☆

1.3660... has a root notation – See ☆

wrong ~~$G = ((2(1+G))^{(\frac{1}{2})})/2 = 1.3660...$~~ Please see P.9b

Notes on the First Pelog, $(H_{n-2} + 2H_{n-1})/2 = H_n$

22 Aug 97 – E.W., P. 9b



(8:15:22)

(4, 11, 15)

Recurrence:

$(H_{n-2} + 2H_{n-1})/2 = H_n$ $\Rightarrow$ $G = ((1 + 2G)/2)^{(1/2)}$

$= 1.36602540378\ldots$

$\log_2 = .449984313472\ldots$

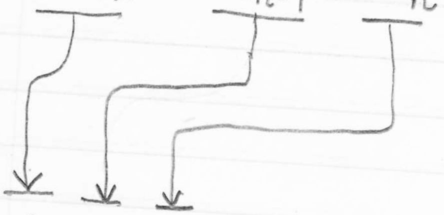
(41)

4 4 6 8 11 15 20.5 28 38.25 52.25 71.375 97.5 133.1875 181.9375 248.53125 339.5 463.7656025 633.515625 865.3984375 1,182.15625 1,614.85546875 2,205.93359375 3,013.36132812 4,116.328125

$H_{n-2} + 2H_{n-1} = H_n$

22 Aug 97 - E.W.
P.9c

$H_{n-2} + 2H_{n-1} = H_n$



1 1 3 7 17 41 99 239

$G = (1+2G)^{(1/2)}$
$= 2.41421356237\ldots$
$\log_2 = 1.271553303 16$

1/x Pattern

→	1	.271...	1/1
←	3	.682	
→	1	.465	
←	2	.149	
→	6	.676	
←	1	.479	
→	2	.087	
	11	.417	
	2	.397	

Zig-Zag Pattern

1/0

2/1
3/2
4/3
5/4 → 9/7
14/11 ←
19/15
33/26
47/37
61/48
75/59
89/70
103/81
192/151
→ 295/232
398/313
← 11 places

Try $G = (1+3G)^{(1/2)} = 3.302775637 73$
$G = (1+2G)^{(1/3)} = 1.618033988 75$
$(1+4G)^{(1/2)} = 4.236067977 50$
$(1+5G)^{(1/2)} = 5.192582403 56$
$(2+3G)^{(1/2)} = 3.561552812 81$

Notes on Meta-S'lendro

17JUL97 E.W.
P.10a
ABABB

① ② ④

0 +1 +2 +3 (+4)

0 1 2 3 4 5/0 1 2 3 4 5/0

|A|B|A|B|B|A|B|A|B|B|

| L* | L | L | L | S |

(a) — (b) — (a+b)

a $\frac{a+b}{2}$ b

$*L = ((2+2L)/2)^{(\frac{1}{3})}$ ⇦ this

Please see P.10b

decimal approx. 1.3247179572 4...

$\log_2$ .405685231370 ...

Same as Meta-Slendro off Pascal's Triangle. Ref below

Keys		1/∞ pattern .405...
———		
(		
(		
2		
+		
2	←	2 .464
×	→	2 .150
RCL 1	←	6 .635
)	→	1 .572
÷	←	1 .745
2	→	1 .341
)	←	2 .929
y^x	→	1 .075
(		13 .276
1		
÷		
3		
)		
=		
STO 1		
———		
(iterate)		

Zig-Zag Pattern

0/1, 1/1, 1/2, 1/3, 2/5, 3/7, 5/12, 7/17, 9/22, 11/27, 13/32, 15/37, 28/69, 43/106, 71/175, 114/281, → 157/387, 271/668

13 places

Meta-Slendro ⇨

$$G = (1+G)^{(\frac{1}{3})}$$

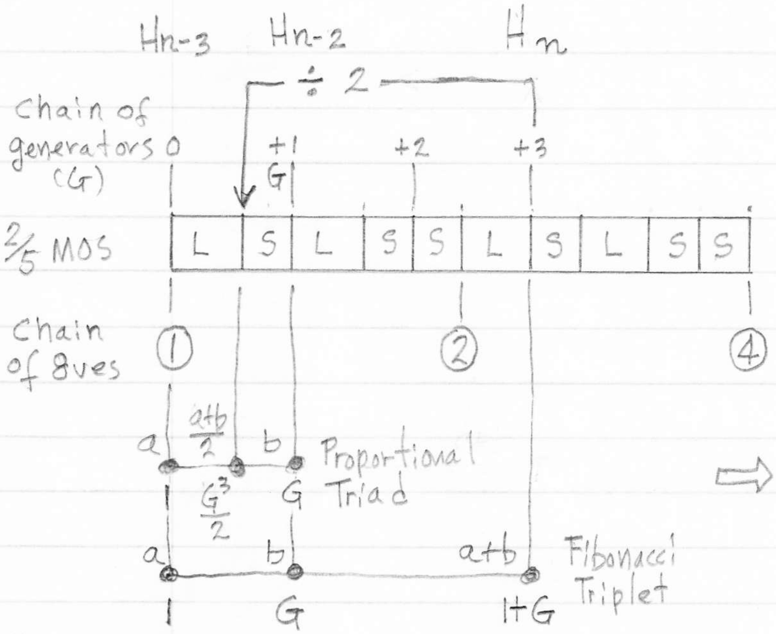
use this; drops everything down an 8ve

———
(
1
+
RCL 1
)
y^x
(
1
÷
3
)
=
STO 1
———
iterate

Reference: Recurrent Sequences and Pascal's Triangle, Thomas M. Green, Mathematics Magazine Vol 41, 1968

The Scales of Mt. Meru, Ervin M. Wilson, 1993

Notes on Meta-S'lendro



$\Rightarrow G = (1+G)^{\left(\frac{1}{3}\right)}$

$= 1.32471795724\cdots$

$\log_2 = .405685231370\cdots$

Recurrence:

$H_{n-3} + H_{n-2} = H_n$

(also note: $H_{n-5} + H_{n-1} = H_n$)
where $G = (1+G^4)^{\left(\frac{1}{5}\right)}$

Seed: 9 12 16 21 28 37 49 65 86 114 151 200 265 351 465 616 816 1081 1,432 1,897 2,513 3,329 4,410 5,842 7,739 10,252 13,581

Fibonacci-Triplets Display

(5,482) 7,739 10,252 13,581
(2,513) 3,329 4,410 5,842 (7,739)
(1,081) 1,432 1,897 2,513 (3,329)
(465) 616 816 1,081 (1,432)
(200) 265 351 465 (616)
(86) 114 151 200 (265)
(37) 49 65 86 (114)
(16) 21 28 37 (49)
9 - - - - 12 - - - - 16 (21)

A 27-Tone Scale where; $H_{n-3} + H_{n-2} = H_n$

Nested MOS $\frac{1}{1}, \frac{1}{2}, \frac{1}{3}, \frac{2}{5}, \frac{3}{7}, \frac{5}{12}, \frac{7}{17}, \frac{9}{22}, \frac{11}{27} \left(\frac{13}{32}\right)\left(\frac{15}{37}\right)\left(\frac{28}{69}\right)\left(\frac{43}{106}\right)$

Notes on Iso-S'lendro

17 Jul 97 E.W.
P. 11a
ABABB

① ② ④

0 1 2 3 4 5/0 1 2 3 4 5/0

| A | B | A | B | B | A | B | A | B | B |

| S* | S | S | S | L |

0 +1 +2 +3 (+4) 0

a $\frac{2ab}{a+b}$ b

(Sub-contrary)

gen.* $S = ((2 \cdot 2 \cdot 2S)/(2+2S))^{(\frac{1}{3})}$

decimal approx. 1.31459621227...

Log_2 .394619733349...

C
C
8
×
RCL 1
)
÷
(
2
+
2
×
RCL 1
)
) ← y^x
(
1
÷
3
)
=
STO 1

iterate

1/x Pattern

.394...

← 2	.534
→ 1	.872
← 1	.146
→ 6	.834
← 1	.198
→ 5	.045
22	.191
5	.232
4	.301

Please see P. 11b

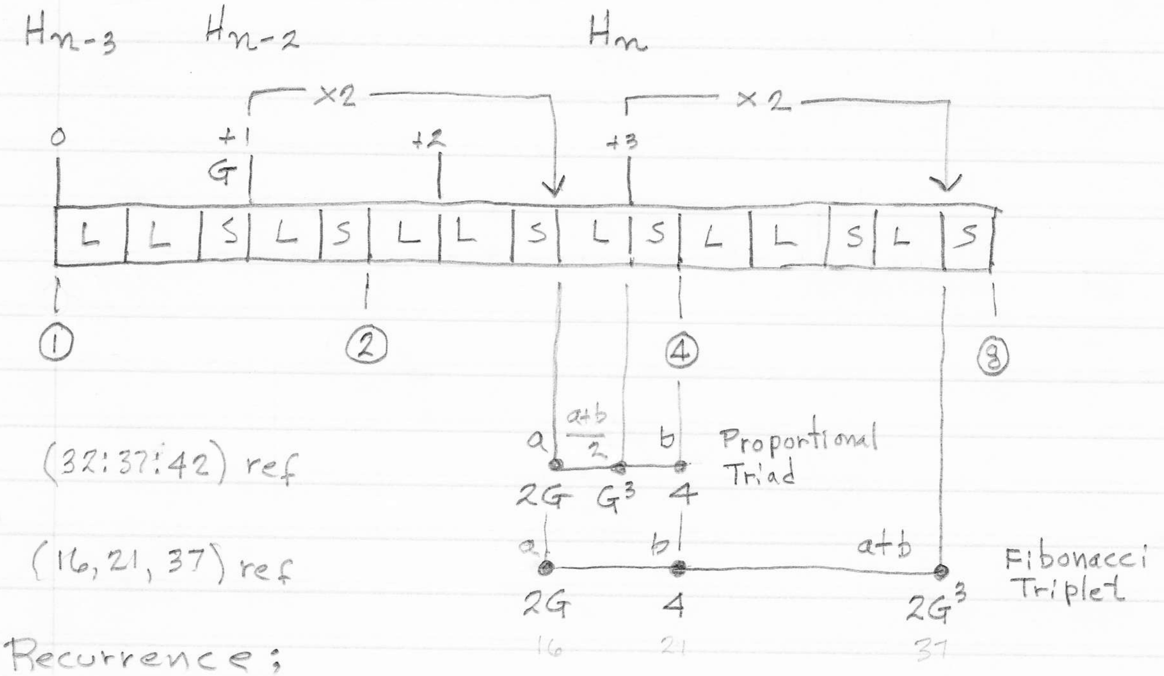
⇨ $G = (2+G)^{(\frac{1}{3})}$

Zig-Zag Pattern

0/1 1/1
1/2
1/3
2/5
3/8
5/13
7/18
9/23 !
11/28
13/33
15/38 —
28/71
43/109
58/147
73/185
88/223 ← !
103/261
22 places

Notes on Iso-S'lendro

20 Aug 97 – E.W.
P. 11b



(32:37:42) ref

(16, 21, 37) ref

Recurrence;

$4H_{n-3} + 2H_{n-2} = H_n$

⇨ $2H_{n-3} + H_{n-2} = H_n$

$G = ((2G+4)/2)^{(\frac{1}{3})}$

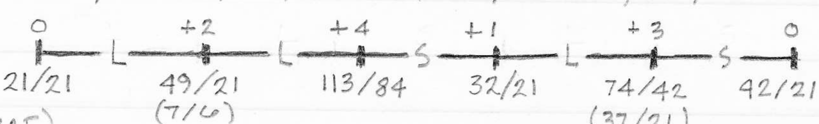
⇨ $= (2+G)^{(1/3)}$

$= 1.52137970680$, ($\frac{1}{2}$×2 = 1.31459621228··· 8ve complement;)

$\text{Log}_2 = .605380266640$

Sample Seed: 21 32 49 74 113 172 261 398 605 920 1,401 2,130 3,241
4,932 7,501 11,414 17,365 26,416 40,193 61,146 93,025 141,532
215,317 327,582 498,381 758,216 1,153,545 1,754,978 2,669,977

Example of converging 3/5 Moment of Symetry, →



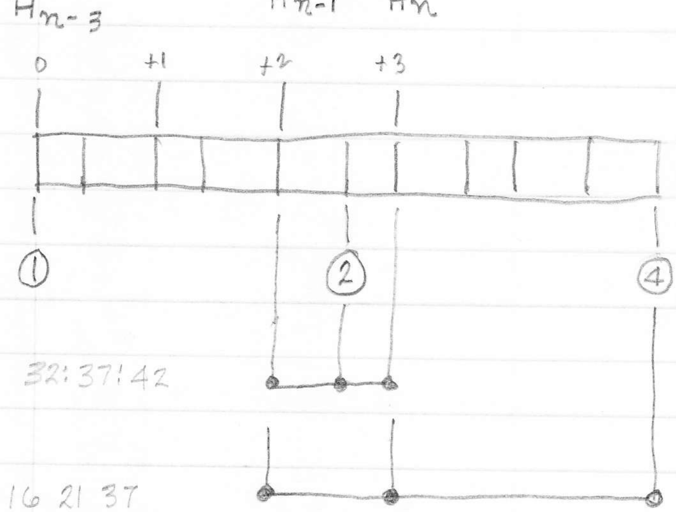
215,317 141,532 (93,025)
(141,532) 93,025 61,146 40,193 (26,416)
(40,193) 26,416 17,365 11,414 (7,501)
(11,414) 7,501 4,932 3,241 (2,130)
(3,241) 2,130 1,401 920 (605)
(920) 605 398 261 (172)
(261) 172 113 74 (49)
(74) 49 - - - 32 - - - 21 (14)
(21) 14 9 6 4
6 4 2.5 1.75 1.125
1.75 1.125 .6875 1.0625 .03125

A 23-Note Scale where; $2H_{n-3} + H_{n-2} = H_n$

Nested MOS

Triplet Display where
(2×21) + 32 = 74 & so forth, in accord with the Recurrence;
$2H_{n-3} + H_{n-2} = H_n$

NO GOOD – Please see P. 11c P. 11c



$(4 - G^3)^{(\frac{1}{2})}$ Error Func.

Recurrence:

$4H_{n-3} - H_{n-1} = H_n$

$G = (4 - G^2)^{(1/3)}$

$= 1.31459621228\ldots$

$\log_2 = .394619733359\ldots$

37 49 64 84 112 144 192 256 320 448 576 704 1088

32 42 56 72 96 128 168 224 288 352 544

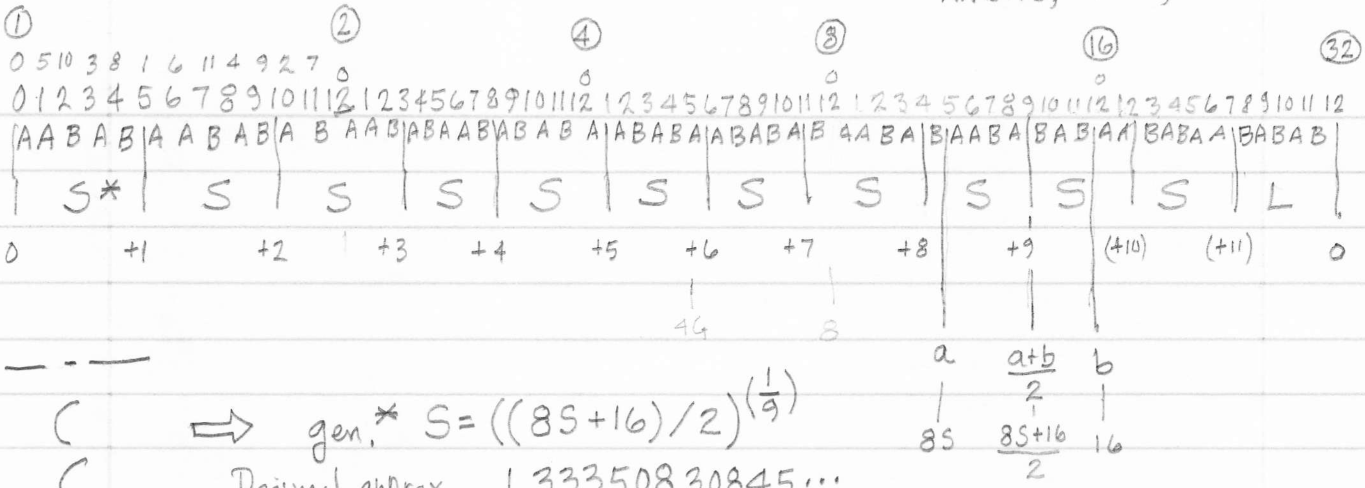
16 21 28 36 48 64 84 112 144 176 272

not converging → 14 18 24 32 42 56 72 88 136

68

This is a good example of what not to do!

17 Jul 97 E.W.
P.12
AABAB, AABAB, AB



— - —

(	⇨	gen.* $S=((8S+16)/2)^{(\frac{1}{9})}$
(		Decimal approx. 1.33350830845...
8		Log_2 .415226813657...
×		
RCL 1		1/x Pattern
+		.415...
16	←	2 .408
)	→	2 .449
÷	←	2 .226
2	→	4 .406
)	←	2 .460
y^x	→	2 .169
(	←	5 .892
1	→	1 .120
÷		8 .324
9		3 .082
)		
=		
STO 1		

— - —

iterate

Ref: Linear Tuning of the 8"10"12" Arithmetic Mean, 1989, Erv Wilson

Zig-Zag Pattern

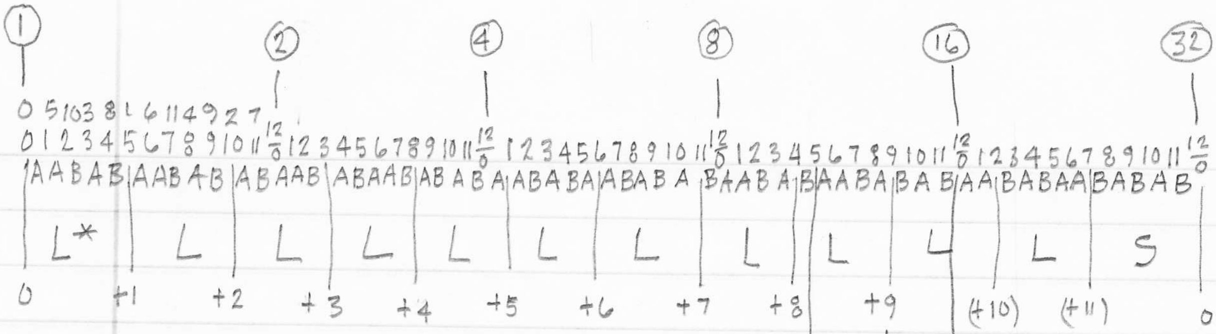
0/1, 1/1, 1/2, 1/3, 2/5, 3/7, 5/12, 7/17, 12/29, 17/41, 22/53, 27/65, 49/118, 71/171, 120/289, 169/407, 289/696, 409/985, 529/1,274, 649/1,563, 769/1,852, 1,418/3,415

8 places

16,980
2,318

$$G = (8+4G)^{(1/9)} = 1.333\ldots$$

17 Jul 97 E.W.
P.13 AABAB, AABAB, AB



a $\frac{2ab}{a+b}$ b (sub-contrary)

8L $\left(\frac{2\cdot 8L\cdot 16}{8L+16}\right)$ 16

⇨ gen.* $L = \left((256L)/(8L+16)\right)^{\left(\frac{1}{9}\right)}$

decimal approx. = 1.327047220047...

Log_2 .408219707200...

— • —
(
(
256
×
RCL 1
)
÷
(
8
×
RCL 1
+
16
)
)
y^x
(
1
÷
9
)
=
STO 1
— • —
Iterate

1/N Pattern 0/1

.408...	
← 2	.449
→ 2	.223
← 4	.466
→ 2	.144
← 6	.930
→ 1	.075
13	.320
3	.122
8	.185

Zig-Zag Pattern

1/1
1/2
1/3
2/5
3/7
5/12
7/17
→ 9/22
11/27
20/49
29/71
49/120
69/169
89/218
109/267
129/316
→ 149/365
278/681

Ref: Linear Tuning of the 32"-40"-48" Arithmetic Mean
1989, Erv Wilson

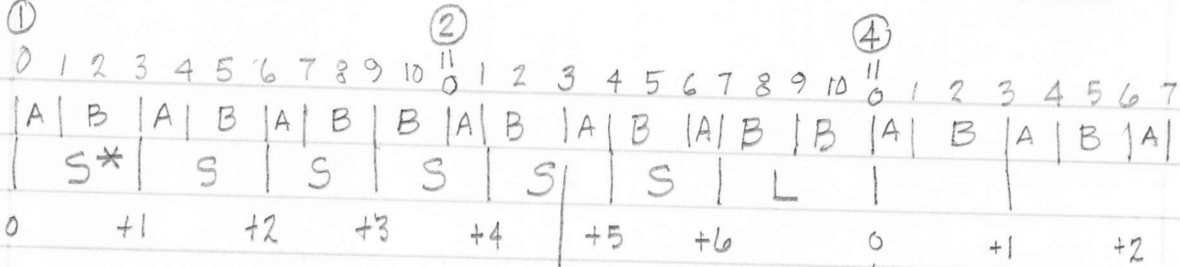
13 places

$\boxed{G = (16(1+G))^{\left(\frac{1}{9}\right)}}$ = 1.507105375 87... $1/x \times 2$ = 1.32704722047

18 Jul 97 E.W.

P.14 a

ABABABB



	a	$\frac{2ab}{a+b}$	b
	2S	$\frac{2\cdot 2S\cdot 4}{2S+4}$	4

see p.14b please ⟹ $*S = \left((2\cdot 2S\cdot 4)/(2S+4)\right)^{\left(\frac{1}{6}\right)}$

decimal approx. 1.20104593104 ...

$\log_2$ .264291324413 ...

Calculator keystrokes:

C
C
16
×
RCL 1
)
÷
(
2
×
RCL 1
+
4
)
)
y^x
(
1
÷
6
)
=
STO1
---
iterate

1/x Pattern

	.264 ...	
←	3	.783
→	1	.275
←	3	.623
→	1	.604
←	1	.654
→	1	.527
←	1	.894
→	1	.118
	8	.472
	2	.114

0/1

ZigZag Pattern

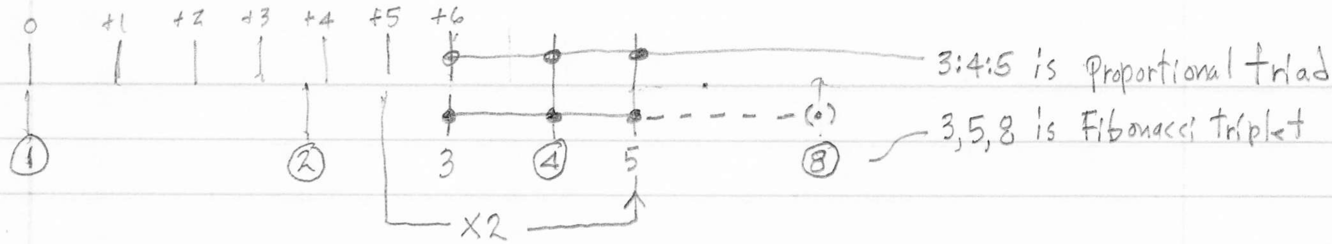
1/1 → 1/2 → 1/3 → 1/4 → 2/7 → 3/11 → 4/15 → 5/19 → 9/34 → 14/53 → 23/87 → 37/140 (V.G. →) → 60/227 → 8 places

This is a new! solution of Hanson's strategy (+6 = 3). Restated, the proportional triad is 3:4:5, and the Fibonacci triplet is 3:5:8, the 13 (+14) is very good.

Ref: Development of a 53-Tone Keyboard Layout, 1989, by Larry A. Hanson, Xenharmonikon 12, Frog Peak.

15 Aug 97 E.W.

P. 14 b



$\Rightarrow \quad G = \left((8 - G^6)/2\right)^{(1/5)}$

$= \underline{1.20104593104....}$

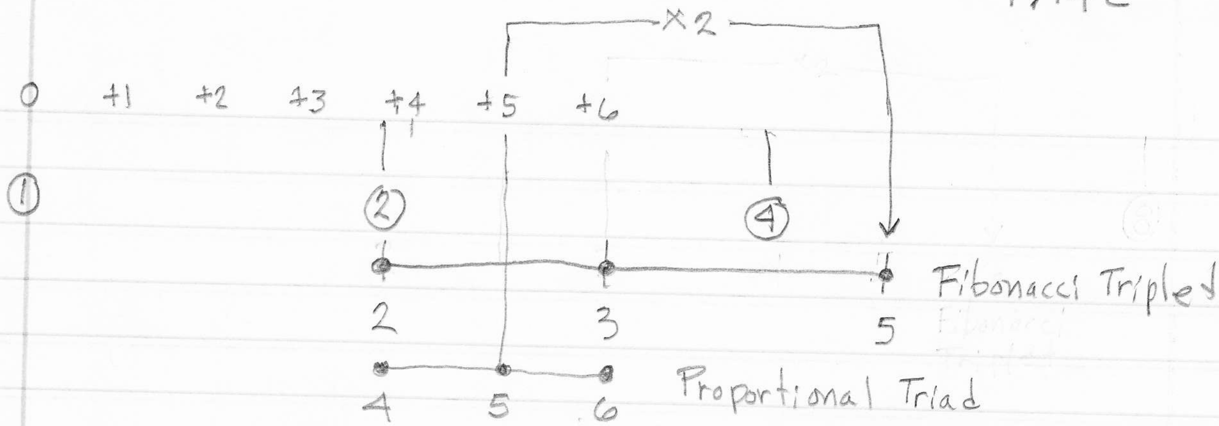
$\log_2 = .264\,291\,324\,413\cdots$

---

0 +1 +2 +3 +4 +5 +6

15 Aug 97 E.W

P. 14c



$$\Rightarrow \quad G = \left(\left(2+G^6\right)/2\right)^{\left(\frac{1}{5}\right)}$$

$$= \underline{1.20160781284\cdots}$$

$$\text{Log}_2 = .264966098381\ldots$$

1/x Pattern

		.264…
←	3	.774
→	1	.291
←	3	.426
→	2	.346
←	2	.883
→	1	.132
	7	.560
	1	.784
	1	.275
	3	.633

Zig-Zag Pattern

0/1

1/1 → 1/2 → 1/3 → 1/4 → 2/7 → 3/11 → 4/15 → 5/19 → 9/34 → 13/49 → 22/83 → 31/117 → 53/200 → 7 places

see Hanson and Wilson in 1989

19Jul97 E.W.

P.15a AB,ABA,BB,

① ② ④

0 1 2 3 4 5 6 7 8 9 10/0 1 2 3 4 5 6 7 8 9 10/0 ←! does not go thru a 10-step MOS! see ⇨ below.

| A | B | A | B | A | B | B | A | B | A | B | A | B | B |

| L* | L | L | L | L | L | S |

0 +1 +2 +3 +4 +5 +6 6

a	$\frac{a+b}{2}$	b
↓	↓	↓
2L	$\frac{2L+4}{2}$	4

2L = 2.429724645 .785
L^6 3.214862323 .785
4 4.

——·——
(
(
RCL1
×
2
+
4
)
÷
2
)
y^x
(
1
÷
6
)
=
STO1
———
Iterate

(Please see P.15b) ← exact generator * $L = ((2L+4)/2)^{(\frac{1}{6})}$

decimal approximation; 1.2148623224 9...

Log_2; .280792825835...

1/x Pattern

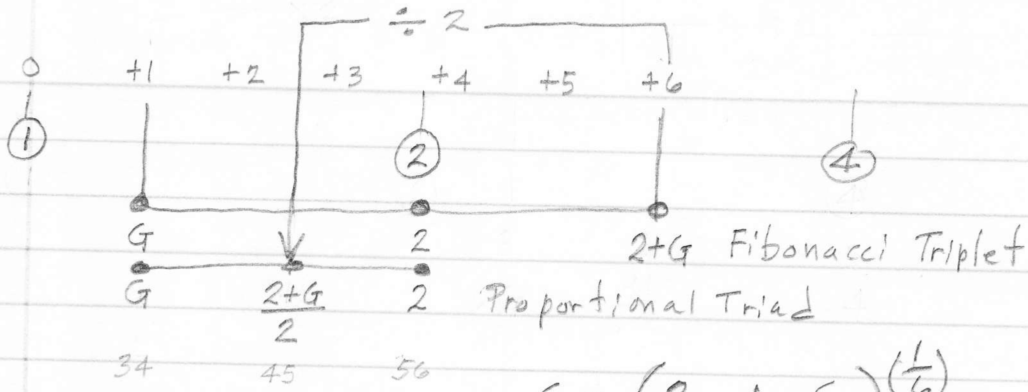
	.280...
← 3	.561
→ 1	.781
← 1	.279
→ 3	.575
← 1	.738
→ 1	.354
← 2	.818
→ 1	.222
← 4	.501
1	.995
(?) 1	.004
(?) 229	.003

Zig-Zag Pattern

0/1

1/1 ← 1/2 ← 1/3 ← 1/4 → 2/7 → 3/11 (! ⇨ 3/11) → 5/18 → 7/25 → 9/32 → 16/57 → 25/89 → 41/146 → 57/203 → 98/349 → 155/552 → 212/755 → 269/958 → 326/1,161 → 595/2,119 ←! → 921/3280

15 Aug 97 - E.W.
P. 15 b



$G = (2 + G)^{\left(\frac{1}{6}\right)}$

$= 1.21486232249\cdots$

about $\frac{17}{14}$

like 34:45:56 (33:44:55)

and 17, 28, 45

$\text{Log}_2 = .280792825835$

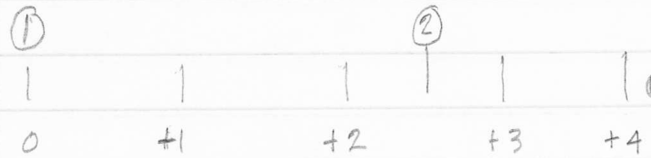
Recurrence:

$2A_{n-6} + A_{n-5} = A_n$

	A_{n-6}	A_{n-5}					A_n						
	0	+1	+2	+3	+4	+5	+6						
Trial Seed;	14	17	21	25	30	37	45	55	67	80	97	119	145
Try;	14	17	21	25	<u>31</u>	37	45	55	67	<u>81</u>	<u>99</u>	119	145

25 July 97 EW
P. 16

$G = (2(1+G))^{\frac{1}{4}}$ = 1.49453018048 meta-meantone

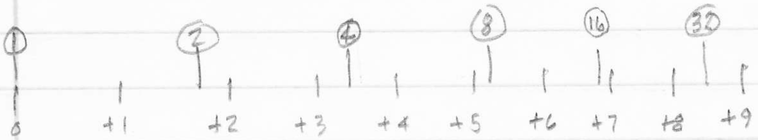


Meta-Mavila
$G = (2+G)^{(\frac{1}{4})}$ = 1.35320996420
$1/x \times 2$ = 1.47796724301

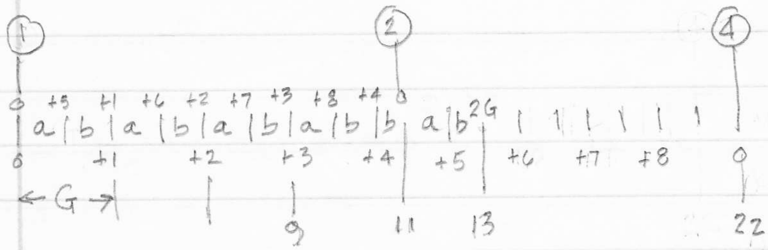
$G = (2+G)^{(\frac{1}{3})}$ = 1.52137970680 $1/x \times 2$ = 1.31459621228...
inside out Meta-S'lendro
see p 11

$G = (1+G)^{(\frac{1}{3})}$ = 1.32471795724 Meta-S'lendro, see p 10

$G = (8+4G)^{(\frac{1}{9})}$ = 1.33350830845...   very like 1/9 skhisma
$G = (4(2+G))^{(\frac{1}{9})}$ = 1.33350830845...



$G = (16(1+G))^{(\frac{1}{9})}$ = 1.50710537587, $1/x \times 2$ = 1.32704722047...
inside-out of above



$G = (4-2G)^{(\frac{1}{3})}$ = 1.17950902460... $1/x \times 2$ = 1.69562076956...
Ref; Linear Tuning for Arithmetic 9-"11"-13", 1989, Erv Wilson

$(4(1-G))^{\frac{1}{3}}$ $(2-G)^{\frac{1}{3}}$
no no

$G^2 + 2 = G^3$
$G = (2+G^2)^{(\frac{1}{3})}$

$G = ((4 + G^5)/2)^{(\frac{1}{6})} = 1.225004868 16\ldots$ $1/x \times 2 = 1.63264657307\ldots$

Meta-Bagpipe, see p.2

$G = (8 - 4G)^{(\frac{1}{6})} = 1.21110071153\ldots$ $1/x \times 2 = 1.65139032696\ldots$

Counter-Bagpipe See p.3

$G = ((2+G)/2)^{(\frac{1}{2})} = 1.28077640640$

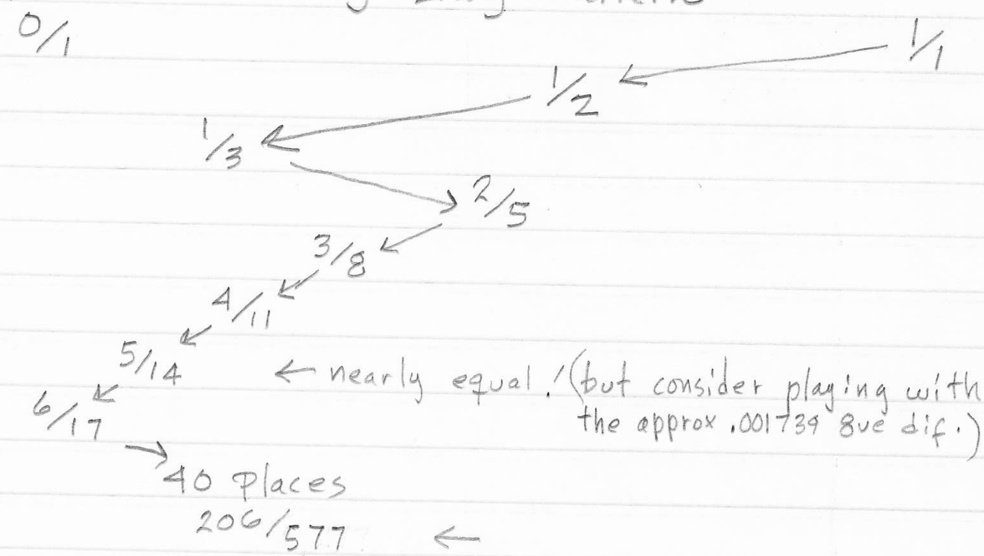
27July 97 EW
P. 18

$Log_2 = .357018636856$

(8ve complement = 1.56155281281..)

	1/x Pattern .357...	
←	2	.800
→	1	.248
←	4	.024
	40	.858
	1	.165
	6	.054
	18	.471
	2	.118

Zig-Zag Pattern



This gives a "7:9:11"-like proportion with notable economy!

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14 / 0	
0	+3				+1	+4			+2					0	5-tone MOS
					"7"				"9"					"11"	Consider "23"

↑ Try tonic here – very India

Note: an early calculation of this is dated 1992

$G=(4-2G)^{(\frac{1}{2})} = \underline{1.23606797752\ldots}$ *

27 July 97 EW
P. 19

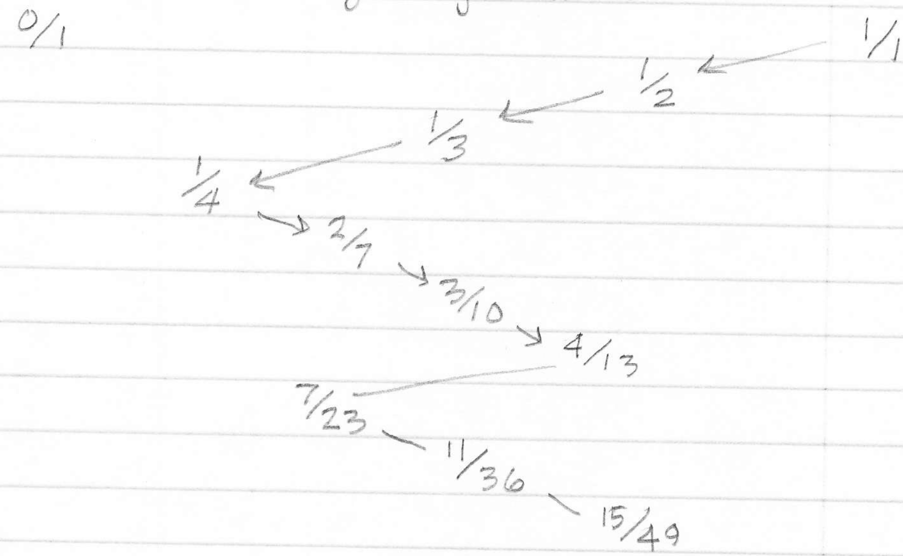
*this mantissa shows up on L.A. Hansons, Simple Repeating zigzag patterns on the Wilson Scale Tree, 1991

$\log_2 = .305758086393$

1/4 Pattern

	.305...	
←	3.	.270
→	3	.696
←	1	.436
	2	.289
	3	.448
	2	.228
	4	.373
	2	.676
	1	.478
	2	.091

Zig-Zag Pattern



Note: 1.23606797752 $1/x \times 2$ = 1.61803398872, its 8ve complement!
(Too easily overlooked.)

Note: an early calculation of this is dated 1992

$G = ((2+G^2)/2)^{(\frac{1}{3})} = \underline{1.19742933693}$ 27Jul97 E.W.
P.20

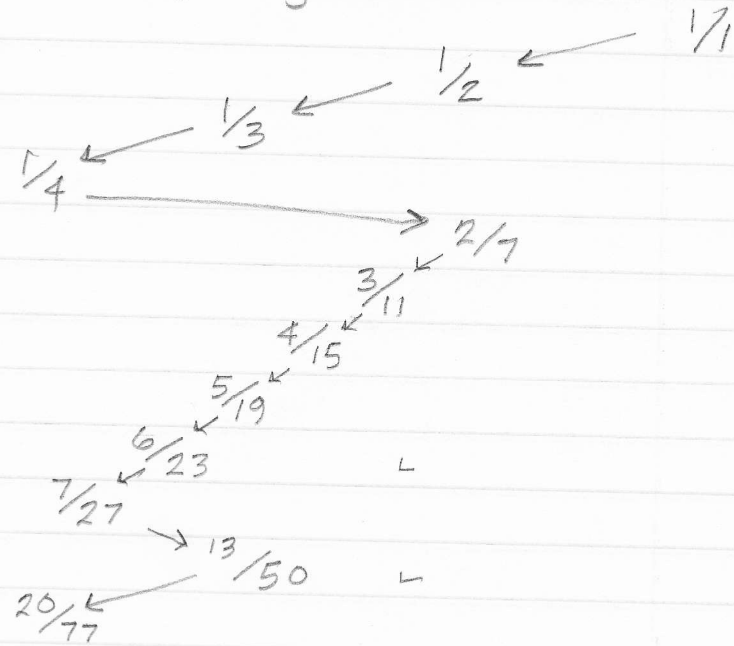
$Log_2 = .25994052170 8\ldots$

1/x Pattern

	.259...	
←	3	.847
→	1	.180
←	5	.537
→	1	.860
←	1	.161
	6	.185
	5	.401
	2	.492
	2	.031
?	31	.832

0/1

Zig-Zag Pattern



Like "5:6:7" proportion
(see 1992)

$G = (4 - 2G)^{(\frac{1}{3})} = 1.179\,509\,024\,60$

27 Jul 97 E.W.
P.21a

$\log_2 = .238\,186\,456\,895$

Ref $G = (2 + G^2)^{\frac{1}{3}}$

1/x Pattern

	.238...	
←	4	.198
→	5	.040
( )	24	.668
→	1	.496
	2	.013
	74	.768
	1	.300
	3	.325
?	3	.075

0/1

Zig-Zag Pattern

1/1 → 1/2 → 1/3 → 1/4 → 1/5

2/9

3/13

4/17

5/21

6/25

24 places

121/508

126/529

247/1037

373/1,566

499/2,095

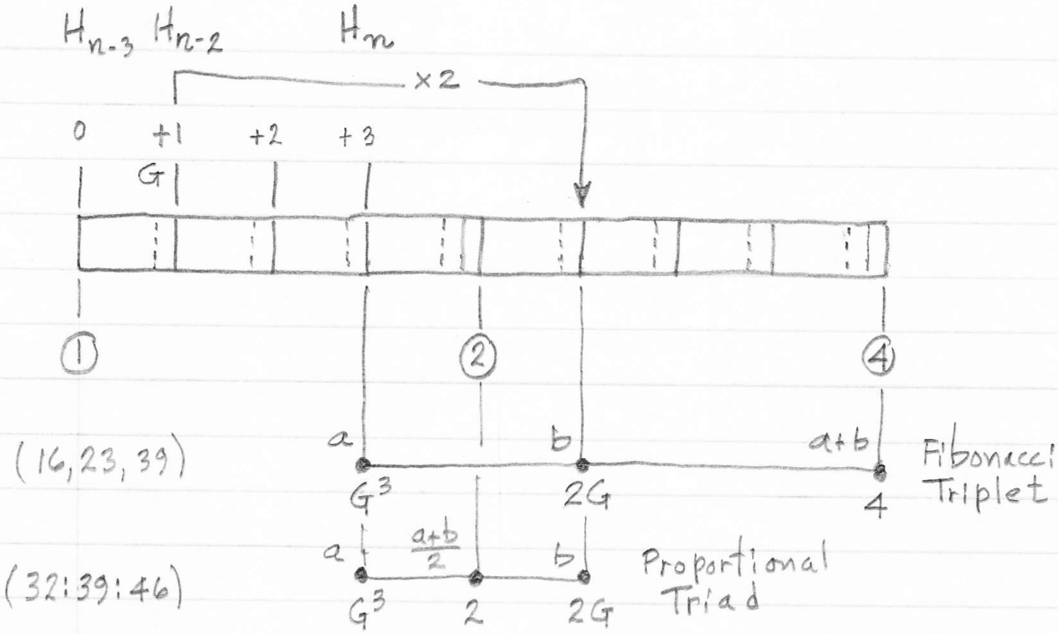
74 Places

Like "14:17:20", or "32:39:46"
see 1992

also Like "9:11:13,
reference;
Linear Tuning for Arithmetic "9"-"11"-"13",
1989, by Erv Wilson

25 Aug 97

P. 21b



1.437 .5236

Please see below

$$4 \cdot H_{n-3} - 2 \cdot H_{n-2} = H_n$$

← converges left (64 + (2 × 46)) / 4

16 + 23

-1 -2 -3

Please see below

$$G = (4 - 2G)^{(\frac{1}{3})}$$

$= 1.17950902460$

→

23.75 28 33 39 46 54 64 76 88 104 128 144 160 diverging

224 132 78 46 27 16

78 46 27 16

SAME THING – Converges right →

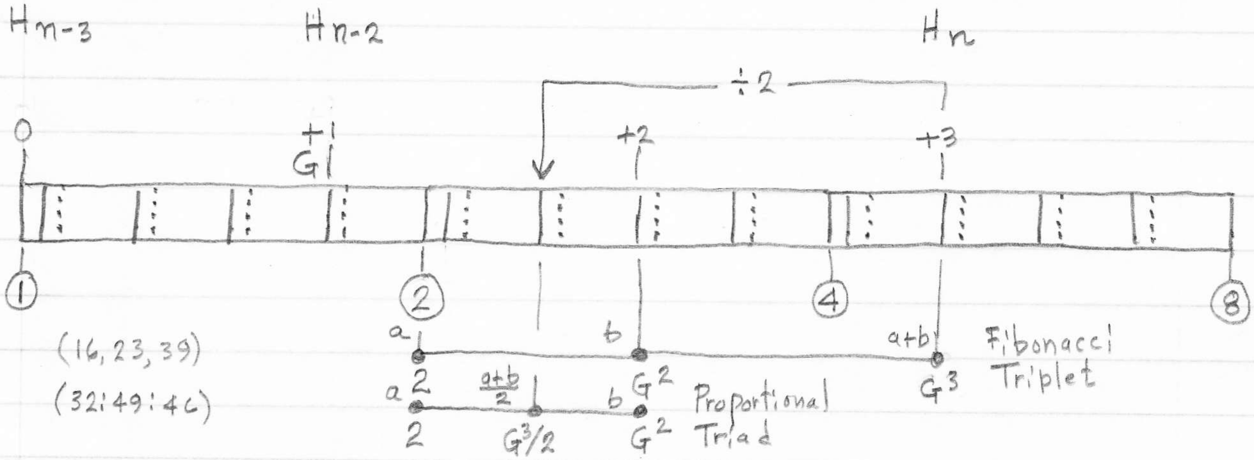
$$2 \cdot H_{n-3} + H_{n-1} = H_n$$

⇨ $G = (2 + G^2)^{(1/3)}$

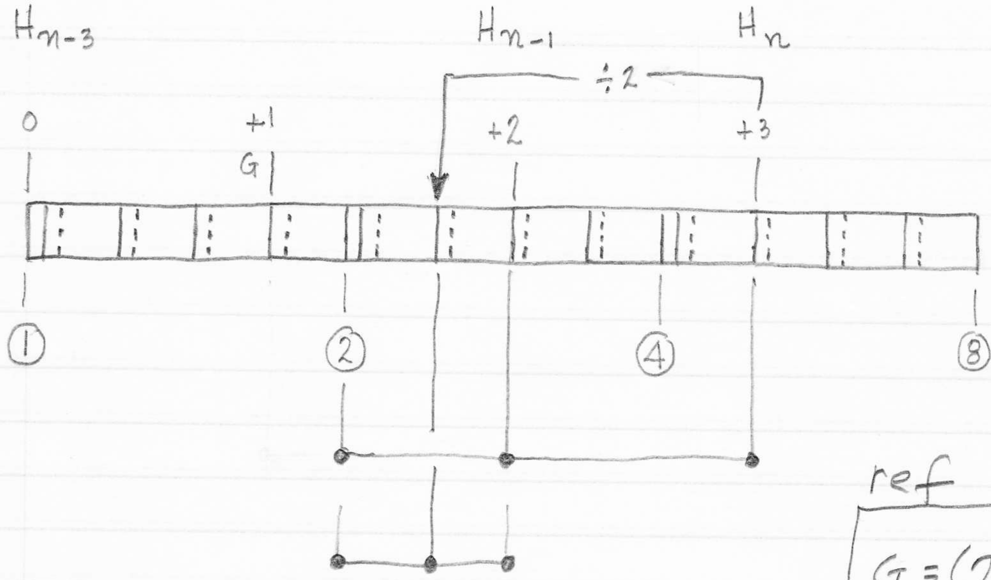
$= 1.695620769 56 \cdots$

16 27 46 78 132 224 380 644 1,092 1,852 3,140 5,324 9,028

15,308 25,956 44,012 74,628 126,540 214,564 363,820 616,900 1,046,028 1,773,668



25 Aug 97 E.W.
P. 21c



ref

$$G = (2 + G^2)^{(1/3)}$$

$2 \cdot H_{n-3} + H_{n-1} = H_n$ See Sloane M2419 ! *

1 1 1 3 5 7 13 23 37 63 109 183 309 527 893
1511 2565 4351 7373

Difference Tones Series; (These are all ~~converging~~ approaching on the limit chain)!

1s	0	0	2	2	2	6	10	14	26	46	8ves of original series	
2s	0	2	4	4	8	16	24	40	72	120	200	
3s		2	4	6	10	18	30	56	86	146	246	418
÷ 2 =		1	2	3	5	9	15	25	43	73	123	209
4s		4	6	12	20	32	56	96	160	272	464	784
÷ 2 =		2	3	6	10	16	28	48	80	136	232	392
÷ 2 =		1	1.5	3	5	8	14	24	40	68	116	196
÷ 2 =						4	7	12	20	34	58	98
÷ 2 =								6	10	17	29	49
5s		6	12	22	34	58	102	170	286	496	830	1402
÷ 2 =		3	6	11	17	29	51	85	143	245	415	701

* The Encyclopedia of Integer Sequences, N.J.A. Sloane, Simon Plouffe 1995, Academic Press, Inc, ISBN 0-12-558630-2, Phone 1-800-321-5068 for computer readable index

26 Aug 97 E.W.
P. 21d

orig	16	27	46	78	132	224	380	644	1092	1852	3140	5324
dif-tones by 1s =	11	19	32	54	92	156	264	448	760	1288	2184	3704
2s =	30	51	86	146	248	420	712	1208	2048	3472	5888	9984
3s =	62	105	178	302	512	868	1472	2496	4232	7176	12168	20632
4s =	116	197	334	566	960	1628	2760	4680	7936	13456	22816	38688
5s =	208	353	598	1014	1720	2916	4944	8384	14216	24104	40872	69304
6s =	364	617	1046	1774	3008	5100	8648	14664	24864	42160	71488	121216
7s =	628	1065	1806	3062	5192	8804	14928	25312	42920	72776	123400	209240

27Jul97 EW
P.22

$$G = ((2+G)/2)^{(\frac{1}{3})} = 1.16537304306\ldots$$

$$Log_2 = .220791844343\ldots$$

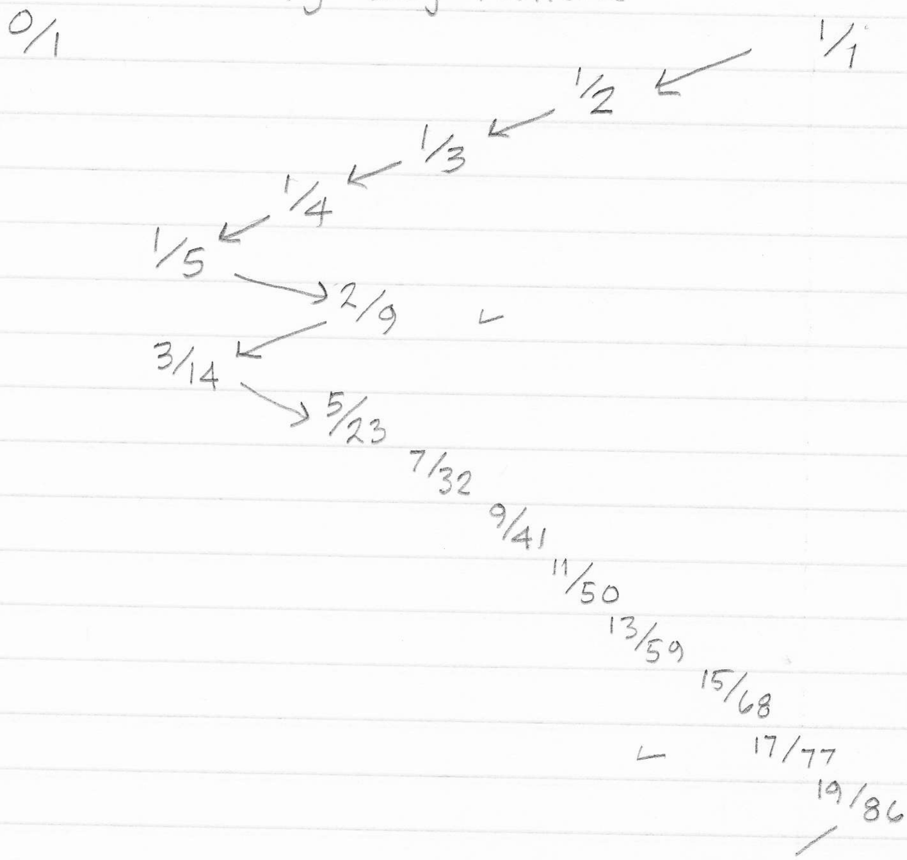
1/x Pattern

.220	
← 4	.529
→ 1	.889
← 1	.123
8	.075
13	.244
4	.097
10	.241
4	.135

Like "11:15:19"

See 1992

Zig-Zag Pattern



$G = ((4 - G^3)/2)^{(\frac{1}{2})} = \underline{1.1303954 3477\ldots}$

27 Jul 97 E.W.
P. 23

$Log_2 = .176827544309$

1/n Pattern .176...		
← 5	.655	0/1
→ 1	.526	
← 1	.900	
→ 1	.110	
← 9	.046	
21	.462	
2	.160	
6	.223	✓
4	.480	

like "8:11:14"

Zig-Zag Pattern

1/1
1/2
1/3
1/4
1/5
1/6
2/11
3/17
5/28
8/45
11/62
14/79
17/96
20/113
23/130
26/147
29/164 ←
32/181 — 21 places

Was this calculation done in 92? Where?

$$G = ((4 + G^3)/2)^{\left(\frac{1}{4}\right)} = 1.33693994610\ldots$$

28Jul97 EW
P. 24

$$\log_2 = .418934662581\ldots$$

.418..

1/n Pattern			
		.418	0/1
←	2	.387	
→	2	.583	
←	1	.712	
→	1	.403	
←	2	.478	
→	2	.089	
	11	.180	→
	5	.544	
	1	.836	! →

Like "3:4:5" proportion

See 1992

Zig-Zag Pattern

1/1 → 1/2 → 1/3 → 2/5 → 3/7 → 5/12 → 8/19 → 13/31 → 18/43 → 31/74 → 44/105 →

11 places

$G = (8 - 4G)^{(\frac{1}{4})} = 1.29559774252\ldots$

28Jul97EW
P. 25

$\log_2 = .373617859462\ldots$

1/x Pattern

	.	.373...	0/1
←	2	.676	
→	1	.478	
←	2	.091	
→	10	.929	
	1	.075	
	13	.271	
	3	.688	
	1	.453	

Like "12:17:22" proportion

See 1992

Zig-Zag Pattern

1/1 → 1/2 → 1/3 → 2/5 → 3/8 ← ! → 4/11

7/19
10/27
13/35
16/43
19/51
22/59
25/67
28/75
31/83
34/91 ← !

→ 65/174 — 13 places

$G = (1+G^2)^{\left(\frac{1}{3}\right)} = 1.465571231 87\ldots$ 28 Jul 97 E.W.
P. 26

$\text{Log}_2 = .551463089738\ldots$

1/n Pattern

		.551…	0/1
←	1	.813	
→	1	.229	
←	4	.357	
→	2	.794	
←	1	.258	
→	3	.865	
←	1	.155	
	6	.423	
	2	.361	
	2	.765	

Zig-Zag Pattern

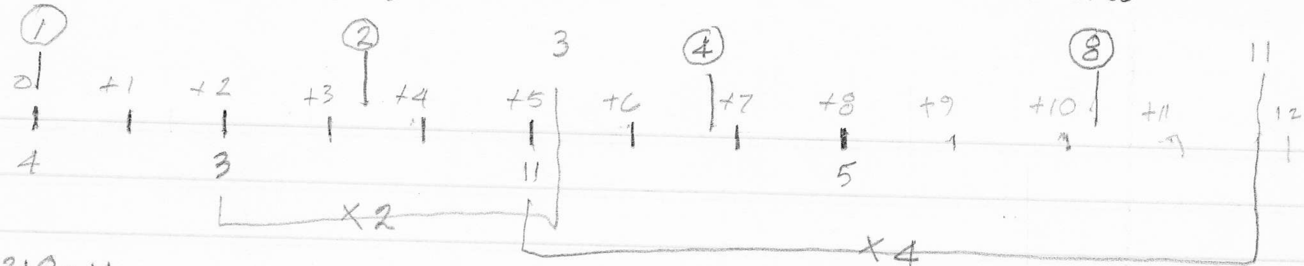
1/1 → 1/2 → 2/3 → 3/5 → 4/7 → 5/9 → 6/11 → 11/20 → 16/29 ← → 27/49 → 43/78 → 59/107 → 75/136 ← → 134/243 — 6 places

This is Meta-Pélog
Like "12:19:26" proportion
See: The Scales of Mt Meru
1993 by Erv Wilson

$G = ((8 + 2\cdot G^2)/4)^{(\frac{1}{5})} = 1.224178132 90\ldots$

Aug 10, 97 E.W.

P. 27a



base: 3+8 = 11

$A_n = (8\cdot A_{n-5} + 2\cdot A_{n-3})/4 \Rightarrow G = ((8 + 2\cdot G^2)/4)^{(\frac{1}{5})}$

$= 1.224178132 90\ldots$

$\text{Log}_2 = .291813503090\ldots$

1/x Pattern		
		.291... 0/1
←	3	.426
→	2	.342
←	2	.917
→	1	.089
←	11	.115
→	8	.687
	1	.453
	2	.203
	4	.907

Like 3, 8, 11

and 6 : 11 : 16

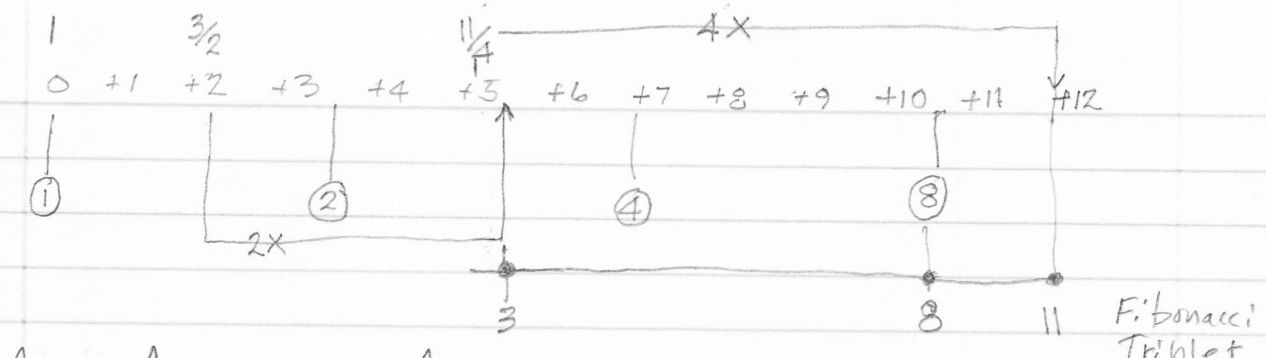
Zig-Zag Pattern

1/1 → 1/2 → 1/3 → 1/4 → 2/7 → 3/10 → 5/17 → 7/24 → 12/41

19/65
26/89
33/113
40/137
47/161
54/185
61/209
68/233
75/257
82/281
89/305
171/586
253/867
335/1,148
417/1,429
499/1710
581/1,991
663/2,272
745/2,553

Notes on 3, 8, 11, $G=((8+2G^2)/4)^{(1/5)}$ cont.

11 Aug 97 E.W.
P. 27b



A_{n-5} A_{n-3} A_n

seed: 72 88 108 132 162 198 242 297 363 445 544.5 665.5 816.5
998.25 1,222.75 1,497.25 1,830.125

Recurrence

$$(8\cdot A_{n-5} + 2\cdot A_{n-3})/4 = A_n$$

examples $((8\cdot 72)+(2\cdot 108))/4 = 198$

" $((8\cdot 88)+(2\cdot 132))/4 = 242$

.694241913631 2-interval Patterns

($\log_2$ 1.618...)

	.694...
← 1	.440
→ 2	.270
← 3	.696
→ 1	.436
← 2	.289
→ 3	.448
← 2	.228
→ 4	.373
← 2	.676
? 1	.478

?

Ref. $A_n = A_{n-2} + A_{n-1}$

Zig-Zag Pattern

0/1, 1/1, 1/2, 2/3, 3/4, 5/7, 7/10, 9/13, 16/23, 25/36, 34/49, 59/85, 84/121, 109/157, 193/278, 277/399, 470/677, 663/955, 856/1,233, 1,049/1,511, 1905/2744, 2,761/3,977

RCL 2
+
RCL 1
=
STO 2 ← R/S
+
RCL 1
=
STO 1

Reseed example

-2 -1

4 9 13 22 35 57 92 149 241 390 631 1,021 1,652 2,673 4,325 6,998
11,323 18,321 29,644 47,965 77,609 125,574 203,183 328,757 531,940 860,697
1,392,637 2,253,334 3,645,971 5,899,305 9,545,276 15,444,581 24,989,857
40,434,438 65,424,295 105,858,733 171,283,028 277,141,761 448,424,789
~~554,283,522 1,002,708,311 1,556,991,833 2,559,700,144 4,116,691,977 6,676,392,121~~
725,566,550 1,173,991,339 1,899,557,889 3,073,549,228 4,973,107,117 8,046,656,345

MOS of 1.46557123188 (log₂ = .551463089748

(13)

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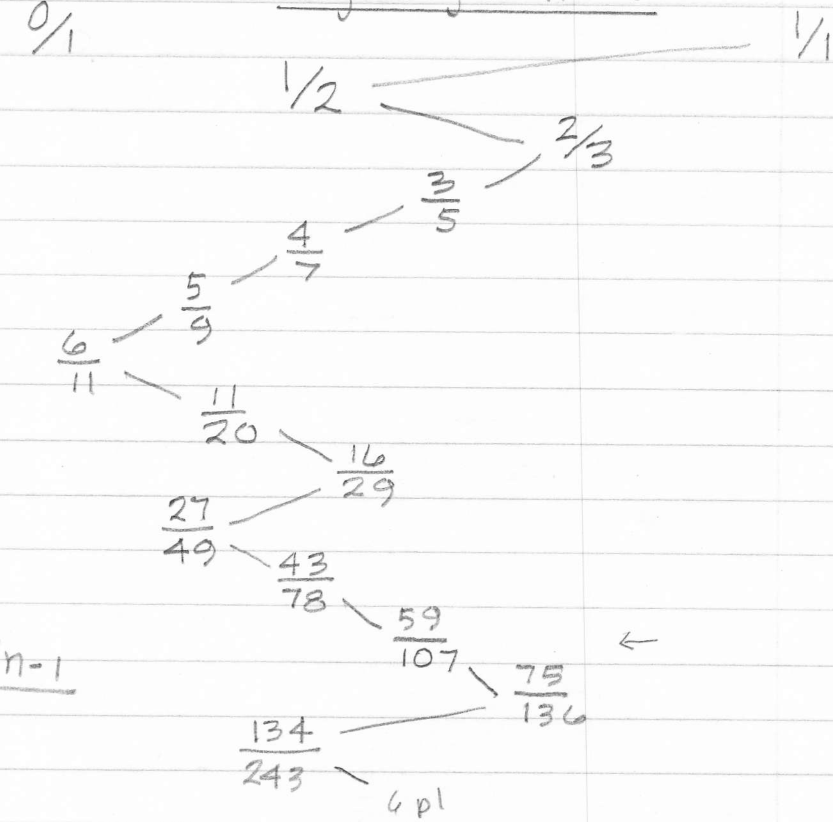
.551...			
←	1		.813
→	1		.229
←	4		.357
→	2		.794
←	1		.258
→	3		.865
←	1		.155
	6		.423
	2	?	.360

Zig-Zag Pattern




```
RCL 1
+
RCL 3
=
STO 3,
R/S
+
RCL 2
=
STO 2,
R/S
+
RC1
=
STO1,
```

Ref: $B_n = B_{n-3} + B_{n-1}$

Meta-Pélog

-3 -2 -1

1 1 1 2 3 4 6 9 13 19 28 41 60 88 129 189 277 406 595 872
1,278 1,873 2,745 4,023 5,896 8,641 12,664 18,560 27,201 39,865
58,425 85,626 125,491 183,916 269,542 395,033

Example of re-seed:

1 2 2 3 5 7 10 15 22 32 47 69 101 148 217 318 466 683 1,001
1,467 2,150 3,151 4,618 6,768 9,919 14,537 21,305 31,224
45,761 67,066 98,290 144,051 211,117 309,407 453,458 664,575
973,982 1,427,440 2,092,015 3,065,997 4,493,437 6,585,452
9,651,449 14,144,886 20,730,338 30,381,787 44,526,673
65,257,011 95,638,798 140,165,471

1.3247179572447461 M.H.

MOS of 1.324717957 (ref $C_n = C_{n-3} + C_{n-2}$)*

(14)

$\log_2 =$

.405685231

←	2	.464	0/1
→	2	.150	
←	6	.635	
→	1	.572	
←	1	.745	
→	1	.341	
←	2	.929	
	1	.075	
	13 ?	.283	

1/1 — 1/2 — 1/3 — 2/5 — 3/7 — 5/12 — 7/17 — 9/22 — 11/27 — 13/32 — 15/37 — 28/69 — 43/106 — 71/175 — 114/281 — 157/387

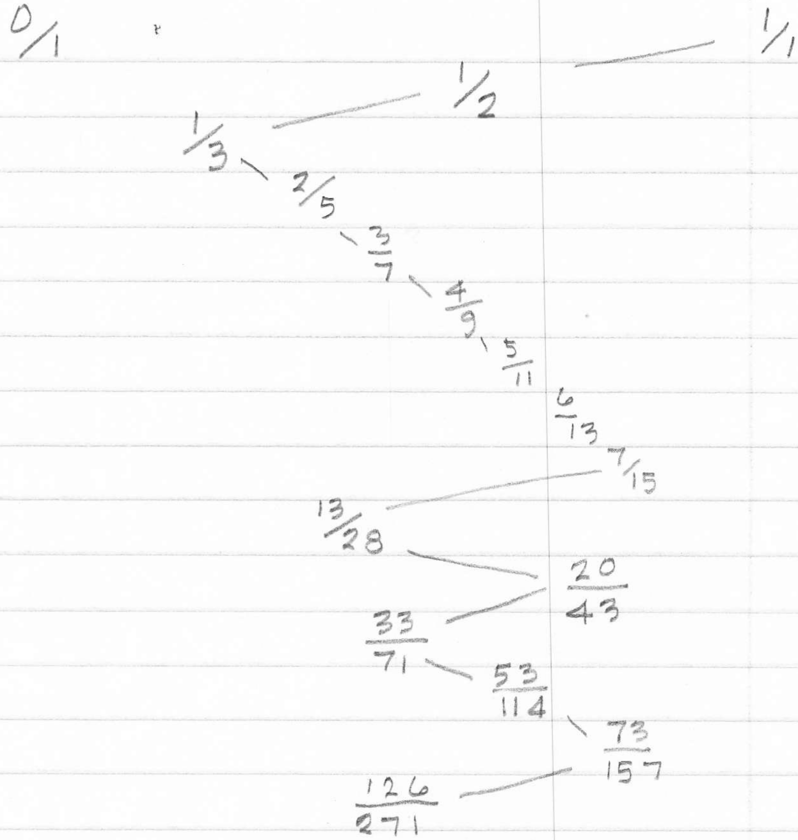
* Also ref: $F_n = F_{n-5} + F_{n-1}$! ←

(Are there any more duplicates like this?)

MOS of 1.380277569 10 (ref. $D_n = D_{n-4} + D_{n-1}$) (15)

Log2 =
.464958417219

←	2.	.150 (1/x)
→	6.	.634 etc
←	1	.576
→	1	.735
←	1	.360
→	2	.774
←	1	.290
	3	.440
	2 ?	.267



RCL 1
+
RCL 4
=
STO 4
+
RCL 3
=
STO 3
+
RCL 2
=
STO 2
+
RCL 1
=
STO 1

Reseed Dec 23, 1996
example:

-4 -3 -2 -1

8 11 15 21 29 40 55 76 105 145 200 276 381 526 726 1,002

1,383 1,909 2,635 3,637 5,020 6,929 9,564 13,201 18,221 25,150 34,714

47,915 66,136 91,286 126,000 173,915 240,051 331,337 457,337 631,252

871,303 1,202,640 1,659,977 2,291,229 3,162,532 4,365,172 6,025,149
8,316,378 11,478,910 15,844,082 21,869,231 30,185,609 41,664,519 57,508,601
79,377,832 109,563,441

MOS of 1.220744085 (ref. $E_n = E_{n-4} + E_{n-3}$) ⑯

$\log_2 =$ .287760788

←	3	.475
→	2	.104
←	9	.543
→	1	.839
←	1	.191
→	5	.227
←	4	.390
	2	.562
	1 ?	.779

0/1

1/1

1/2

1/3

1/4

2/7

3/10

5/17

7/24

9/31

11/38

13/45

15/52

17/59

19/66

21/73

40/139

61/212

101/351

141/490

181/629

221/768 ←

261/907

482/1,675

703/2,443

924/3,211

1,145/3,979

MOS of 1.236505703 (ref. $G_n = G_{n-5} + G_{n-2}$)

Log 2 .3062688937			
←	3		.265
→	3		.772
←	1		.295
→	3		.387
←	2		.578
→	1		.727
←	1		.373
	2		.675
	1	?	.479

0/1

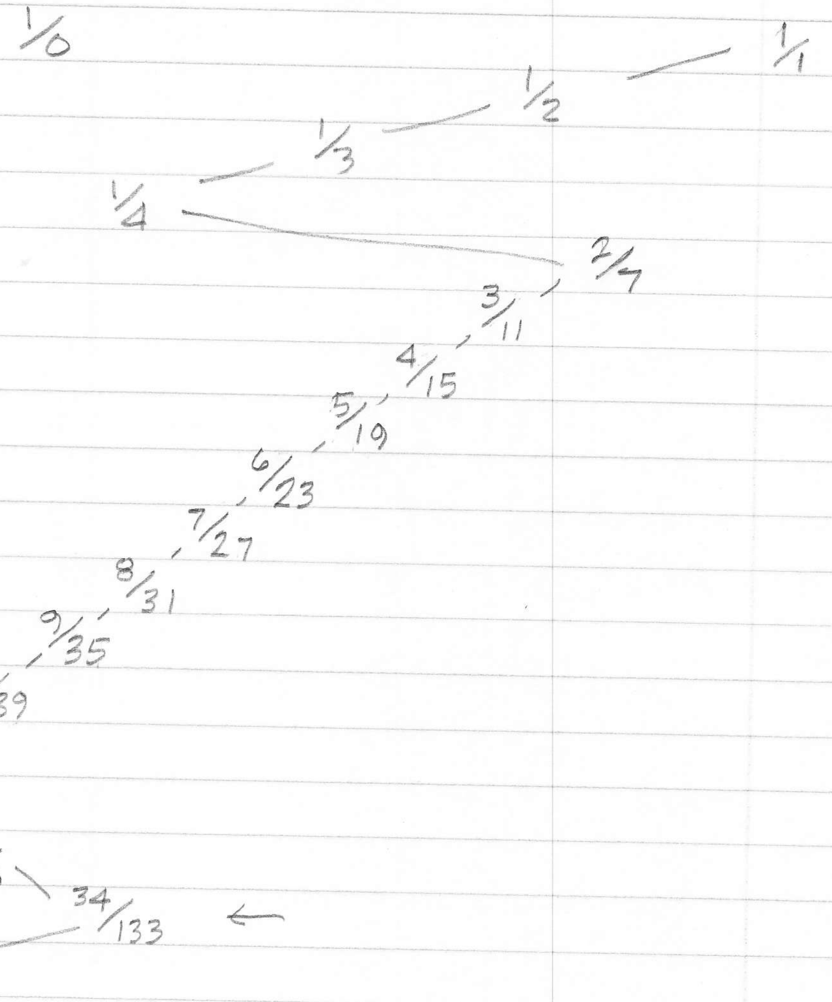
1/1 — 1/2 — 1/3 — 1/4 — 2/7 — 3/10 — 4/13 — 7/23 — 11/36 — 15/49 — 19/62 — 34/111 — 49/160 — 83/271 — 132/431

MOS of 1.193859111 (ref. $H_{n-5} + H_{n-3} = H_n$) (18)

Log 2

.255632592

←	3	.911
→	1	.096
←	10	.346
→	2	.889
←	1	.124
	8	.013
	76	.144



MOS of 1.167303978 (ref. $I_n = I_{n-5} + I_{n-4}$)

	Log 2	.2231803026
←	4	.480
→	2	.080
←	12	.441
→	2	.265
←	3	.766
	1	.304
	3	.282
	3	.539
	1 ?	.854

0/1 — 1/1

1/1 — 1/2 — 1/3 — 1/4 — 1/5

1/5 — 2/9 — 3/13 ⇦

3/13 — 5/22 — 7/31 — 9/40 !

9/40 — 11/49 — 13/58 — 15/67 — 17/76 — 19/85 — 21/94 — 23/103 — 25/112 ← — 27/121

27/121 — 52/233 — 77/345

77/345 — 129/578 — 181/811 — 233/1044 ←

etc

12 14 **reseed examples** Nov 19, 1996

−5 −4 −3 −2 −1

6 19 23 26 30 35 42 49 56 65 77 91 105 121 142 168 (÷4=42)

196 (÷4=49) 226 263 310 364 (÷4=91) 422 489 573 674 786 911 1,062 1,247

OR this! 10 12 14 16 19 22 26 30 35 41 48 56 65 76 89 104 121 141 165	!

5/12

32/77

27/65

49/118

22/53

61/147

39/94

56/135

17/41·

80/193

63/152

109/263

46/111

121/292

75/181

104/251

·29/70·

·99/239

·70/169·

111/268

·41/99·

94/227

53/128

65/157

12/29

(1,1,2)

.5811388300083

53×5=265!

1.7207
1.3874
2.581 08

1/n Pattern

	.581	0/1
← 1	.720	
→ 1	.387	
← 2	.581	
→ 1	.720	
1	.387	
2	.581	
1	.720	
1	.387	
2	.581	
1	.720	
1	.387	
2	.581	
1	.720	
1	.387	
2	.581	
1	.720	
1	.387	

Zig-Zag Pattern

1/1
1/2
2/3
3/5
4/7
7/12
11/19
18/31
25/43
43/74
68/117
111/191
154/265
265/456 5×53/24×19
419/721
684/1177
949/1633
1633/2810
2582/4443
4215/7253
5848/10,063
10063/17316 1.720759217
15,911/27,379 1.581138831
25974/44695 1.632455532
36037/62011 1.387425887
62011/106706 1.720759220
98048/168717 1.581138830
160059/275,423 1.632455532
222,070/382,129 1.387425887

and so forth

a period 382129/62011 = 6.162277660!

$(\sqrt{7}+1)/2$

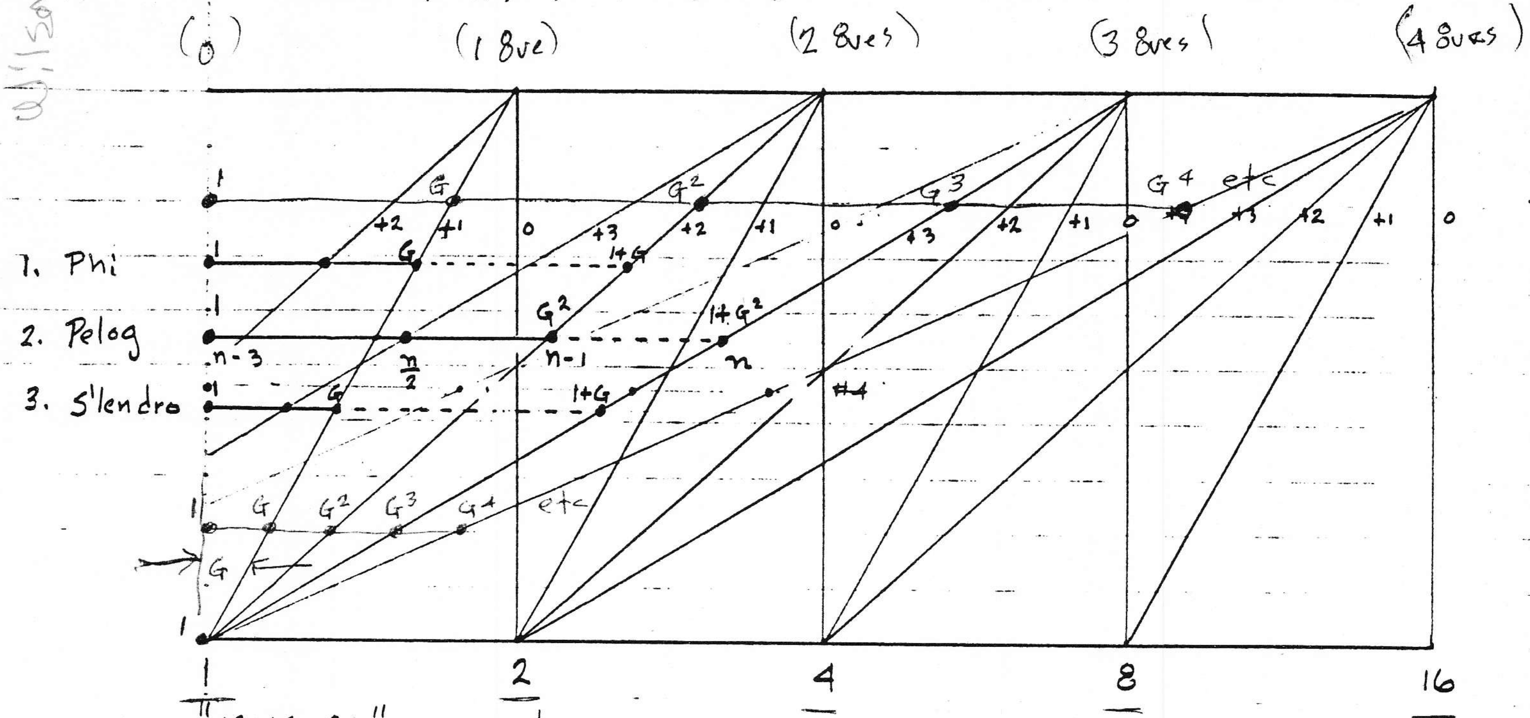
1.82287565553...

1/x	pattern
1	.822
1	.215
4	.645
1	.548
1	.882
1	.215
4	.645
1	.548

Dear Warren Burt,

Diagram for Meta-Pelog $G=(1+G^2)^{(\frac{1}{3})}$ Aug 1, 1997

and Phi; $G=(1+G)^{(\frac{1}{2})}$; and Meta-Slendro, $G=(1+G)^{(\frac{1}{3})}$

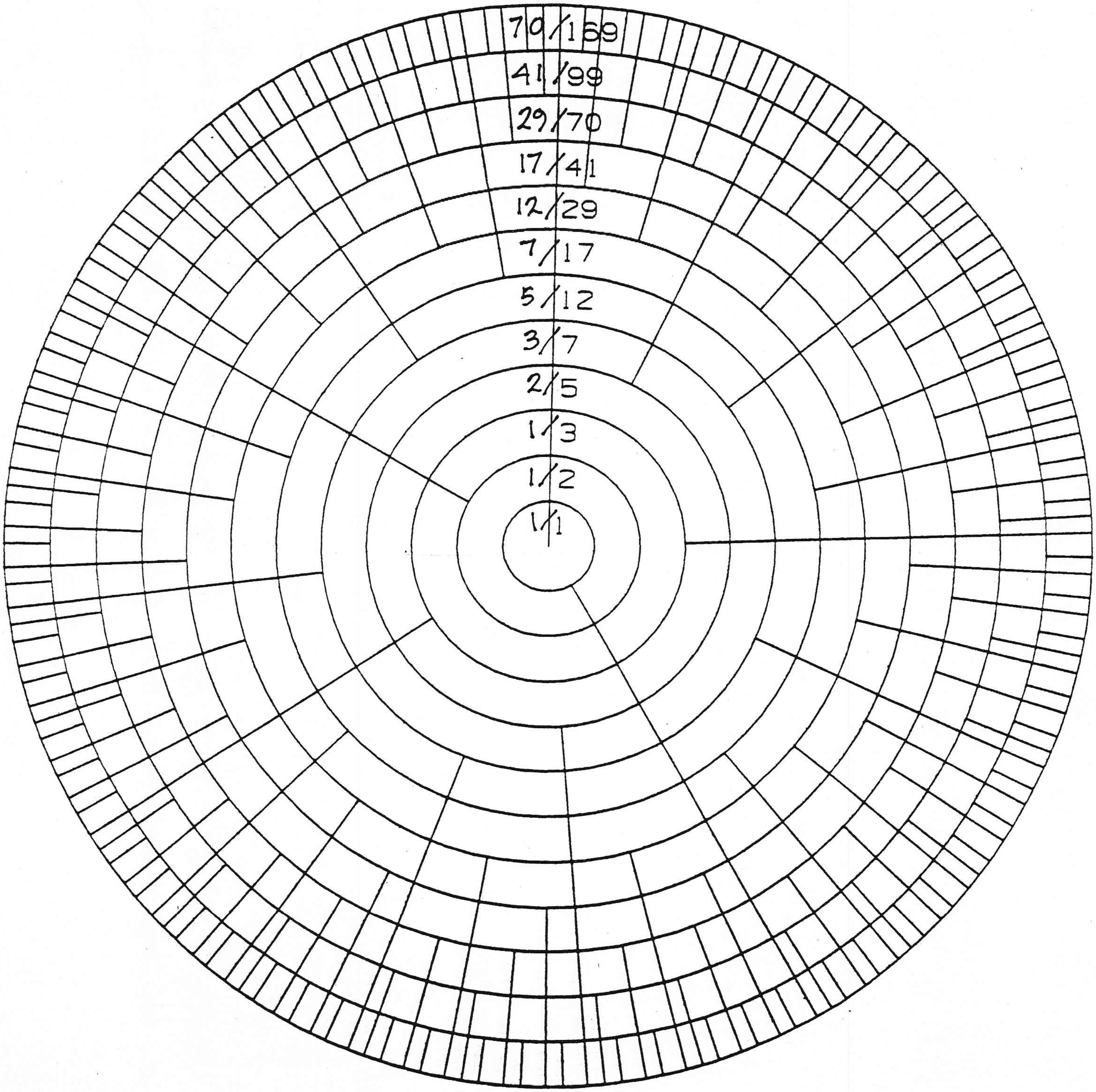


Like "12:19:26" proportion 12:19:26

#4 5:9:13:(18)

Ultimately – the respective recurrent sequences taken from the sums-of-the-diagonals thru Pascals Triangle (Meru Prāstara) converge upon a limit-chain of logarithmically equal intervals, designated here by generator (G). Fig 12 shows a sample ~~all~~ of the variability in magnitude of G. A continuum of the G-chain can be mapped to a straight-line pattern as shown. It is notable that discreet points, φ-like in derivation, ~~are~~ along the continuum, are imbued with Fibonacci Triplets [1, G, (1+G)], [1, G^2, (1+G^2)] which the ear can perceive. As the diagonals are taken from larger and larger triangles G gets smaller and smaller. And as the triangle gets endlessly large the Chain-of-G ~~can~~ reduces endlessly toward a point. G in a sense then is the meta-Phi (Continuum, which in the process of expansion produces a Chain-of-G whose imbedded Fibonacci triplets undulate dramatically between very simple and very complex Meta-Phi signatures. This shows up in the wave-form display. Great great stuff!

Regards, Erv Wilson



33

2-ZIG/2-ZAG

.414213563
(149.1168827)

.414213562374 Sequence

Dec 22, 1996

1/1
1/2
1/3
2/5
3/7
5/12
7/17
12/29
17/41
29/70
41/99
70/169
99/239

This progression was my answer to Yasser, at about 1950!