

Diagonals 1 thru 79
Of Recurrent Sequences
In Pascals Triangle (Meru)

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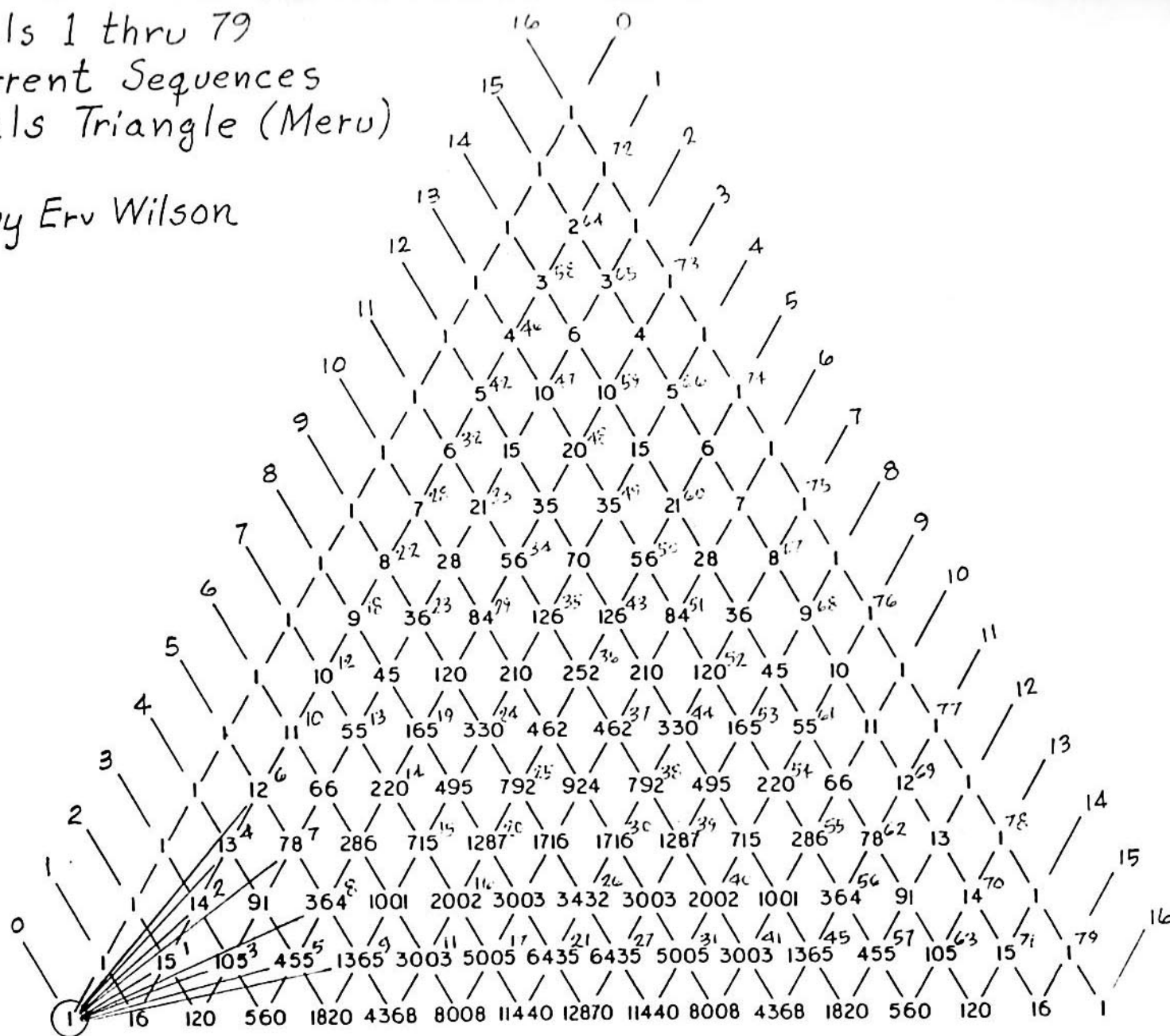


Fig 10

Recurrent Sequences From Enumerated Diagonals in Pascals Triangle (Meru)

Fig 11

1. $H_n = H_{n-2} + H_{n-1}$
2. $H_n = H_{n-3} + H_{n-1}$
3. $H_n = H_{n-3} + H_{n-2}$
4. $H_n = H_{n-4} + H_{n-1}$
5. $H_n = H_{n-4} + H_{n-3}$
6. $H_n = H_{n-5} + H_{n-1}$
7. $H_n = H_{n-5} + H_{n-2}$
8. $H_n = H_{n-5} + H_{n-3}$
9. $H_n = H_{n-5} + H_{n-4}$
10. $H_n = H_{n-6} + H_{n-1}$
11. $H_n = H_{n-6} + H_{n-5}$
12. $H_n = H_{n-7} + H_{n-1}$
13. $H_n = H_{n-7} + H_{n-2}$
14. $H_n = H_{n-7} + H_{n-3}$
15. $H_n = H_{n-7} + H_{n-4}$
16. $H_n = H_{n-7} + H_{n-5}$
17. $H_n = H_{n-7} + H_{n-6}$
18. $H_n = H_{n-8} + H_{n-1}$
19. $H_n = H_{n-8} + H_{n-3}$
20. $H_n = H_{n-8} + H_{n-5}$
21. $H_n = H_{n-8} + H_{n-7}$
22. $H_n = H_{n-9} + H_{n-1}$
23. $H_n = H_{n-9} + H_{n-2}$
24. $H_n = H_{n-9} + H_{n-4}$
25. $H_n = H_{n-9} + H_{n-5}$
26. $H_n = H_{n-9} + H_{n-7}$
27. $H_n = H_{n-9} + H_{n-8}$
28. $H_n = H_{n-10} + H_{n-1}$
29. $H_n = H_{n-10} + H_{n-3}$
30. $H_n = H_{n-10} + H_{n-7}$
31. $H_n = H_{n-10} + H_{n-9}$
32. $H_n = H_{n-11} + H_{n-1}$
33. $H_n = H_{n-11} + H_{n-2}$
34. $H_n = H_{n-11} + H_{n-3}$
35. $H_n = H_{n-11} + H_{n-4}$
36. $H_n = H_{n-11} + H_{n-5}$
37. $H_n = H_{n-11} + H_{n-6}$
38. $H_n = H_{n-11} + H_{n-7}$
39. $H_n = H_{n-11} + H_{n-8}$
40. $H_n = H_{n-11} + H_{n-9}$
41. $H_n = H_{n-11} + H_{n-10}$
42. $H_n = H_{n-12} + H_{n-1}$
43. $H_n = H_{n-12} + H_{n-5}$
44. $H_n = H_{n-12} + H_{n-7}$
45. $H_n = H_{n-12} + H_{n-11}$
46. $H_n = H_{n-13} + H_{n-1}$
47. $H_n = H_{n-13} + H_{n-2}$
48. $H_n = H_{n-13} + H_{n-3}$
49. $H_n = H_{n-13} + H_{n-4}$
50. $H_n = H_{n-13} + H_{n-5}$
51. $H_n = H_{n-13} + H_{n-6}$
52. $H_n = H_{n-13} + H_{n-7}$
53. $H_n = H_{n-13} + H_{n-8}$
54. $H_n = H_{n-13} + H_{n-9}$
55. $H_n = H_{n-13} + H_{n-10}$
56. $H_n = H_{n-13} + H_{n-11}$
57. $H_n = H_{n-13} + H_{n-12}$
58. $H_n = H_{n-14} + H_{n-1}$
59. $H_n = H_{n-14} + H_{n-3}$
60. $H_n = H_{n-14} + H_{n-5}$
61. $H_n = H_{n-14} + H_{n-9}$
62. $H_n = H_{n-14} + H_{n-11}$
63. $H_n = H_{n-14} + H_{n-13}$
64. $H_n = H_{n-15} + H_{n-1}$
65. $H_n = H_{n-15} + H_{n-2}$
66. $H_n = H_{n-15} + H_{n-4}$
67. $H_n = H_{n-15} + H_{n-7}$
68. $H_n = H_{n-15} + H_{n-8}$
69. $H_n = H_{n-15} + H_{n-11}$
70. $H_n = H_{n-15} + H_{n-13}$
71. $H_n = H_{n-15} + H_{n-14}$
72. $H_n = H_{n-16} + H_{n-1}$
73. $H_n = H_{n-16} + H_{n-3}$
74. $H_n = H_{n-16} + H_{n-5}$
75. $H_n = H_{n-16} + H_{n-7}$
76. $H_n = H_{n-16} + H_{n-9}$
77. $H_n = H_{n-16} + H_{n-11}$
78. $H_n = H_{n-16} + H_{n-13}$
79. $H_n = H_{n-16} + H_{n-15}$
80. $H_n = H_{n-17} + H_{n-1}$
81. $H_n = H_{n-17} + H_{n-2}$
82. $H_n = H_{n-17} + H_{n-3}$
83. $H_n = H_{n-17} + H_{n-4}$
84. $H_n = H_{n-17} + H_{n-5}$
85. $H_n = H_{n-17} + H_{n-6}$
86. $H_n = H_{n-17} + H_{n-7}$
87. $H_n = H_{n-17} + H_{n-8}$
88. $H_n = H_{n-17} + H_{n-9}$
89. $H_n = H_{n-17} + H_{n-10}$
90. $H_n = H_{n-17} + H_{n-11}$
91. $H_n = H_{n-17} + H_{n-12}$
92. $H_n = H_{n-17} + H_{n-13}$
93. $H_n = H_{n-17} + H_{n-14}$
94. $H_n = H_{n-17} + H_{n-15}$
95. $H_n = H_{n-17} + H_{n-16}$

Figure 12. Limit $(H_n / H_{n-1}) = \text{Generator } (G)$

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<u>Recurrence</u>	<u>G =</u>	<u>decimal</u>	<u>Log 2</u>
1. $H_n = H_{n-2} + H_{n-1}$	$(1+G)^{(\frac{1}{2})}$	1.618033 98875...	.694241913631...
2. $H_n = H_{n-3} + H_{n-1}$	$(1+G^2)^{(\frac{1}{3})}$	1.46557123188...	.551463089748...
3. $H_n = H_{n-3} + H_{n-2}$	$(1+G)^{(\frac{1}{3})}$	1.32471795725...	.405685231382...
4. $H_n = H_{n-4} + H_{n-1}$	$(1+G^3)^{(\frac{1}{4})}$	1.38027756909...	.464958417209...
5. $H_n = H_{n-4} + H_{n-3}$	$(1+G)^{(\frac{1}{4})}$	1.22074408461...	.287760787088...
6. $H_n = H_{n-5} + H_{n-1}$	$(1+G^4)^{(\frac{1}{5})}$	1.32471795724...	.405685231370...
7. $H_n = H_{n-5} + H_{n-2}$	$(1+G^3)^{(\frac{1}{5})}$	1.23650570339...	.306268894183...
8. $H_n = H_{n-5} + H_{n-3}$	$(1+G^2)^{(\frac{1}{5})}$	1.19385911132...	.255632592555...
9. $H_n = H_{n-5} + H_{n-4}$	$(1+G)^{(\frac{1}{5})}$	1.16730397826...	.223180302967...
10. $H_n = H_{n-6} + H_{n-1}$	$(1+G^5)^{(\frac{1}{6})}$	1.28519903326	.361991800713
11. $H_n = H_{n-6} + H_{n-5}$	$(1+G)^{(\frac{1}{6})}$	1.13472413840	.182341608058
12. $H_n = H_{n-7} + H_{n-1}$	$(1+G^6)^{(\frac{1}{7})}$	1.25542287107	.328173397034
13. $H_n = H_{n-7} + H_{n-2}$	$(1+G^5)^{(\frac{1}{7})}$	1.19071270709	.251825364457
14. $H_n = H_{n-7} + H_{n-3}$	$(1+G^4)^{(\frac{1}{7})}$	1.15855189310	.212322665905
15. $H_n = H_{n-7} + H_{n-4}$	$(1+G^3)^{(\frac{1}{7})}$	1.13818186107	.186731092883
16. $H_n = H_{n-7} + H_{n-5}$	$(1+G^2)^{(\frac{1}{7})}$	1.12373282100	.168299060792
17. $H_n = H_{n-7} + H_{n-6}$	$(1+G)^{(\frac{1}{7})}$	1.11277568428	.154162800414
18. $H_n = H_{n-8} + H_{n-1}$	$(1+G^7)^{(\frac{1}{8})}$	1.23205463142	.301066229029
19. $H_n = H_{n-8} + H_{n-3}$	$(1+G^5)^{(\frac{1}{8})}$	1.14613894966	.196781956689
20. $H_n = H_{n-8} + H_{n-5}$	$(1+G^3)^{(\frac{1}{8})}$	1.11479780585	.156782068038
21. $H_n = H_{n-8} + H_{n-7}$	$(1+G)^{(\frac{1}{8})}$	1.09698155780	.133539271690
22. $H_n = H_{n-9} + H_{n-1}$	$(1+G^8)^{(\frac{1}{9})}$	1.21314972305	.278757614244
23. $H_n = H_{n-9} + H_{n-2}$	$(1+G^7)^{(\frac{1}{9})}$	1.16185205479	.216426373898
24. $H_n = H_{n-9} + H_{n-4}$	$(1+G^5)^{(\frac{1}{9})}$	1.11925266658	.162535755416
25. $H_n = H_{n-9} + H_{n-5}$	$(1+G^4)^{(\frac{1}{9})}$	1.10735199067	.147113880183
26. $H_n = H_{n-9} + H_{n-7}$	$(1+G^2)^{(\frac{1}{9})}$	1.09102447048	.125683460089
27. $H_n = H_{n-9} + H_{n-8}$	$(1+G)^{(\frac{1}{9})}$	1.08507024549	.117788443167
28. $H_n = H_{n-10} + H_{n-1}$	$(1+G^9)^{(\frac{1}{10})}$	1.19749143357	.278757614233
29. $H_n = H_{n-10} + H_{n-3}$	$(1+G^7)^{(\frac{1}{10})}$	1.13588834613	.183821029912
30. $H_n = H_{n-10} + H_{n-7}$	$(1+G^3)^{(\frac{1}{10})}$	1.08593791264	.118941620926
31. $H_n = H_{n-10} + H_{n-9}$	$(1+G)^{(\frac{1}{10})}$	1.07576606609	.105364384459

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32.	$H_n = H_{n-11} + H_{n-1}$	$(1+G^{10})^{(\frac{1}{11})}$	1.18427632233	.244005738352
33.	$H_n = H_{n-11} + H_{n-2}$	$(1+G^9)^{(\frac{1}{11})}$	1.14168557901	.191165386200
34.	$H_n = H_{n-11} + H_{n-3}$	$(1+G^8)^{(\frac{1}{11})}$	1.11984287665	.163296324265
35.	$H_n = H_{n-11} + H_{n-4}$	$(1+G^7)^{(\frac{1}{11})}$	1.10572820369	.144996803857
36.	$H_n = H_{n-11} + H_{n-5}$	$(1+G^6)^{(\frac{1}{11})}$	1.09556688270	.131677561365
37.	$H_n = H_{n-11} + H_{n-6}$	$(1+G^5)^{(\frac{1}{11})}$	1.08777020052	.121373808806
38.	$H_n = H_{n-11} + H_{n-7}$	$(1+G^4)^{(\frac{1}{11})}$	1.08152908669	.113072465724
39.	$H_n = H_{n-11} + H_{n-8}$	$(1+G^3)^{(\frac{1}{11})}$	1.07637950368	.106186824686
40.	$H_n = H_{n-11} + H_{n-9}$	$(1+G^2)^{(\frac{1}{11})}$	1.07203255224	.100348713857
41.	$H_n = H_{n-11} + H_{n-10}$	$(1+G)^{(\frac{1}{11})}$	1.06829718892	.0953130452823
42.	$H_n = H_{n-12} + H_{n-1}$	$(1+G^{11})^{(\frac{1}{12})}$	1.17295075001	.230142438595
43.	$H_n = H_{n-12} + H_{n-5}$	$(1+G^7)^{(\frac{1}{12})}$	1.09079559659	.125380781392
44.	$H_n = H_{n-12} + H_{n-7}$	$(1+G^5)^{(\frac{1}{12})}$	1.07766033457	.107902529807
45.	$H_n = H_{n-12} + H_{n-11}$	$(1+G)^{(\frac{1}{12})}$	1.06216916786	.0870135572876
46.	$H_n = H_{n-13} + H_{n-1}$	$(1+G^{12})^{(\frac{1}{13})}$	1.16311979065	.217999688795
47.	$H_n = H_{n-13} + H_{n-2}$	$(1+G^{11})^{(\frac{1}{13})}$	1.12665248354	.172042584199
48.	$H_n = H_{n-13} + H_{n-3}$	$(1+G^{10})^{(\frac{1}{13})}$	1.10776045680	.147645945332
49.	$H_n = H_{n-13} + H_{n-4}$	$(1+G^9)^{(\frac{1}{13})}$	1.09547157459	.131552049613
50.	$H_n = H_{n-13} + H_{n-5}$	$(1+G^8)^{(\frac{1}{13})}$	1.08658059655	.1197951189642
51.	$H_n = H_{n-13} + H_{n-6}$	$(1+G^7)^{(\frac{1}{13})}$	1.07973135192	.110672399921
52.	$H_n = H_{n-13} + H_{n-7}$	$(1+G^6)^{(\frac{1}{13})}$	1.07423032258	.103303350511
53.	$H_n = H_{n-13} + H_{n-8}$	$(1+G^5)^{(\frac{1}{13})}$	1.06967836633	.0971770685379
54.	$H_n = H_{n-13} + H_{n-9}$	$(1+G^4)^{(\frac{1}{13})}$	1.06582624405	.0919722624125
55.	$H_n = H_{n-13} + H_{n-10}$	$(1+G^3)^{(\frac{1}{13})}$	1.06250870523	.0874746614296
56.	$H_n = H_{n-13} + H_{n-11}$	$(1+G^2)^{(\frac{1}{13})}$	1.05961102145	.0835347549626
57.	$H_n = H_{n-13} + H_{n-12}$	$(1+G)^{(\frac{1}{13})}$	1.05705057522	.0800444049832
58.	$H_n = H_{n-14} + H_{n-1}$	$(1+G^{13})^{(\frac{1}{14})}$	1.15449355069	.207260113853
59.	$H_n = H_{n-14} + H_{n-3}$	$(1+G^{11})^{(\frac{1}{14})}$	1.10274870438	.141104065408
60.	$H_n = H_{n-14} + H_{n-5}$	$(1+G^9)^{(\frac{1}{14})}$	1.08282308428	.114797549242
61.	$H_n = H_{n-14} + H_{n-9}$	$(1+G^5)^{(\frac{1}{14})}$	1.06320772373	.0884234903010
62.	$H_n = H_{n-14} + H_{n-11}$	$(1+G^3)^{(\frac{1}{14})}$	1.05731321162	.0804028146723
63.	$H_n = H_{n-14} + H_{n-13}$	$(1+G)^{(\frac{1}{14})}$	1.05271192015	.0741093192475

$$(H_n / H_{n-1}) =$$

$$G =$$

64.	$H_n = H_{n-15} + H_{n-1}$	$(1 + G^{14})^{(\frac{1}{15})}$	1.14685404218	.197681794124
65.	$H_n = H_{n-15} + H_{n-2}$	$(1 + G^{13})^{(\frac{1}{15})}$	1.11493572263	.156960539459
66.	$H_n = H_{n-15} + H_{n-4}$	$(1 + G^{11})^{(\frac{1}{15})}$	1.08736583498	.120837404502
67.	$H_n = H_{n-15} + H_{n-7}$	$(1 + G^8)^{(\frac{1}{15})}$	1.06839797799	.0954491506976
68.	$H_n = H_{n-15} + H_{n-8}$	$(1 + G^7)^{(\frac{1}{15})}$	1.06430970756	.0899180272907
69.	$H_n = H_{n-15} + H_{n-11}$	$(1 + G^4)^{(\frac{1}{15})}$	1.05523431651	.0775633873042
70.	$H_n = H_{n-15} + H_{n-13}$	$(1 + G^2)^{(\frac{1}{15})}$	1.05084892116	.0715552702892
71.	$H_n = H_{n-15} + H_{n-14}$	$(1 + G)^{(\frac{1}{15})}$	1.04898493476	.0689939584652
72.	$H_n = H_{n-16} + H_{n-1}$	$(1 + G^{15})^{(\frac{1}{16})}$	1.14003393745	.189076772339
73.	$H_n = H_{n-16} + H_{n-3}$	$(1 + G^{13})^{(\frac{1}{16})}$	1.09422958583	.129915469015
74.	$H_n = H_{n-16} + H_{n-5}$	$(1 + G^{11})^{(\frac{1}{16})}$	1.07639339947	.106205449397
75.	$H_n = H_{n-16} + H_{n-7}$	$(1 + G^9)^{(\frac{1}{16})}$	1.06589026920	.0920589238106
76.	$H_n = H_{n-16} + H_{n-9}$	$(1 + G^7)^{(\frac{1}{16})}$	1.05869316086	.0822845161959
77.	$H_n = H_{n-16} + H_{n-11}$	$(1 + G^5)^{(\frac{1}{16})}$	1.05334164715	.0749734446319
78.	$H_n = H_{n-16} + H_{n-13}$	$(1 + G^3)^{(\frac{1}{16})}$	1.04915147912	.0692229928799
79.	$H_n = H_{n-16} + H_{n-15}$	$(1 + G)^{(\frac{1}{16})}$	1.04575102416	.0645394108911
80.	$H_n = H_{n-17} + H_{n-1}$	$(1 + G^{16})^{(\frac{1}{17})}$	1.13390249031	.181296581378
81.	$H_n = H_{n-17} + H_{n-2}$	$(1 + G^{15})^{(\frac{1}{17})}$	1.10550108570	.144700442009
82.	$H_n = H_{n-17} + H_{n-3}$	$(1 + G^{14})^{(\frac{1}{17})}$	1.09057033955	.125082823851
83.	$H_n = H_{n-17} + H_{n-4}$	$(1 + G^{13})^{(\frac{1}{17})}$	1.08076298477	.112050169522
84.	$H_n = H_{n-17} + H_{n-5}$	$(1 + G^{12})^{(\frac{1}{17})}$	1.07361455787	.102476139267
85.	$H_n = H_{n-17} + H_{n-6}$	$(1 + G^{11})^{(\frac{1}{17})}$	1.06807451013	.0950122946336
86.	$H_n = H_{n-17} + H_{n-7}$	$(1 + G^{10})^{(\frac{1}{17})}$	1.06360241213	.0889589541811
87.	$H_n = H_{n-17} + H_{n-8}$	$(1 + G^9)^{(\frac{1}{17})}$	1.05988567187	.0839086520320
88.	$H_n = H_{n-17} + H_{n-9}$	$(1 + G^8)^{(\frac{1}{17})}$	1.05672824728	.0796044148392
89.	$H_n = H_{n-17} + H_{n-10}$	$(1 + G^7)^{(\frac{1}{17})}$	1.05399965816	.0758743990709
90.	$H_n = H_{n-17} + H_{n-11}$	$(1 + G^6)^{(\frac{1}{17})}$	1.05160900235	.0725983973826
91.	$H_n = H_{n-17} + H_{n-12}$	$(1 + G^5)^{(\frac{1}{17})}$	1.04949061371	.0696892637100
92.	$H_n = H_{n-17} + H_{n-13}$	$(1 + G^4)^{(\frac{1}{17})}$	1.04759563668	.0670819558728
93.	$H_n = H_{n-17} + H_{n-14}$	$(1 + G^3)^{(\frac{1}{17})}$	1.04588682209	.0647267425564
94.	$H_n = H_{n-17} + H_{n-15}$	$(1 + G^2)^{(\frac{1}{17})}$	1.04433517699	.0625848159064
95.	$H_n = H_{n-17} + H_{n-16}$	$(1 + G)^{(\frac{1}{17})}$	1.04291773230	.0606253593114

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G =

96.	$H_n = H_{n-18} + H_{n-1}$	$(1+G^{17})^{(\frac{1}{18})}$	1.12835593967	.17422237412
97.	$H_n = H_{n-18} + H_{n-5}$	$(1+G^{13})^{(\frac{1}{18})}$	1.07107250654	.0990561470209
98.	$H_n = H_{n-18} + H_{n-7}$	$(1+G^{11})^{(\frac{1}{18})}$	1.06150446026	.0861104332136
99.	$H_n = H_{n-18} + H_{n-11}$	$(1+G^7)^{(\frac{1}{18})}$	1.05001509362	.0704100663049
100.	$H_n = H_{n-18} + H_{n-13}$	$(1+G^5)^{(\frac{1}{18})}$	1.04616271563	.0651072595922
101.	$H_n = H_{n-18} + H_{n-17}$	$(1+G)^{(\frac{1}{18})}$	1.04041494778	.0571590319340
102.	$H_n = H_{n-19} + H_{n-1}$	$(1+G^{18})^{(\frac{1}{19})}$	1.12331080622	.167757158864
103.	$H_n = H_{n-19} + H_{n-2}$	$(1+G^{17})^{(\frac{1}{19})}$	1.09771228418	.134499966383
104.	$H_n = H_{n-19} + H_{n-3}$	$(1+G^{16})^{(\frac{1}{19})}$	1.08418008378	.116604410196
105.	$H_n = H_{n-19} + H_{n-4}$	$(1+G^{15})^{(\frac{1}{19})}$	1.07525800225	.104682868101
106.	$H_n = H_{n-19} + H_{n-5}$	$(1+G^{14})^{(\frac{1}{19})}$	1.06873610454	.0959056625327
107.	$H_n = H_{n-19} + H_{n-6}$	$(1+G^{13})^{(\frac{1}{19})}$	1.06366974044	.0890502769759
108.	$H_n = H_{n-19} + H_{n-7}$	$(1+G^{12})^{(\frac{1}{19})}$	1.05957187998	.0834814615875
109.	$H_n = H_{n-19} + H_{n-8}$	$(1+G^{11})^{(\frac{1}{19})}$	1.05616028916	.0788288032831
110.	$H_n = H_{n-19} + H_{n-9}$	$(1+G^{10})^{(\frac{1}{19})}$	1.05325767469	.0748584283111
111.	$H_n = H_{n-19} + H_{n-10}$	$(1+G^9)^{(\frac{1}{19})}$	1.05074586261	.0714137757821
112.	$H_n = H_{n-19} + H_{n-11}$	$(1+G^8)^{(\frac{1}{19})}$	1.04854241545	.0683852222563
113.	$H_n = H_{n-19} + H_{n-12}$	$(1+G^7)^{(\frac{1}{19})}$	1.04658770997	.0656932226651
114.	$H_n = H_{n-19} + H_{n-13}$	$(1+G^6)^{(\frac{1}{19})}$	1.04483733715	.0632783574704
115.	$H_n = H_{n-19} + H_{n-14}$	$(1+G^5)^{(\frac{1}{19})}$	1.04325740307	.0610951581613
116.	$H_n = H_{n-19} + H_{n-15}$	$(1+G^4)^{(\frac{1}{19})}$	1.04182150095	.0591081166242
117.	$H_n = H_{n-19} + H_{n-16}$	$(1+G^3)^{(\frac{1}{19})}$	1.04050869162	.0572890163032
118.	$H_n = H_{n-19} + H_{n-17}$	$(1+G^2)^{(\frac{1}{19})}$	1.03930211633	.0556150944483
119.	$H_n = H_{n-19} + H_{n-18}$	$(1+G)^{(\frac{1}{19})}$	1.03818801944	.0540677444179
120.	$H_n = H_{n-20} + H_{n-1}$	$(1+G^{19})^{(\frac{1}{20})}$	1.11869910802	.161822052632
121.	$H_n = H_{n-20} + H_{n-3}$	$(1+G^{17})^{(\frac{1}{20})}$	1.08136930508	.112859310878
122.	$H_n = H_{n-20} + H_{n-7}$	$(1+G^{13})^{(\frac{1}{20})}$	1.05778435249	.0810455392627
123.	$H_n = H_{n-20} + H_{n-9}$	$(1+G^{11})^{(\frac{1}{20})}$	1.05171471628	.0727434182952
124.	$H_n = H_{n-20} + H_{n-11}$	$(1+G^9)^{(\frac{1}{20})}$	1.04717641889	.0665045150644
125.	$H_n = H_{n-20} + H_{n-13}$	$(1+G^7)^{(\frac{1}{20})}$	1.04360670427	.0615781173648
126.	$H_n = H_{n-20} + H_{n-17}$	$(1+G^3)^{(\frac{1}{20})}$	1.03826715619	.0541777108629
127.	$H_n = H_{n-20} + H_{n-19}$	$(1+G)^{(\frac{1}{20})}$	1.03619371713	.0512937410720

dated 23, July 97, Erv Wilson

G=

128.	$H_n = H_{n-21} + H_{n-1}$	$(1+G^{20})^{(\frac{1}{21})}$	1.11446487992	.156351153733	
129.	$H_n = H_{n-21} + H_{n-2}$	$(1+G^{19})^{(\frac{1}{21})}$	1.09115426488	.125855080987	
130.	$H_n = H_{n-21} + H_{n-4}$	$(1+G^{17})^{(\frac{1}{21})}$	1.07058312813	.0983968217717	
131.	$H_n = H_{n-21} + H_{n-5}$	$(1+G^{16})^{(\frac{1}{21})}$	1.06458163720	.0902865867724	
132.	$H_n = H_{n-21} + H_{n-8}$	$(1+G^{13})^{(\frac{1}{21})}$	1.05296889721	.0744628224001	
133.	$H_n = H_{n-21} + H_{n-10}$	$(1+G^{11})^{(\frac{1}{21})}$	1.04795064911	.0675707779816	74
134.	$H_n = H_{n-21} + H_{n-11}$	$(1+G^{10})^{(\frac{1}{21})}$	1.04590489630	.0647516738848	
135.	$H_n = H_{n-21} + H_{n-13}$	$(1+G^8)^{(\frac{1}{21})}$	1.04246006703	.0599921201676	50
136.	$H_n = H_{n-21} + H_{n-16}$	$(1+G^5)^{(\frac{1}{21})}$	1.03842717347	.0544000412593	
137.	$H_n = H_{n-21} + H_{n-17}$	$(1+G^4)^{(\frac{1}{21})}$	1.03730134918	.0528350762250	
138.	$H_n = H_{n-21} + H_{n-19}$	$(1+G^2)^{(\frac{1}{21})}$	1.03529605930	.0500433882143	20
139.	$H_n = H_{n-21} + H_{n-20}$	$(1+G)^{(\frac{1}{21})}$	1.03439739613	.0487905485950	
140.	$H_n = H_{n-22} + H_{n-1}$	$(1+G^{21})^{(\frac{1}{22})}$	1.11056159809	.151289415212	
141.	$H_n = H_{n-22} + H_{n-3}$	$(1+G^{19})^{(\frac{1}{22})}$	1.07636568450	.106168302417	
142.	$H_n = H_{n-22} + H_{n-5}$	$(1+G^{17})^{(\frac{1}{22})}$	1.06272406461	.0877670509648	
143.	$H_n = H_{n-22} + H_{n-7}$	$(1+G^{15})^{(\frac{1}{22})}$	1.05457914241	.0766673683209	
144.	$H_n = H_{n-22} + H_{n-9}$	$(1+G^{13})^{(\frac{1}{22})}$	1.04894204264	.0689349666609	29
145.	$H_n = H_{n-22} + H_{n-13}$	$(1+G^9)^{(\frac{1}{22})}$	1.04138831772	.0585081277982	
146.	$H_n = H_{n-22} + H_{n-15}$	$(1+G^7)^{(\frac{1}{22})}$	1.03867167386	.0547396875907	
147.	$H_n = H_{n-22} + H_{n-17}$	$(1+G^5)^{(\frac{1}{22})}$	1.03639729664	.0515771574802	
148.	$H_n = H_{n-22} + H_{n-19}$	$(1+G^3)^{(\frac{1}{22})}$	1.03445529581	.0488713001938	
149.	$H_n = H_{n-22} + H_{n-21}$	$(1+G)^{(\frac{1}{22})}$	1.03277096644	.0465203488621	43
150.	$H_n = H_{n-23} + H_{n-1}$	$(1+G^{22})^{(\frac{1}{23})}$	1.10695024499	.146590377567	
151.	$H_n = H_{n-23} + H_{n-2}$	$(1+G^{21})^{(\frac{1}{23})}$	1.08554363709	.118417721115	
152.	$H_n = H_{n-23} + H_{n-3}$	$(1+G^{20})^{(\frac{1}{23})}$	1.07412658867	.103164028784	
153.	$H_n = H_{n-23} + H_{n-4}$	$(1+G^{19})^{(\frac{1}{23})}$	1.06655341115	.0929562151597	
154.	$H_n = H_{n-23} + H_{n-5}$	$(1+G^{18})^{(\frac{1}{23})}$	1.06099159767	.0854132311370	
155.	$H_n = H_{n-23} + H_{n-6}$	$(1+G^{17})^{(\frac{1}{23})}$	1.05665444367	.0795036511652	
156.	$H_n = H_{n-23} + H_{n-7}$	$(1+G^{16})^{(\frac{1}{23})}$	1.05313493325	.0746902939697	
157.	$H_n = H_{n-23} + H_{n-8}$	$(1+G^{15})^{(\frac{1}{23})}$	1.05019649883	.0706592910959	
158.	$H_n = H_{n-23} + H_{n-9}$	$(1+G^{14})^{(\frac{1}{23})}$	1.04769014601	.0672121034098	
159.	$H_n = H_{n-23} + H_{n-10}$	$(1+G^{13})^{(\frac{1}{23})}$	1.04551633144	.0642155976554	

		$G =$		
160.	$H_n = H_{n-23} + H_{n-11}$	$(1+G^{12})^{(\frac{1}{23})}$	1.04360546721	.0615764072367
161.	$H_n = H_{n-23} + H_{n-12}$	$(1+G^{11})^{(\frac{1}{23})}$	1.04190712585	.0592266835211
162.	$H_n = H_{n-23} + H_{n-13}$	$(1+G^{10})^{(\frac{1}{23})}$	1.04038368022	.0571156740107
163.	$H_n = H_{n-23} + H_{n-14}$	$(1+G^9)^{(\frac{1}{23})}$	1.03900636449	.0552044915761
164.	$H_n = H_{n-23} + H_{n-15}$	$(1+G^8)^{(\frac{1}{23})}$	1.03775273217	.0534627302387
165.	$H_n = H_{n-23} + H_{n-16}$	$(1+G^7)^{(\frac{1}{23})}$	1.03660495829	.0518661995522
166.	$H_n = H_{n-23} + H_{n-17}$	$(1+G^6)^{(\frac{1}{23})}$	1.03554867151	.0503953628254
167.	$H_n = H_{n-23} + H_{n-18}$	$(1+G^5)^{(\frac{1}{23})}$	1.03457213036	.0490342333903
168.	$H_n = H_{n-23} + H_{n-19}$	$(1+G^4)^{(\frac{1}{23})}$	1.03366562916	.0477695771741
169.	$H_n = H_{n-23} + H_{n-20}$	$(1+G^3)^{(\frac{1}{23})}$	1.03282106126	.0465903254572
170.	$H_n = H_{n-23} + H_{n-21}$	$(1+G^2)^{(\frac{1}{23})}$	1.03203159238	.0454871349785
171.	$H_n = H_{n-23} + H_{n-22}$	$(1+G)^{(\frac{1}{23})}$	1.03129141248	.0444520533026
172.	$H_n = H_{n-24} + H_{n-1}$	$(1+G^{23})^{(\frac{1}{24})}$	1.10359783531	.142214531983
173.	$H_n = H_{n-24} + H_{n-5}$	$(1+G^{19})^{(\frac{1}{24})}$	1.05937114612	.0832081198868
174.	$H_n = H_{n-24} + H_{n-7}$	$(1+G^{17})^{(\frac{1}{24})}$	1.05178181615	.0728354599489
175.	$H_n = H_{n-24} + H_{n-11}$	$(1+G^{13})^{(\frac{1}{24})}$	1.04256118015	.0601320471800
176.	$H_n = H_{n-24} + H_{n-13}$	$(1+G^{11})^{(\frac{1}{24})}$	1.03943946852	.0558057456818
177.	$H_n = H_{n-24} + H_{n-17}$	$(1+G^7)^{(\frac{1}{24})}$	1.03475002543	.0492822840239
178.	$H_n = H_{n-24} + H_{n-19}$	$(1+G^5)^{(\frac{1}{24})}$	1.03292206396	.0467314040770
179.	$H_n = H_{n-24} + H_{n-23}$	$(1+G)^{(\frac{1}{24})}$	1.02993969667	.0425598695813
180.	$H_n = H_{n-25} + H_{n-1}$	$(1+G^{24})^{(\frac{1}{25})}$	1.10047627900	.138128047966
181.	$H_n = H_{n-25} + H_{n-2}$	$(1+G^{23})^{(\frac{1}{25})}$	1.08067967600	.1119389577550
182.	$H_n = H_{n-25} + H_{n-3}$	$(1+G^{22})^{(\frac{1}{25})}$	1.07008302693	.0977227385826
183.	$H_n = H_{n-25} + H_{n-4}$	$(1+G^{21})^{(\frac{1}{25})}$	1.06303651145	.0881911490639
184.	$H_n = H_{n-25} + H_{n-6}$	$(1+G^{19})^{(\frac{1}{25})}$	1.05380162239	.0756033059401
185.	$H_n = H_{n-25} + H_{n-7}$	$(1+G^{18})^{(\frac{1}{25})}$	1.05051078861	.0710909783786
186.	$H_n = H_{n-25} + H_{n-8}$	$(1+G^{17})^{(\frac{1}{25})}$	1.04775999937	.0673082899941
187.	$H_n = H_{n-25} + H_{n-9}$	$(1+G^{16})^{(\frac{1}{25})}$	1.04541121213	.0640705375284
188.	$H_n = H_{n-25} + H_{n-11}$	$(1+G^{14})^{(\frac{1}{25})}$	1.04157811174	.0587710363966
189.	$H_n = H_{n-25} + H_{n-12}$	$(1+G^{13})^{(\frac{1}{25})}$	1.03998236582	.0565590659051
190.	$H_n = H_{n-25} + H_{n-13}$	$(1+G^{12})^{(\frac{1}{25})}$	1.03854989695	.0545705318812
191.	$H_n = H_{n-25} + H_{n-14}$	$(1+G^{11})^{(\frac{1}{25})}$	1.03725394604	.0527691456854

$$192. \quad H_n = H_{n-25} + H_{n-16} \quad \overset{G=}{(1+G^9)^{(\frac{1}{25})}} \quad 1.03499231367 \quad .0496200536461$$

193.

work in Progress E.W. 28 July 1997

$$G = (1 + G^2)^{\frac{1}{3}} = \underline{1.46557123187...}$$

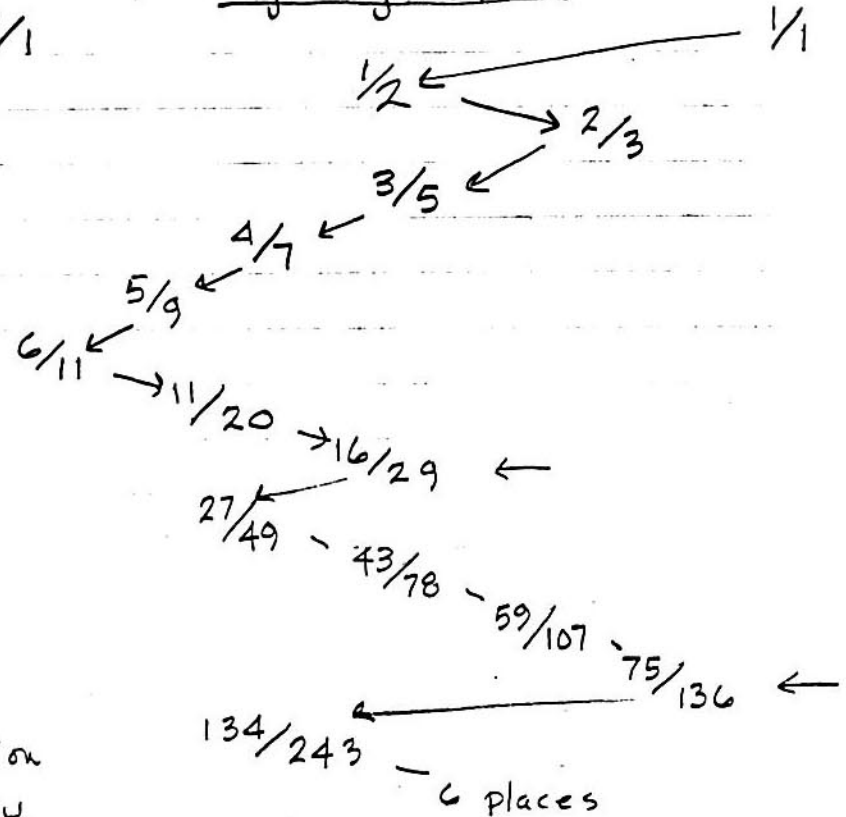
28 Jul 97 E.W.
P. 26

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

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



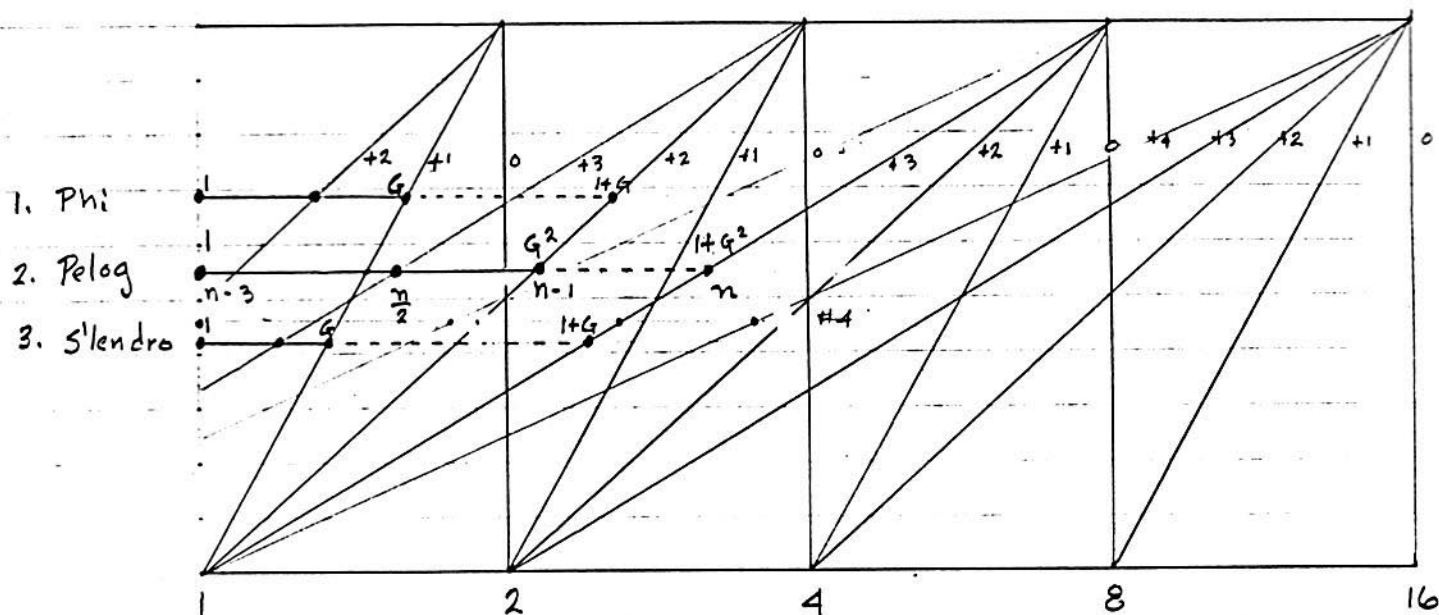
This is Meta-Pélog

Like "12:19:26" proportion

See; The Scales of Mt Meru

1993 by Erv Wilson

Diagram for Meta-Pellog $G=(1+G^2)^{(\frac{1}{3})}$



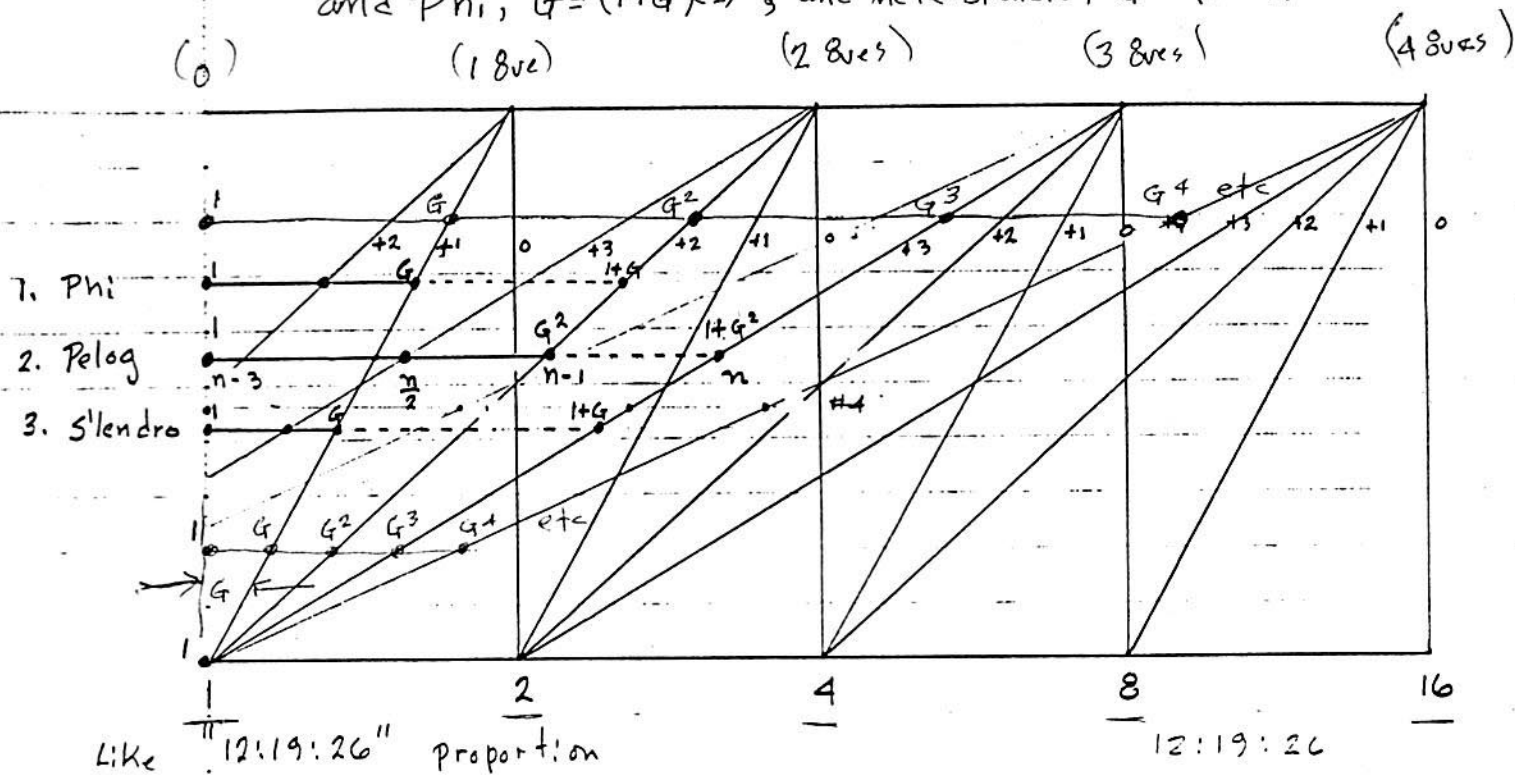
Like "12:19:26" proportion

12:19:26

#4 5:9:13:(18)

Dear Warren Burt,

Diagram for Meta-Pellog $G = (1 + G^2)^{(\frac{1}{3})}$ Aug 1, 1997
 and Phi; $G = (1 + G)^{(\frac{1}{2})}$; and Meta-Slendro, $G = (1 + G)^{(\frac{1}{3})}$



#4 5:9:13:18

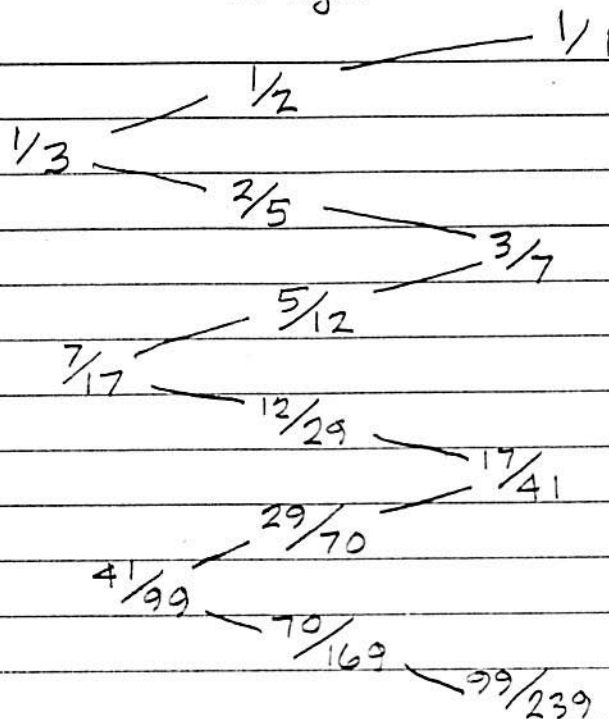
Ultimately - the respective recurrent sequences taken from the sums-of-the-diagonals thru Pascals Triangle (Meru Prastara) converge upon a limit-chain of logarithmically equal intervals, designated here by generator (G). Fig 12 shows a sample of the variability in magnitude of G . A continuum of the G -chain can be mapped to a straight-line pattern as shown. It is notable that discrete 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~~ reduce 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

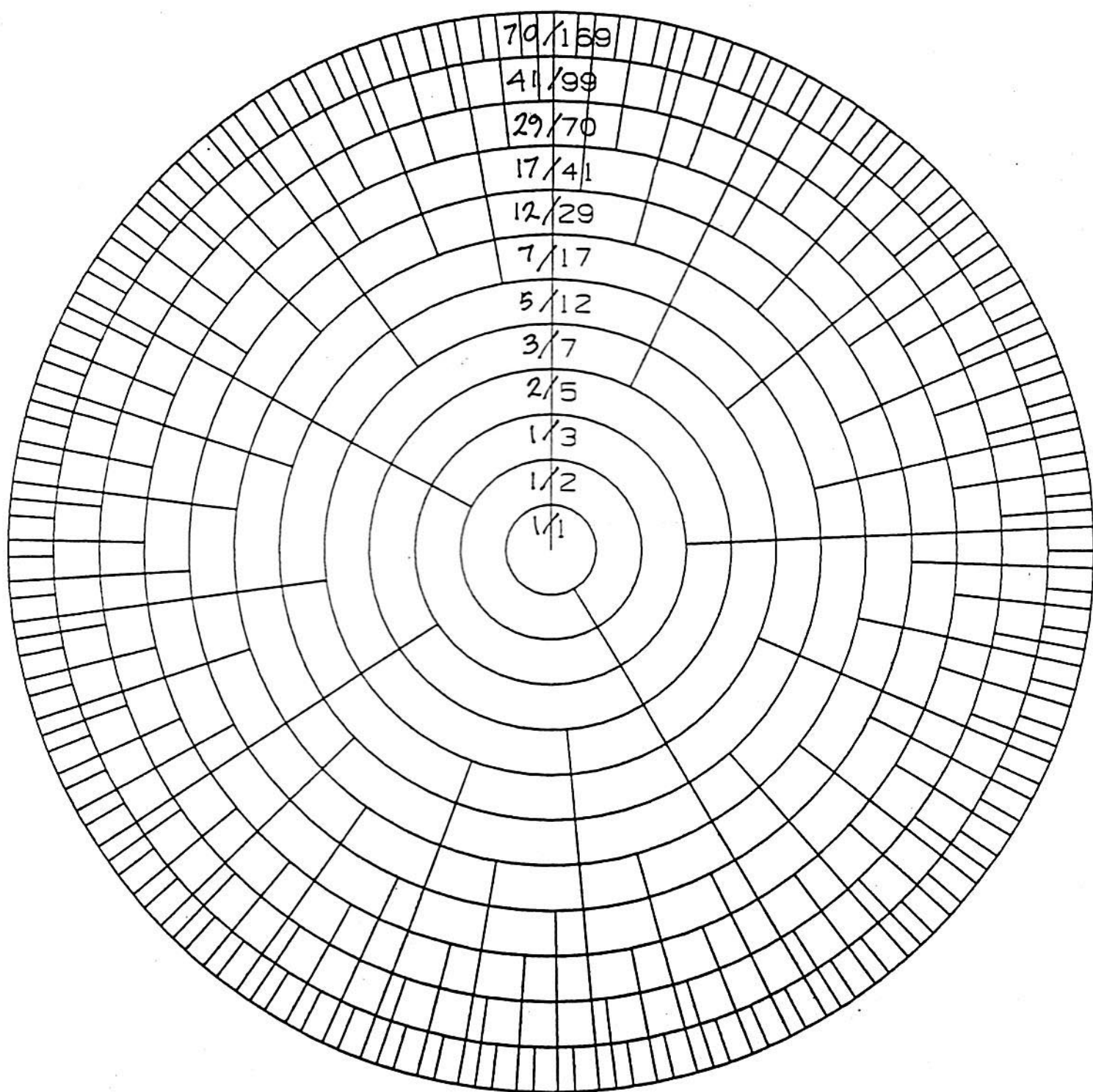
.414213562374 Sequence

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Dec 22, 1996



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



33

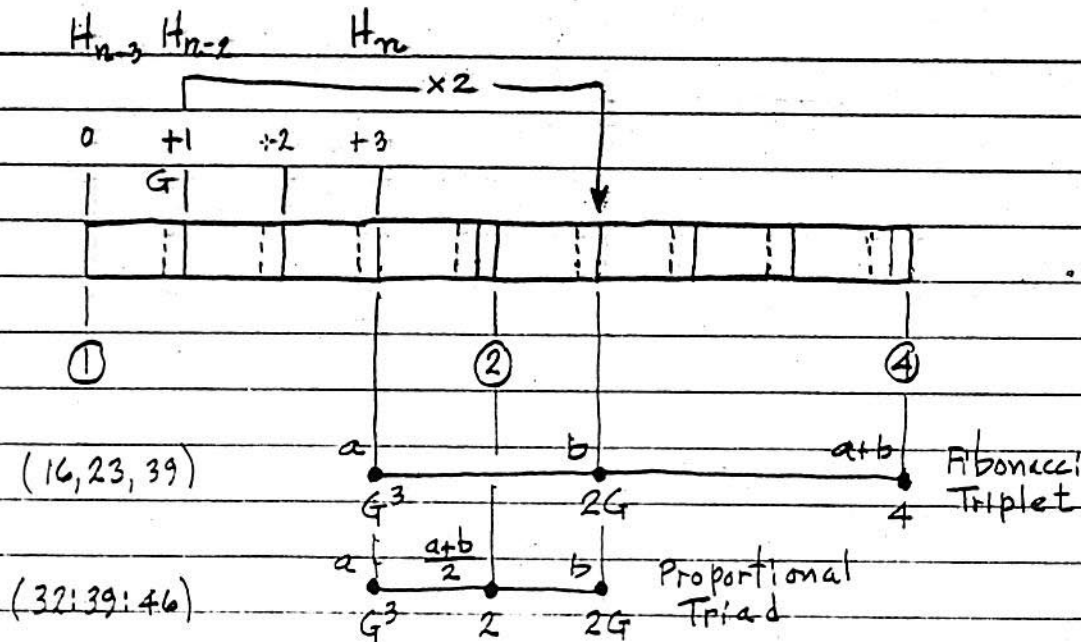
2-ZIG/2-ZAG

.414213563

(149.1168827)

25 Aug. 97

P. 216



Please see below

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

← converges left $(64 - 2 \times 46) / (16 + 23) = 1.17950902460$

Please see below

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

$$= 1.17950902460$$

→ diverging

28 33 39 46 54 64 76 88 104 128 144 60

224 132 78 46 27 16

SAME THING - Converges right →

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

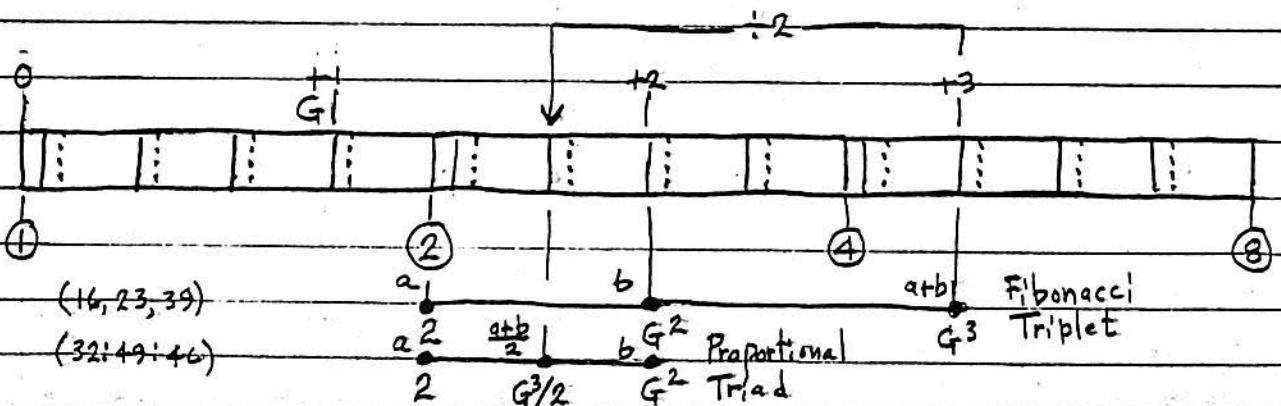
$$\Rightarrow G = (2 + G^2)^{(1/3)}$$

$$= 1.69562076956 \dots$$

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

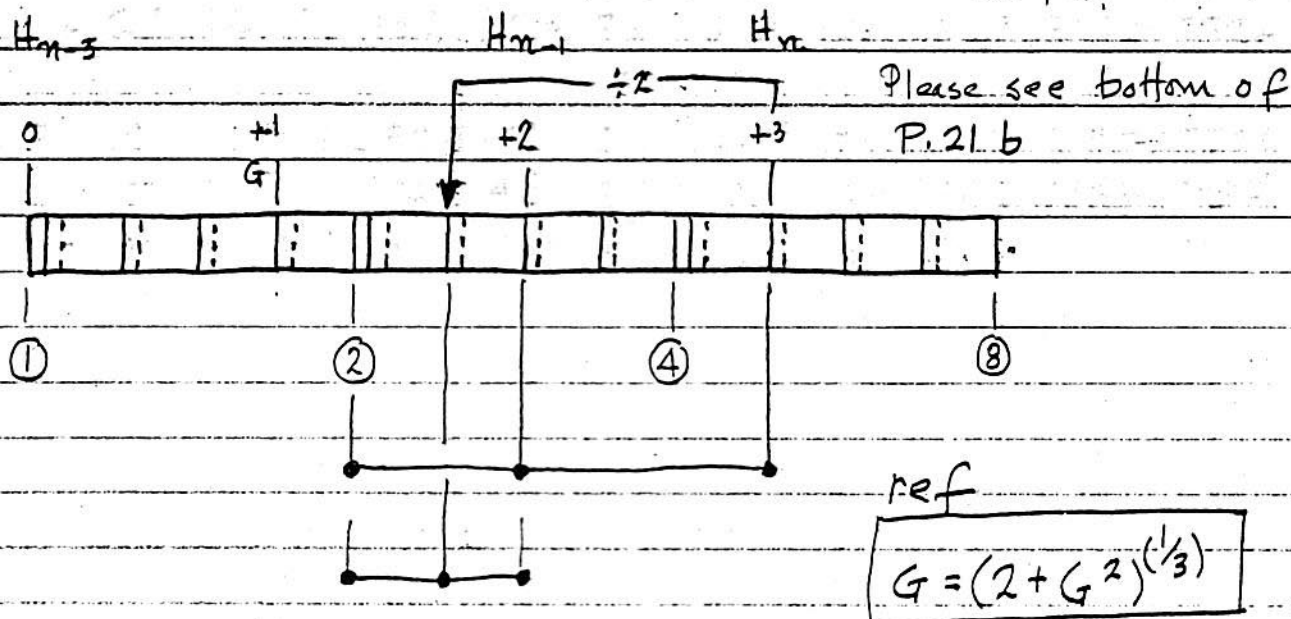
15,308 25,956 44,012 74,628 126,540 214,564 363,820 616,900 1,046,028 1,773,668

H_{n-3} H_{n-2} H_n



25 Aug 97 E.W.

P.21c



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

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 $\sqrt{\quad}$ 2 4 6 10 18 30 56 86 146 246 418

$\div 2 =$ 1 2 3 5 9 15 25 43 73 123 209

4s $\sqrt{\quad}$ 4 6 12 20 32 56 96 166 272 464 784

$\div 2 =$ 2 3 6 10 16 28 48 80 136 232 392

$\div 2 =$ 1 1.5 3 5 8 14 24 40 68 116 196

$\div 2 =$ 4 7 12 20 34 58 98

$\div 2 =$ 6 10 17 29 49

5s 6 12 22 34 58 102 170 286 496 830 1402

$\div 2 =$ 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
or computer readable index

26 Aug 97 E.W.

P. 21 d

orig 16 27 46 78 132 224 380 644 1092 1852 3140 5324

diff-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

$$K_n = 8(K_{n-2} K_{n-3}) \text{ (NO)}$$

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dated Jan 3, 1997

Example:

-3 -2 -1 0
31.625 39 48 59 72 88 104 128 128 192 0 512 -1,536

0 -1 -2 -3

maybe it runs backwards ↑

$$K_n = K_{n-1} - \left(\frac{K_{n-3}}{8}\right)$$

Example:

-3 -2 -1 0 1 2 3

(253)

(205)

(166)

(134,375)

* 128 104 88 72 59 48 39 31.625 25.625 20.75 16.796875

RCL1 cont

-

=

$$\frac{K_{n-1}}{K_n}$$

converges on

1.23606797750

(compl .618...)

(divide by 2, 1/4)

C

STO1₂

RCL3

÷

Log₂ = .305758086370

÷

RCL2

←

3

.270

0/1

8

=

→

3

.696

)

1/4

←

1

.436

=

→

→

2

.289

STO3₂

RTN

3

.448

-

←

2

.228

C

PRGM

4

.373

RCL2

2

.676

÷

1

.478

8

)

=

STO2₂

* O.K. so I've rediscovered Phi - but this is not the Fibonacci series parked in the driveway. Or is it?

C

RCL1

128 72 39 88 48 104 59 128

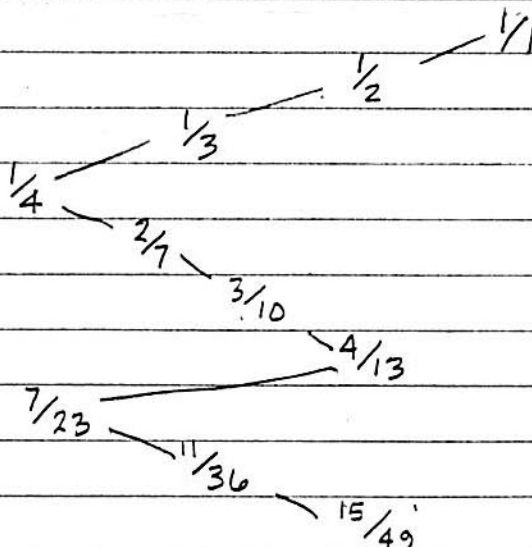
÷

C D E F G H I C

8

1 9 39 11 3 13 59 1

)

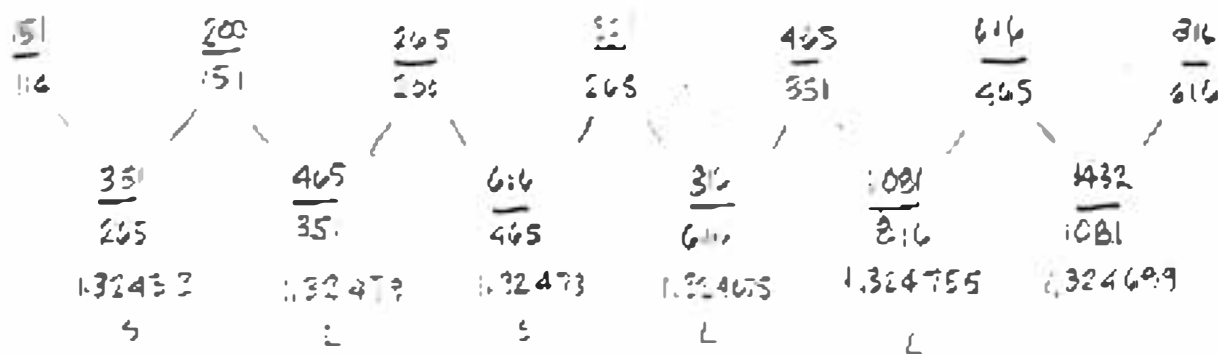
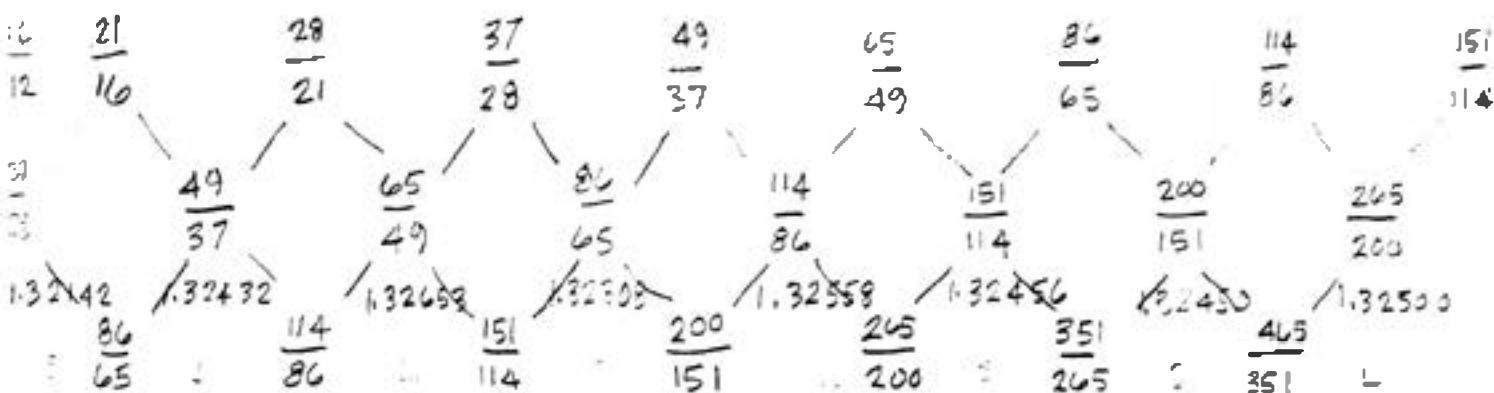


For Craig Grady

A meta-S'endro Sequence after Kunst #2

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Sheet 1 of 1



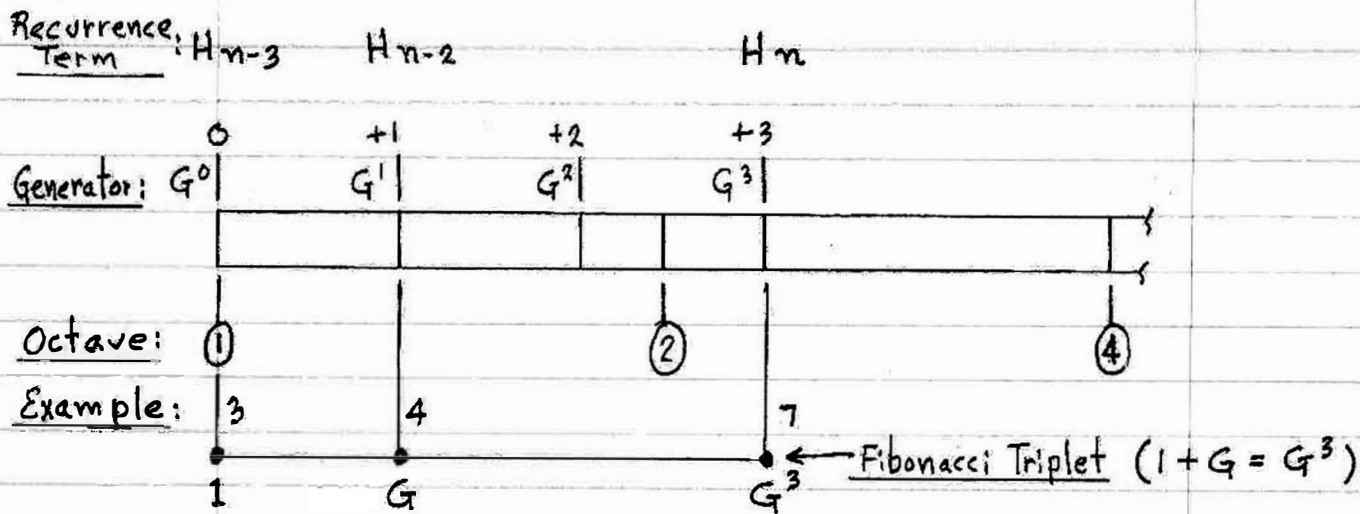
Variation

0 2 1 2 3 3 5 6 8 11 14 19 25 33 44 58 77 102 135 179 237 314 416 551 730 967 1281

$G = (1+G)^{1/3}$, Meta-Slendro (1.32471795724...)

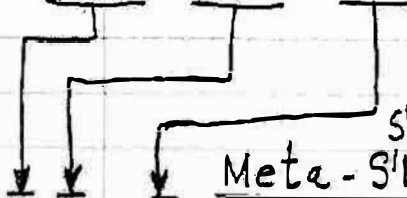
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15 MAR 98 · EW



Recurrence Relation

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



Sloan-M0284

Meta-Slendro, the recurrent integer sequence

* 1 1 1 2 2 3 4 5 7 9 12 16 21 28 37 49 65 86 114 151 200 265 351

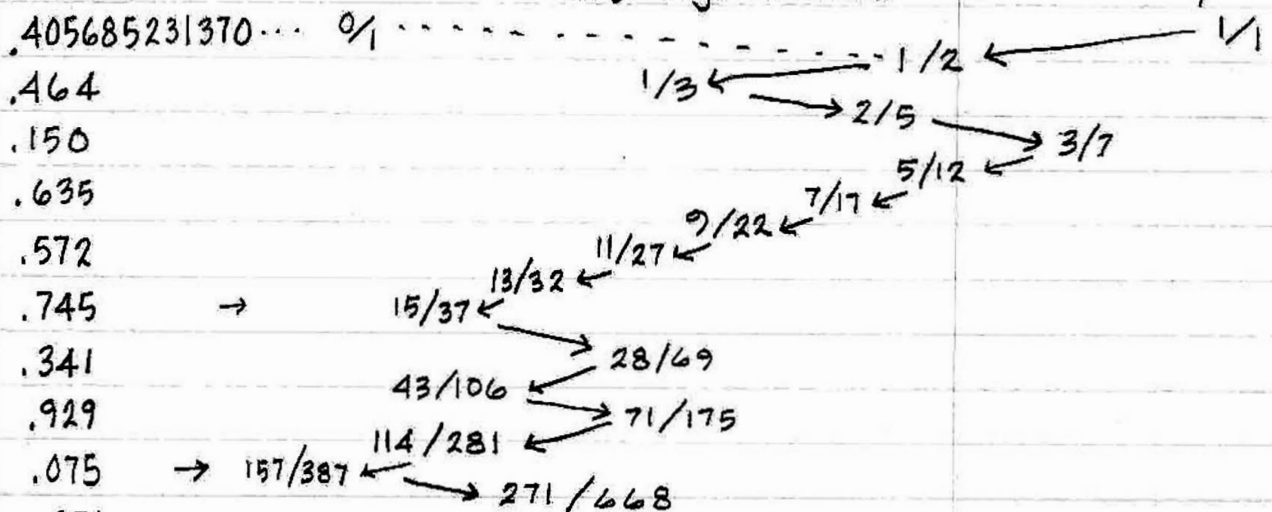
Reseed: example

2 1 1 3 2 4 5 6 9 11 15 20 26 35 46 61 81 107 142 188 249 330 437

1/n Pattern

← 2 .464
→ 2 .150
← 6 .635
→ 1 .572
← 1 .745
→ 1 .341
← 2 .929
→ 1 .075
13 .276

Zig-Zag Pattern (from the Scale-Tree)



* a.k.a. PADOVAN SEQUENCE Scientific American June 1996, p 102-103, by Ian Stewart

Ref.: The Scales of Mt. Meru, Fig. 3 & 12, 1993-97 Erv Wilson

Fibonacci Triplets of Meta-S'lendro ($C_{n-3} + C_{n-2} = C_n$)

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$$9 + 12 = 21$$

$$12 + 16 = 28$$

$$16 + 21 = 37$$

$$21 + 28 = 49$$

$$28 + 37 = 65$$

$$37 + 49 = 86$$

$$49 + 65 = 114$$

$$65 + 86 = 151$$

$$86 + 114 = 200$$

$$9 \quad 12 \quad 16 \quad 21 \quad 28 \quad 37 \quad 49 \quad 65 \quad 86 \quad 114 \quad 151 \quad 200 \quad (288)$$

$$\left| \begin{array}{cccccccccccc} 4/3 & 4/3 & 21/16 & 4/3 & 37/28 & 49/37 & 65/49 & 86/65 & 57/43 & 151/114 & 200/151 & 72/25 \end{array} \right| \text{ Cycle 4ths}$$

Good!

5-tone Slendro

7-tone Scale

12-tone Scale

example of nested scales where each scale is contained within the next — 5 within 7, within 12 etc.

(Scale Series is; 5, 7, 12, 17, 22, 27, 32, 37 ...)

Example of Re-Seed

$$15 \quad 20 \quad 26 \quad 35 \quad 46 \quad 61 \quad 81 \quad 107 \quad 142 \quad 188 \quad 249 \quad 330$$

$$15 + 20 = 35$$

$$20 + 26 = 46$$

$$26 + 35 = 61$$

$$35 + 46 = 81$$

$$46 + 61 = 107$$

$$61 + 81 = 142$$

$$81 + 107 = 188$$

$$107 + 142 = 249$$

$$142 + 188 = 330$$

good!

5-tone example

7-tone scale

12-tone scale

Meta-S'lendro Sequence sheet 2 of 2

RCL 1

+

RCL 2

=

STO 1,

RCL 2

+

RCL 3

=

STO 2,

RCL 3

+

RCL 1,

=

STO 3,

÷

RCL 2,

=

STO 4

(or)

add this, for read
every 3rd Fourth

(LOG₂)

.405685231 = 486.822277L

1/4

0/1

2 .465
2 .150
6 .635
1 .572
1 .745
1 .341
2 .929
1 .075
13 .276

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 →
2PL ←

(also see Proportional "6,7,8" from 1992)

0 1 1 1 2 2 3 4 5 7 9 12 16
A B A+B=D D
(1) (2) (3) 1 2 3

variation:

0 1 2 1 3 3 4 6 7 10 13 17 23 30 40 53 70 93 123
163 216 286 379

(1)

(2)

7/5

9/7

(3)

(4)

12/9

16/12

(3)

(4)

21/16

28/21

(3)

(4)

1.33333

1.31250

L

L

1.33333

1.33333

L

L

RCL 1

+

RCL 2

STO 1,

=

STO 4

RCL 3

STO 2,

RCL 4

STO 3,

÷

RCL 2,

=

STO 4,

RCL 3,

converges on 1.3247179572.
dated Oct 15, 1993
21 28 37 49 65 Env Wilson
86 114 151

Notes on Meta-Slendro

17 JUL 97 E.W.

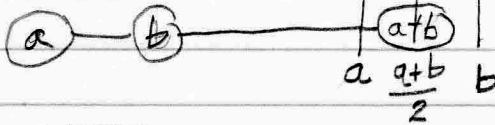
P.10a

ABABB

Please see P.10b

①						②									④
0	+1			+2			+3								
0	1	2	3	4	5/6	0	1	2	3	4	5/6				
A	B	A	B	B	A	B	A	B	B						
L*	L			L		L		L	S						

$$*L = ((2 + 2L) / 2)^{(1/3)} \quad \leftarrow \text{this}$$



decimal approx. 1.32471795724...

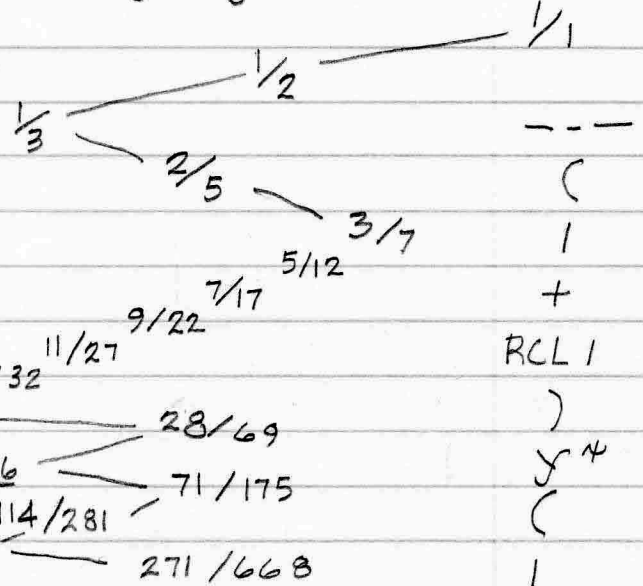
$\log_2 .405685231370...$
Same as Meta-Slendro off Pascal's Triangle. Ref below

$1/n$ pattern
.405...

Zig-Zag Pattern

(
(
2
+
2
X
RCL 1
)
+
2
)
y⁴
(
1
÷
3
)
=
STO 1

0/1

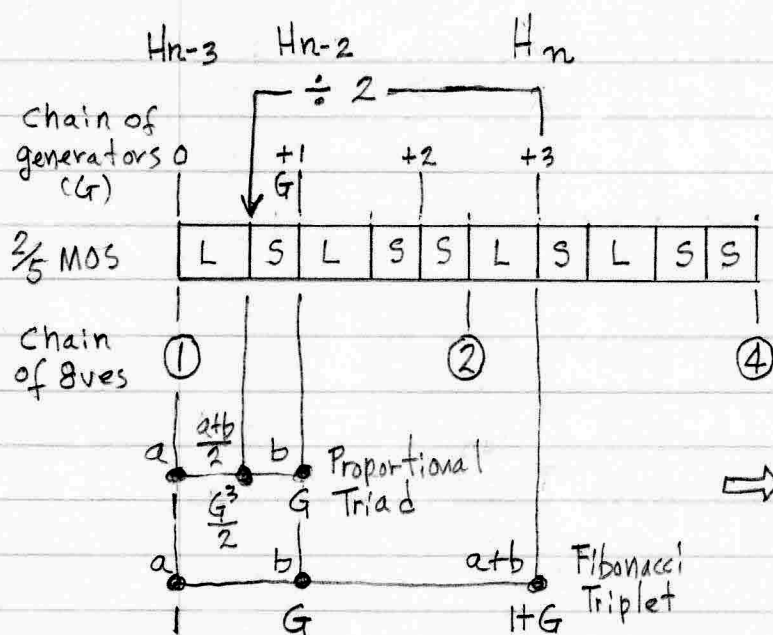


Notes on Meta-Slendero

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19 Aug 97 - E.W.

P. 10 b



$$\Rightarrow G = (1 + G)^{\left(\frac{1}{3}\right)} = 1.32471795724 \dots$$

$$\log_2 = \underline{\underline{.405685231370 \dots}}$$

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 1432 1897 2513 3329 4410 5842 7739 10252
13581

Fibonacci-Triplets

	(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)

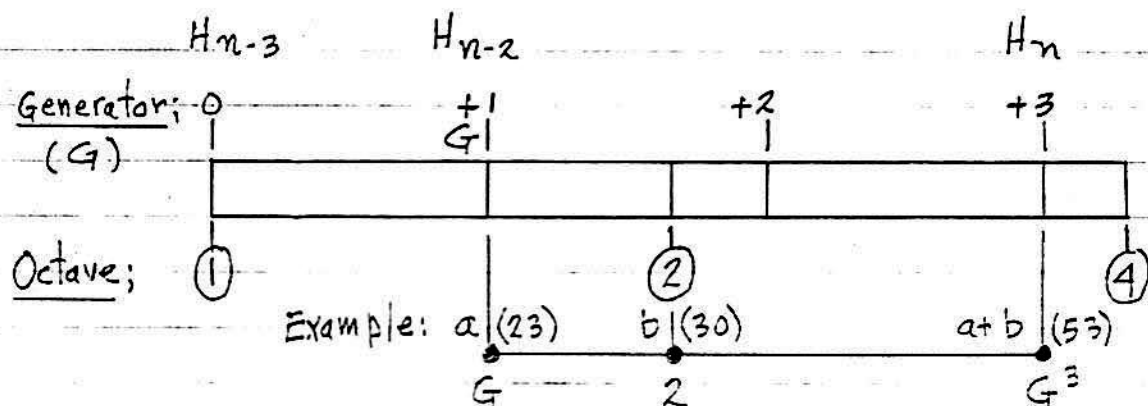
A 27-Tone Scale where; $H_{n-3} + H_{n-2} = H_n$

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

$$G = (2 + G)^{(1/3)}, (\text{LLSLS} - \text{S'lendro})$$

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4 OCT 97 - E.W.



Recurrence Relation:

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

1, 1, 1, 3, 3, 5, 9, 11, 19, 29, 41, 67, 99, 149, NLIS

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

$$= 1.52137970680...$$

$$\log_2 = \underline{\underline{.605380266640}}$$

Re-Seed Example:

15, 23, 35, 53, 81, 123, 187, 285, 433

1/16 Pattern

.605... 0/1

← 1 .651
→ 1 .534
← 1 .872
→ 1 .146
← 6 .834
→ 1 .198
← 5 .045
22 .196
5 .246

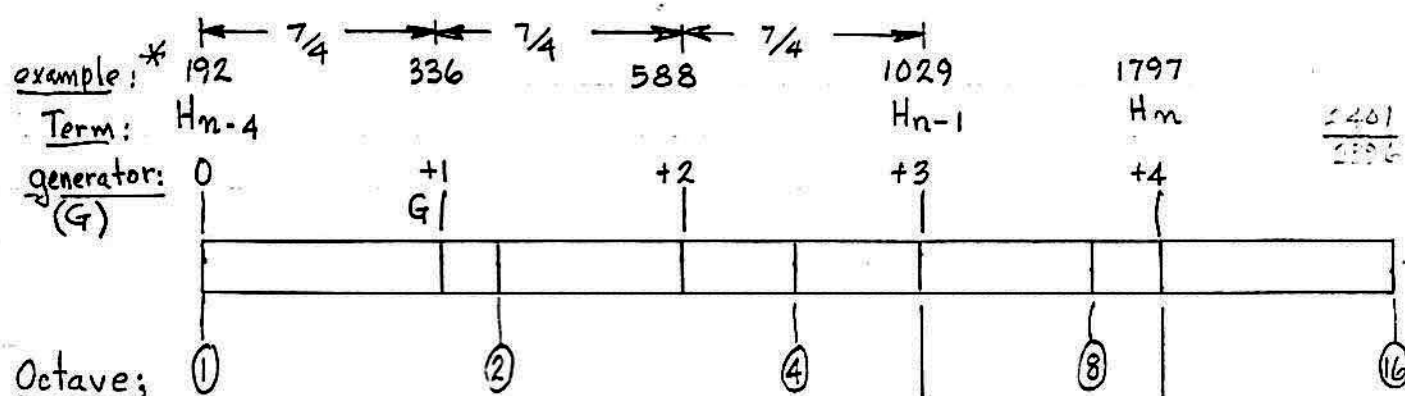
Zig-Zag Pattern

1/2 2/3 3/5 5/8 8/13 13/21 21/34 34/55 55/89 89/144 144/233 233/377 377/610 610/987 987/1597 1597/2584 2584/4181 4181/6765 6765/10946 10946/17711 17711/28657 28657/46368 46368/75025 75025/121393 121393/196418 196418/317811 317811/514229 514229/832040 832040/1346269 1346269/2178309 2178309/3524578 3524578/5702887 5702887/9227465 9227465/14930352 14930352/24157817 24157817/39088169 39088169/63246006 63246006/102334175 102334175/165580181 165580181/267914356 267914356/433494537 433494537/701408893 701408893/1134903430 1134903430/1836312323 1836312323/2971215753 2971215753/4807528076 4807528076/7778743829 7778743829/12585271895 12585271895/20363995724 20363995724/32949267619 32949267619/53313263343 53313263343/86262529062 86262529062/139575792405 139575792405/225838321467 225838321467/365414113872 365414113872/591252835339 591252835339/956666949211 956666949211/1557919784550 1557919784550/2514586733761 2514586733761/4072506518311 4072506518311/6587093252072 6587093252072/10659599770383 10659599770383/17246693022455 17246693022455/27906292792838 27906292792838/45152991815293 45152991815293/73059291608131 73059291608131/118212283399424 118212283399424/191271575007555 191271575007555/309483858406979 309483858406979/500755433414534 500755433414534/810239318422513 810239318422513/1311014751837047 1311014751837047/2121254069259560 2121254069259560/3432268821096607 3432268821096607/5553522890356167 5553522890356167/9005786951452774 9005786951452774/14559309841808941 14559309841808941/23665096793261715 23665096793261715/38224406634660656 38224406634660656/61889506427922371 61889506427922371/100113913121183027 100113913121183027/162003419559105398 162003419559105398/262117332680288425 262117332680288425/424121242201493823 424121242201493823/686238574881682248 686238574881682248/1110359817083176071 1110359817083176071/1796598391964858319 1796598391964858319/2906958209048034390 2906958209048034390/4703557601031892709 4703557601031892709/7600555992063927028 7600555992063927028/12304113593105821737 12304113593105821737/20008671184137748765 20008671184137748765/32312784777243570792 32312784777243570792/52321455961349419557 52321455961349419557/84634237138583168351 84634237138583168351/136955693100932587948 136955693100932587948/221586930239515707505 221586930239515707505/358542627340448295453 358542627340448295453/580129557579963983358 580129557579963983358/938672187820489678811 938672187820489678811/1518801745390453662169 1518801745390453662169/2457473933210443645980 2457473933210443645980/3976275678600907318149 3976275678600907318149/6434077611811351064129 6434077611811351064129/10410353545412258382278 10410353545412258382278/16844431157223609446407 16844431157223609446407/27254784702635867830585 27254784702635867830585/44099215859859477277092 44099215859859477277092/71353997012485347117677 71353997012485347117677/115453212872344824994771 115453212872344824994771/186807110884830172112448 186807110884830172112448/302260323757175019307219 302260323757175019307219/489067434641005191419667 489067434641005191419667/791327558398180210727086 791327558398180210727086/1280394993039185402146753 1280394993039185402146753/2071722551437365613566439 2071722551437365613566439/3352117544516551015713192 3352117544516551015713192/5423840095953916629279631 5423840095953916629279631/8775957647470467642992823 8775957647470467642992823/14200000243424383772272454 14200000243424383772272454/23075947890895300412265277 23075947890895300412265277/37275948134319684184557731 37275948134319684184557731/60351895025215084596823008 60351895025215084596823008/97627843159534768771380739 97627843159534768771380739/157979738184750053368203747 157979738184750053368203747/255607571344284838139584486 255607571344284838139584486/413587309529034891507788233 413587309529034891507788233/669194880873319729647372719 669194880873319729647372719/1082782190402354621155160952 1082782190402354621155160952/1751976971275674350792533671 1751976971275674350792533671/2834759161678028971947694623 2834759161678028971947694623/4586736132953703322142858295 4586736132953703322142858295/7421495304629722293935452918 7421495304629722293935452918/11948231437583425616078311836 11948231437583425616078311836/19369726742213148810013764754 19369726742213148810013764754/31317958179796574426092076590 31317958179796574426092076590/50687684922010723236105841344 50687684922010723236105841344/82005643091807297662197917934 82005643091807297662197917934/132693328013818020898303759278 132693328013818020898303759278/214698971105625218560411677212 214698971105625218560411677212/347392299119443239458715436490 347392299119443239458715436490/562091270225068458019127113702 562091270225068458019127113702/909483569344493697477842550192 909483569344493697477842550192/1471574839569562155497069663904 1471574839569562155497069663904/2381058408914055852974932214096 2381058408914055852974932214096/3852633248483618008472001878000 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3242602967480830001846746811977216/5246954097153743804988347306963840 5246954097153743804988347306963840/8489557064634573806835094118941056 8489557064634573806835094118941056/13736511161788317611823441425904128 13736511161788317611823441425904128/22226068226422891418658535544845312 22226068226422891418658535544845312/36062579388211209230481976970750720 36062579388211209230481976970750720/58288647614634100642139912515596032 58288647614634100642139912515596032/94351226928845309872621824026352064 94351226928845309872621824026352064/1526398745434794105147617365419481728 1526398745434794105147617365419481728/2470010990723247113273814730683002880 2470010990723247113273814730683002880/4006409736158041218421432096092483968 4006409736158041218421432096092483968/6476420726881288331695246826775967872 6476420726881288331695246826775967872/10582841463039329549116678922868851712 10582841463039329549116678922868851712/17059262189920617880812925749644812800 17059262189920617880812925749644812800/27642103652959947429929604672513674240 27642103652959947429929604672513674240/44691365842880565310742530422158487040 44691365842880565310742530422158487040/72333469495840512740655060844276974080 72333469495840512740655060844276974080/116666935338681025481307591688463948800 116666935338681025481307591688463948800/189033870677362050962615183376727897600 189033870677362050962615183376727897600/305699806015043076443922774715191808000 305699806015043076443922774715191808000/494733676632405127406550608442769740800 494733676632405127406550608442769740800/799467353264810254813075916884639488000 799467353264810254813075916884639488000/1280001130029620509626151833767278976000 1280001130029620509626151833767278976000/206946848329443076443922774715191808000 206946848329443076443922774715191808000/334993696658886152887845549430383616000 334993696658886152887845549430383616000/541989393317772305775712879088613760000 541989393317772305775712879088613760000/883315325490058458663568418147702016000 883315325490058458663568418147702016000/142130452078409371730171026903632320000 142130452078409371730171026903632320000/229761983317615614768273643805811712000 229761983317615614768273643805811712000/371923966635231229536547287611618822400 371923966635231229536547287611618822400/60168595327046245907309457522323763200 60168595327046245907309457522323763200/97360990654092491814515131235718028800 97360990654092491814515131235718028800/157529586046544083723224210057148838400 157529586046544083723224210057148838400/254890576673086575537159337690277376000 254890576673086575537159337690277376000/412410162719630659260318675380446720000 412410162719630659260318675380446720000/667298739392717234797478012970724096000 667298739392717234797478012970724096000/1080708901105434469594956024941448192000 1080708901105434469594956024941448192000/1741414241778151719391930040906317312000 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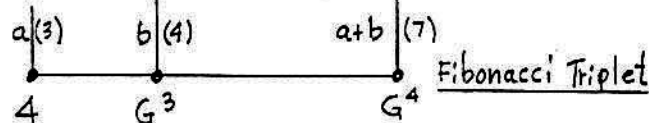
$$G = (4 + G^3)^{1/4}, \text{ (meta-s'lendro 2)}$$

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10 DEC. 97 - E.W.



example:



Recurrence Relation:

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

Examples of re-seed:

G Paraphrase:

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

$$= 1.74840288125$$

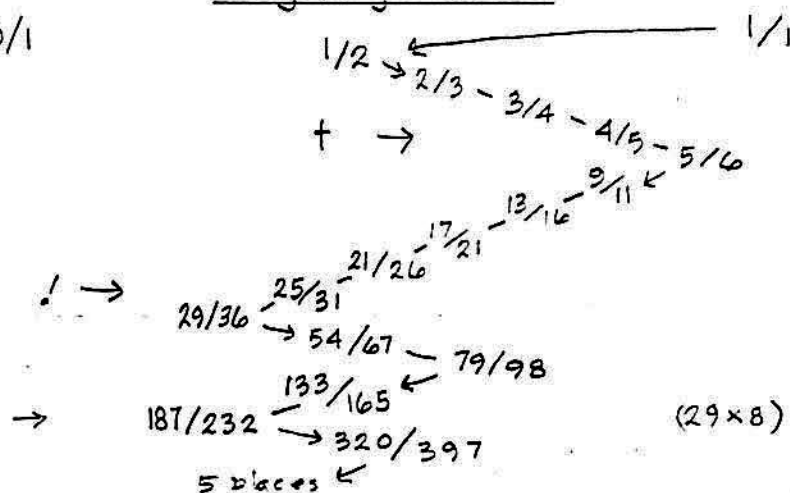
$$\log_2 = .806037660702$$

* 192 336 588 1029 1797 3141 5493 9609 16797 29361 51333 89769 156957 etc.
NLIS 1 1 1 1 5 9 13 17 37 73 125 193 341 633 1133 etc.

1/4 Pattern

		.80603...	0/1
←	1	.240	
→	4	.155	
←	6	.425	
→	2	.352	
←	2	.837	
→	1	.194	
	5	.135	
	7	.404	
	2	.469	
	2	.131	

Zig-Zag Pattern



Ref: Straight Line Patterns and Proportional Triads, Erv Wilson 1992

The complementary generator, 1.14390111195.

+ Life Tuning with Prima Sounds, Keyserling/Losey, 1993, School of Wisdom

Notes on $4H_{n-4} + H_{n-1} = H_n$

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STO, 2 3 4 STO, 2 3 4
1 1 1 1 5 9 13 17

Hewlett Packard 20S

begin

(
4
x
RCL 1
)
+
RCL 4
=
STO 1
(
4
x
RCL 2
)
+
RCL 1b
=
STO 2b
(
4
x
RCL 3
)
+
RCL 2b
=
STO 3b

Cont

22 Dec 97 EW

(ref 10 Dec 97 EW)
 $G = (4 + G^3)^{1/4}$, SH+2

	STO	examples
1	H_{n-4}	17 or 12
2	H_{n-3}	30 21
3	H_{n-2}	52 36
4	H_{n-1}	92 64

Examples

Re-seed
 $(4 \times 17) + 92 = 160$

2nd
↓
17 30 52 92
160 280 488 856
1496 2616 4568 7992
13,976 24,440 42,712 74,680
67,912 223,344 399,192 697,912
1,220,248 2,133,624 3,730,392 6,522,040
11,403,032 19,937,528 34,859,096 60,947,256
106,559,384 186,309,496 325,745,880 569,534,904

12 21 36 64 Re-seed
 $(4 \times 12) + 64 = 112$
112 196 340 596
1,044 1,828 3,188 5,572
9,748 17,060 29,812 52,100
91,092 159,332 278,580 486,980
851,348 1,488,676 2,602,996 4,550,916
7,956,308 13,911,012 24,322,996 42,526,660
74,351,892 129,995,940 227,287,924 397,394,564

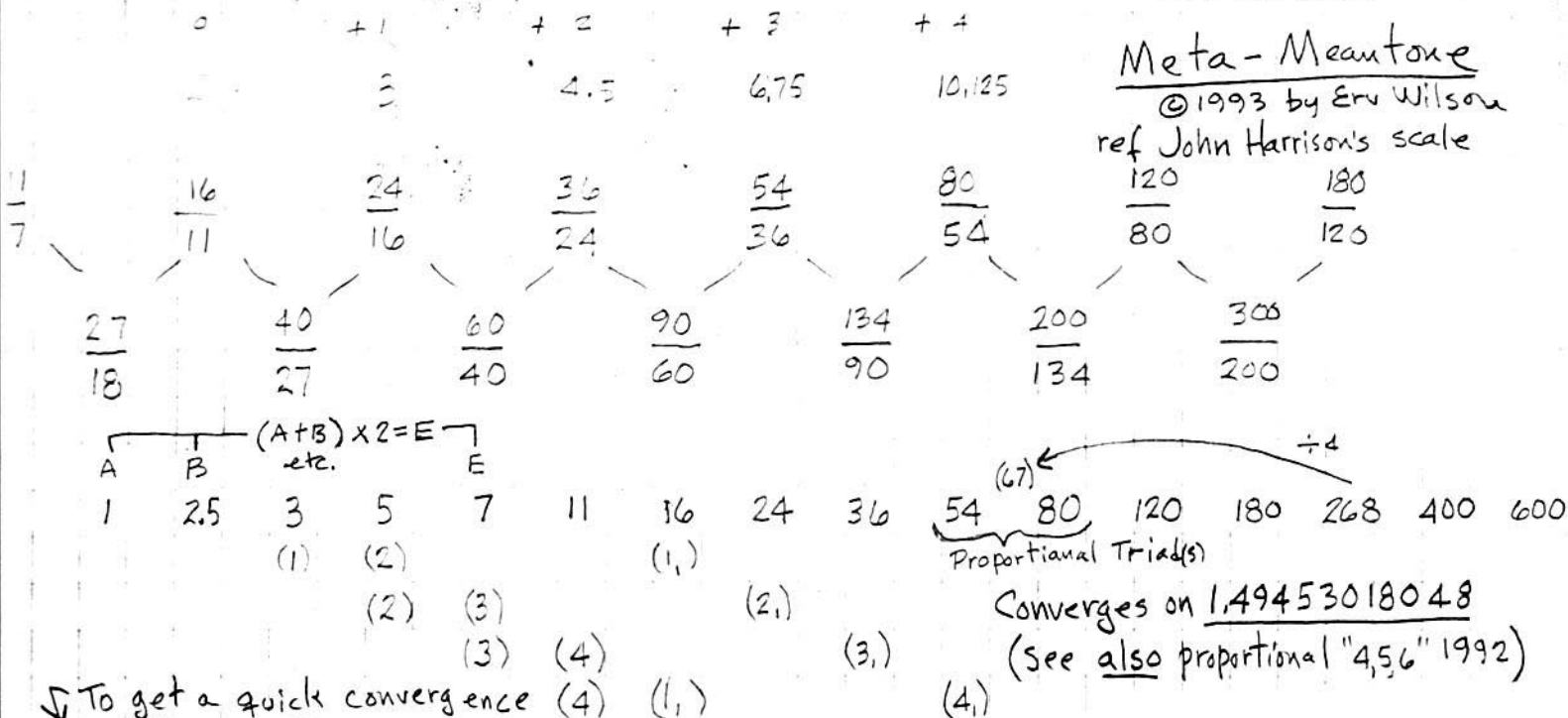
For Kraig Grady

Proportional "4, 5, 6" Sequence ?

dated
Oct 16, 1993
Erv Wilson

Meta-Meantone

© 1993 by Erv Wilson
ref John Harrison's scale



↓ To get a quick convergence

(RCL 1 + RCL 2) X 2 = STO 1, (RCL 2 + RCL 3) X 2 = STO 2,	(RCL 3 + RCL 4) X 2 = STO 3, (RCL 4 + RCL 1,) X 2 = STO 4, ÷ RCL 3, = ---	(RCL 1 + RCL 2) X 2 = STO 1, [÷ RCL 4 = STO 5] (RCL 2 + RCL 3) X 2 ÷ RCL 1 = STO 6 = STO 2, ←	(RCL 3 + RCL 4) X 2 = STO 3, [÷ RCL 2, = STO 7] (RCL 4 + RCL 1,) X 2 ÷ RCL 3 = STO 8 = STO 4, ←
--	--	---	---

This stores the ratios
for viewing at 5, 6, 7, 8

$G = (8 + 8G)^{(1/6)}$
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24 Sep 97. EW

Recurrence

Terms: Hn-6

Generator: 0, +1, +2, +3, +4, +5, +6

Octave: 1, 2, 4, 8, 16, 32

Fibonacci Triplet: a, b, a+b

(like 3:5:8) →

8, 8G, G6

Recurrence relation:

$$8H_{n-6} + 8H_{n-5} = H_n$$

1 1 1 1 1 1. 16 16

Example: $(8 \cdot 3 + 8 \cdot 5 = 64)!$

H_{n-6}	H_{n-5}					H_n	
243	405	675	1,125	1,875	3,125	5,184	8,640

G Paraphrase:

$$\Rightarrow G = (8 + 8G)^{(1/6)} \quad 8$$

$$= 1.66521524973 \dots \times$$

$$\log_2 = \underline{.735708675583} \quad \text{RCL}$$

1/n pattern

$.735 \dots$ %

←	1	.359
→	2	.783
←	1	.275
→	3	.623
←	1	.604
→	1	.654
←	1	.527
→	1	.894
←	1	.118

8.472

Compare w. log-Gold; .735691503280... in Scale-Tree 74, EW

Ref: Development of a 53-tone Keyboard Layout, 1989, L.A. Hanson, Xenharmonikon 12, Frog Peak

$$\delta(H_{N-6} + H_{m-5}) = H_m$$

Zig-Zag Pattern

$\frac{1}{2} \leftarrow \frac{2}{3} \rightarrow \frac{3}{4}$

$$\begin{array}{l} 5/7 \leftarrow 8/11 - 11/15 - 14/19 \\ 25/34 \leftarrow 39/53 \\ 64/87 \leftarrow 103/140 \\ 167/227 \leftarrow 270/367 \end{array}$$

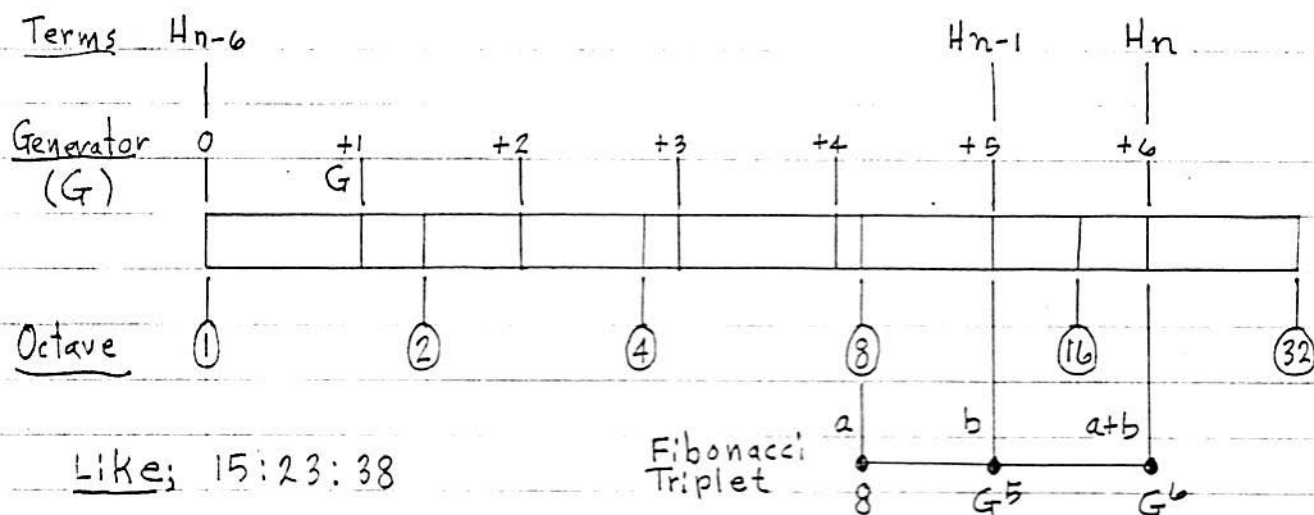
✓ etc. 8 pl.

$$\frac{1}{1} \frac{6}{1} = \text{STO}$$

$$G = (8 + G^5)^{1/6}$$

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25 Sep 97-EW



Like; 15:23:38

Recurrence relation;

$$8 \cdot H_{n-6} + H_{n-1} = H_n$$

$$\Rightarrow G = (8 + G^5)^{1/6}$$

$$= 1.65139032696$$

$$\log_2 = \underline{\underline{.723681159751}}$$

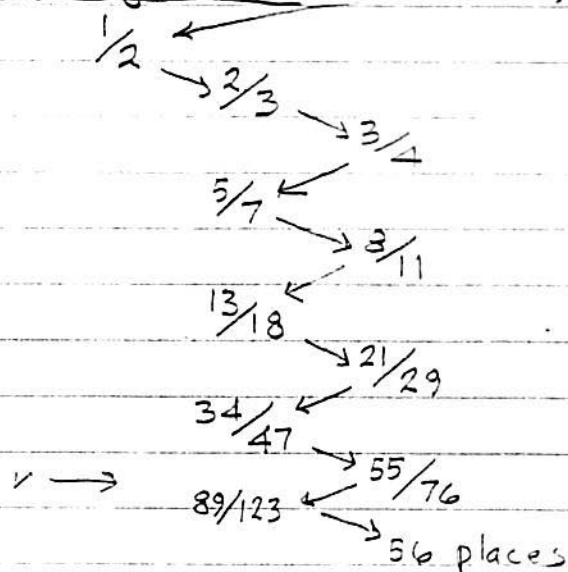
1/4 pattern

2/1

		.723...
←	1	.381
→	2	.619
	1	.615
	1	.624
	1	.600
	1	.664
	1	.504
	1	.982
	1	.017
	56	.131

Zig-Zag Pattern

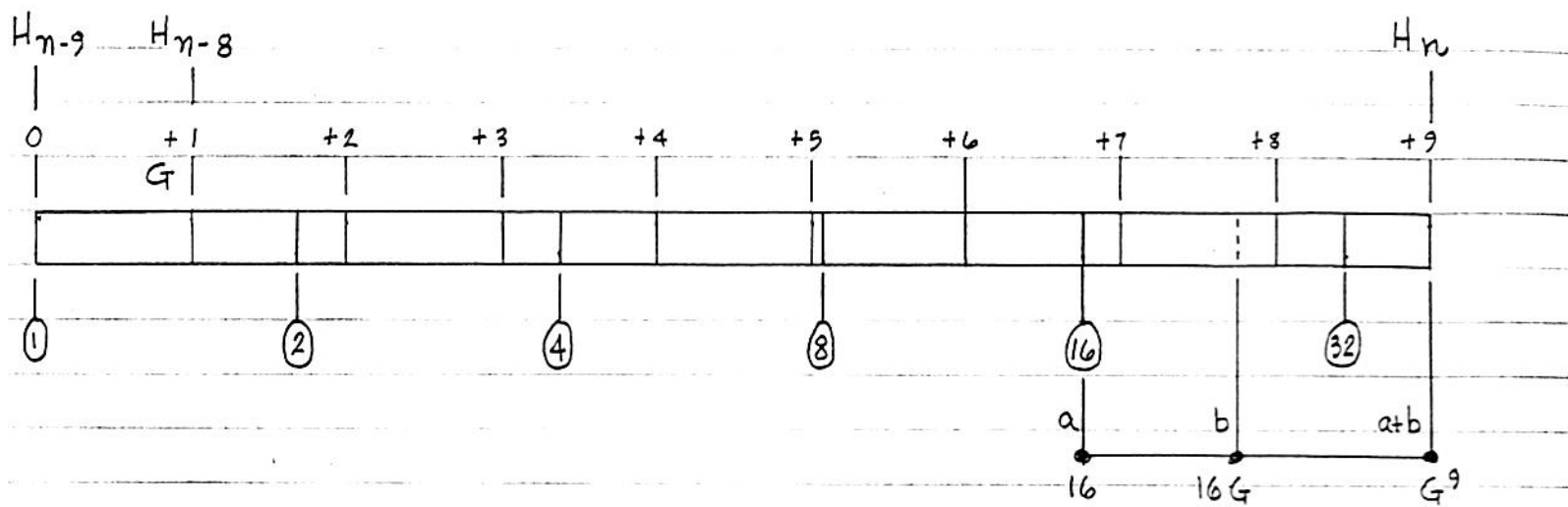
1/1



$$G = (16 + 16G)^{(1/9)}$$

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18 Sep 97 E.W.



Recurrence Relation:

$$16H_{n-9} + 16H_{n-8} = H_n$$

$$\Rightarrow G = (16 + 16G)^{(1/9)}$$

$$= 1.50710537587...$$

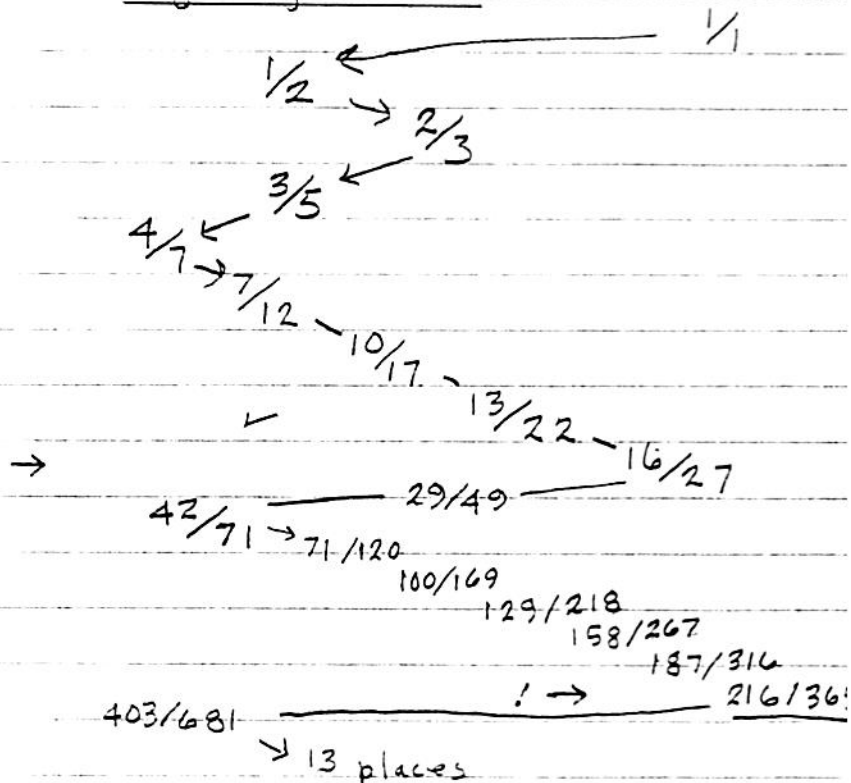
$$\log_2 = \underline{\underline{.591780292802}}$$

1/4 Pattern

.59178... 0/1

← 1	.689
→ 1	.449
← 2	.223
→ 4	.466
← 2	.144
→ 6	.930
← 1	.075
13	.320
3	.121
8	.244

Zig-Zag Pattern



Ref: Linear Tuning of the 32-"40"-48" Arithmetic Mean (+9=40), 1989, Erv Wilson

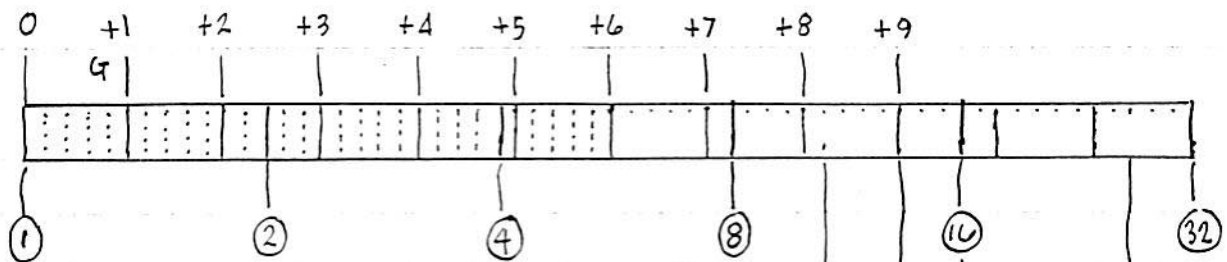
$$G = (8 + 4G)^{(1/9)}$$

16 Sep 97 E.W.

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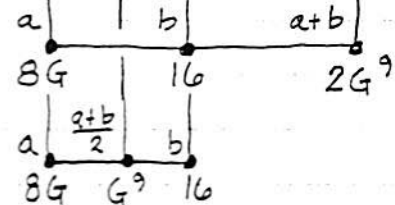
note:

H_{n-9} H_{n-8} (Please see simplified diagram at bottom of this page.) H_n



like 2:3:5

like 4:5:6



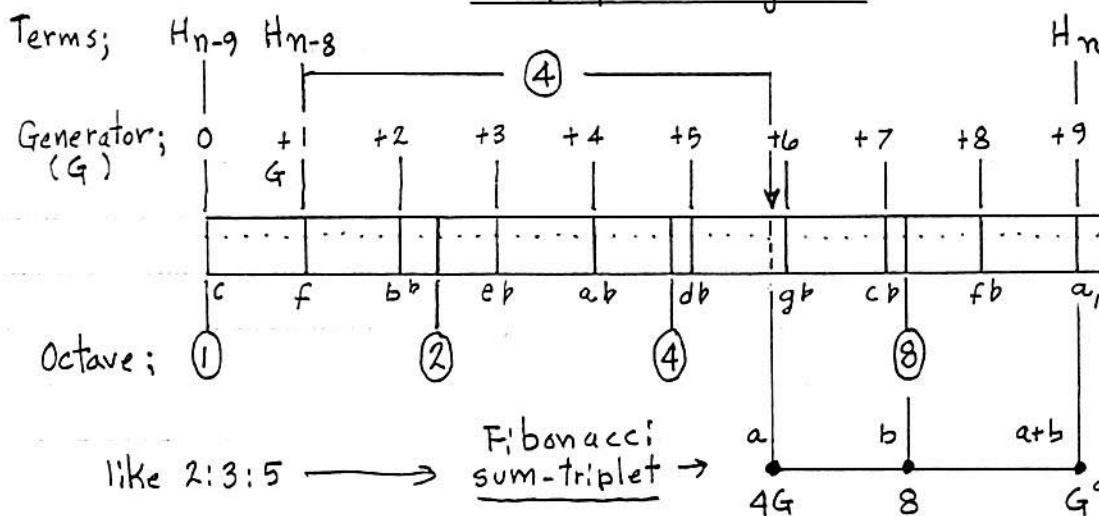
Recurrence relation:

$$8 \cdot H_{n-9} + 4 \cdot H_{n-8} = H_n$$

example seed:

-9	-8	-7	-6	-5	-4	-3	-2	-1	n
19,683	26,244	34,992	46,656	62,208	82,944	110,592	147,456	196,608	262,440

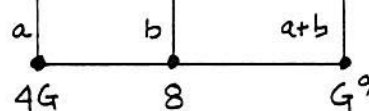
Simplified Diagram



18 Sep 97 E.W.

like 2:3:5

Fibonacci
sum-triplet



Recurrence Relation: $8 \cdot H_{n-9} + 4 \cdot H_{n-8} = H_n$

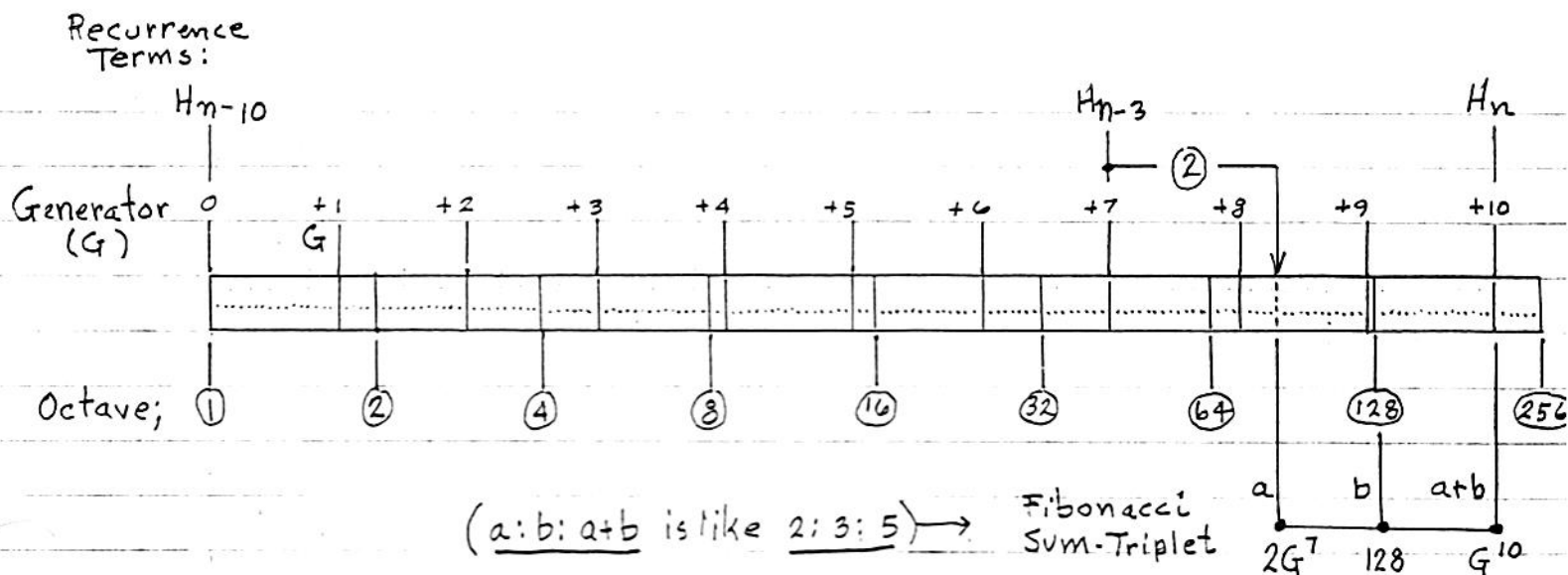
$$\Rightarrow G = (8 + 4G)^{(1/9)}$$

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

$$G = (128 + 2G^7)^{(1/10)}$$

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23 Sep 97. EW



Recurrence relation:

$$128 \cdot H_{n-10} + 2 \cdot H_{n-3} = H_n$$

$$\Rightarrow G = (128 + 2G^7)^{(1/10)}$$

$$= 1.70969994699$$

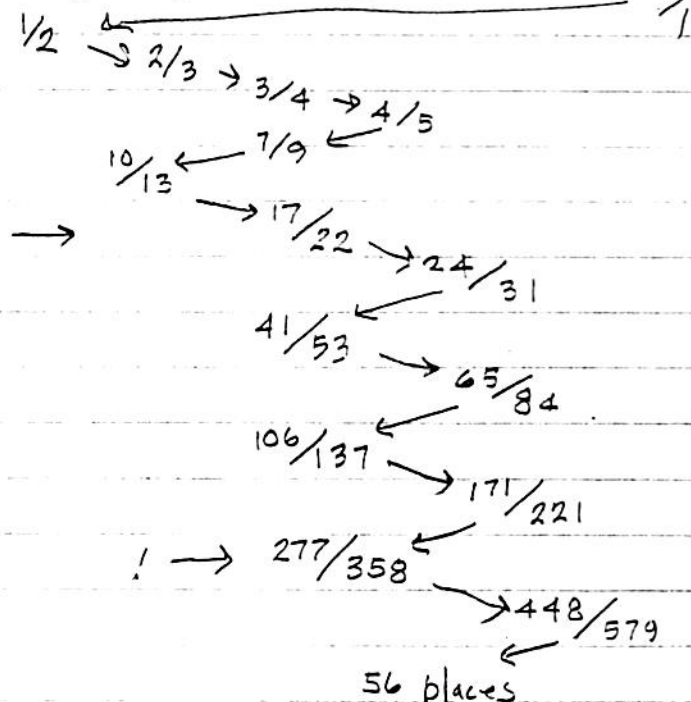
$\log_2$.773743153781

Zig-Zag Pattern

1/n Pattern

0/1

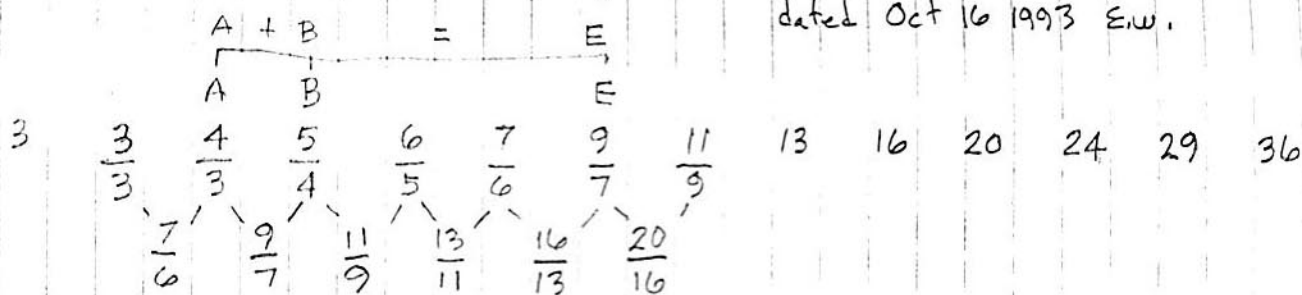
← 1	.292
→ 3	.419
← 2	.382
→ 2	.615
← 1	.624
→ 1	.600
← 1	.664
→ 1	.504
← 1	.982
→ 1	.017
? 56	.326



Ref: Scales of Mt. Meru, Fig. 12, Recurrence # 29 (Wilson, 1993/1997)

Meta-Ptolemy

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dated Oct 16 1993 E.W.



36 44 53 65 80 97 118 145 177 215 263

(1) (2) (3) (4) (1) (2) (3) (4)

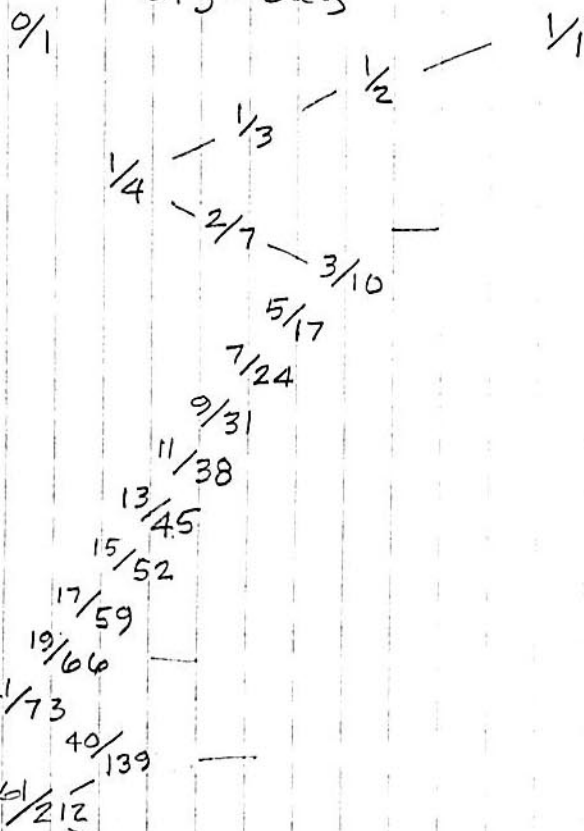
Converges On 1.22074408461

Log2 = .287760787077

1/2 Pattern

3 .475
2 .104
9 .543
1 .839
1 .191
5 .227

zig-zag



10-40 = Ptolemy's Equal

Try: 4 6 7 8 10 12 15 18 22 27 33 40 49 60 73