

Fig 1. This is a branch of the scale tree where the Fourths of the Generating Series may vary between  $\frac{2}{5}$  and  $\frac{3}{7}$  Octave. Within those limits a 12 tone linear scale is formed. It may be used as the basis of a generalized keyboard having 12 ranks, every 5th rank being tuned to the Generating Fourth. It will accommodate any of the scales occurring below it. It is named therefore, the  $[\frac{5}{12}]$  keyboard.

The numerator is the sum of the 2 numerators above, and the denominator is the sum of the 2 denominators. The denominator indicates the number of tones in the scale, or ranks in the keyboard. The numerator

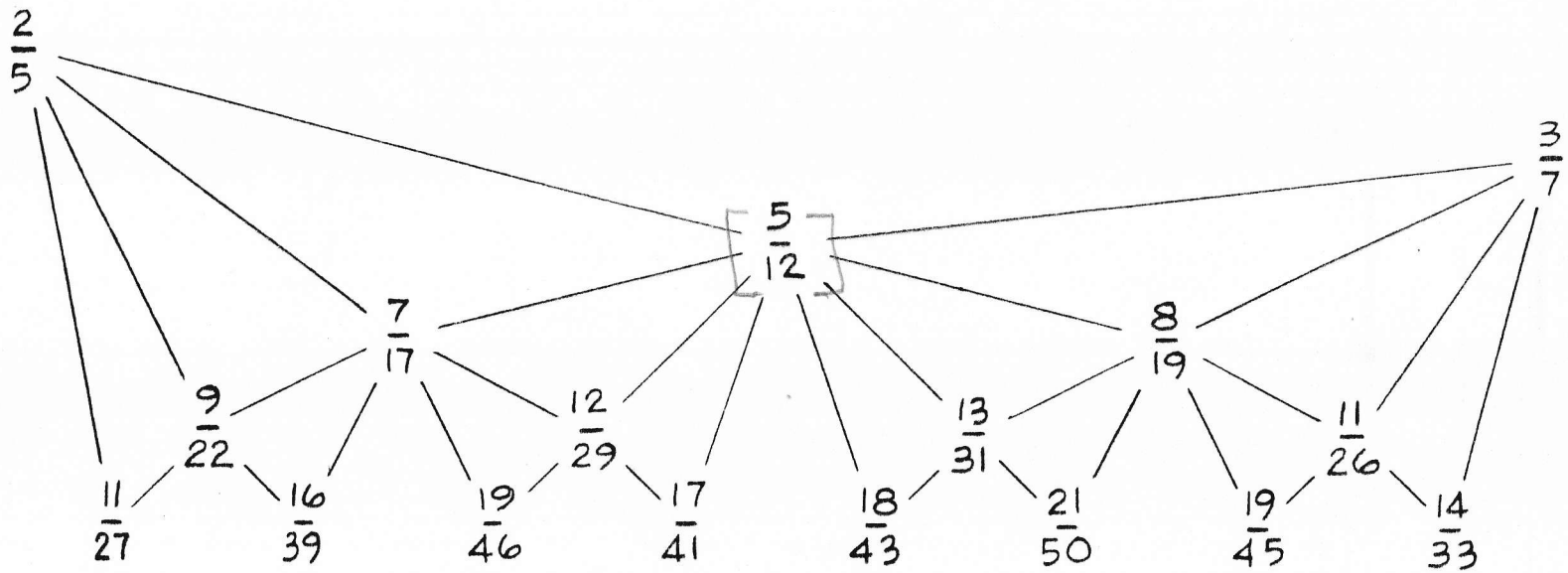


Fig. 1 Scale Tree

Fig 1. This is a branch of the scale tree where the Fourths of the Generating Series may vary between  $\frac{2}{5}$  and  $\frac{3}{7}$  Octave. Within those limits a 12 tone linear scale is formed. It may be used as the basis of a generalized keyboard having 12 ranks, every 5th rank being tuned to the Generating Fourth. It will accommodate any of the scales occurring below it. It is named therefore, the  $[\frac{5}{12}]$  keyboard.

The numerator is the sum of the 2 numerators above, and the denominator is the sum of the 2 denominators. The denominator indicates the number of tones in the scale, or ranks in the keyboard. The numerator

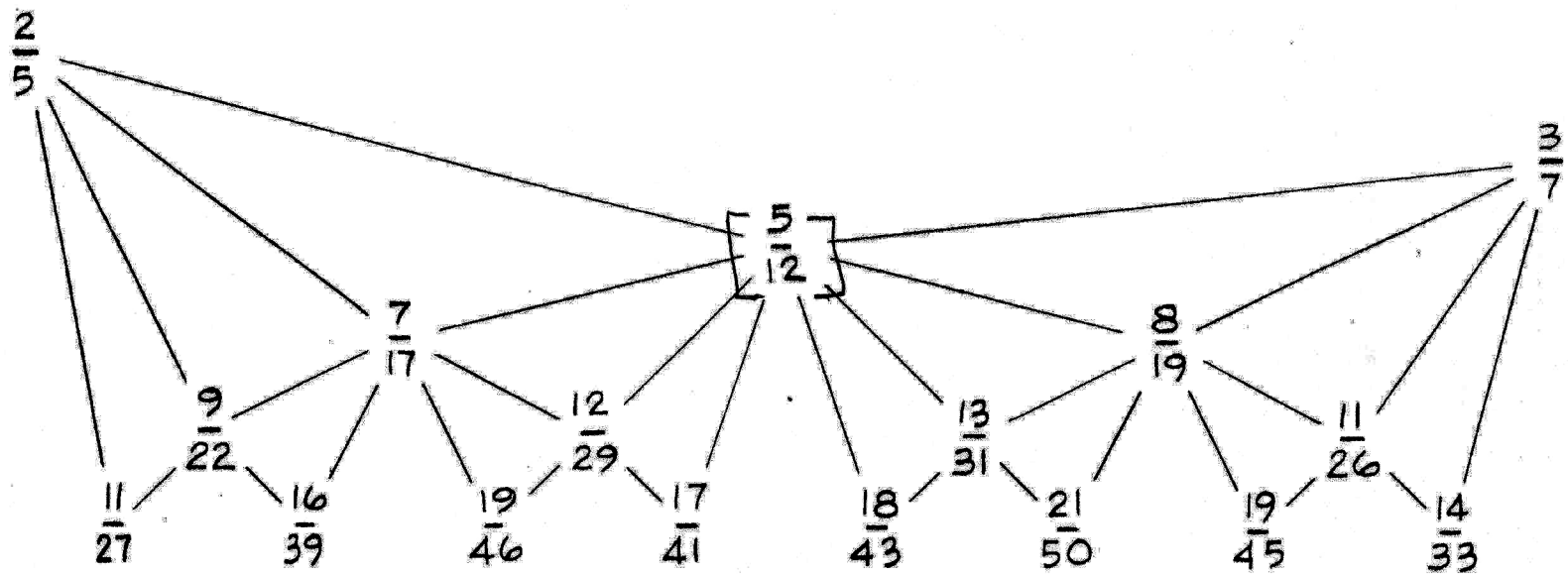


Fig. 1 Scale Tree

# The Generalized Marimba Keyboard

© 1986 by Erv Wilson

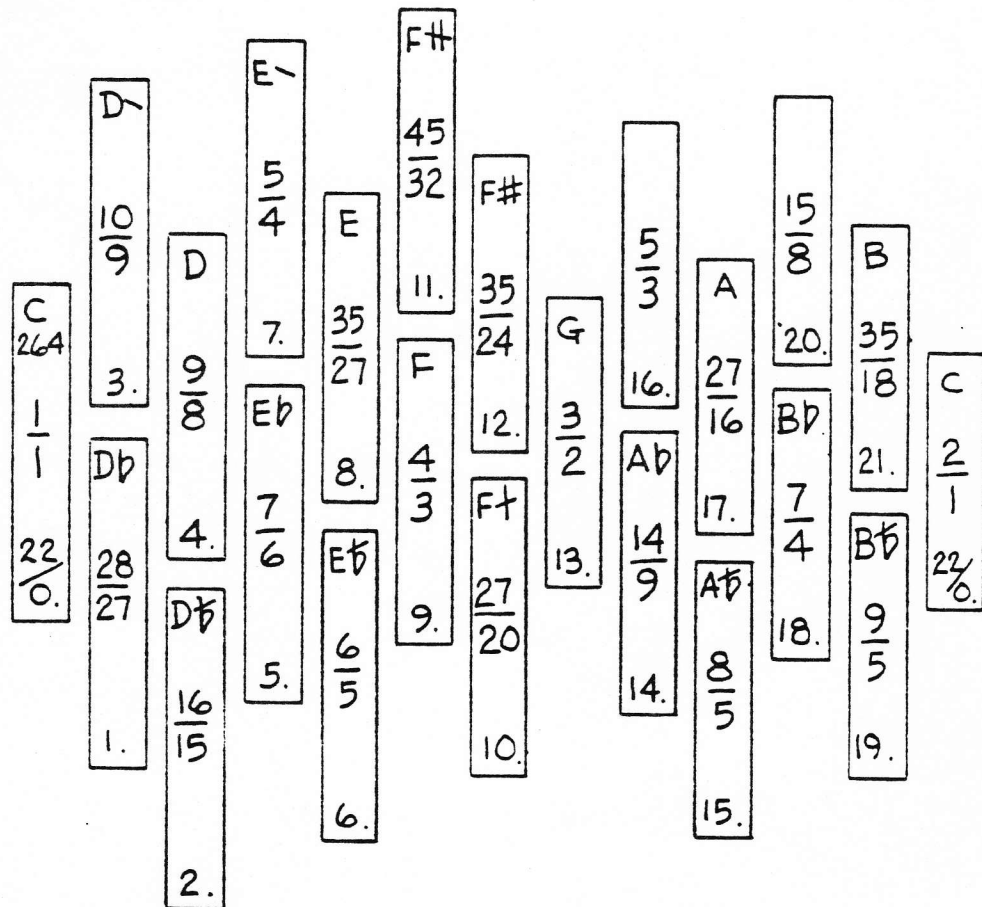
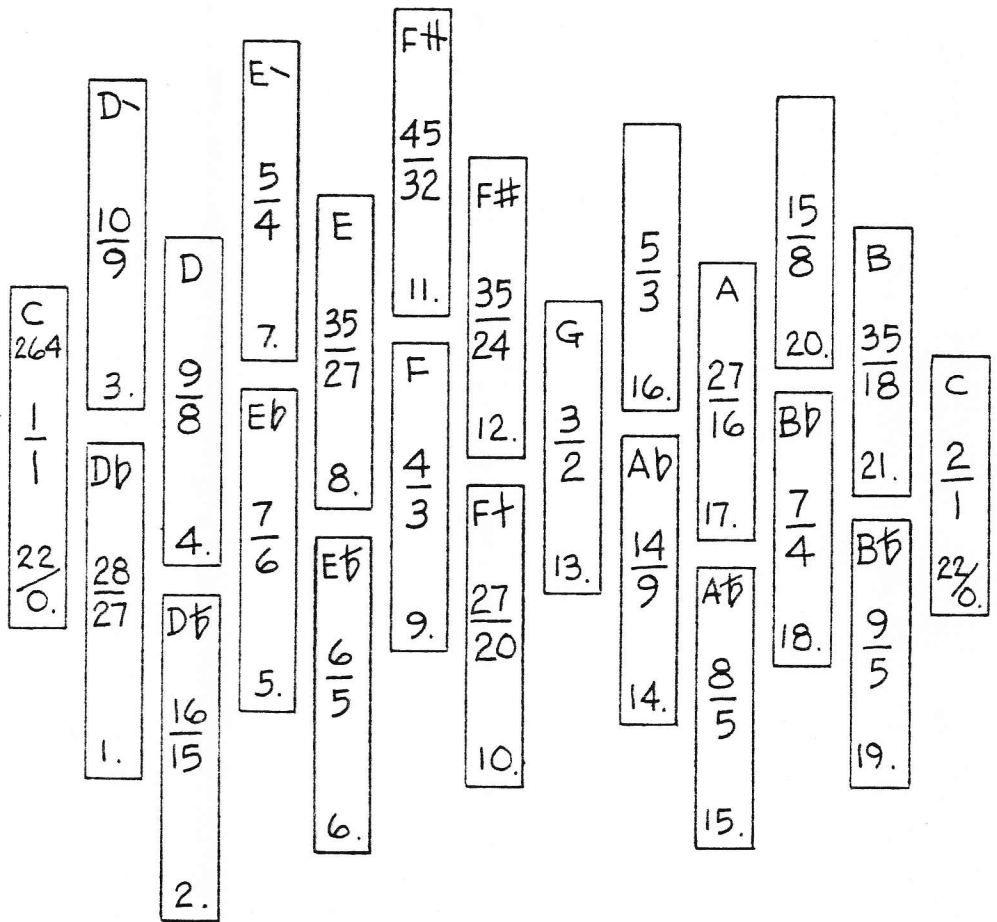


Fig 1. A 22-Tone Scale on the Bosanquet, Marimba Keyboard

Comments; All malletting is homogeneous. The scale is built from Greek tetrachords. How many can you find? The 22-tone scale of India, fig 3b, may be mounted in this same manner. This scale sub-divides the 16/15 by 28/27 & 36/35. That of India divides the 16/15 by 256/243 & 81/80. They are otherwise the same.





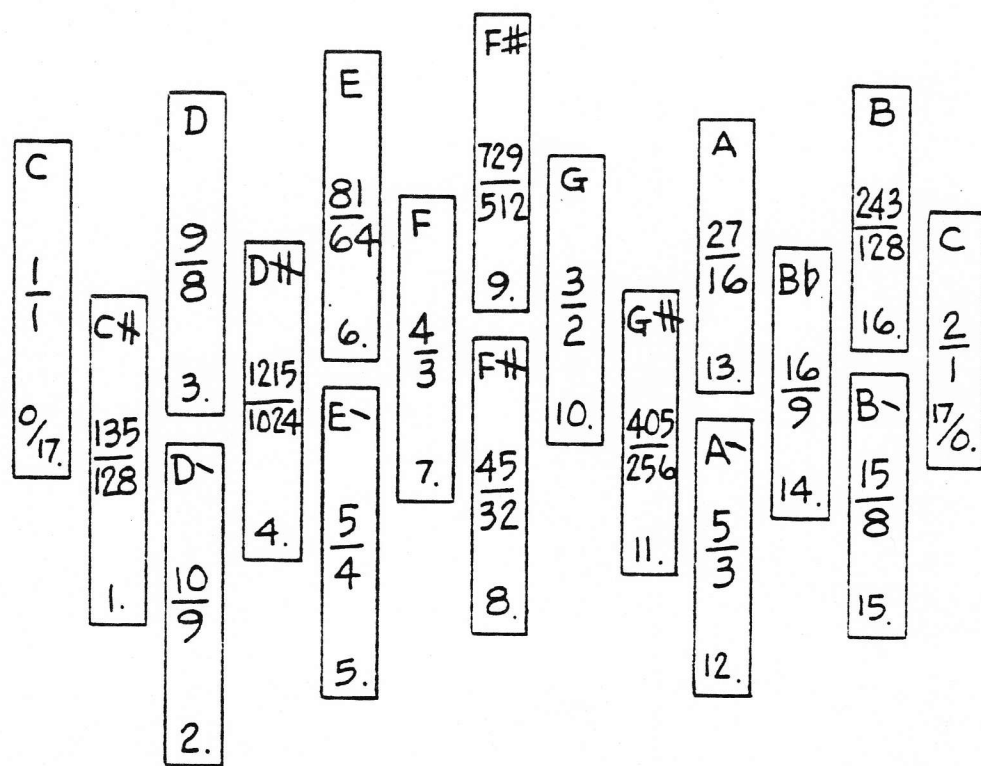
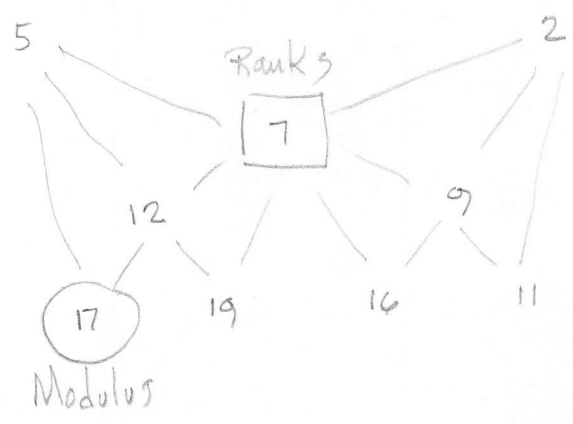
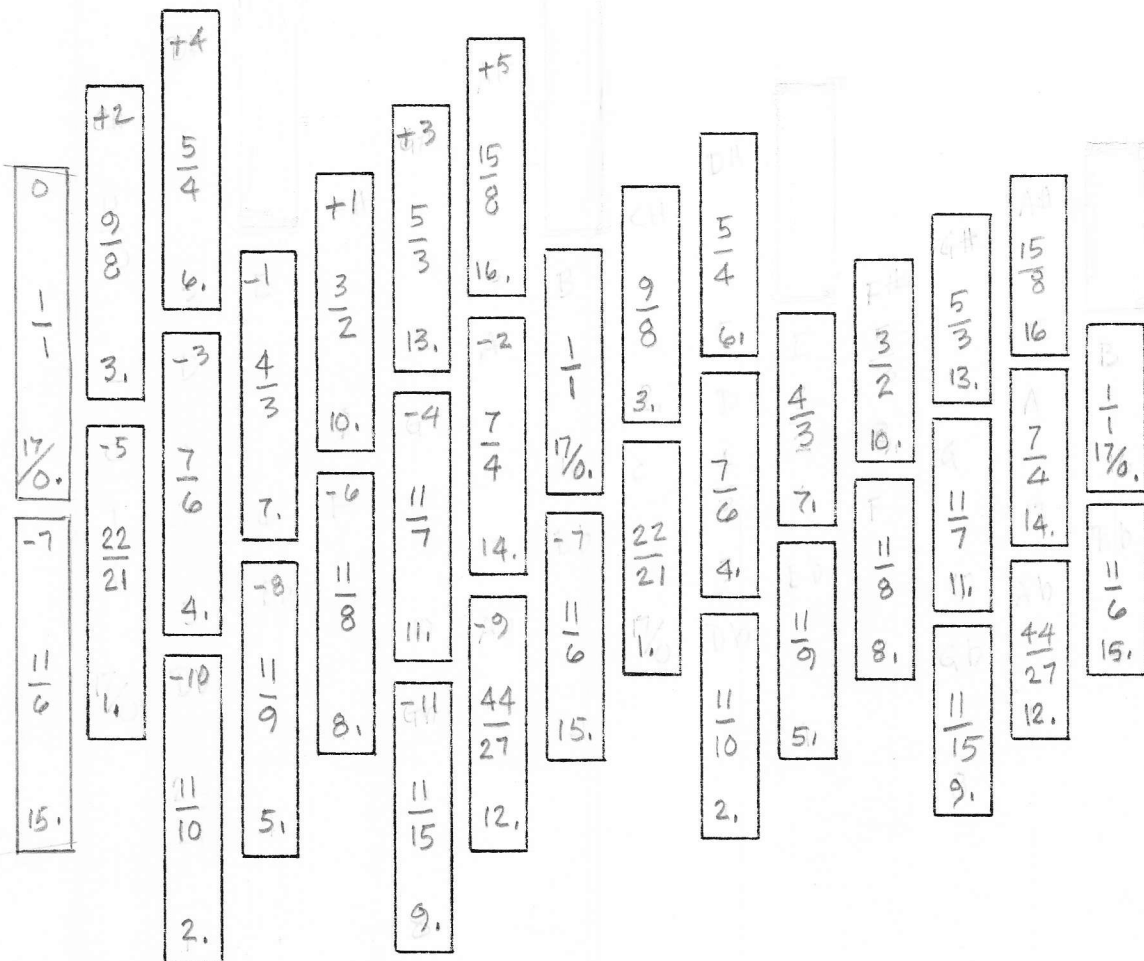


Fig 2. A 17-tone-Scale on the Bosanquet, Marimba Keyboard  
 Comments; All malleting homogeneous. This scale is described in  
Some Basic Patterns Underlying Genus 12 & 17 by the author  
 (844 N. Ave 65, Los Angeles, CA 90042). From "D" this scale is  
 equivalent to a 13th century Persian scale, give or take a skhisma.  
 See TRACTAT O MUSIQUE by Jami. Also see An Elementary  
Treatise on Musical Intervals and Temperament by R.H.M. Bosanquet.

1.3

11



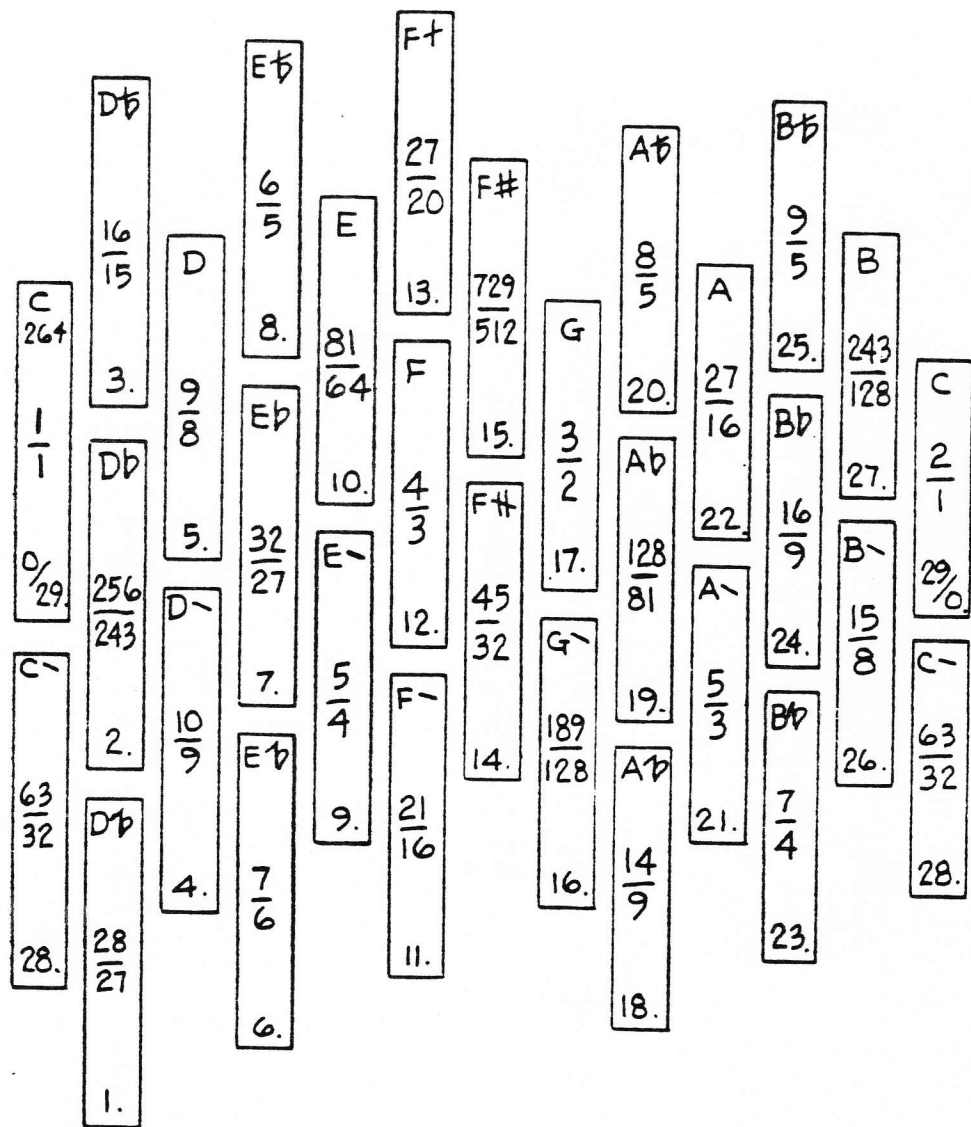


Fig 3a. - A 29-tone scale on the Bosanquet, Marimba Keyboard  
 Comments; All malletting homogeneous. This scale includes the classic 22 tones of Indian theory, <sup>Fig 3b,</sup> plus 7 septimal intervals which subdivide the sruti, 256/243, into 28/27 & 64/63.

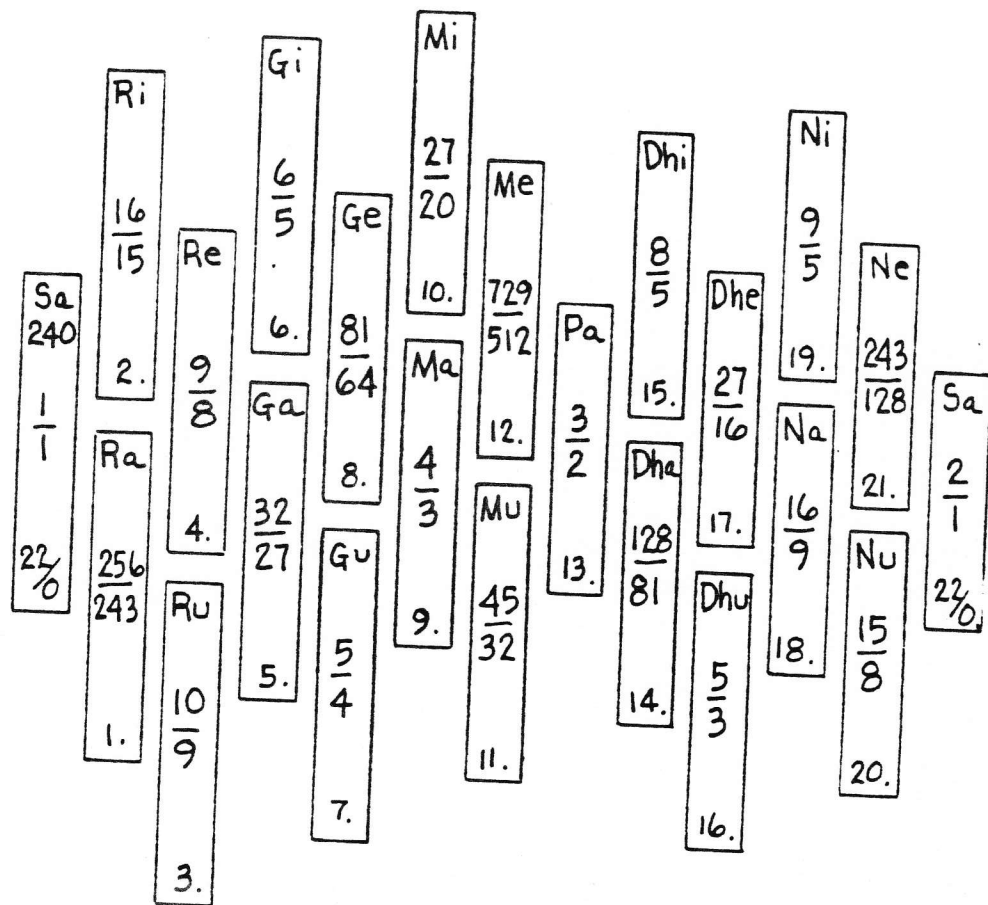


Fig 3b. The 22 Srutis of Indian Theory, on the Bosanquet, Marimba Keyboard

Comments; The scale is treated as a chain of Fourths, the skhisma neglected. This allows homogeneous malletting in both the expressed scales and in an elaborate set of skhismatically equivalent modulations. The sruti count is geometrically irregular. Reference; South Indian Music, Book IV, by P. Sambamoorthy.

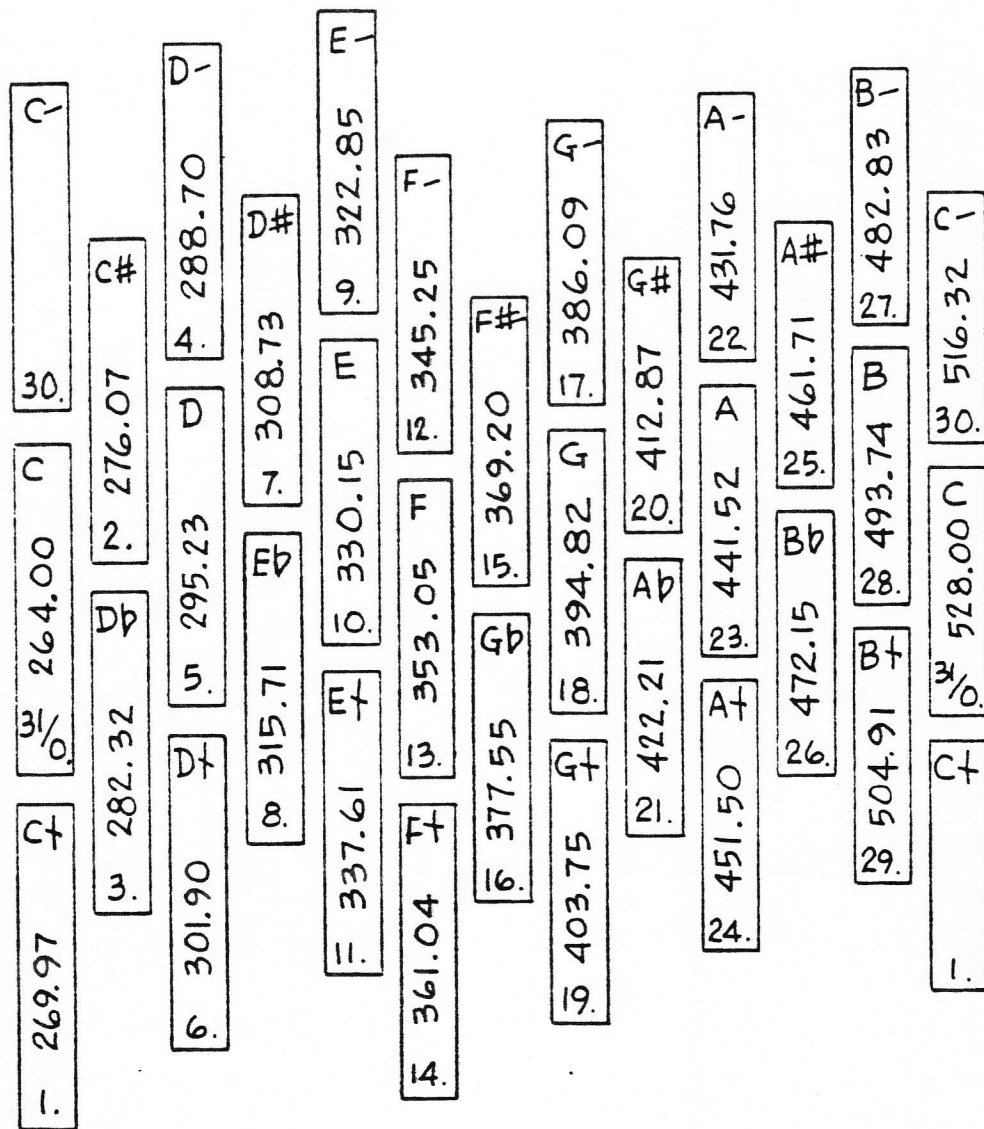


Fig 4. 31-Tone equal scale on the Bosanquet, marimba keyboard  
 Comments; Homogeneous malletting. Several have been built and they are  
 a delight to play. (An instrument builder is Stephen Smith, 5017 Latona N.E.,  
 Seattle, WA 98105.) Reference; Sistema Natural de la Música by  
 Augusto Navarro, and New Music in 31 Tones by Fokker.

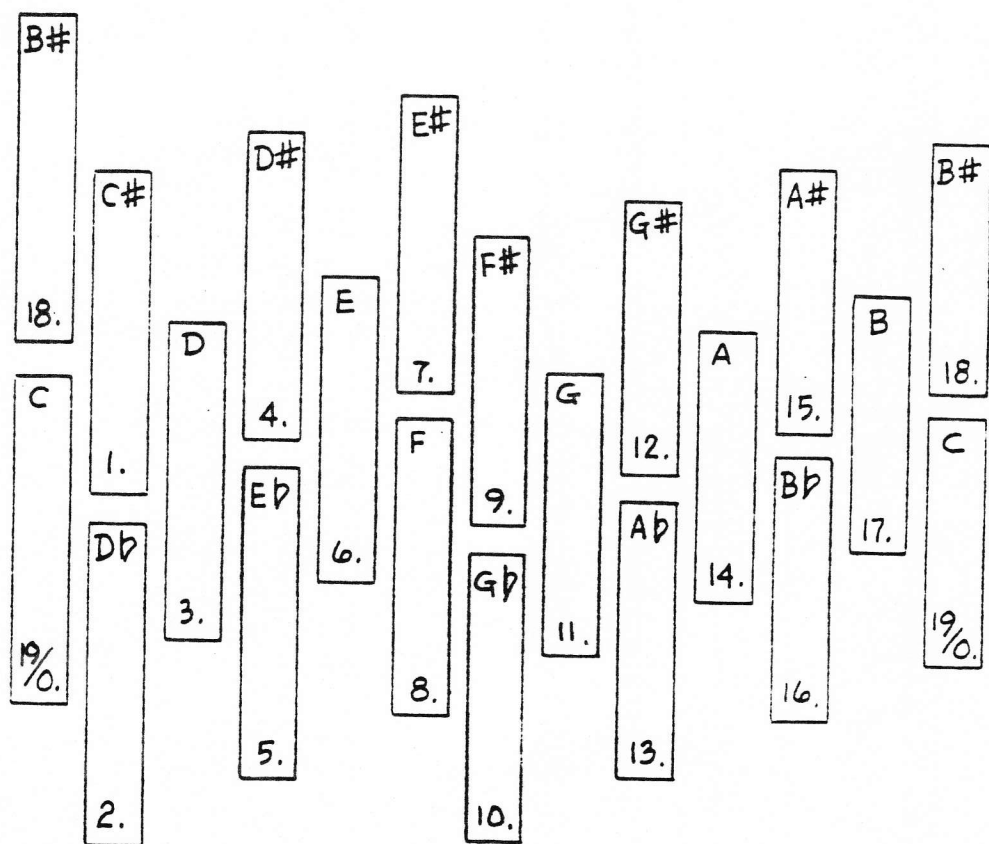
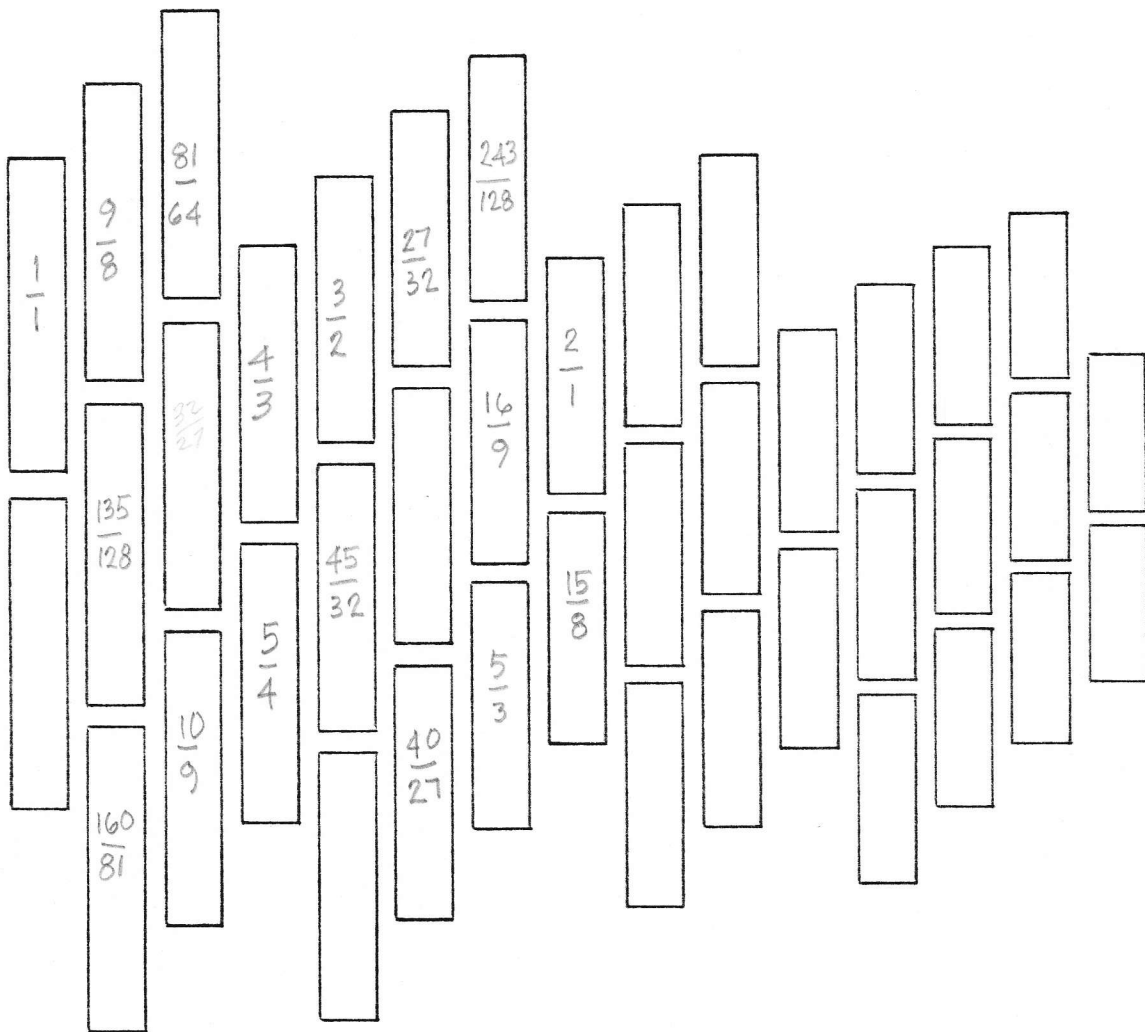
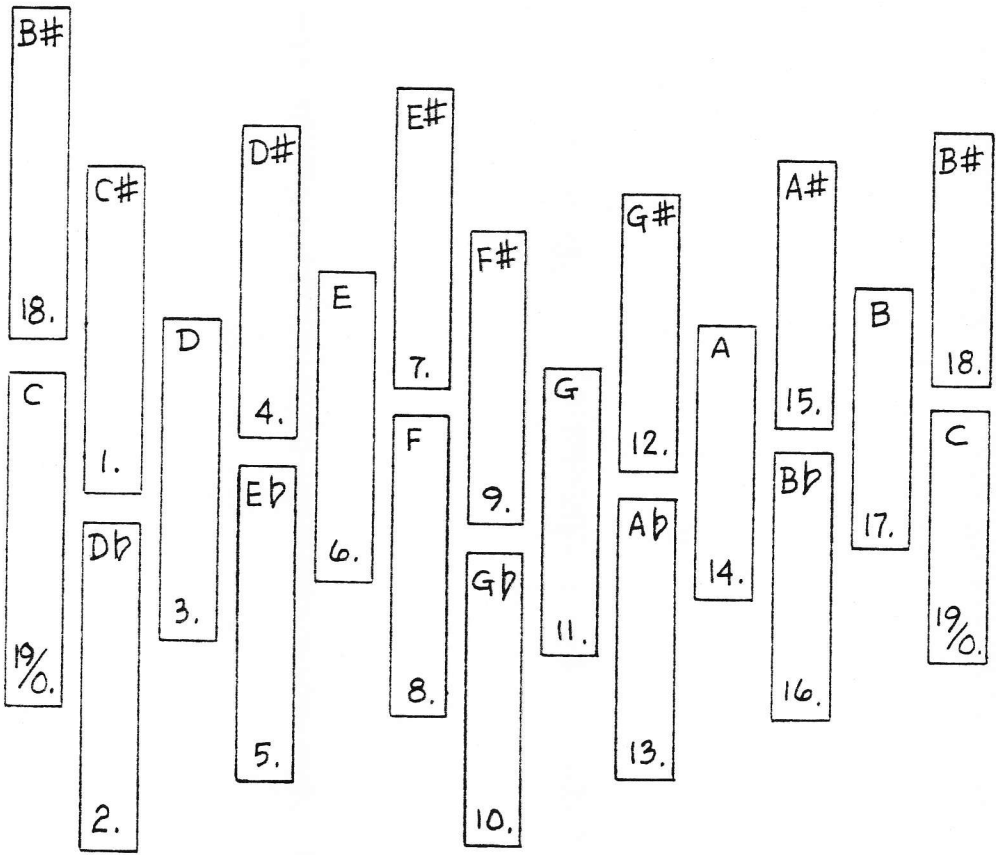


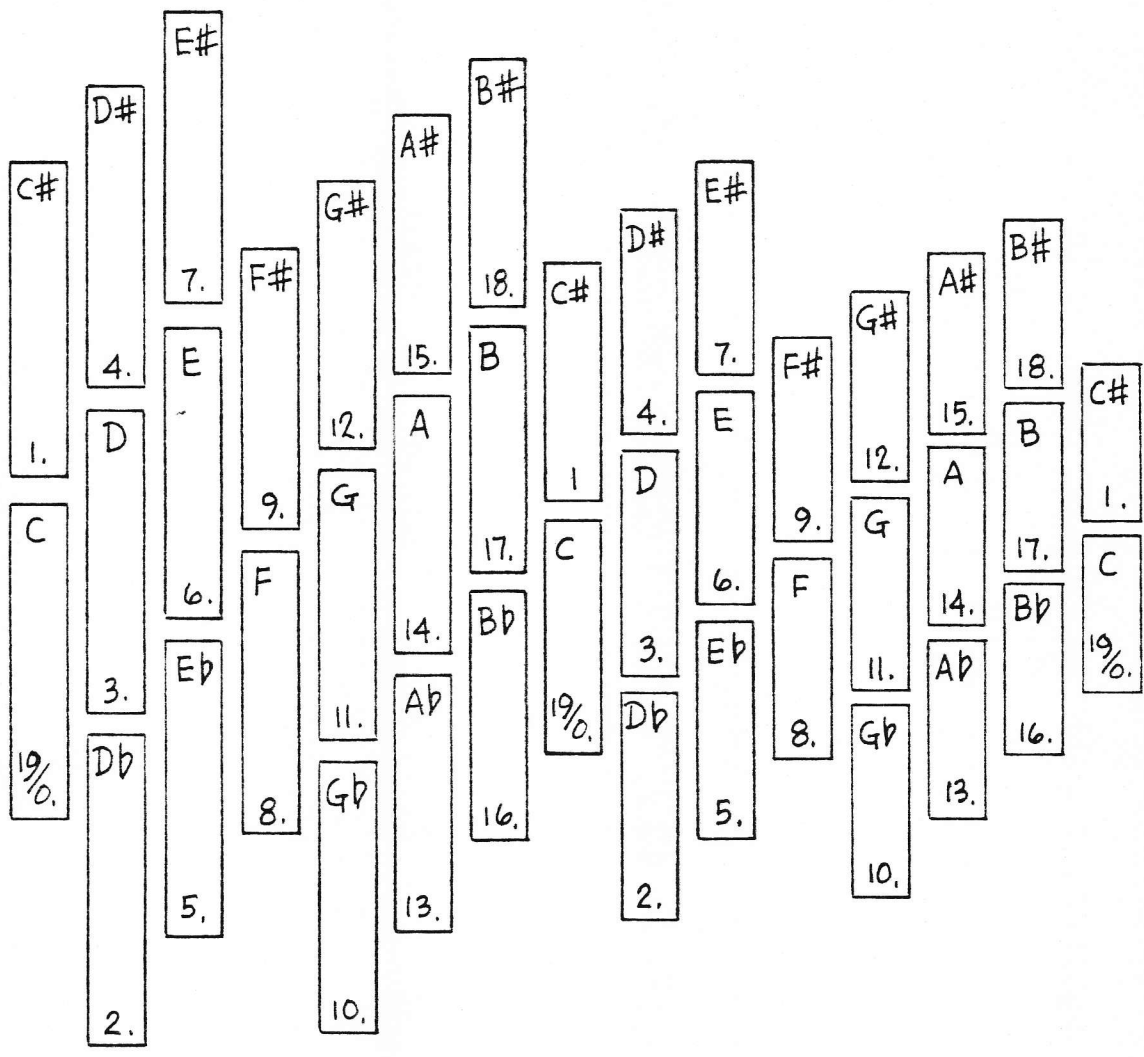
Fig 5. A 19-Tone Scale on the Bosanquet Marimba, Keyboard  
 Comments; Malletting homogeneous.  
 Tuning; this can be a subset of the 31-tone scale. But this scale can be tuned in many ways, as can each of the scales shown; 22, 17, 29, 31, 19, 41. How would you like to tune this marimba?  
 Reference; A Theory of Evolving Tonality by Joseph Yasser

B $\flat$  F C G D A









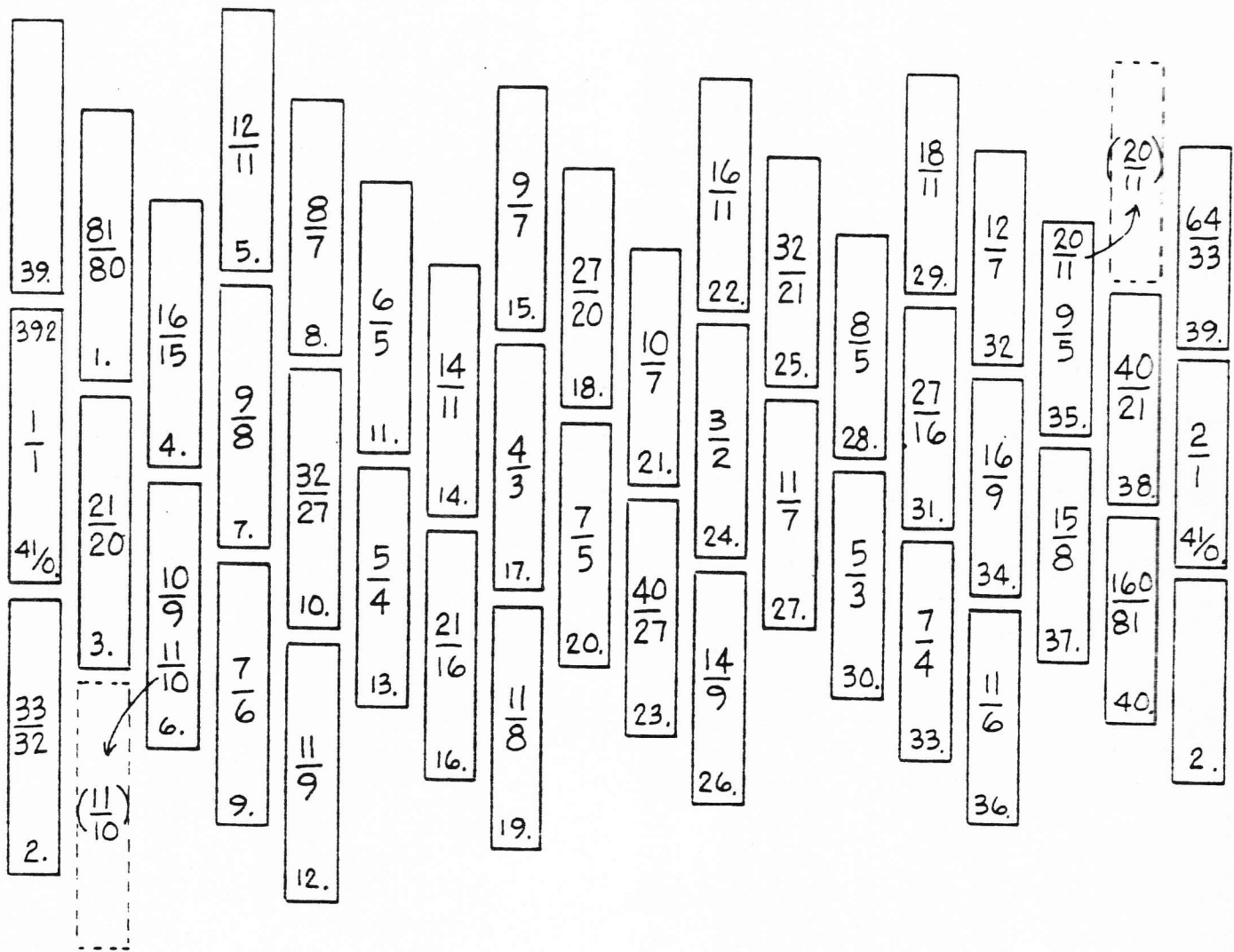


Fig 6a. A 17-Rank Generalized Marimba Keyboard, Showing Harry Partch's Scale mapped to modulus 41.

Comments; all malletting homogeneous except for  $\frac{11}{10}$  and  $\frac{20}{11}$ , which would fall on Key 6, and Key 35, already occupied by  $\frac{10}{9}$  and  $\frac{9}{5}$  respectively. The Dotted lines indicate one way out of this dilemma. Split keys, as in the Octal marimba, might be another solution. Reference; Genesis of a Music by Harry Partch. Another modulus 41 tuning suited to this keyboard follows in figure 6b:

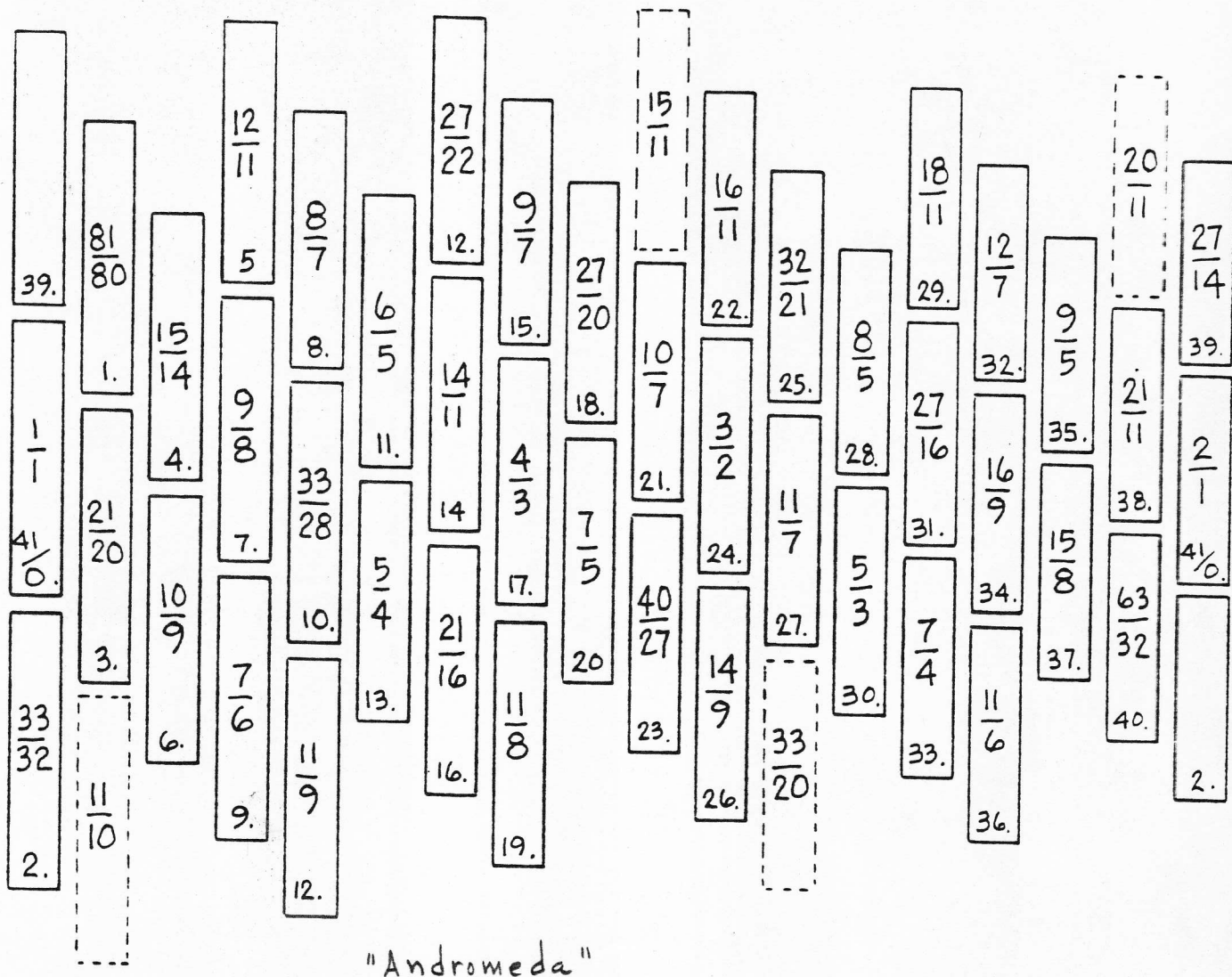
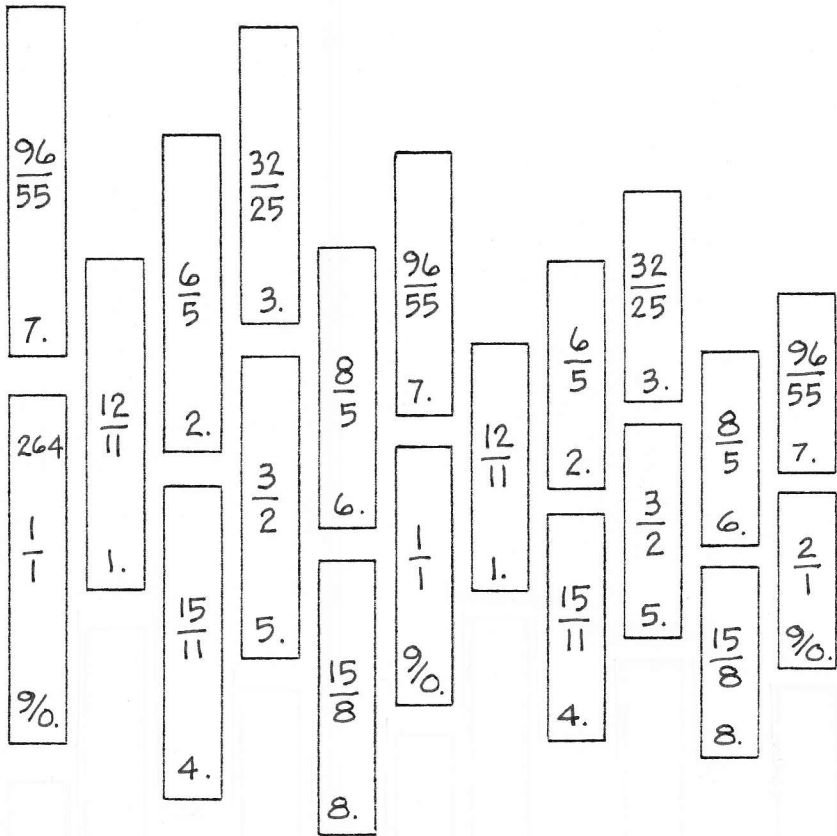
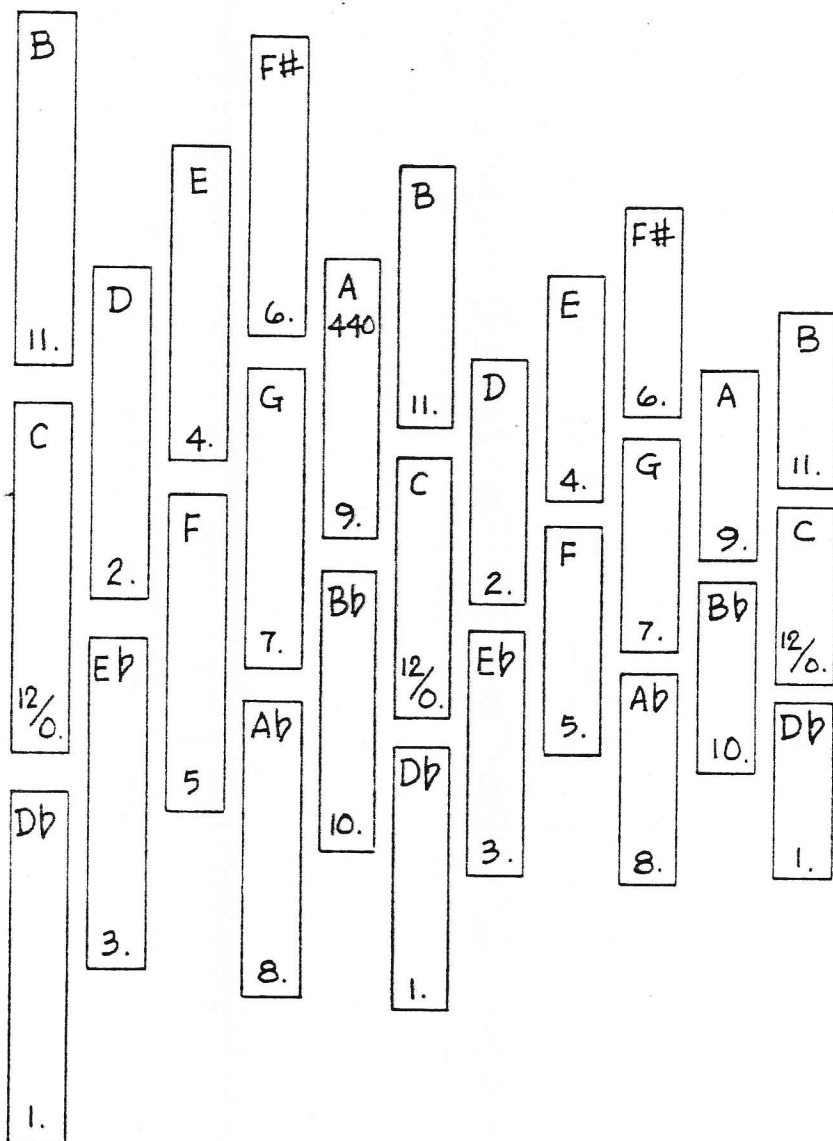


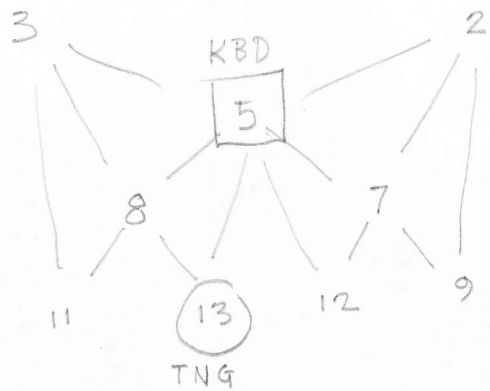
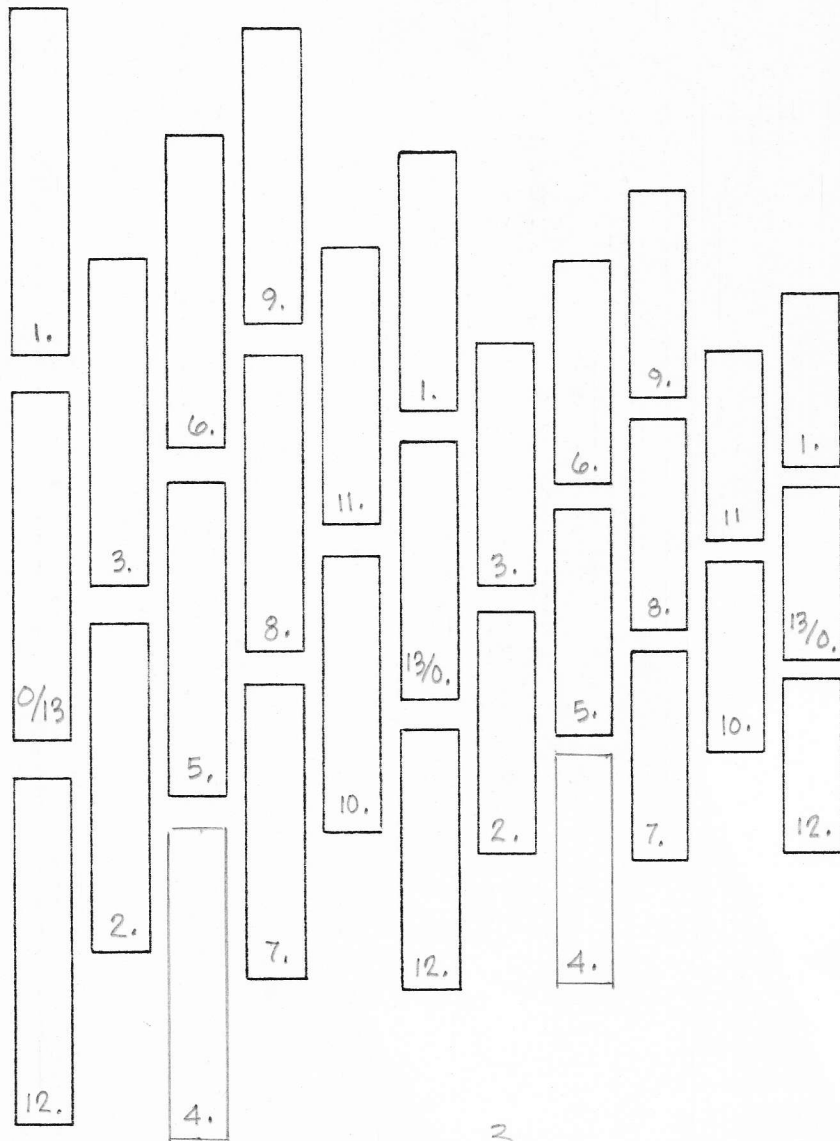
Fig 6b. A 17-Rank Generalized Marimba Keyboard, showing 2 Diamonds, Key C and Key G.

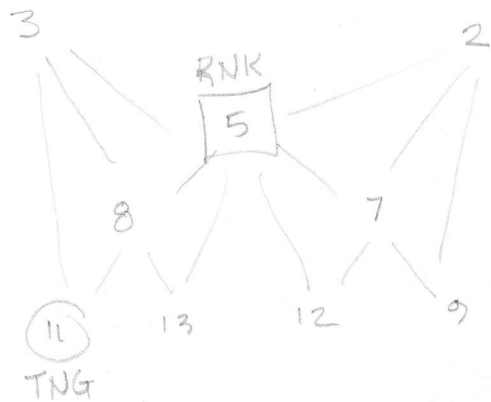
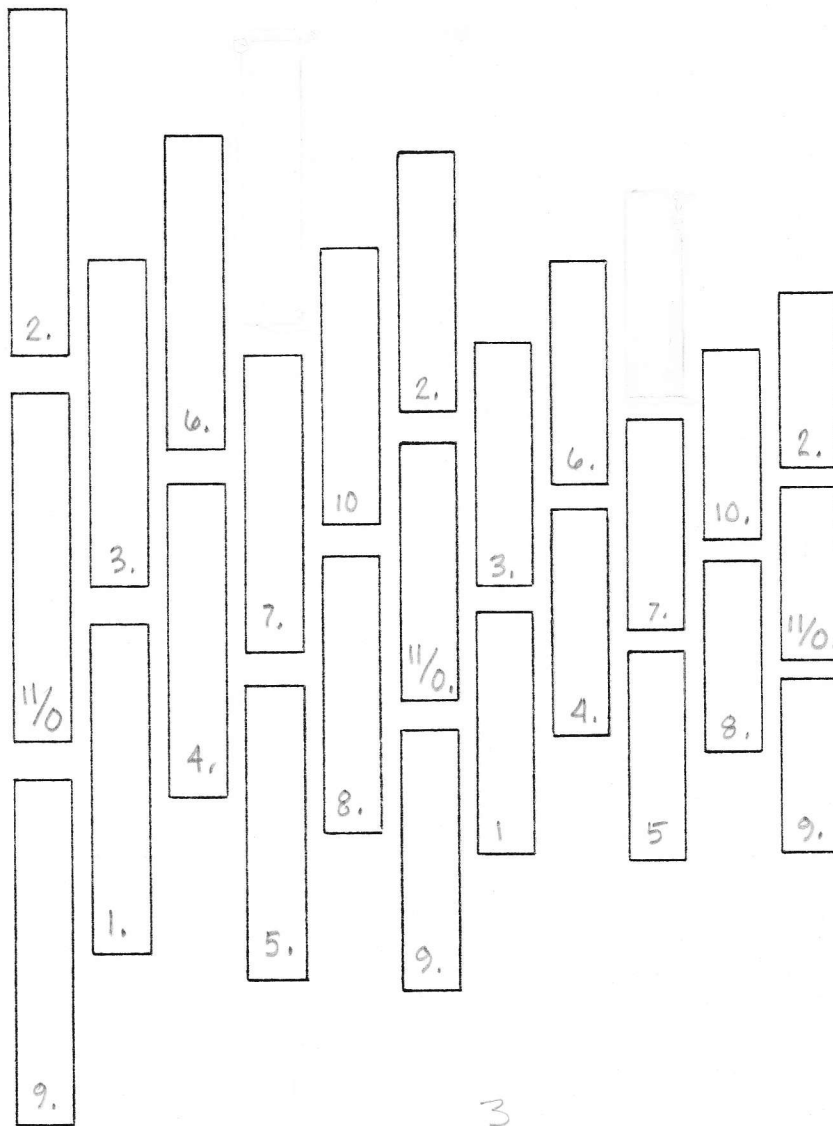
Comments; Homogeneous malletting except, again, the  $\frac{11}{10}$  &  $\frac{20}{11}$  of each Diamond, in dotted lines, require special malletting. The special malletting, consistent, however, and derived from modulus 53.



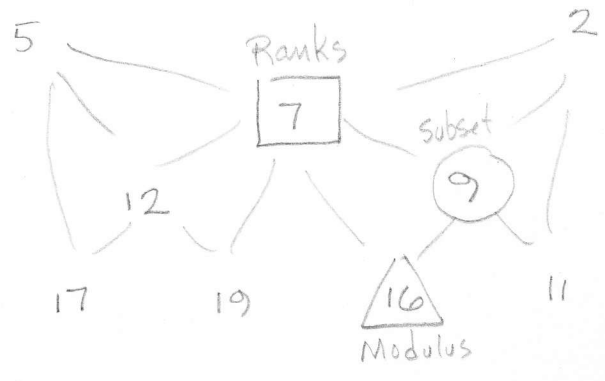
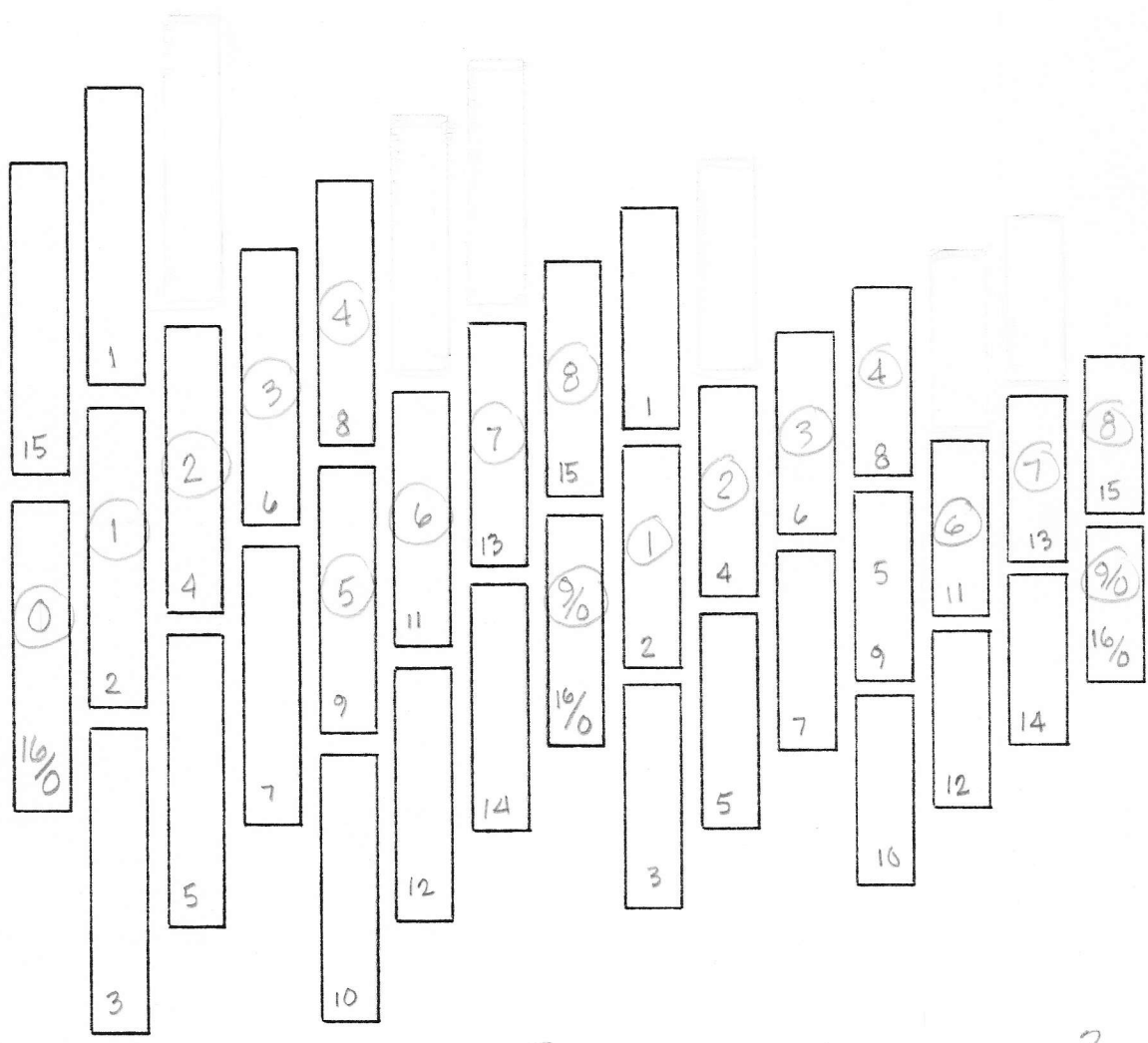






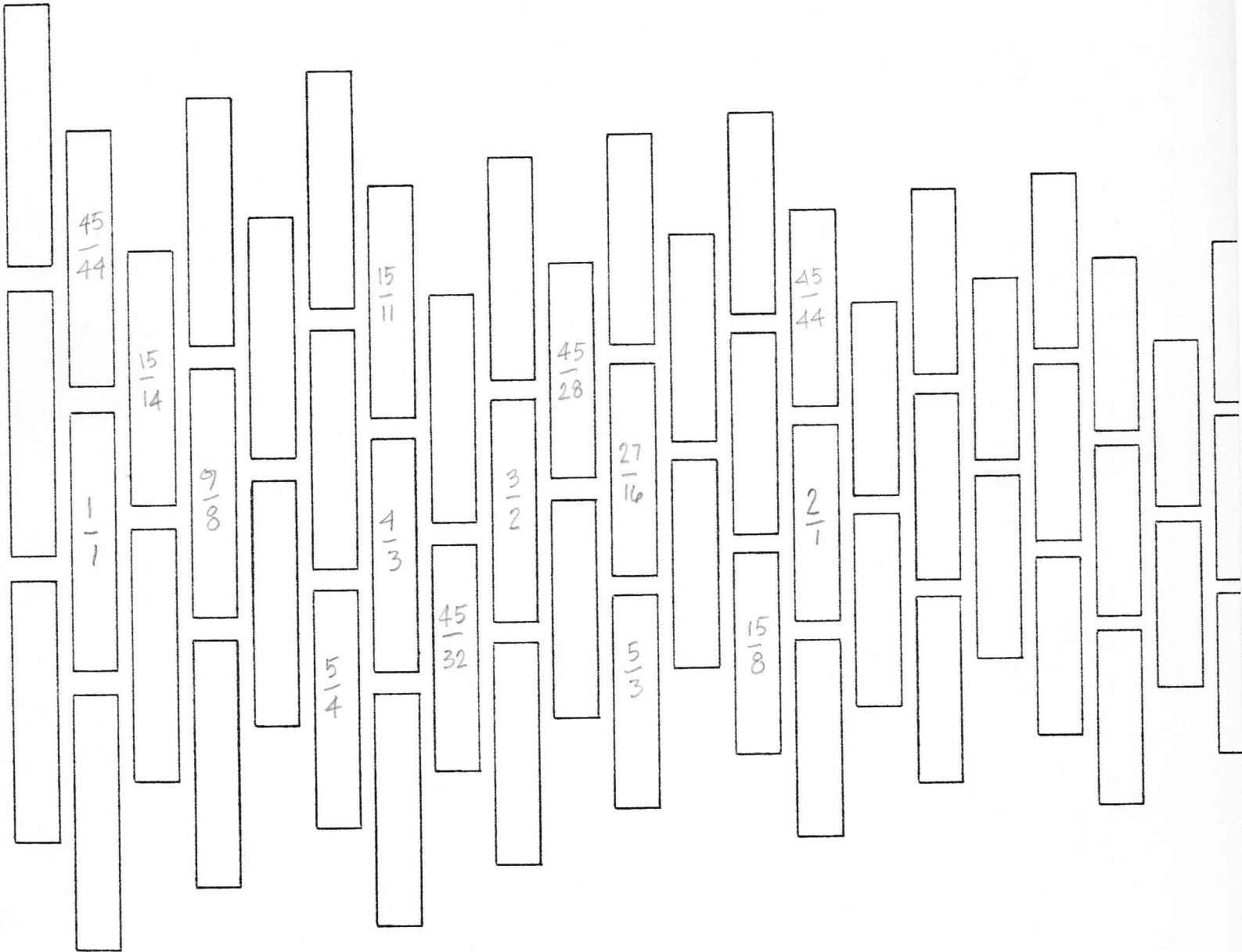






$$\frac{9}{8} \times \frac{10^5}{11} = \frac{45}{44}$$

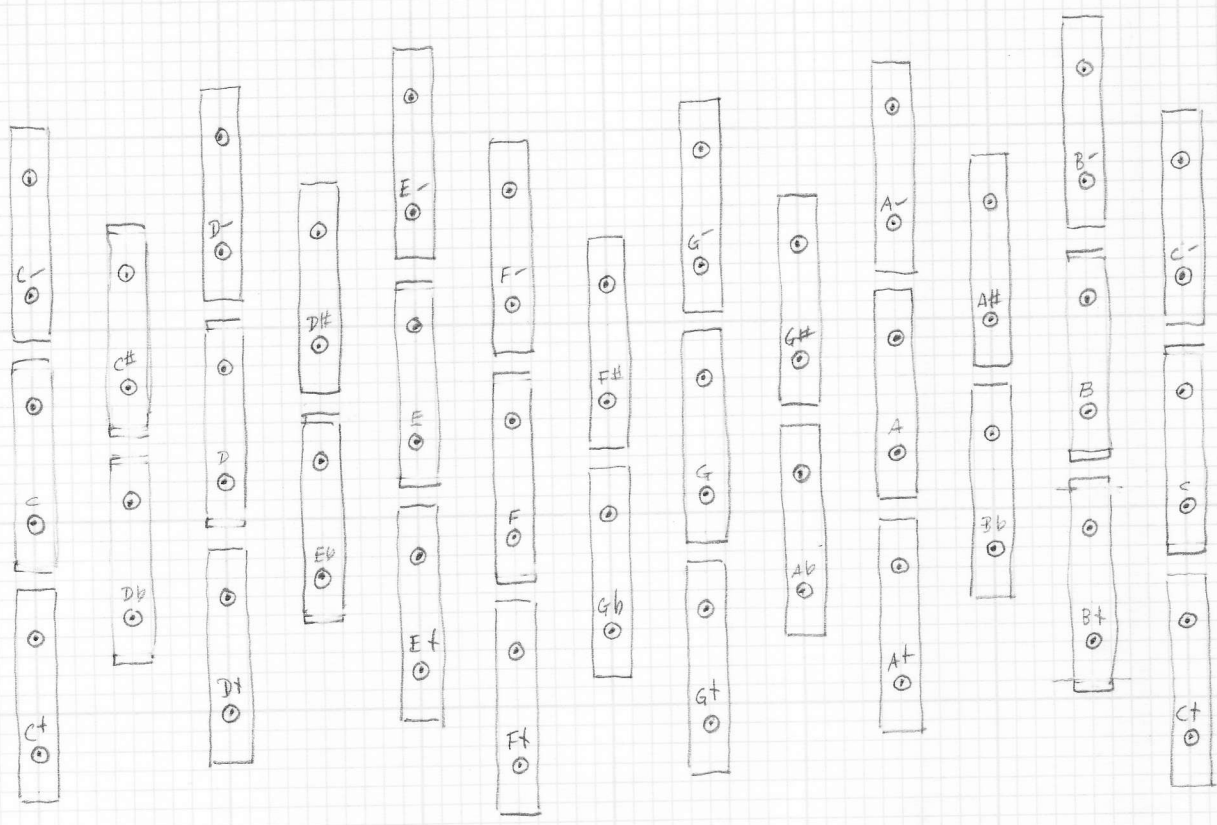
$$\frac{3}{2} \times \frac{15}{14} = \frac{45}{28}$$



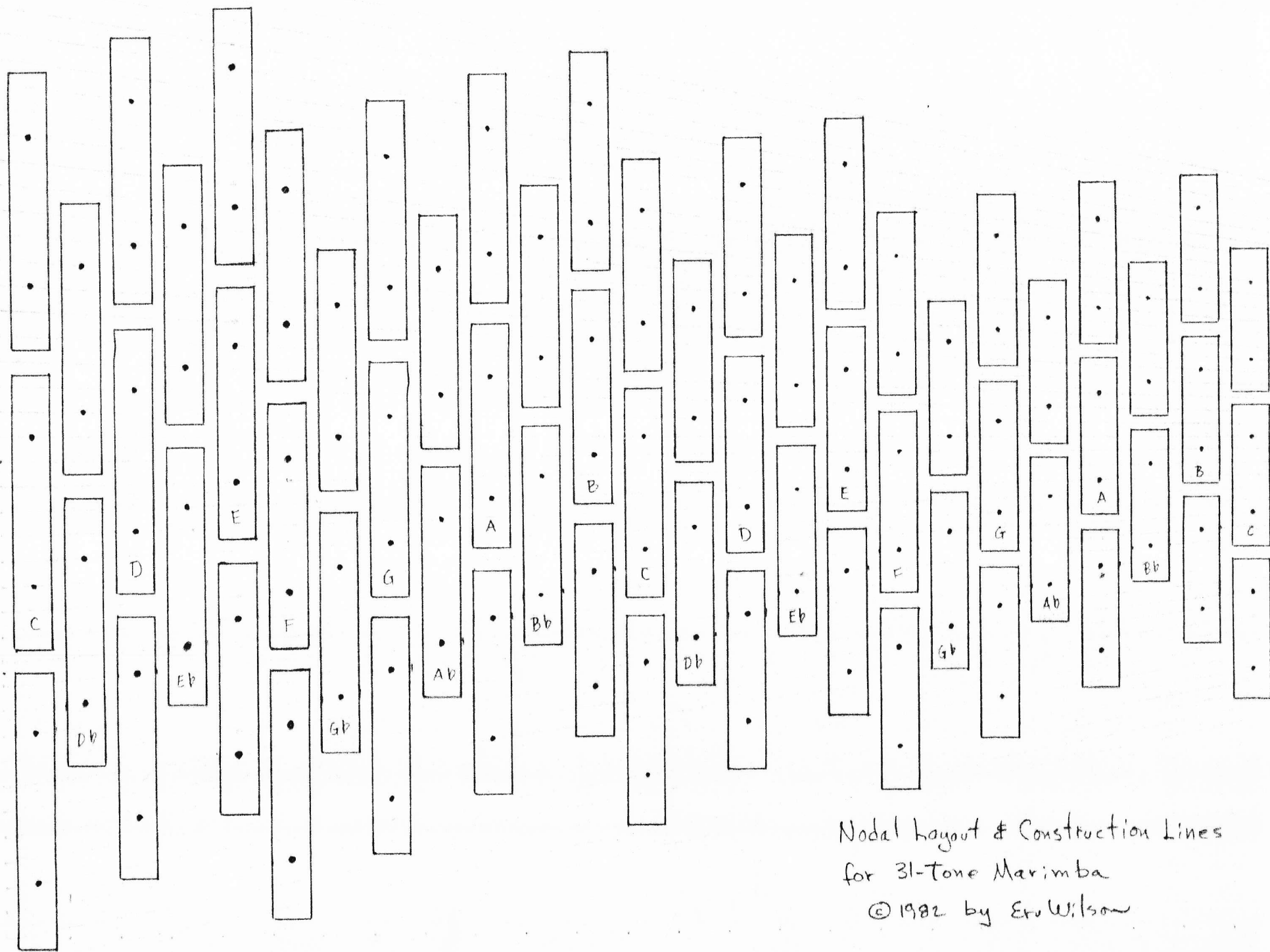
0 1 2 3 4 5 6 7 8 9 10 11 12

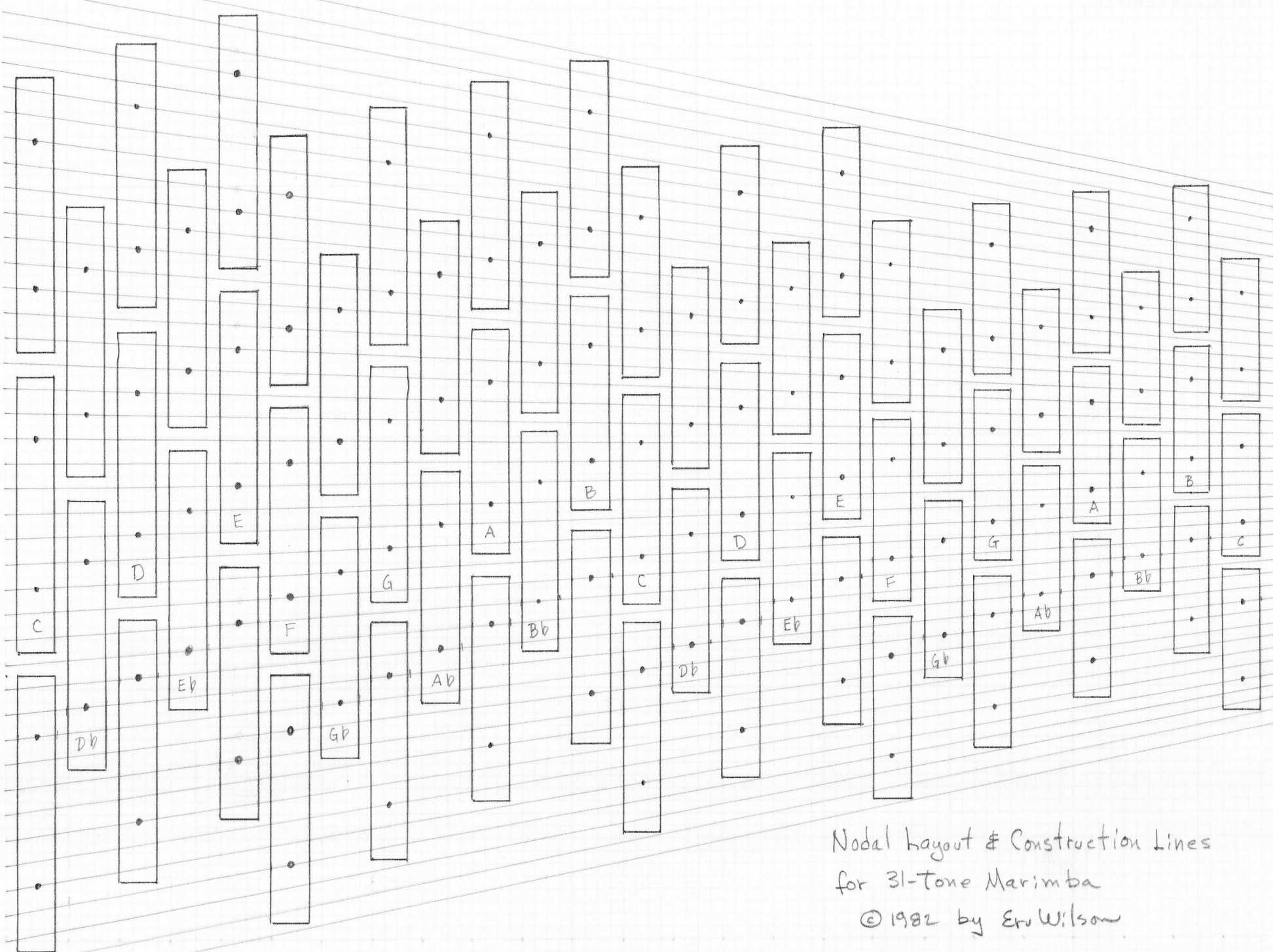
Showing construction lines to get nodes in line for generalized 31  
 © 1982 by Eric Wilson

37 lines  
 for node



FILED ON STEUBEN



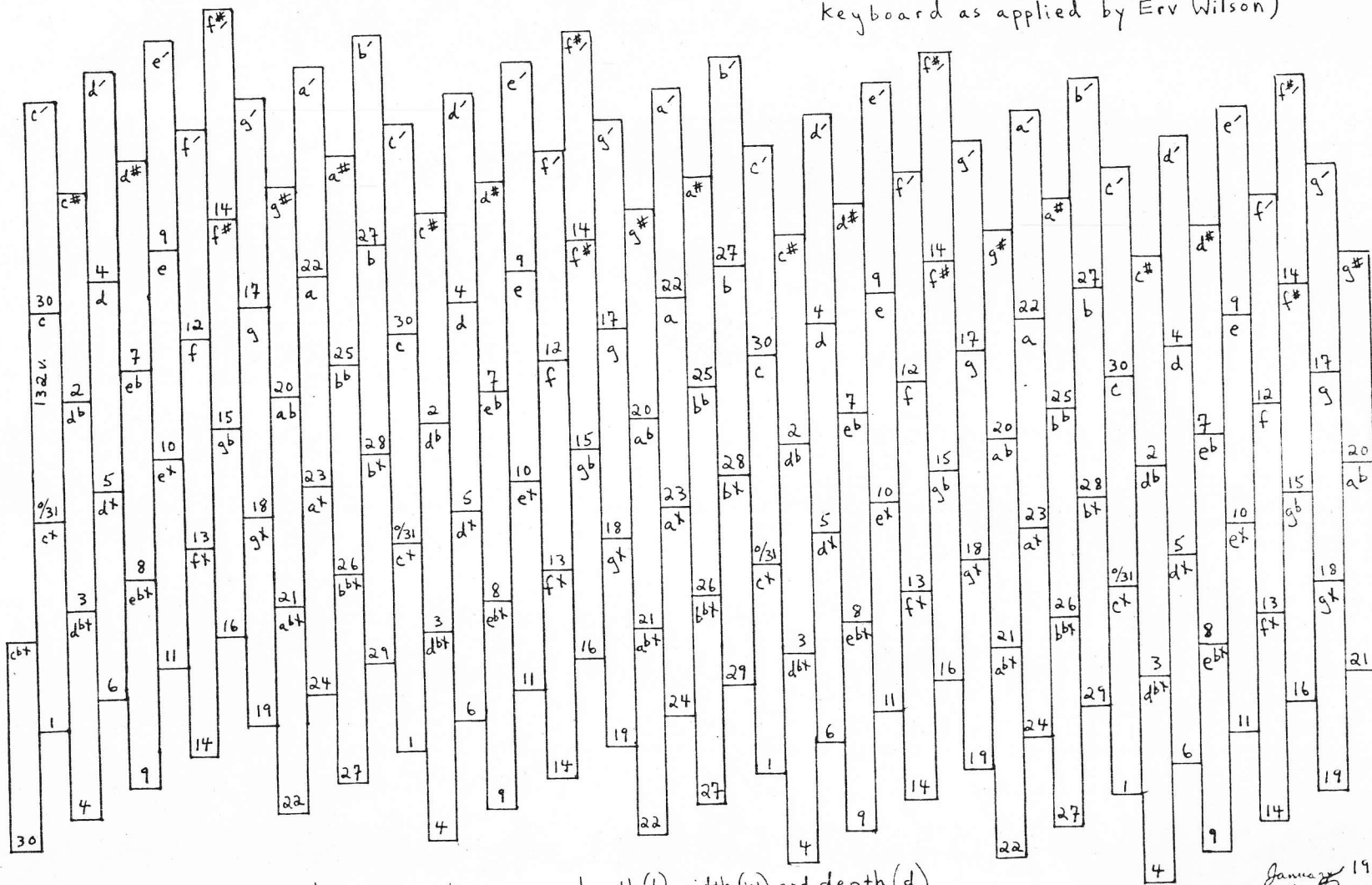


Nodal layout & Construction Lines  
 for 31-tone Marimba  
 © 1982 by Eric Wilson





Layout of the Toochoolzote (31-meantone marimba using  
R.H.M. Bosanquet's generalized  
keyboard as applied by Erv Wilson)



note: the bars on the real instrument vary in length (L), width (w) and depth (d)  
 E<sub>+</sub>(C/132v. L=16" w=2" d=5/16") (ab/1689.6v. L=7 1/8" w=1 5/8" d=3/4")

compiled by Glen A. Poor January 1984

Key  
d# = pitch name

+9 = 9 MVU

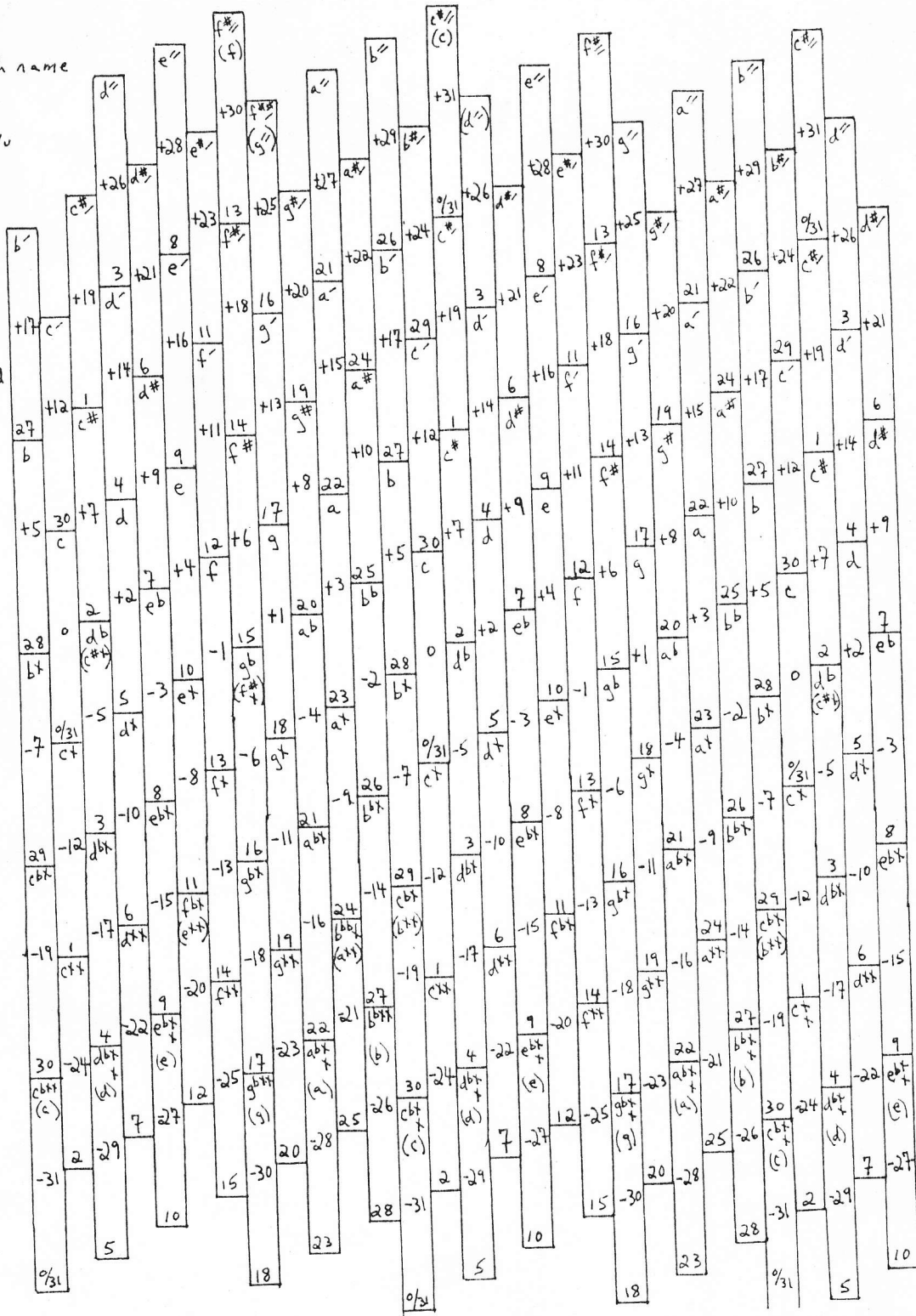
7 = u

dbt = pitch name

-17 = 17 MVD

4 = u

(compiled by Alan A Prior) Keyboard of meantone fifths





34-TONE KALIMBA DESIGN (not to scale)  
15-rank variation of Hanson Keyboard Geometry  
(used by permission)

by Erv Wilson 1993

