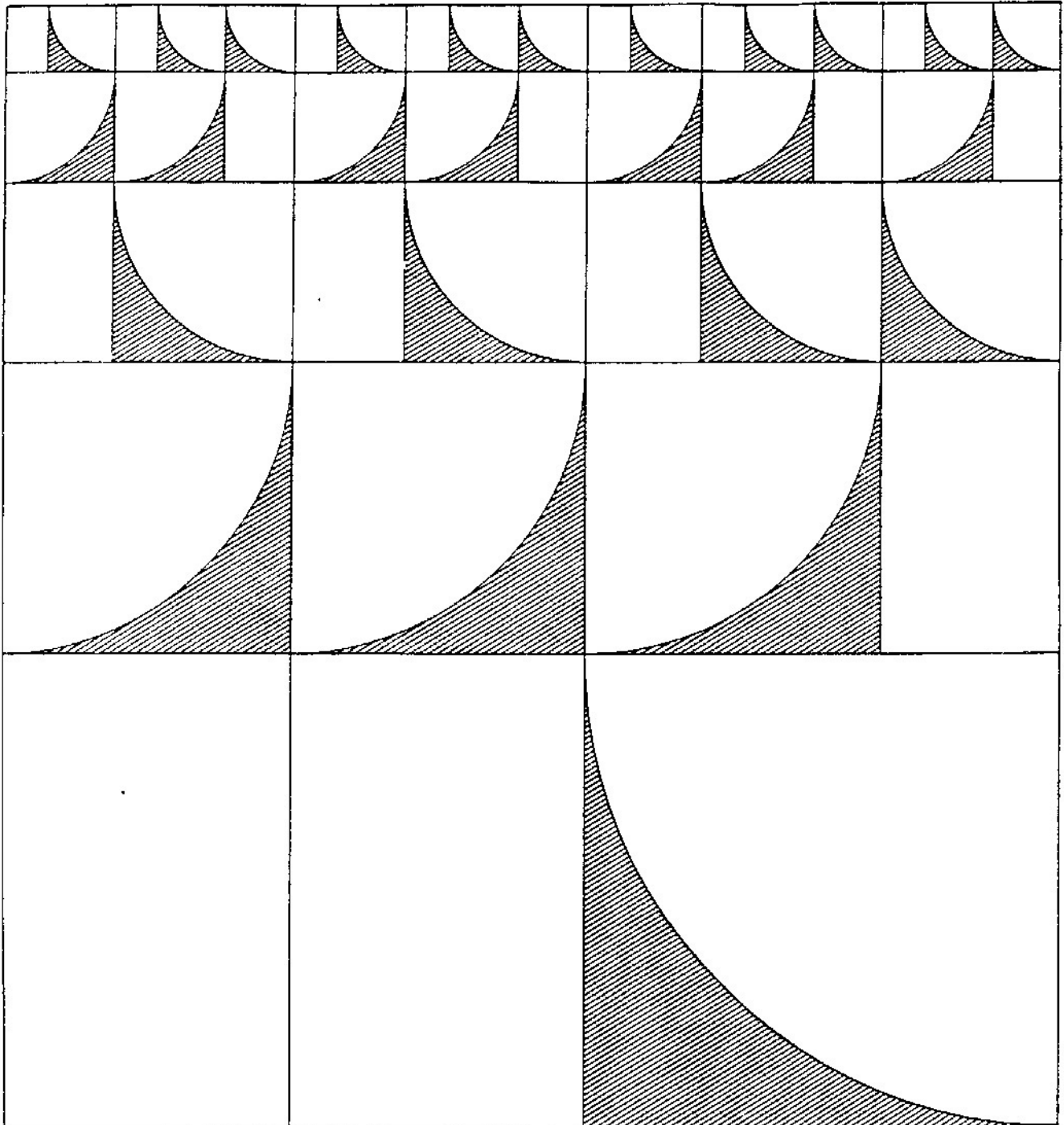


XENHARMONIKON 16



AUTUMN 1995

XH XENHARMONIKON ΞΕΝΑΡΜΟΝΙΚΩΝ

AN INFORMAL JOURNAL OF EXPERIMENTAL MUSIC
NUMBER 16, Autumn 1995

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A Rhythmic Application of the Horagrams

by Kraig Grady

Having used long meters in a variety of works, I've many times been criticized that they were always subdivided and put together out of shorter subdivisions and not really long meters at all. My 15/8 was really 3/8-3/8-2/8-3/8-2/8-2/8. I could only respond that there 6/8 might really be 3/8-3/8. Only years later did I discover that long meters have existed throughout the middle east and India for centuries. This was a great comfort and put to ease my own natural intuitive sense of rhythm and form. My own studies in the music of various cultures has time and time again reminded me of various ideas that the training in the western tradition taught me to ignore or consider of little importance. On the other hand, years of analyzing sonata after sonata has left me with nothing but a feeling that the symbology of the form is obvious if not downright trite and just as in a movie when you know what is going to happen makes you feel cheated, so it is in music. Someday longer rhythms and meters will probably have the same predictability, but until then.....

Over the years, there have been various approaches to rhythmic applications to the Fibonacci Series with David Canright (1990) being one of the more recent and interesting.

Because of this article, Erv Wilson showed me in passing that his HORAGRAMS formed out of the first 64 "golden" numbers in his SCALE TREE can be used in a similar way that Canright used with the Fibonacci Series. Erv also pointed out that the different rings (or levels) can be combined in any fashion one wishes. While utilizing these patterns in a variety of different works, I finally discovered one the the most interesting properties of different ways of putting these levels together. In the HORAGRAMS the levels or rings are arranged with the greatest possible "coincidence" between levels (shared beats between lines). I became interested in those that had the least "coincidence". Within this subset of possible ways of arranging these levels I discovered arrangements where if I took two of the levels their sum would be the same as another level except starting on a different beat. I call these arrangements the "Greatest Isomeric Symmetry". But let me illustrate the whole process to show what my words may fail to convey. Taking Horagram 22 taken from the Fibonacci Series, I chose level 21 as my meter and treat each block as one beat. My meter is 21, but I could have started on any level. Next using graphic notation I write out all the levels contained therein. Next omitting level 13 to not have more beats than I wish for least coincidences, I start with the innermost level and arrange the other levels working outward from the center paying particular attention to having as many combinations of 2 layers forming as a sum the rhythm of an outer layer. For this particular Horagram I was able to find 2 "solutions" and there retrogrades. For those needing a traditional notation merely replace the blank squares with eighth rests and those containing a symbol with an eighth note. I find that in that form of notation it is very difficult to see any of the patterns clearly. When asking players to play such patterns I use the graphic with letter names of notes avoiding visual eyesores as well as helping the player understand what he or she is playing. Also with the graphic notation it is quite easy for a single player to play all the lines or even slowly

add and then subtract levels according in any formal method one wishes to use. The following diagrams show two other Horagrams and the possible Greatest Isomeric Symmetries. With the last, I show the same Horagram starting on a different level to show how the same pattern can be expanded or contracted. Since there is nothing to prevent one from placing these rhythms on any pitch level, these patterns can be used to create some quite good melodies. Also more often than not, the inner levels will fall short of filling all the available places where a beat can occur. These empty spaces will be a negative pattern of one of the layers, simply a pattern occurring as rests. It is possible to treat these also as a duplicate pattern. This was done with Horagram 22 where the level marked "-" is used. One could also use this duplicate as an alternative. In my next paper I will show some of the melodic capabilities in action.

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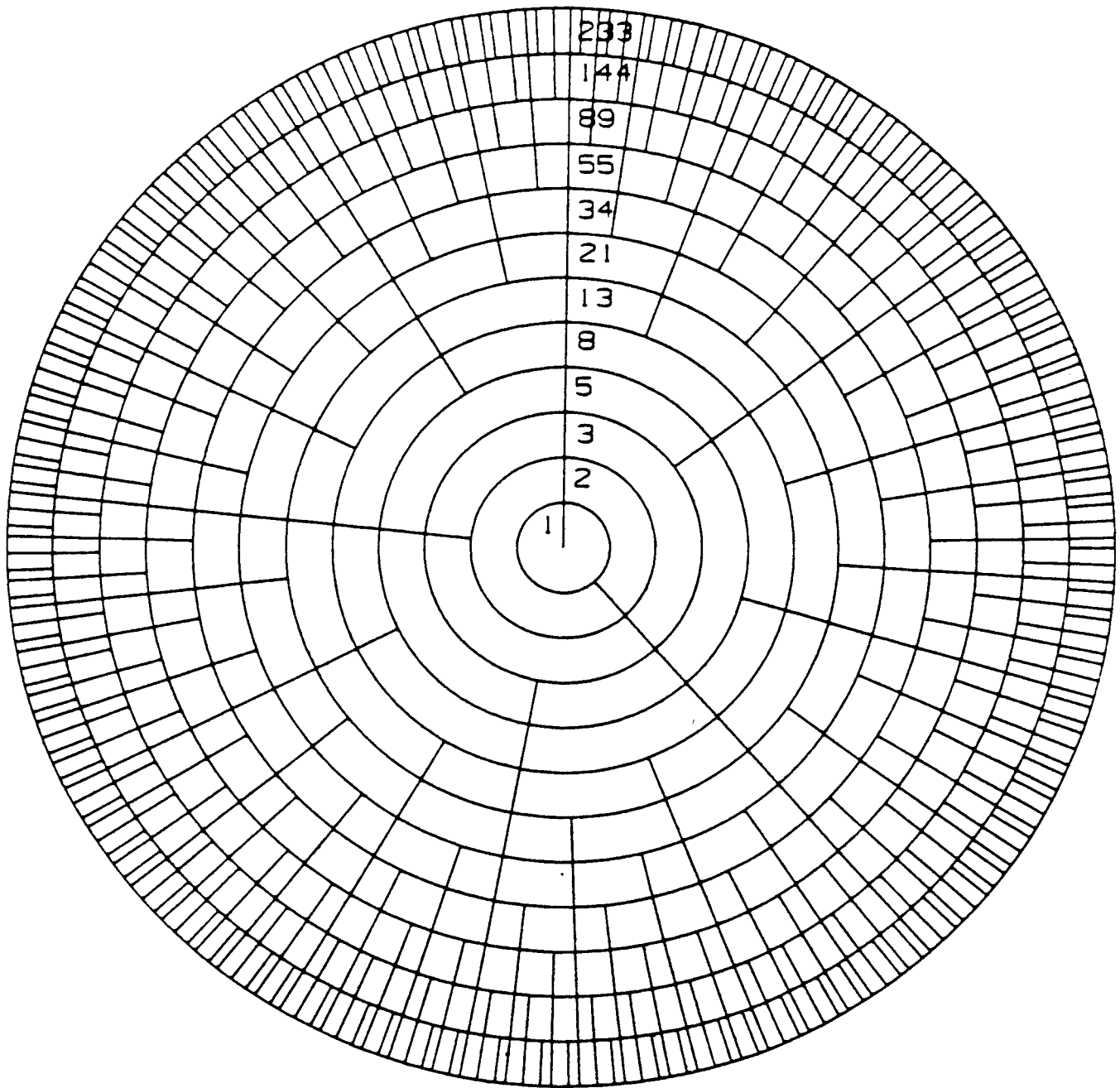
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North American Embassy of Anaphoria- Personal Communications. These arrangements are widely used throughout Anaphoria Island

Canright, David 1/1 Mag. Autumn 1990 Fibonacci Gamelan Rhythms

Wilson, Erv The Golden Horagrams of the Scale Tree Unpublished
Scale Tree Unpublished

$$\frac{1 \phi + 0}{2 \phi + 1}$$

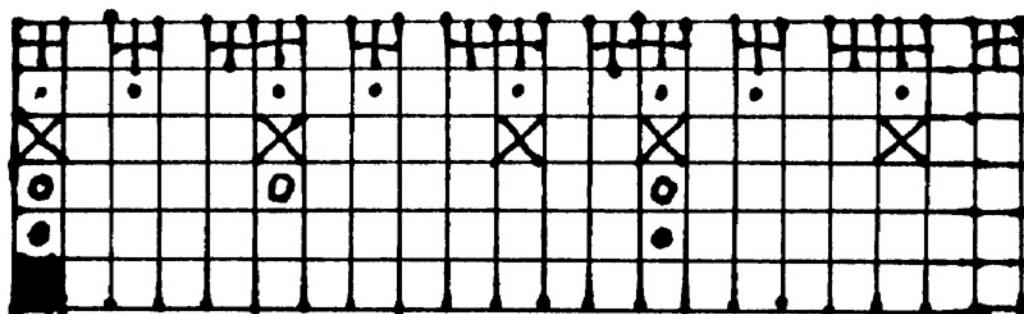


22

FIBONACCI

.381966011

137.507764



HORAGRAM 22 (READ COUNTERCLOCKWISE)

AS IT APPEARS IN THE ORIGINAL

+ = 2 2 1 2 2 1 2 1 2 2 1 2 1

• = 2 3 2 3 3 2 3 3

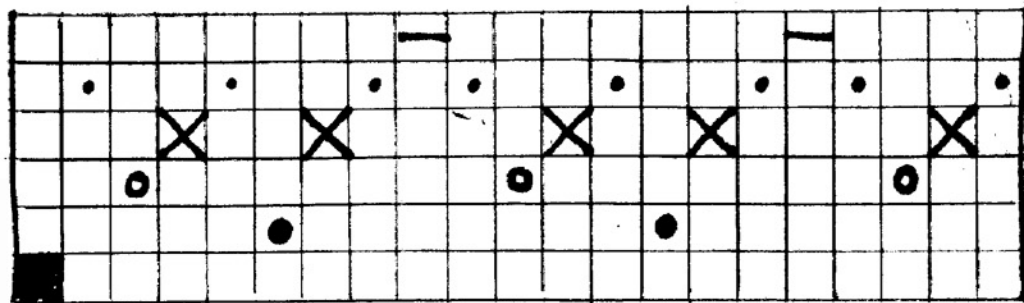
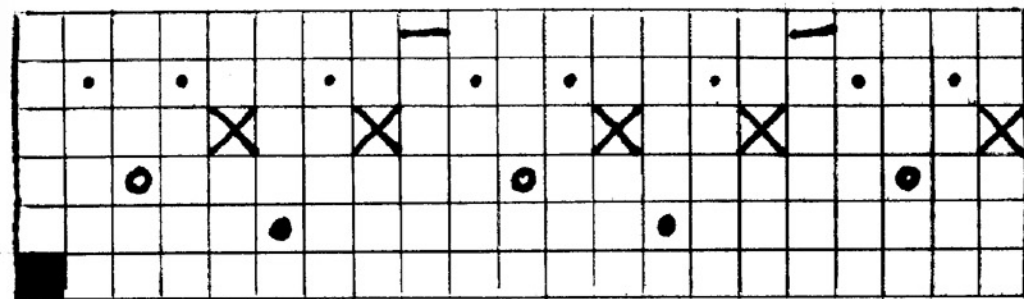
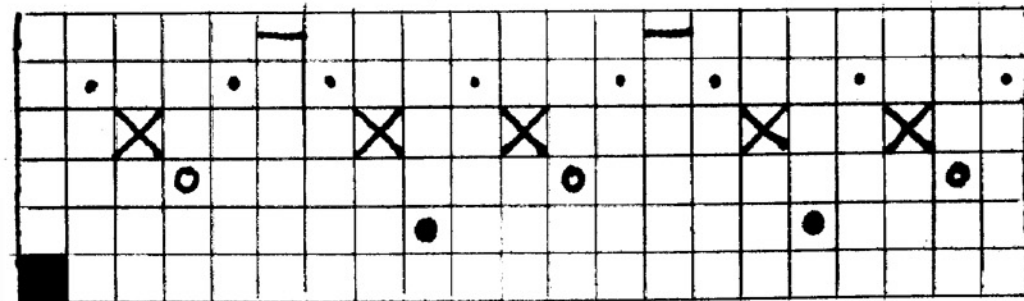
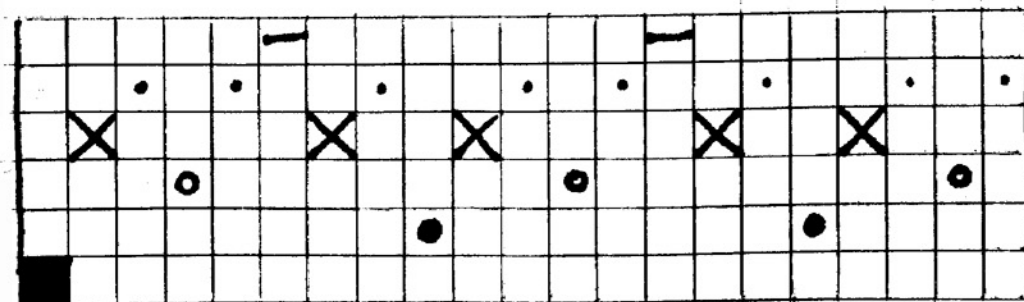
X = 5 5 3 5 3

o = 5 8 8

• = 13 8

■ = 21

NOTE: THIS REFLECTS
CANRIGHTS IDEA

A₂B₂A_RB_B

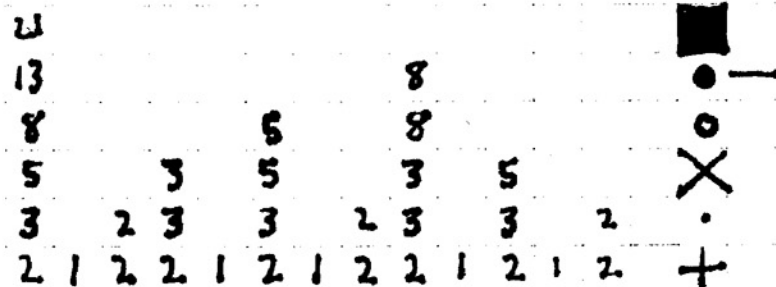
* B

$$\begin{aligned}
 \blacksquare + \bullet + \circ + - &= \bullet \\
 \bullet + \circ &= \times \\
 \blacksquare + \bullet &= \circ
 \end{aligned}$$

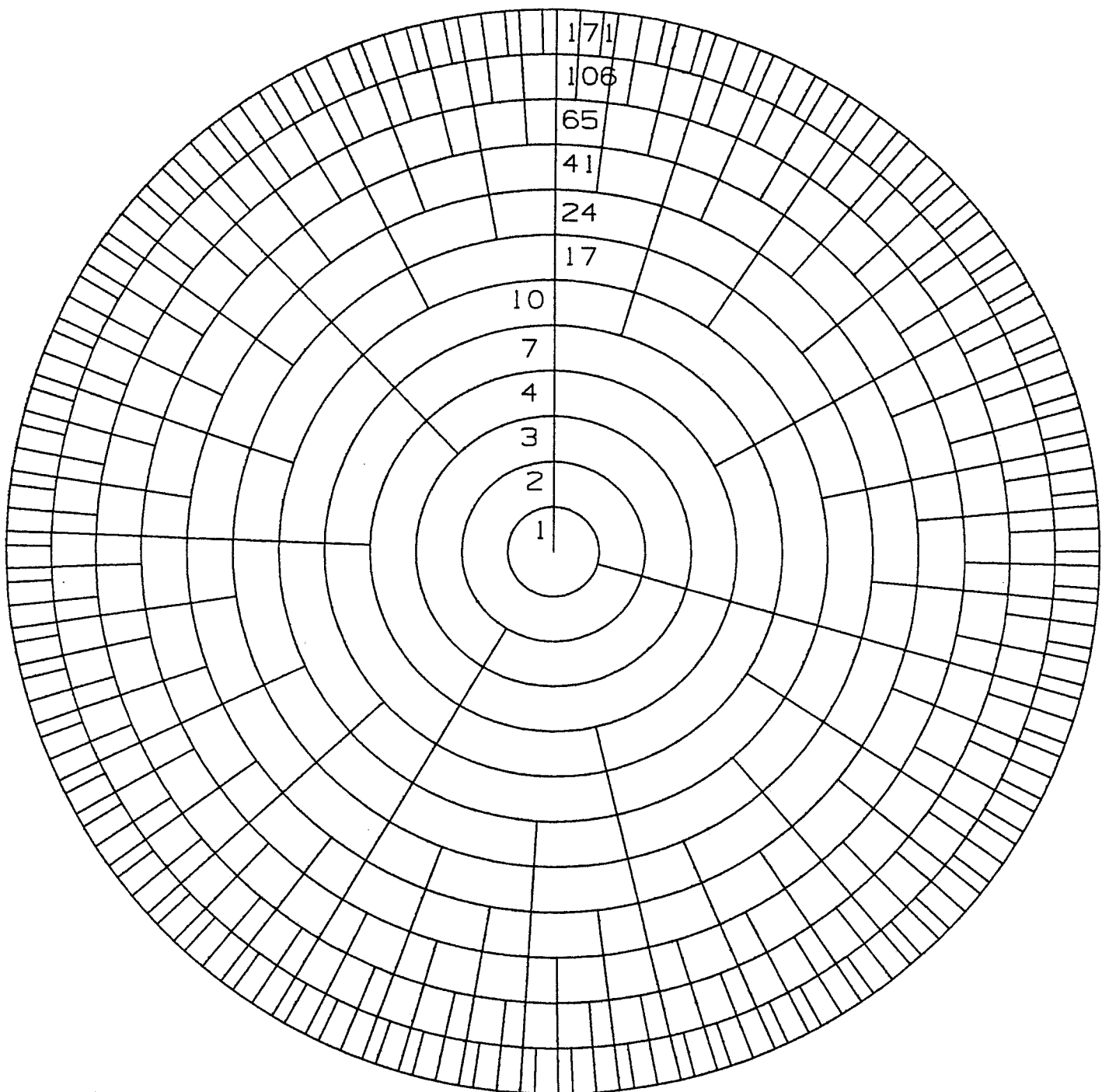
* A

$$\begin{aligned}
 \blacksquare + \bullet + \circ + - &= \bullet \\
 \bullet + \circ &= \times \\
 \blacksquare + \bullet &= \circ \\
 \blacksquare + \times + - &= \bullet
 \end{aligned}$$

GREATEST ISOMERIC SYMMETRIES



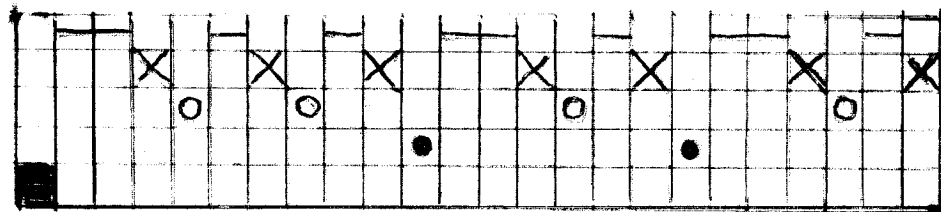
$$\frac{5 \phi + 2}{17 \phi + 7}$$



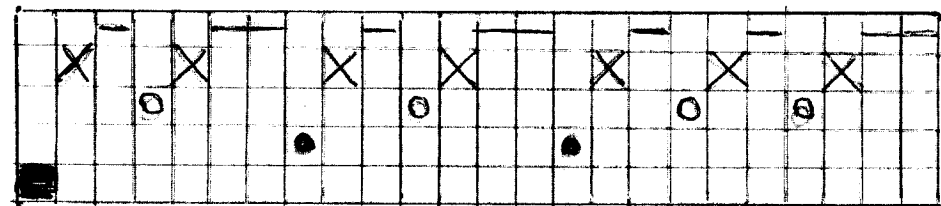
13

.292412942
105.2686591

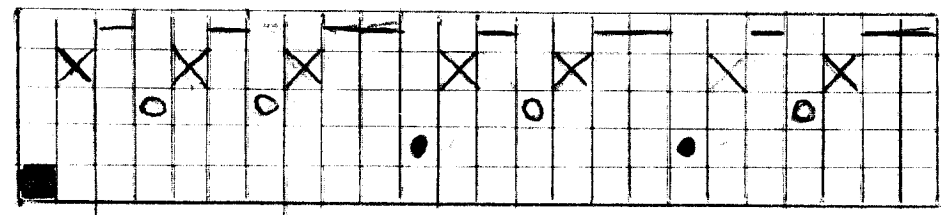
A^Q



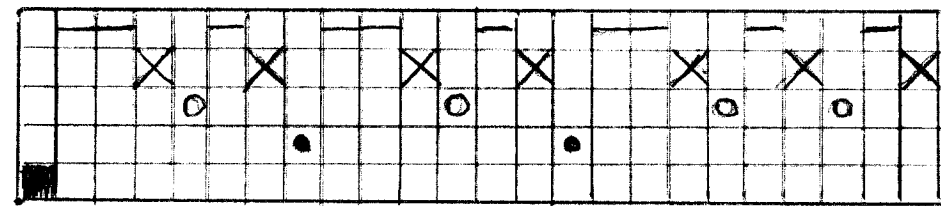
A^R



B^Q



B^R



HORAGRAM 13 (27)

SUPERABUNDANT-

MISSING LEVEL "3"

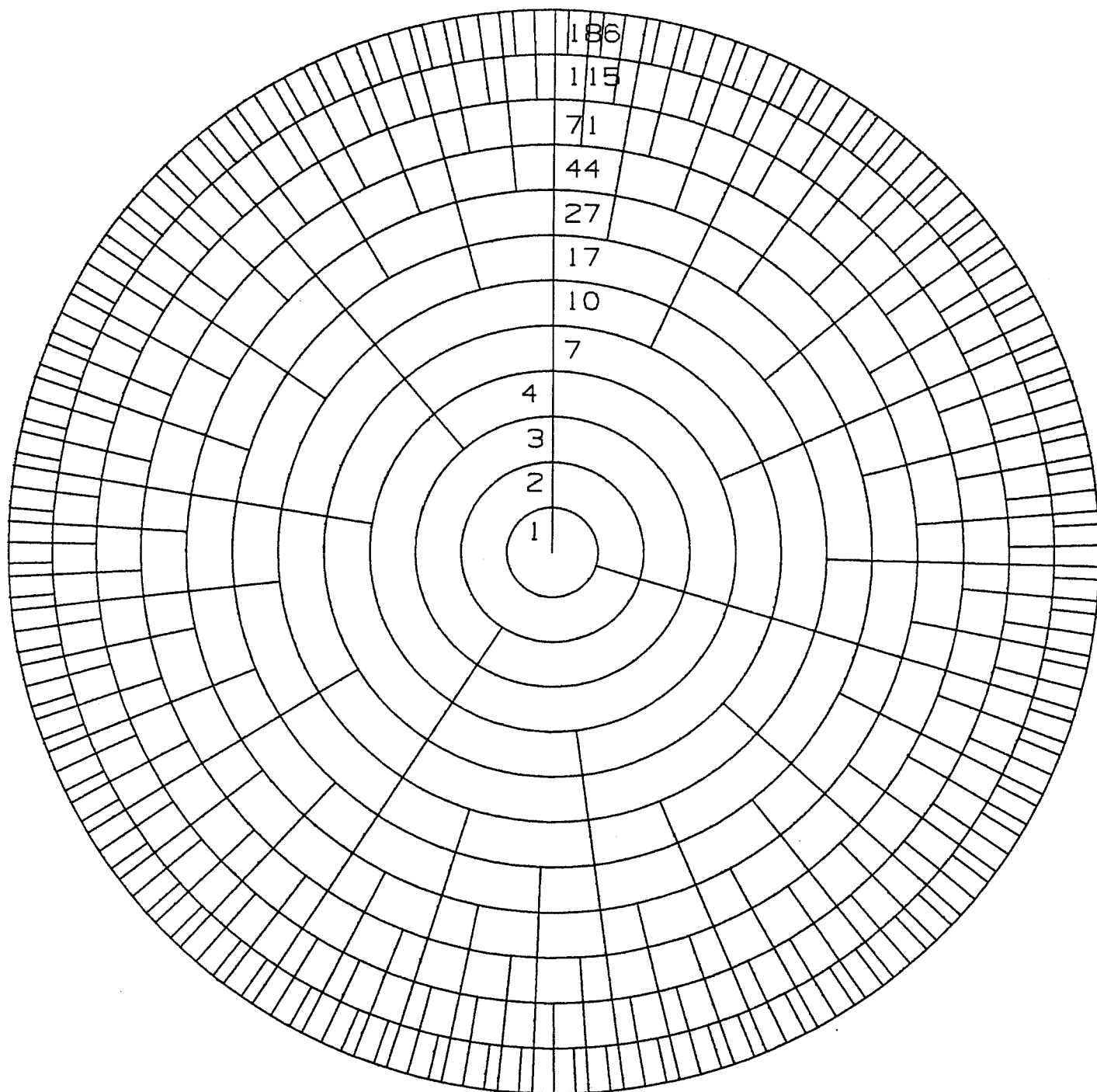
BUT ■ + ● = LVL. "3"

$$\blacksquare + \bullet + \circ = X$$

$$\blacksquare + \circ + X = \boxplus$$

$$X + \boxplus = \text{LVL. 13}$$

$$\frac{2\phi + 1}{7\phi + 3}$$



14

.295685999

106.4469596

HORAGRAM 14 (27)

PERFECT

IN BOTH A+B

$$\blacksquare + \bullet = 0$$

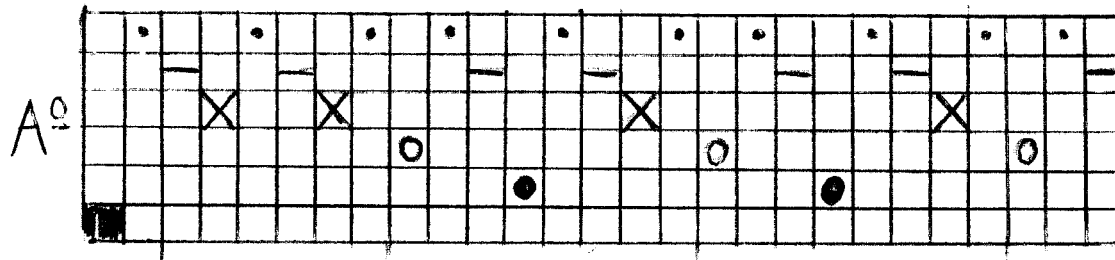
$$\blacksquare + 0 = X$$

$$\blacksquare + \bullet + 0 + X = \cdot$$

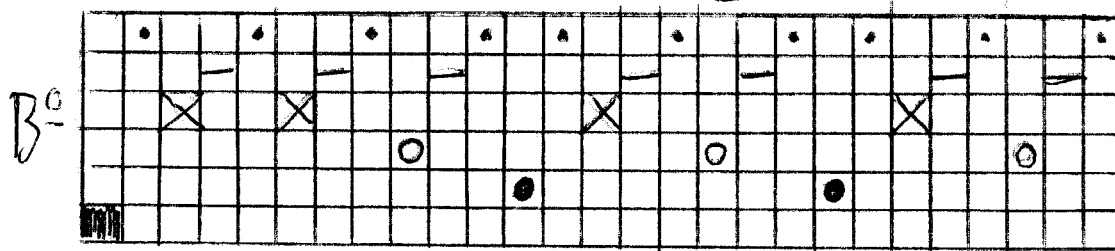
$$\cdot + \boxplus = \text{LVL. 17}$$

$$\blacksquare + \bullet + 0 + X + \boxplus =$$

LEVEL 17



RETROGRADES (R) NOT SHOWN



IN A ONLY

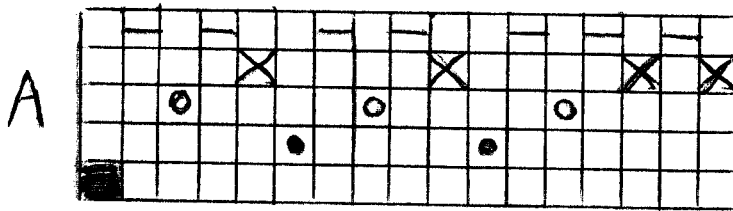
$$0 + \boxplus = \cdot$$

$$\blacksquare + \bullet + X = \boxplus$$

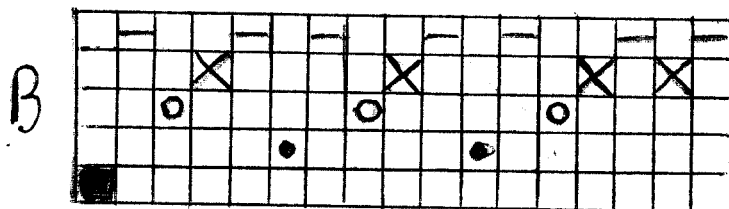
IN B ONLY

$$0 + X = \boxplus$$

$$\bullet + 0 + X = \cdot$$



SAME HORAGRAM
USING DIFFERENT
LEVEL



IN BOTH A+B

$$\blacksquare + \bullet = 0$$

$$\blacksquare + 0 = X$$

IN A

$$0 + X = \boxplus$$

IN B

$$\blacksquare + \bullet + X = \boxplus$$