XENHARMONIKON XI

Notes on a New Marimba, its Tuning, and its Music

Erv Wilson, Stephen Smith, Kraig Grady

(Editor's note: the Marimba pictured on the cover of this issue was built by Stephen Smith, using an inversion of Wilson's "D'Alessandro" generalized keyboard tuning program, and commissioned by Los Angeles composer-performer Kraig Grady. The tuning allows for Eikosanys (a "combination-product set" consisting of all possible combinations of 3 elements from a set of 6 generating elements or factors) of the sets (1, 3, 5, 7, 9, 11) and (1, 3, 7, 9, 11, 15), the second set repeated at a 3/2 below. The instrument itself is stunning in craft, engineering, and tonal quality. The keys are fashioned of deep brown Wenge, an African hardwood with a timbre somewhat darker than the rosewood of central American instruments and close to that of the Chopi Xylophones or Ghanaian Balophone. Kraig Grady has written the following notes about the repertoire of pieces he has developed for the instrument alone, and in small ensembles).

Grady writes:

I have always felt it a shame that Harry Partch had so many short decay instruments given the beauty of his tuning. It is for this reason that a marimba was never my first priority. My first instruments were brass chimes, the tree (suspended aluminum bars), two pump organs, and a hammered dulcimer. Finally came the time when a short decay instrument was crucial to my music: I became aware of the instruments of Stephen Smith and he has made this dream a reality. I wish here to describe a series of short pieces illustrating some of the possibilities of this marimba which is tuned to Wilson's product combination set. This is a continuation of my early article in this journal (Xenharmonikon IX). With the grace of the muses, these little pieces will become the first in a series of "microcosmos" for patterns from the product combination set. It goes without saying that this marimba has made many of these pieces possible that would have otherwise remained conceptual.

Diagram 1 illustrates the notation used for the marimba throughout these pieces, along with the frequency ratios of the tuning structure. Diagram 2 shows the centered hexad lattice of the Eikosany with a pattern I call the "Loop" for lack of a better name. It is followed by a piece for two players at one marimba (or a virtuoso soloist) based upon this pattern. Triads formed are completed by the missing tetrad tone and then by common dyads, modulated to the next triad. There is one exception to this process that I leave up to the reader to discover.

Diagram 3 uses the same lattice in a different rotation as well as a new relationship. Two complementary tetrads and hexanies are based on set (1, 3, 9, 11). Here the tetrad tones are used as pivots completing different triads derived from the hexanies which in turn overlap with other tetrads forming a series of modulations. My Rondo illustrates one use of this pattern. This piece allows a certain degree of liberty in that the number of repeated eighth notes is left up to the individual performers, again in duet.

The next diagram (4), is the simplest of all the patterns included here. It involves an uncentered hexany lattice (Wilson 1962) with stellate points

derived from eikosany pitches. Only the harmonic points are given but all three rotations are listed and used in the following piece, Indian Echo, scored for the marimba with an added instrument of sustained pitch (such as pump organ).

The last piece, The Third Eye, named for the location of its premiere, is the most improvisatory of the set. It satisfied a need for a piece for players not familiar with the instrument (each player is limited to a hexany within a short range), while still exploring some of the most daring of modulations.

Marimba design

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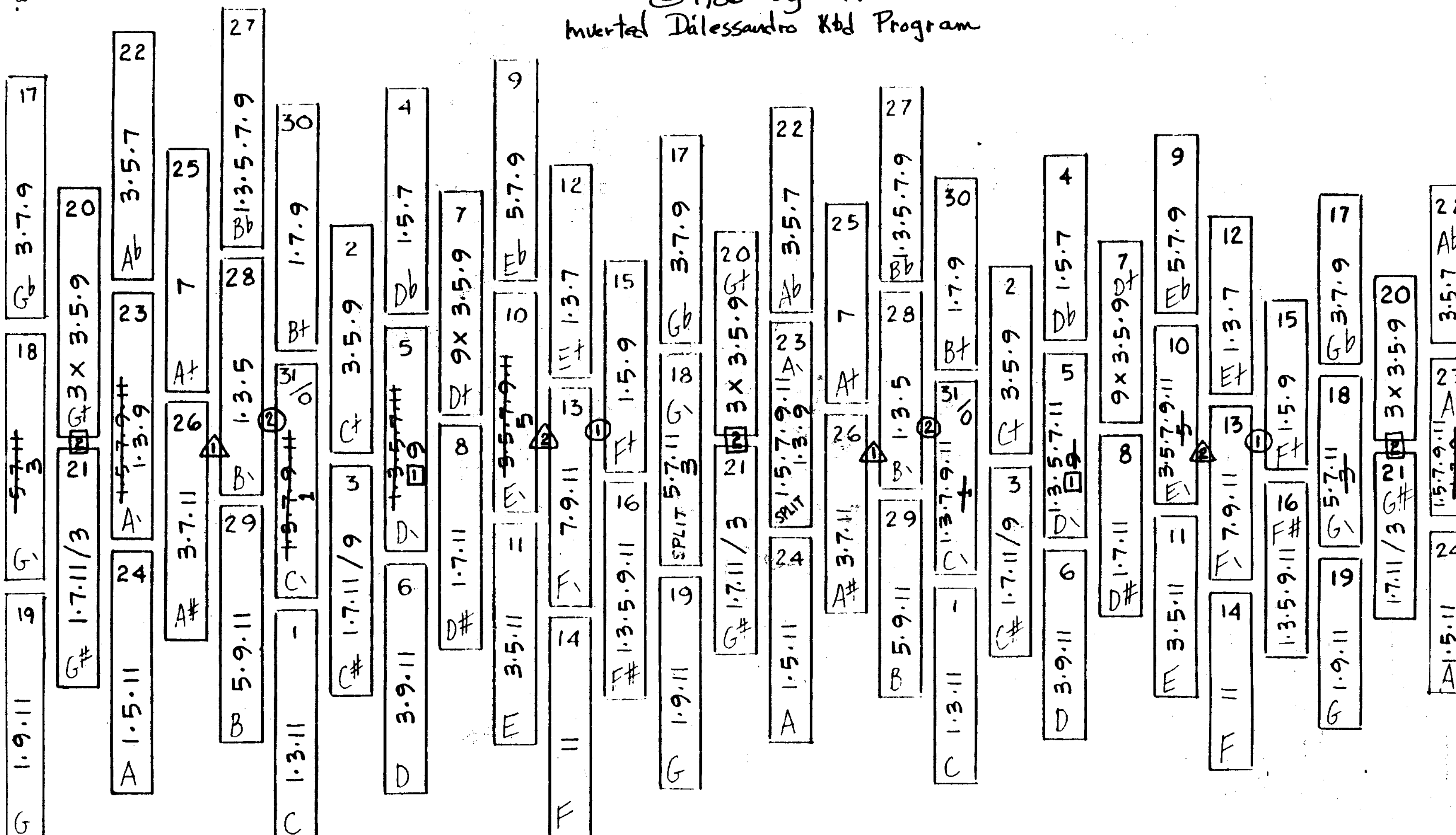
Inverted D'alessandro Kbd Program



[1] & [2] = Symetry points of 1·3·5·7·9·11 Eikosany

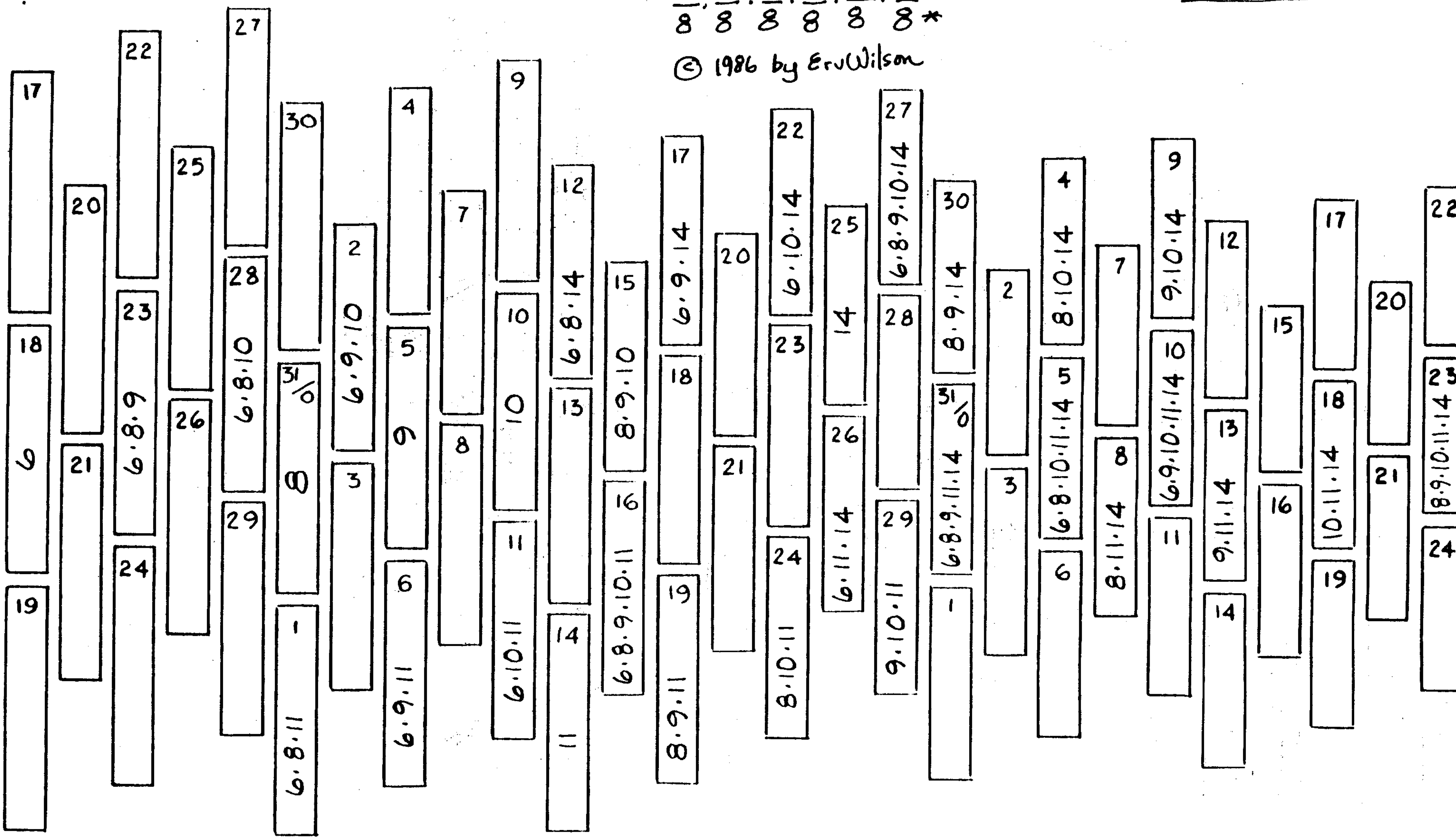
(1) & (2) = Symetry Points of 1·3·7·9·11·15 Eikosany

△ & ▲ = Symetry Points of 1·3·7·9·11·15 ÷ 3 Eikosany

Literal Combination Product Array

$\frac{6}{8} \cdot \frac{8}{8} \cdot \frac{9}{8} \cdot \frac{10}{8} \cdot \frac{11}{8} \cdot \frac{14}{8}$ *

861210
Fig 4



* $\bar{8}$ understood

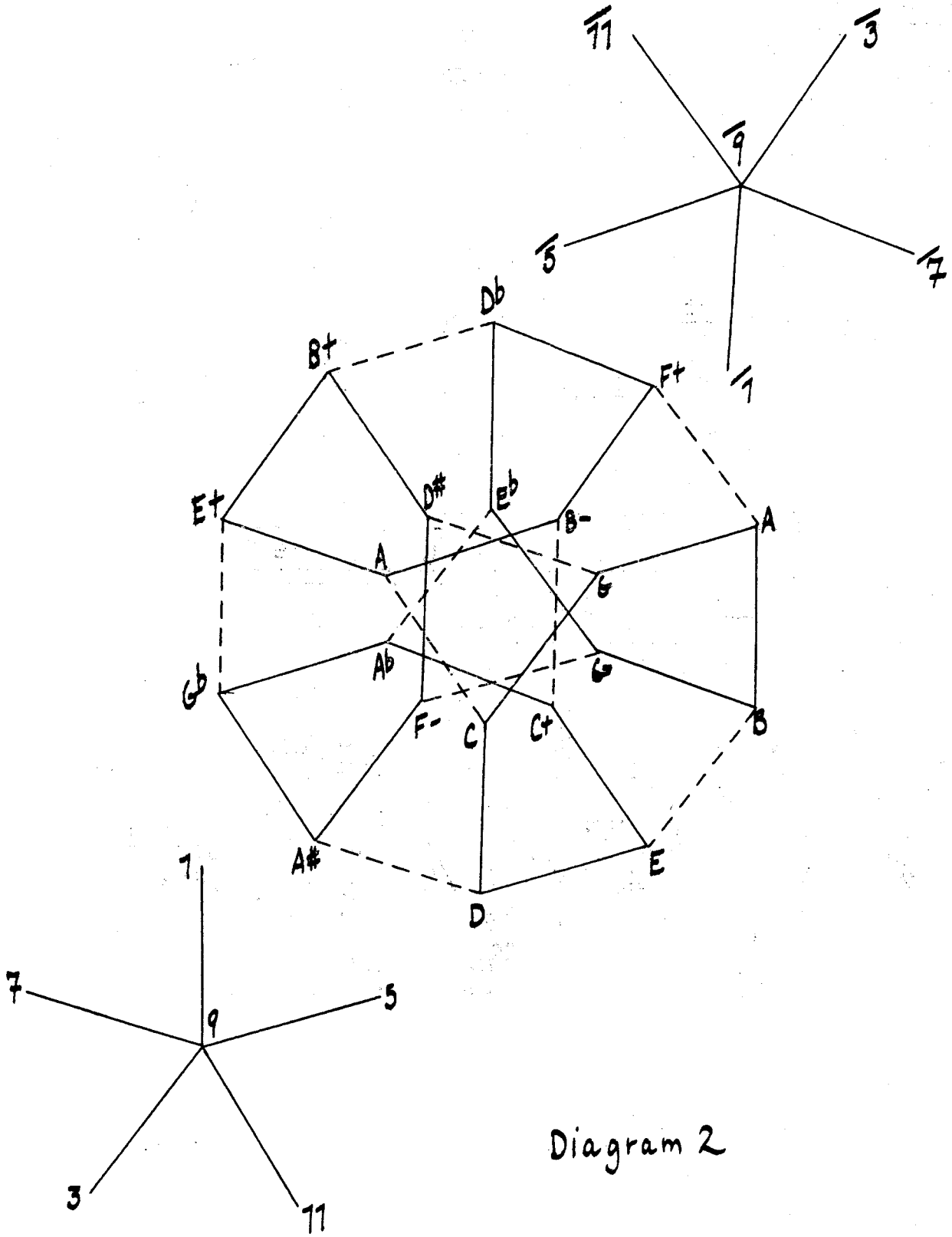
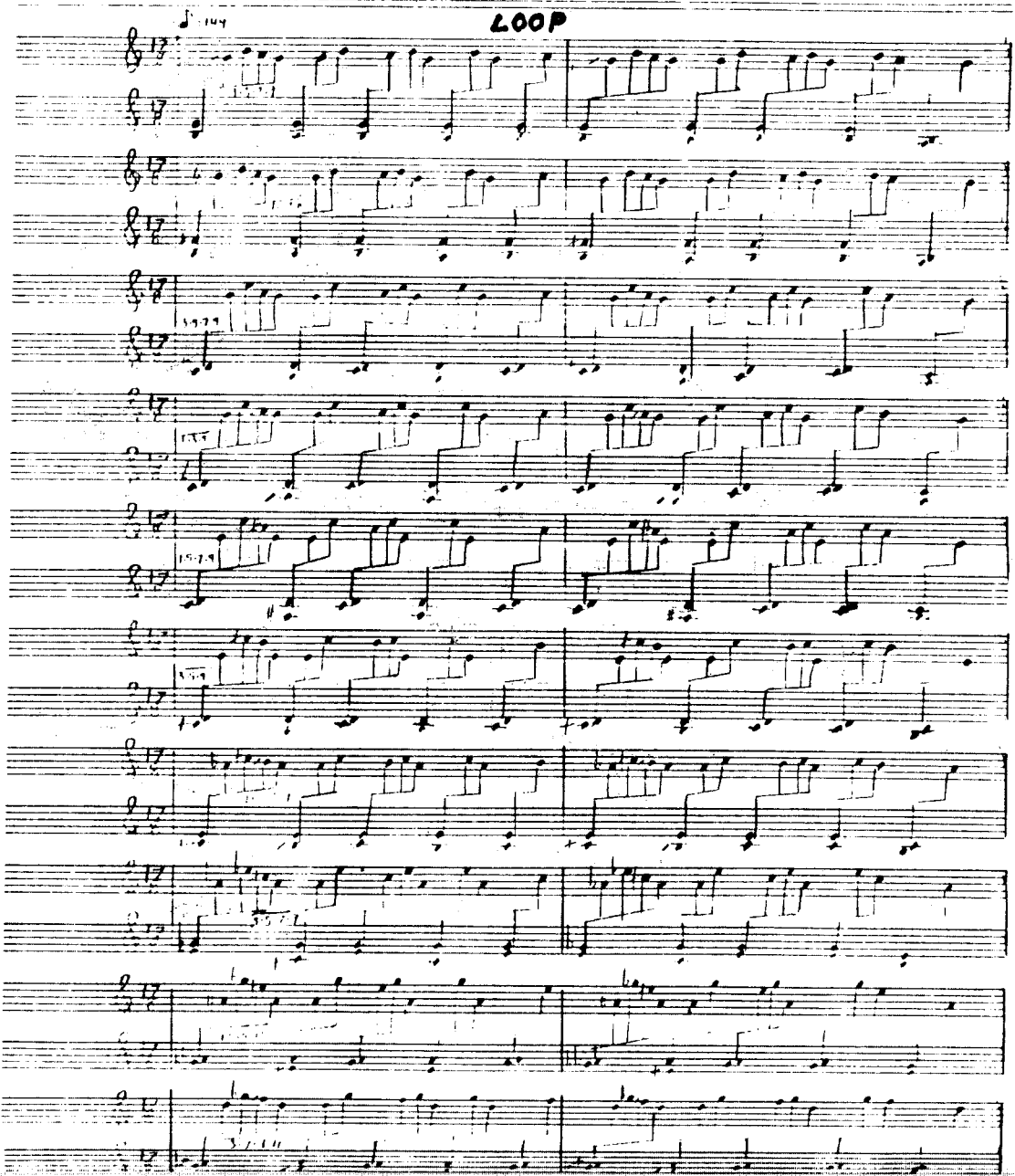
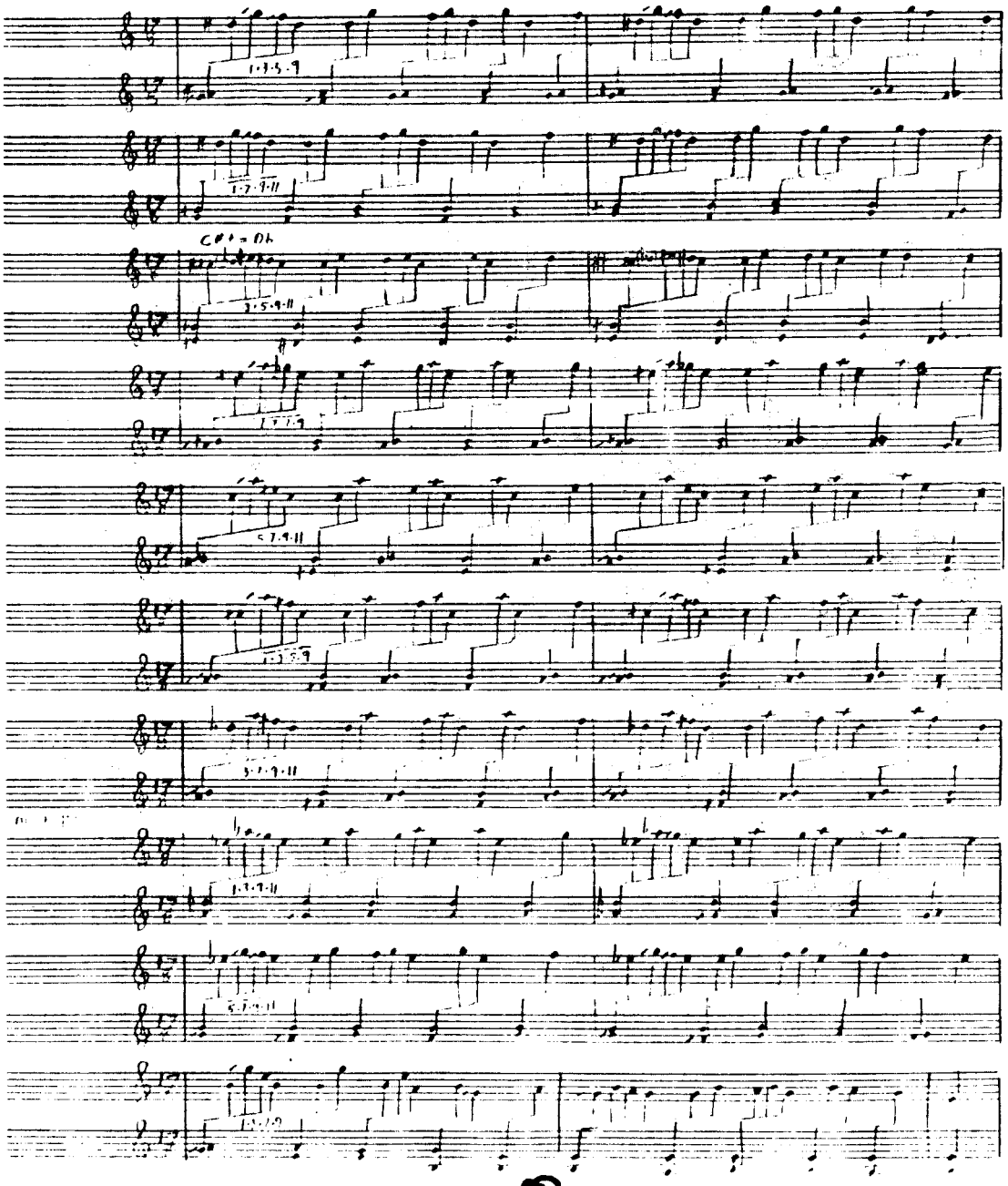


Diagram 2

Kraig Grady

LOOP





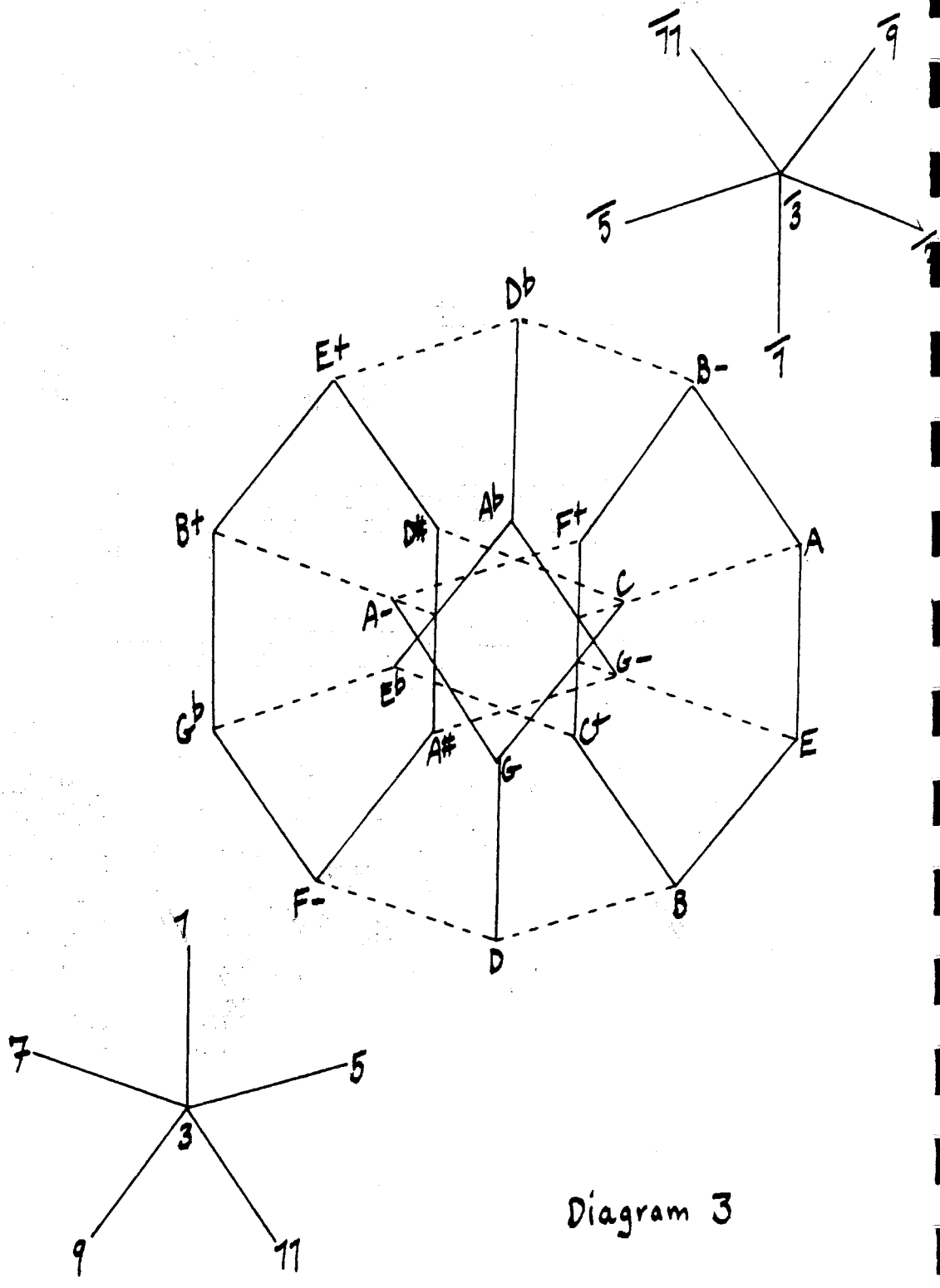
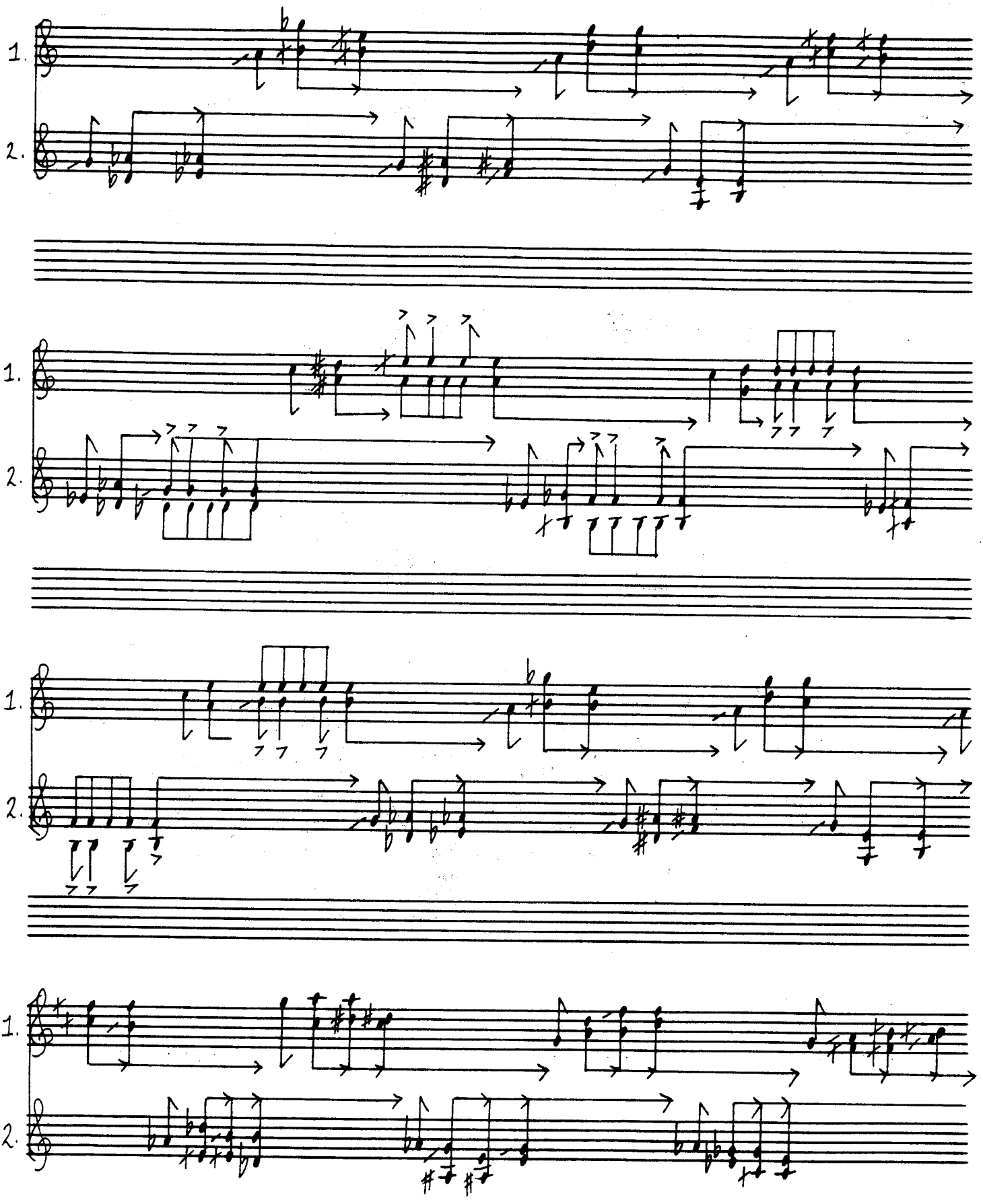


Diagram 3

RONDO

Kraig Grady

→ = ♪ ♪ (about 3 times longer than graphically indicated)



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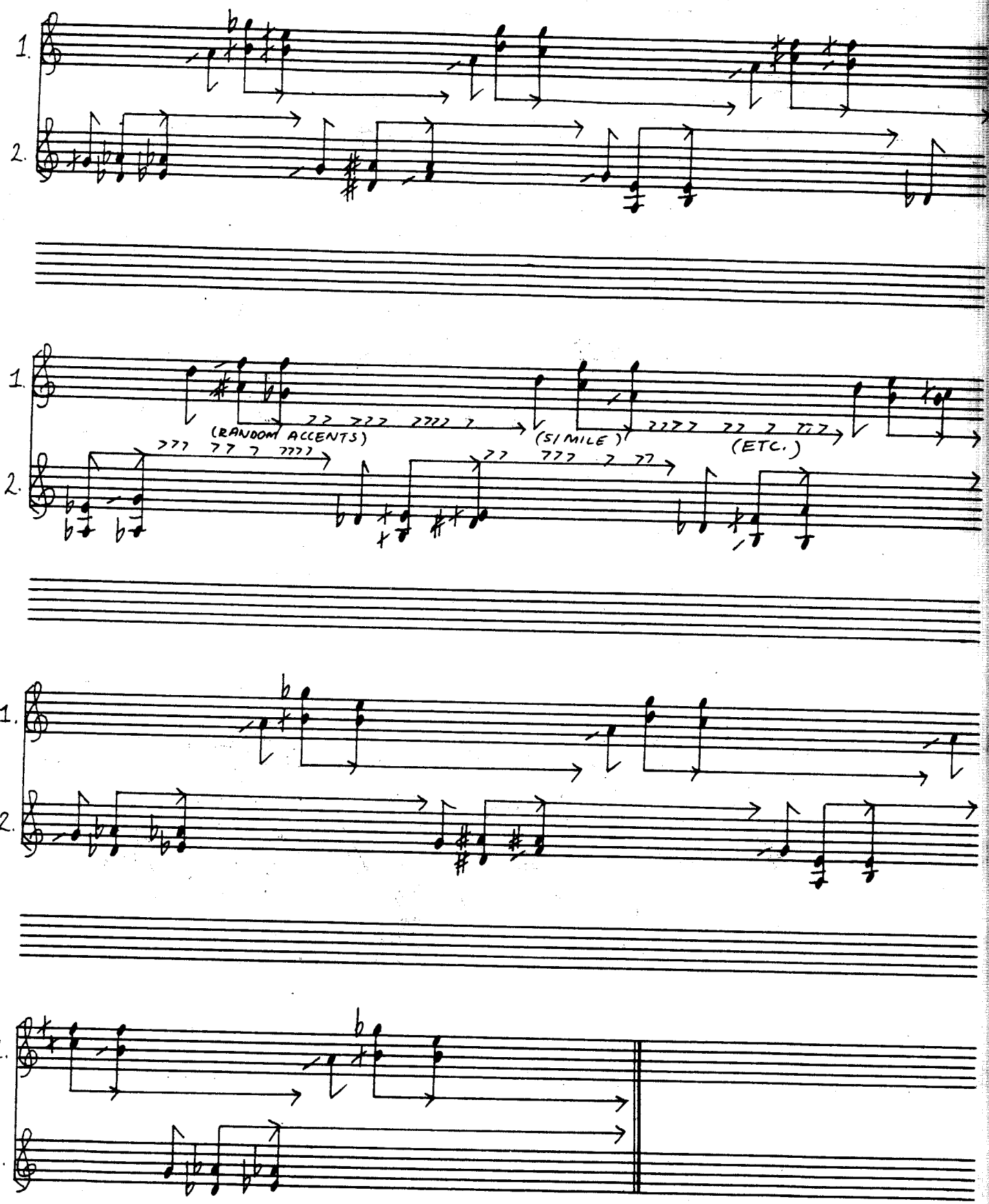

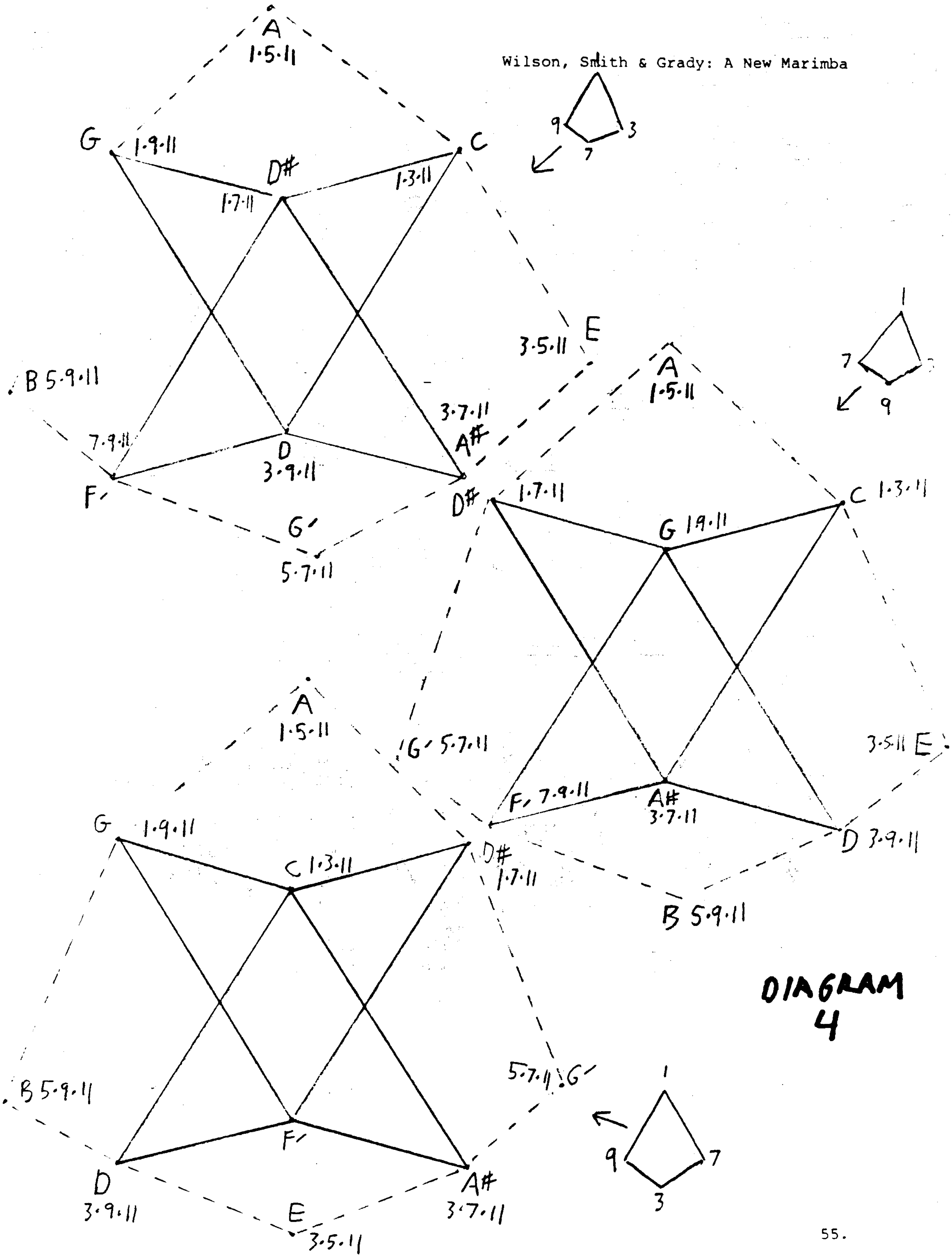
A 1·5·11
G 1·9·11
C
D# 1·7·11
1·3·11
E 3·5·11
B 5·9·11
7·9·11
D 3·9·11
3·7·11 A#
F
G 5·7·11
9 3 7
1 7 3 9
A 1·5·11
D# 1·7·11
C 1·3·11
G 1·9·11
3·5·11 E
F, 7·9·11
A# 3·7·11
D 3·9·11
B 5·9·11
A 1·5·11
G 5·7·11
G 1·9·11
C 1·3·11
D# 1·7·11
B 5·9·11
5·7·11 G
F
D 3·9·11
E 3·5·11
A# 3·7·11
1 9 7 3

DIAGRAM 4

INDIAN ECHO

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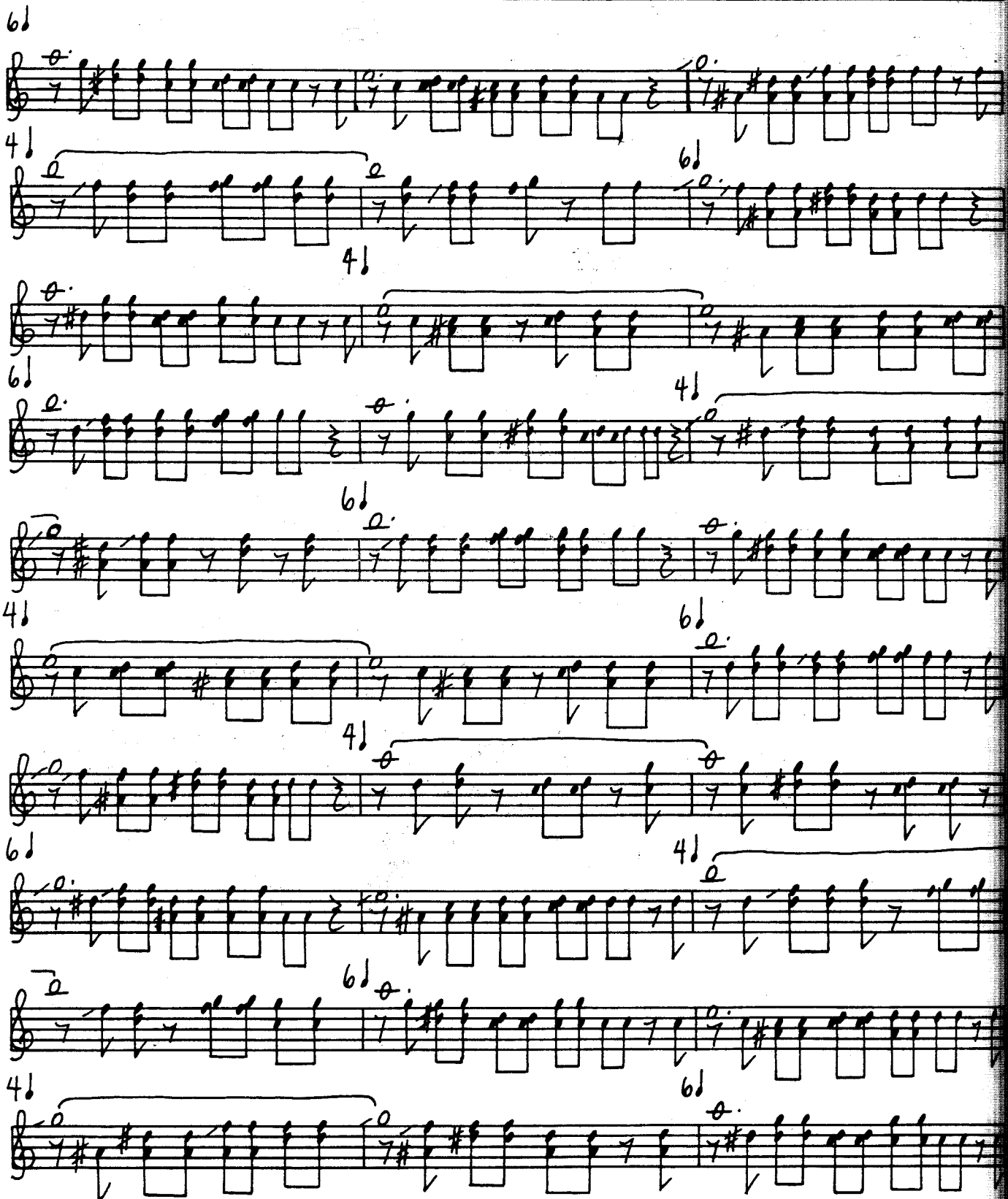

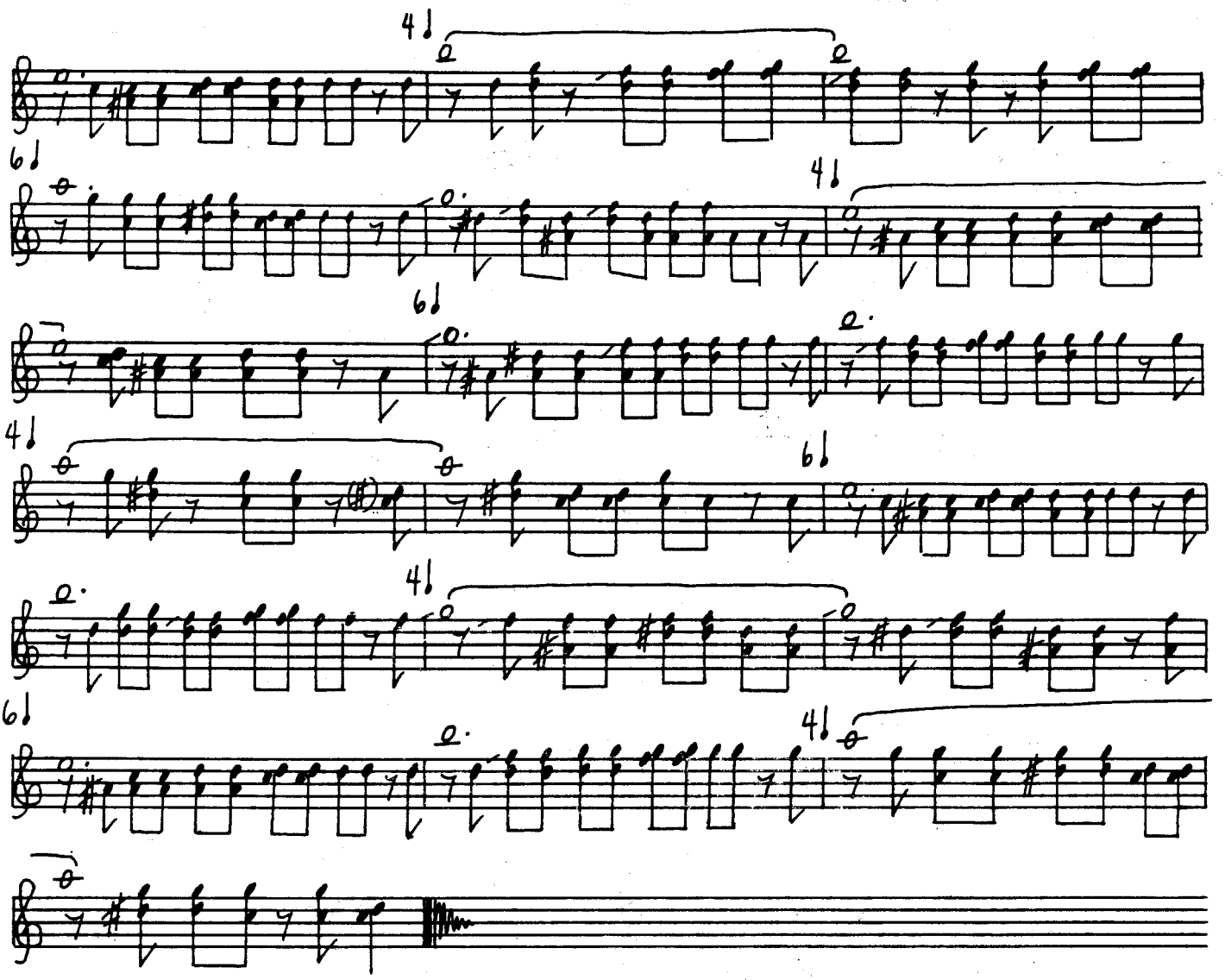

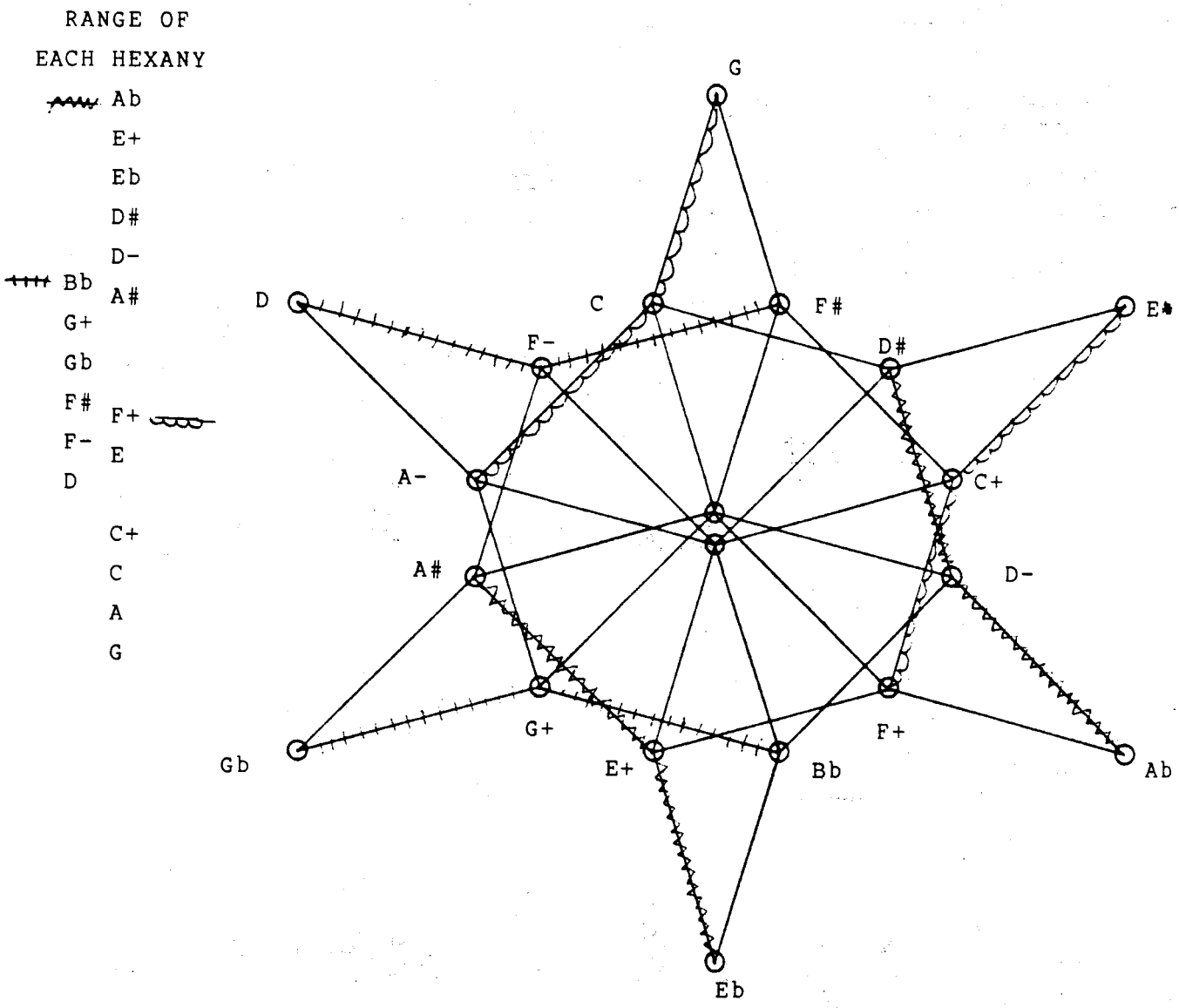
RANGE OF
EACH HEXANY
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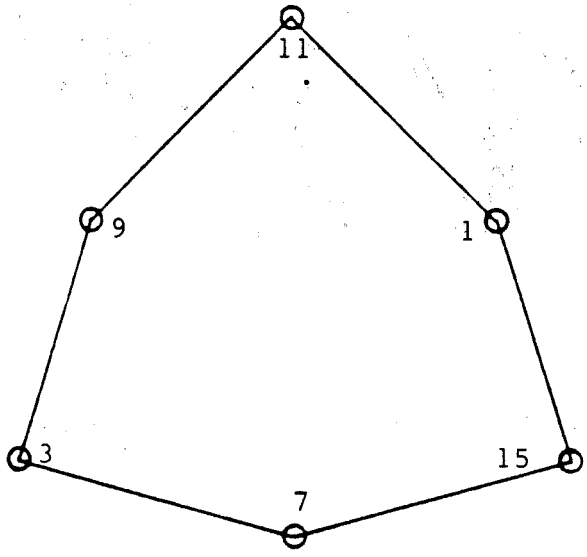
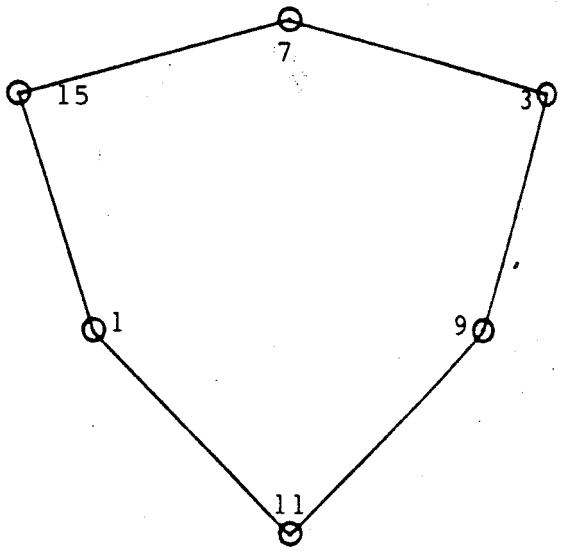

11
9
1
3
15
7


7
15
3
1
9
11

T H E T H I R D E Y E

Kraig Grady

for marimba, three players

1.	‖:	A#	Eb	E+	→	Eb		A#	Eb	E+	→	Eb		D-	Eb	Ab			
2.	:	→	Gb		Gb	G+	Bb	→	Gb		Gb	G+	Bb	→	Bb				
3.	:		F+/A-			%			%			%			F+				

1.		→	Ab		D-	D#	Ab	→	Ab		D-	D#	Ab	→	D#				
2.			Bb/F#			%			%			%			F#				
3.		C+	E	F+	→	E		C+	E	F+	→	E		G	C	E			

1.			D#/A#			%			%			%			A#	:	‖		
2.		D	F-	F#	→	D		D	F-	F#	→	D		D	Gb	G+	:		
3.	→		G		G	A-	C	→	G		G	A-	C	→	A-		:	‖	

Performance Instructions:

Each "bar" last approximately 4-10" with an overall feeling of shortening through each repetition, and slowing to the end of the piece. Notes are written left to right, designating high to low frequencies, but can be played in any order within each measure grouping. Movement to the next "bar" is led by the player with arrow, who proceeds to hold the single pitch while the others immediately follow. The / sign designates that these pitches are to be played together but less often, and function in support of the pulse and as a harmonic pedal. Single notes are to be played as rapid repeated pitches maintaining a feeling of pulse and tempo throughout (throughin!).