

Preface

Polymodal fun on a Fibonacci pyramid, hereafter referred to as *Poly*, is the outcome of a term project completed during the Spring 96 offering of Music Theory IV by Professor Helen Brown at Purdue University. The goal of the project was to compose in the style of Béla Bartók. That the resulting music sound like that of Bartók was not a requirement. It was decided to use two of the commonly found features of his music, namely, *polymodality* and *non-traditional forms*. An effort was made to formalize the notion of polymodality. *Poly* makes use of some elements of the theory developed.

Two mode types found in the North Indian classical music system are used in *Poly*. These are Khamāj, which uses flat 7, and Todī, which uses flat 2, 3, 6 and sharp 4. The modes are independent, in the sense that they use different sets of accidentals, and complete, in the sense that together they make use of 12 tones. Note that there was no attempt to make use of any rāgā derived from these mode types.

The Fibonacci series, given as 0, 1, 1, 2, 3, 5, 8, 13, ... is the basis of the form of and the pitch classes used in *Poly*. Fibonacci pitch cells $F_1, F_2, \dots$ are defined and used in an orderly manner. A pitch cell, say F_i , $i \geq 1$, is a set of at most k pitch classes where k is the value of the i th element of the Fibonacci series. For example, F_1 is empty as the first element of the Fibonacci series is 0 and F_6 can have at most five pitches because the sixth element in the Fibonacci series is 5. The Fibonacci numbers in the series decide when to switch from using pitch cell F_i to pitch cell F_{i+1} or to pitch cell F_{i-1} . Thus F_1 is used for zero measures, i.e. it is *not used*, F_2 and F_3 are used for one measure each, F_4 for two measures, F_5 for three measures, and so on.

The largest pitch cell used is F_8 which contains seven pitches and is used for thirteen consecutive measures. A Fibonacci pitch cell cannot have more than twelve pitch classes if the 12-tone system is used. A desire to keep the composition short and to the point resulted in the decision not to use Fibonacci cells greater than F_8 . It is certainly possible to use F_9 and higher pitch cells to lengthen the duration of the composition. Though these cells will not have more than 7 pitches, if we continue to use only 7 pitches in each mode, they will allow the use of additional measures.

The first and the last eight measures of *Poly* serve as its prelude and postlude. No Fibonacci pitch cell is used in these measures; they contain repetitive rhythmic patterns played on a pair of Indian drums commonly known as the *Tabla*. Starting at measure 9 until measure 41 the sequence $F_2, F_3, \dots, F_8$ is used. Starting at measure 42 the use of pitch cells is retraced in reverse order i.e. the sequence $F_8, F_7, \dots, F_2$ is used until measure 74. The pitch cells used during the retrace are, in some cases, different from those used until measure 41. Sitar and strings use the mode Khamāj and French Horn and the Xylophone use the mode Todī. As in Table 1, the pitch cell definitions are different for the two modes.

The score for *Poly* was written using the Finale notation tool from Coda Music Software running on a Power Macintosh 7100 system. The notation used for the *Tabla* is based on the *Tabla* sounds available in the Proteus World synthesizer module. In the absence of any standard notation for the *Tabla*, I invented my own as shown in the Ossia at the bottom right of the first page in the complete score.

Poly was first performed using Finale with Roland SC-55 and the Proteus World sound modules

Table 1: Fibonacci pitch cells used in Poly.

Measure number		Fibonacci pitch cell used		
Absolute [†]	Relative [‡]	Name	for Sitar/Strings	for French Horn/Xylophone
1-8	0		Not used	Not used
9	1	F ₂	{C [#] }	Not used
10	2	F ₃	{C [#] }	Not used
11-12	3-4	F ₄	{C [#] , B}	{C [#] , B [#] }
13-15	5-7	F ₅	{C [#] , E [#] , B}	{C [#] , D, B [#] }
16-20	8-12	F ₆	{C [#] , D [#] , E [#] , B}	{C [#] , D, E, B [#] }
21-28	13-20	F ₇	{C [#] , D [#] , E [#] , F [#] , A [#] , B}	{C [#] , D, E, F*, B [#] }
29-41	21-33	F ₈	{C [#] , D [#] , E [#] , F [#] , G [#] , A [#] , B}	{C [#] , D, E, F*, G [#] , A, B [#] }
42-54	34-46	F ₈	{C [#] , D [#] , E [#] , F [#] , G [#] , A [#] , B}	{C [#] , D, E, F*, G [#] , A, B [#] }
55-62	47-54	F ₇	{C [#] , D [#] , E [#] , F [#] , G [#] , A [#] , B}	{C [#] , D, E, F*, G [#] , A, B [#] }
63-67	55-59	F ₆	{C [#] , D [#] , E [#] , F [#] , G [#] }	{D, E, G [#] , A, B [#] }
68-70	60-62	F ₅	{C [#] , F [#] , A [#] }	{E, G [#] , B [#] }
71-72	63-64	F ₄	{C [#] , B}	{C [#] , B [#] }
73	65	F ₃	{C [#] }	{C [#] }
74	66	F ₂	{C [#] }	{C [#] }
75-82	67-74		Not used	Not used

[†] As printed in the score. [‡] Relative to measure 8.

to obtain the instrument sounds. The premiere performance of Poly was held on May 3 during the final meeting of the Music Theory IV class and was attended by seven people. Of course, my piano teacher got a sneak preview two days earlier!

Thanks to my wonderful music teachers Verna Abe and Helen Brown who taught me the basics of piano performance and music theory thus enabling me to create yet another one of those beautiful objects of mother nature: Music.

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Original: May 1996, Revised: March 24, 1997