

Quadraphonic Flex

As flexagons acquire more faces, you will find that there are multiple ways to fold a frieze pattern (template) into flexagons that have different flexing patterns (state diagrams or traversals). As with most flexagons, there are an infinite number of hexaflexagons and all hexaflexagons with more than 6 faces have frieze patterns that will fold up into multiple varieties of unique flexagons. Take a look at this table for hexaflexagons:faces friezes

friezes with

multiple foldings 6 3 0 7 3 1 8 7 4 9 8 6 10 11 10

The numbers of friezes with multiple foldings grow rapidly. For the decahexaflexagon, only one frieze does not have multiple foldings! One decahexaflexagon frieze will fold up into 12 different flexagons.

I wanted to continue pursuing the possibilities of friezes with multiple foldings. I choose the 12 faced Hexaflexagon, the dodecahexaflexagon, with a straight strip of 36 triangles. This flexagon has four possible ways to fold up. You can see the Tukey construction diagrams for each of these four variations and download a complete 9 page template from the hexaflexagon page.

On this template, you will find that each of the 72 dodecaflexagon triangles is coded with four unique symbols so that it is fairly easy to see how to fold up each of the four variations by folding together matching symbols in one of the four - 12 symbol sets. This flexagon is rather fun to fold up each variation in different ways to see all the intermediate patterns. These are really quite fascinating. Cut and folded accurately, it flexes amazingly well for having 12 faces. Each of the folding variations have their own unique faces. The theme for the flexagon was inspired by the 12 faces. It is a Zodiac theme with 48 unique symbols in 4 Zodiac symbol sets and with each symbol numbered from 1-6 for a total of 288 different symbols. These are the most complex flexagon plates I have ever created. The Chinese Zodiac would also make for a nice set of 12 symbols maybe for a future project. Let me know if anyone succeeds in making one of these!