

Vermont Rhythms is written for 2 saxophones (tenor and baritone), trombone, percussion, guitar and keyboard.

Two Vermont mathematicians constructed a remarkably symmetrical list that includes all the 462 six-note rhythms playable in a measure of 11 beats. This permitted the composer to write 462 measure of syncopations that are as different from jazz as from Stravinsky. Written for the professional Dutch sextet [Klang](#), the score is not recommended for part-time ensembles. Score 15€, parts 15€.

Introduction

This piece is called Vermont Rhythms because it would never have been written without the cooperation of two Vermont mathematicians, working at the University of Vermont in Burlington. In answer to a question of mine, Susan Janiszewski, with her advisor, Professor Jeffrey H. Dinitz, constructed a remarkable list of all the 462 six-note rhythms possible in an 11-beat period. Their impressive list distributes the rhythms in 42 groups of 11, each group forming an 11 by 11 square. The first square, the first 11 measures of music, is shown on the cover, so that one can better appreciate the symmetry of these squares. All 42 squares contain six elements in each row and six elements in each column, giving maximal rhythmic variety within the 11 phrases of each square. Each six-note rhythm has exactly three beats in common with each of the 10 others, and mathematicians will appreciate additional symmetries in these configurations.

My primary interest was the 462 rhythms, but I soon realized that I could choose pitches by employing the 462 six-note chords possible on an 11-note scale at the same time, so I did that too. Of course, much of this organization will not be heard consciously, even by very astute listeners, but some of it will be quite clear to everyone, and it is satisfying to know that many unheard symmetries are also present, reflecting one another in the background.

As the piece became clearer in my mind, I realized it would be particularly effective played by [Klang](#), an ensemble in The Hague that had recently done an amazing interpretation of [Narayana's Cows](#).

They agreed to premier the work, which explains why it is scored for two saxophones, trombone, guitar, percussion, and piano. The music has little to do with instrumental color, however, so the instrumentation may be varied somewhat to be more suitable for other ensembles.

Tom Johnson, Paris, December 2008