

Moreno, Andreatta, Noll Thomas, Agon Carlos and Assayag Gerard. "The Geometrical Groove: rhythmic canons between Theory, Implementation and Musical Experiment."

The focus of this article is the description of a family of rhythmic canons having the property of tiling musical time space. OpenMusic allows the graphical manipulation of rhythmic operations that help demonstrate two main families of canons: the RCMC-canons and the augmented canons. OpenMusic also demonstrates how to deal with complex musical transformations, such as the modulations between different canons. The more general OpenMusic package, Zn, is entirely based on the algebraic properties of (cyclic) groups and their application to music. There are two main parts to a periodic rhythm: the "inner rhythm" and the "outer rhythm." For RCMC-canons (Regular Complementary Canons of Maximal Category), the implementation of Vuza's algorithm on OpenMusic enables a calculation to be made, for any period, of all possible inner and outer structures associated with it. Another investigation focusing on inner syntagmatic structures of canons includes the paradigmatic relations between several canons. "Canon modulation" refers to the structural analogies in harmony. A typical modulatory effect in harmony is forced by the re-interpretation of a chord in a new harmonic role.

Another more interesting type of canon focused on in the article is the augmented rhythmic canon. These are canons with "augmented voices." Basically, there is a matrix of symmetries between two sequences called a "canon of symmetries." Generally, each pair of sequences can generate a symmetry canon if exactly one translation of modulo the product of the number of entries in the first sequence and the number of entries in the second sequence occurs among the different symmetries. The interesting part is in the augmented situation in which a symmetry-canon-generating pair (R,S) does not usually mean that the pair (S,R) is also canon-generating. It is not commutative. In the case that a symmetry-canon-generating pair (R,S) is such that $|R*S| = |S*R|$, then it is said to be a "dual-symmetry-canon-generating pair."

I was not able to try OpenMusic because it is MacOS based and I have very limited access to a Mac PC. The math skills required for this paper initially turned me off to the topic, but after realizing that it was a lot simpler to understand than was originally thought, I thought their mathematical descriptions of canons were convoluted and unclear. Their examples were very hard to understand and I must have missed the point of the last example because I completely do not understand what it was trying to say. Are the notes supposed to line up? No two notes are correctly lined up with each other, which makes me question the purpose for it. I guess I just need more information in order to come to a more definite opinion.