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*Deterministic Geometries, Self-Similarity, and the Aesthetics of Music Composition.* Preliminary report.

This presentation explores the use of various mathematically deterministic games, self-similar sequences, and stochastic mechanisms as the basis of novel generative material for musical compositions. The mathematical games include various modified versions of the Sierpinski gasket to produce repeating geometric patterns or deterministic chaos depending on the selection of an initial seed. Self-similar sequences generated by the motion of a line within a square lattice give rise to the fractal pattern known as a “dragon curve” and the hypothetical “rabbit” sequence suggested by Fibonacci. Stochastic algorithms are used to shape a variety of time-dependent probability distributions that in turn create the perceived form of temporal events.

The material generated by such methods is then applied as the basis for the various elements of musical experience including rhythm, event duration, sound density, frequency, timbre, amplitude, envelope, and temporal and spatial relationships.

Finally, the outcomes of these techniques are compared to historical methodologies and a subjective evaluation of the aesthetic value of such generative procedures by composers from differing specialties, backgrounds, and compositional styles are presented. (Received January 19, 2016)