Stochastic Music Xenakis

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ABSTRACT

The purpose of the paper is to give more details about the recent computer research of Mr. Iannis Xenakis in stochastic research last year in Montreal (see the paper written by Mr. Xenakis in the ICMC 91 proceedings).

My contribution will emphasize the use of the probability theory in the musical composition. I will focus on the computer program that Iannis Xenakis has written in 1990 (the program is still in progress). This program has been used for the composition of two pieces (GENDY'S01 premiered in Montreal, October 1991, and GENDY'S3 premiered in Metz, November 1991). The program is applying stochastic laws at two levels of the composition: the sound synthesis algorithm is called dynamic stochastic synthesis; this algorithm computes directly the numerical samples of the sound (with reference to the Fourier theory) by distorting an initial waveform with stochastic variations. The macroscopic organization of the musical piece is also depending on stochastic laws: for instance the time distribution of the different voices are computed with the exponential law. The probability theory is used in computer music for different reasons and for different musical goals. I will present other examples of the use of aleatory calculus in contemporary computer music.