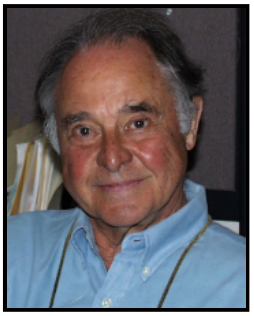

CCT Colloquium Series

FM Synthesis: 40 Years in Art and Industry

John Chowning, Stanford University

Professor Emeritus

Johnston Hall 338
February 27, 2009 - 11:30 am

Abstract:
It was in 1957, 50 years ago, that Max Mathews at Bell Telephone Laboratories wrote the first sound synthesis program, Music I that he developed and released as Music IV in 1963. Running on mainframe computers at large institutions, the production of music was slow and costly. My naïve discovery in 1967 of frequency modulation synthesis–computationally efficient, having few but perceptually salient parameters and time-varying spectra–led to a rapid increase in music synthesized by computers, first by software synthesis, then by real-time hardware synthesis ten years later. In 1983, Yamaha's DX7 coupled with the development of MIDI and computer music "hit the streets" resulting in the widespread use of computers in music that continues to this day. There were many elegant technical and aesthetic contributions to the development of FM synthesis, by a number of people, many unknown to the public. The presentation will include sound-synchronous animations that demonstrate this development ranging from the first experiments from 40 years ago, the breakthrough in 1971, to my most recent composition, Voices.

Speaker's Bio:
John M. Chowning was born in Salem, New Jersey in 1934. Following military service and studies at Wittenberg University, he studied composition in Paris for three years with Nadia Boulanger. In 1964, with the help of Max Mathews then at Bell Telephone Laboratories and David Poole of Stanford, he set up a computer music program using the computer system of Stanford University's Artificial Intelligence Laboratory. Beginning the same year he began the research leading to the first generalized sound localization algorithm implemented in a quad format in 1966. He received the doctorate in composition from Stanford University in 1966, where he studied with Leland Smith. The following year he discovered the frequency modulation synthesis (FM) algorithm, licensed to Yamaha, that led to the most successful synthesis engines in the history of electronic instruments. His three early pieces, Turenas (1972), Stria (1977) and Phoné (1981), make use of his localization/spatialization and FM synthesis algorithms in uniquely different ways. After more than twenty years of hearing problems, Chowning was finally able to compose again beginning in 2004, when he began work on Voices, for solo soprano and interactive computer using MaxMSP. Chowning was elected to the American Academy of Arts and Sciences in 1988. He was awarded the Honorary Doctor of Music by Wittenberg University in 1990. The French Ministre de la Culture awarded him the Diplôme d'Officier dans l'Ordre des Arts et Lettres in 1995 and he was given the Doctorat Honoris Causa in 2002 by the Université de la Méditerranée. He taught computer-sound synthesis and composition at Stanford University's Department of Music and was the founding director of the Center for Computer Research in Music and Acoustics (CCRMA), one of the leading centers for computer music and related research.

Refreshments will be served.
This lecture has a reception.

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