Chimpanzees, Wind Chimes, and Algorithmic Composition

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Despite a generally widespread interest in procedures for music composition, this topic is rarely seen on the program at International Computer Music Conferences (ICMC). However, at the 1992 ICMC in San Jose, California, this topic became the focus of a lively two-hour panel discussion when a special event on algorithmic composition was launched during the conference’s last day. It surprised me to see no coverage of this panel in Computer Music Journal’s review edition [17.2 Summer 1993].

The panel for the discussion included Max Mathews, Gareth Loy, Larry Austin, Kevin Jones, and David Cope (who was also the moderator). After Cope introduced the other panel members and spoke at some length about his own fascination with and use of algorithms in composition, Mathews played an example of an early experiment he did with permutations of a melodic phrase of a popular song. Although Mathews’s example clearly did not reflect current directions in algorithmic music, his 25-year-old experiment proved to be highly amusing. Unfortunately, instead of accepting the early example for what it was (an icebreaker), it became a handy reference for some members of the audience to argue that algorithmic composition is futile. To me, this argument had almost the same relevance as a demonstration of the horrible effects of mustard gas to prove that chemistry is something “bad.” Mathews’s intention in playing this example was probably not to advocate some of the quite reactionary arguments of the audience, but rather to emphasize what procedures the composer should pay more attention to when using algorithms in composition. The impact that this short example had on the discussion should not go ignored, and it certainly threw some fuel into the fire, revealing some audience members’ fairly anachronistic and limited perceptions of contemporary music. At times during this two-hour discussion, I blushed on behalf of those who insisted on bringing the event down to the “what-is-music” level. In the panel, Larry Austin, Gareth Loy, and David Cope spoke favorably about using algorithms in composition. Indeed, Austin stated that he liked Mathews’s piece, even as a composition.

The discussion then shifted with some help from Stephen Pope toward deterministic versus stochastic models of composition. It is amazing that even the editor of this journal seems to be trapped in a popular and rampant idea of music composition. A thread from the cultural life of Sweden crossed my mind during Pope’s comment on stochastic procedures in composition: he stated the prevalent view that sounds from wind chimes are not music. I recall how, in the early seventies, a couple of journalists, annoyed by modern art, decided that they should dispose of it (and its adherents) once and for all. They gave a chimpanzee some oil paint, brushes, and a canvas and then submitted the result to an annual art exhibition in Stockholm. They were delighted to find the painting admitted by the jury and hung among works by credible modern artists. It occurred to me that some of the people who opposed algorithmic composition during the ICMC session neither understand nor have paid much attention to what impact directional procedures have on stochastic processes. That’s what the two Swedish journalists did when they overlooked the consequences of directions and limitations in the material given to the chimpanzee and of their own decision to interrupt the ape’s activity when the painting looked like art. The journalists, not the chimp, were at that moment the artists. The chimp, who of course lacks artistic skills, would have kept on painting until there was no more paint (and even longer). At the moment when directions and limits are given to a chimpanzee (or for that matter a stochastic cloud or even the design of a wind chime), the director (designer, composer, artist, etc.) becomes the creator of the work. It’s here that some of the arguments expressed at the ICMC panel degenerated into infantile expressions—statements that can hardly be considered relevant arguments for the panel’s topic, but rather were opinions on what music the arguers prefer listening to.

Because composers throughout history have tended to utilize the highest technologies available, it is easy to agree with Iannis Xenakis’s statement that “music, by its very abstract nature, is the first of the arts to have attempted the conciliation of artistic creation with scientific thought.” With this in mind—in addition to hearing quite a few references to Xenakis during the discussion—it seems contradictory to see so many engineers at a computer music conference, all dedicated to cutting-edge technologies, speaking favorably about conservative and embryonic ideas of music composition. Unfortunately, it also seems that the engineers, even at the earliest stages of their work, often ignore possible collaboration with the users of their products (i.e., composers). Instead, their developments or inventions are guided almost entirely by their own rudimentary and biased conception of composition, with the result being perhaps an engineering advance, but a
step backward for music composition. It happens too often that audible examples by engineers get confused with [and treated as] actual composed music, when they should rather be looked at as demonstrations of new engineering ideas and breakthroughs.

I believe that algorithmic composition in signal processing is one of the most important areas of new music today. I hope that panel discussions and presentations such as this one will be repeated at upcoming conferences, though I hope with more diverse and open discussion from both the engineering and composition sides of the computer music community.

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Leon Theremin

Leon Theremin, the inventor of the musical instrument that bears his name, died in Moscow in November 1993 at the age of 97. Theremin created one of the first electronic musical instruments and was a pioneer in the area of human-machine interface. The Theremin senses the proximity of each of the performer’s hands in relation to its two antennae, affecting both pitch and amplitude. As a scientist and inventor for the KGB in Moscow, Theremin invented electronic surveillance devices, worked on remote-control aircraft, and developed systems for tracking ships behind enemy lines. He spent time in Siberia when he was convicted of anti-Soviet propaganda.

I met Theremin during his trip to the United States in 1991 at a concert “presented to celebrate Stanford University’s Centennial year and the Center for Computer Research in Music and Acoustics’s (CCRMA) contribution to electroacoustic music, and to honor Leon Theremin and Max Mathews, whose respective contributions were visionary and extensible” (Glenn Spencer in his review of the event in Computer Music Journal 16:1). I also had the privilege, with Stephen Travis Pope and Roger Dannenberg, of attending a performance in Vilnius, Lithuania, in 1989 by his daughter, Natasha, on one of the original Theremins. One of the interests of the Lithuanians who hosted our cultural/technological exchange group was to establish a Western partner to transform the Theremin into a MIDI device.

Theremin’s explorations into musical instrument design foreshadowed and even influenced the work of many musical instrument builders, including those who are now working with computer-based technology.

In the early 1980s, prior to the development of MIDI, Joel Chadabe created gestural interface devices to control synthesizers in live performance. Mark Coniglio’s MIDI Dancer, Ed Severinghaus’s BodySynth, and the Mandala systems are reflective of Theremin’s Terpsitone, a Theremin-based musical dance platform on which dancers’ movements affect the sound production. Other examples of noncontact and gesture-based controllers include Will Bauer and Bruce Foss’s Gesture and Media System (GAMS), a sonar-based sensing system for performance (described in their article in Computer Music Journal 16:1), The Hands, a MIDI-based gestural controller, created by Michel Waisvisz at the STEIM center in Amsterdam; and the Radio Baton, created at Stanford by Max Mathews.

Steven Martin, a New York–based filmmaker, created a documentary about Theremin’s life, entitled “The