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Keynote Address
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My View Of The Future Of Real-Time Computer Music

It is clear that incredibly fast and inexpensive hardware is just around the corner. Soon, if we want real-time performance, we will have to slow down our computers in order that the computation not get too far ahead of the performance. It is also clear that performing music, whether done at home or on stage, is a great and expressive pleasure. Good performance instruments will be immensely popular.

I see three periods in the evolution of hardware. The past and present include MIDI synthesizers with all their powers and limitations. In the present and immediate future DSP chips promise to provide music much more adaptable to the desires of the individual musician than MIDI equipment. Now, the difficulty of programming DSP chips limits their use. The future, new chips, perhaps successors to present RISC processors, will provide both power and easy programmability.

Obtaining good software remains the biggest (and most interesting) obstacle to real-time performance. At present two kinds of software exist—sequencers, of which there are many examples, and block-diagram compilers, among which Miller Puckette’s MAX program is a popular example. Sequencers and sequences provide one way of describing the time-varying aspects of a composition. They can embody much of the information in a traditional score. Real-time block-diagram compilers provide a practical way for non-computer specialists to invent and construct their own instruments. The block-diagrams contain much of the information that is built into traditional instruments.

The division of music into time-varying sequences and time-invariant instruments is old. Its usefulness is well established. Most traditional music fits this pattern. Music V included a block-diagram compiler for instruments and a time ordered sequence of notes in a score. But is this division necessary? Perhaps we can create an environment in which the time-varying and instrumental aspects of music are combined in a much more intimate and flexible way than presently exists. Perhaps we can make time-varying instruments whose properties are changed by a score, or perhaps we can make scores in the form of block-diagrams. Or perhaps (and most hopefully) we can create a new music structure that is so powerful and so different that it cannot be thought of in terms of instruments and scores.

The complete text of this address is available from International Computer Music Association.