

## **Richard Teitelbaum** **The Digital Piano**

Musical automata have existed since the 14th century, and music has been composed for them by Hassler, Mozart (including the great FANTASIA IN F MINOR, KV 608, for mechanical organ) Beethoven, Stravinsky, Hindemith and others. Unquestionably the most extensive and far-reaching exploration of the medium has been made by the American Expatriate composer Conlon Nancarrow, whose extraordinary STUDIES FOR PLAYER PIANO have recently been "discovered" after years of neglect.

With the advent of digital electronic hardware of the type employed in the Marantz Pianocorder system, it becomes feasible to interface one or more pianos with computers to create a real-time, interactive multipiano PERFORMANCE system, such as that heard in tonight's concert. This system differs significantly from previous musical automata in that it is simultaneously under both human AND "non-human" control. Here the computer functions as an extension and enhancement of the pianist-composer's body and mind-affording him, for example, direct control over as many as eighty "fingers" per piano, and the ability to program an infinite variety of instantaneous musical responses and transformations of what he plays, as he plays it.

As my system is presently configured, material played by the pianist on one keyboard is instantly read into computer memory where it can be stored, overlaid, delayed, transposed, inverted and otherwise manipulated before being passed on to the other two pianos for "playback" at the performer's behest. This may be done either simultaneously, or at a fixed, selectable delay time, or stored for future recall. Any section of material may also be looped to form an ostinato; foot pedals controlling the "global" volume level of both remote pianos allow the performer to balance and "fade" them in or out.

For some years, I have been involved in the attempt to integrate the spontaneity and "responsiveness-to-the-moment" of improvisation with the greater degree of control and complexity which structured composition provided. Working with analog synthesizers I have generally responded to this problem by "composing" a complex electronic system or network with a varied menu of sound and control pathways available for instant selection and combination. This provided a broad range of timbral, registral, pitch and (more recently) rhythmic responses. Now, with the extension of large-scale control over the time domain, as well as the instant manipulation of foreground details that digital memory and control provide, the notion of "real-time composition" begins to be a reality.

In SOLO FOR THREE PIANOS, the composer-performer selects a series of programs that represent musical processes: they command the computers (and pianos) to respond to the live performer in a variety of ways, functioning very much as a traditional score directs the actions of its interpreters. Some years ago John Cage commented that when you come right down to it, composition means telling other people what to do, and that he found that an unattractive way of doing things. I find it philosophically satisfying, as well as musically rewarding, to be able to relegate the alienated function of "obeying orders" to machines capable of comfortably performing tasks far beyond the reach of any human performer, while I maintain my freedom to play as imagination and inspiration dictate.

The implications of such an approach to music, and the potentials for its continuing development are, I think, vast.

Richard Teitelbaum