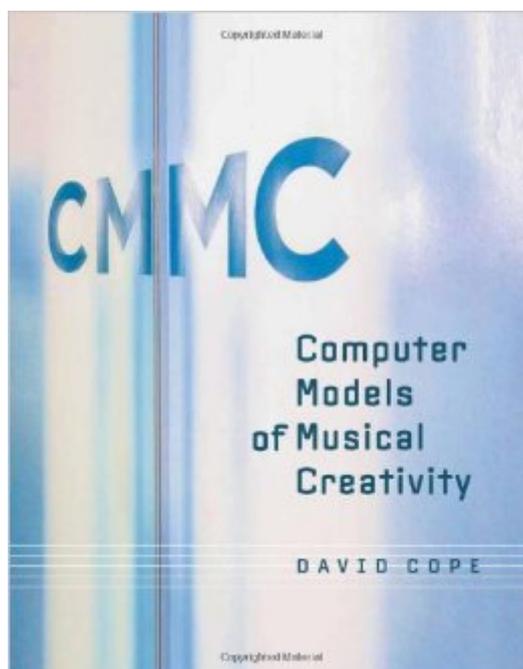# Computer Models Of Musical Creativity (MIT Press)

Synopsis

In this original and provocative study of computational creativity in music, David Cope asks whether computer programs can effectively model creativity -- and whether computer programs themselves can create. Defining musical creativity, and distinguishing it from creativity in other arts, Cope presents a series of experimental models that illustrate salient features of musical creativity. He makes the case that musical creativity results from a process that he calls inductive association, and he contends that such a computational process can in fact produce music creatively. Drawing on the work of many other scholars and musicians -- including Douglas Hofstadter, Margaret Boden, Selmer Bringsjord, and Kathleen Lennon -- Cope departs from the views expressed by most with his contentions that computer programs can create and that those who do not believe this have probably defined creativity so narrowly that even humans could not be said to create.After examining the foundations of creativity and musical creativity, Cope describes a number of possible models for computationally imitating human creativity in music. He discusses such issues as recombinance and pattern matching, allusions, learning, inference, analogy, musical hierarchy, and influence, and finds that these experimental models solve only selected aspects of creativity. He then describes a model that integrates these different aspects -- an inductive-association computational process that can create music. Cope's writing style is lively and nontechnical; the reader needs neither knowledge of computer programming nor specialized computer hardware or software to follow the text.The computer programs discussed in the text, along with MP3 versions of all the musical examples, are available at the author's website, http://arts.ucsc.edu/faculty/cope.

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Customer Reviews

In this book the author makes a case for musical creativity by machines resulting from a process named "inductive association" which is a more narrowly defined version of free association, or the shedding of deductive reasoning for a more intuitive process. Each chapter begins with a simple principle, one that the author attempts to prove as the chapter proceeds. These principles are followed by illustrative vignettes appropriate to that chapter's focus. Many chapters also contain descriptions of computer programs designed to demonstrate that chapter's focus on the complexities of musical creativity.Part one provides the history and meaning of creativity. That section ends with a detailed analysis of randomness and how it differs from creativity. There is a summary of computer program types that in some way may model musical creativity.Part two describes a number of possible models for computationally imitating human creativity. Chapter 4 outlines the basic principles of recombinance and pattern matching, which are the two foundations of the author's work with computers and music. Chapter 5 describes how allusions contribute to musical creativity, and concludes with the description of a program that analyzes music for its references to other music and possible ways in which these references might be interpreted. Chapter 6 explains the role that learning plays in the creative process. Chapter 7 presents some of the ways in which composers build musical expectations and then either fulfill them or surprise listeners. It then discusses musical hierarchy and how computer programs can incorporate the analytical tools necessary to meld hierarchy into their creative processes.

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