

# Computer Models of Musical Creativity: A Review of Computer Models of Musical Creativity by David Cope

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## 1 Introduction

*Pseudoscience* (as defined by Wikipedia on 4th July 2007) is

any body of knowledge, methodology, belief, or practice that claims to be scientific or is made to appear scientific, but does not adhere to the basic requirements of the scientific method.

(<http://en.wikipedia.org/wiki/Pseudoscience>)

Examples from the same article are 'astrology, quackery, the occult, and superstition', and some identifying features are (paraphrased):

- (1) Use of vague, exaggerated or untestable claims—including: (a) assertion of imprecise claims and (b) use of obscurantist language.
- (2) Over-reliance on confirmation rather than refutation—including: (a) assertion of claims that cannot be falsified in the event that they are incorrect; (b) over-reliance on testimonials and anecdotes; (c) selective use of experimental evidence.
- (3) Lack of openness to testing by other experts—including: failure to provide adequate information for other researchers to reproduce the claimed results.
- (4) Lack of progress—including: failure to progress towards additional evidence of its claims.

- (5) Personalisation of issues—including: (a) tight social groups and grandiloquence; (b) attacking the motives or character of anyone who questions the claims.

When one sets out to study or replicate human or machine creative behaviour in anything like a scientific way, one must be very careful, because creativity is shrouded in both mystery and mystique. Psychologically and philosophically, creativity is every bit as difficult to identify as consciousness. Proponents of artificial intelligence often shy away from computational creativity as the inscrutable, unachievable thing, much in the same way that their opponents refuse to accept the idea of computational intelligence. Aesthetically, creativity is extremely hard to define: it is relative to both temporal and social context, it can apply at any number of different but interrelated levels (e.g. perceptual, narrative, theoretical). In general, we can recognise something as creative when we see it, and even explain individual cases, but we cannot generally give rules as to what is really a product of creative behaviour. Finally, of course, to many people, creativity is a precious, personal thing, almost like a religious construct, which is not open to question or even scrutiny.

David Cope's latest book, *Computer Models of Musical Creativity* (2005), sets out to study musical creativity, which, he argues, is different from other

# Computer Models Of Musical Creativity

**William Forde Thompson**



## **Computer Models Of Musical Creativity:**

**Computer Models of Musical Creativity** David Cope,2005 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 Jacket

**The Act of Musical Composition** Dave Collins,2016-04-01 The study of musical composition has been marked by a didactic technique based approach focusing on the understanding of musical language and grammar harmony counterpoint orchestration and arrangement or on generic and stylistic categories In the field of the psychology of music the study of musical composition even in the twenty first century remains a poor cousin to the literature which relates to musical perception music performance musical preferences musical memory and so on Our understanding of the compositional process has in the main been informed by anecdotal after the event accounts or post hoc analyses of composition The Act of Musical Composition Studies in the Creative Process presents the first coherent exploration around this unique aspect of human creative activity The central threads or key themes compositional process creative thinking and problem solving are integrated by the combination of theoretical understandings of creativity with innovative empirical work [Patterns of Intuition](#)

Gerhard Nierhaus,2015-01-11 The present book is the result of a three year research project which investigated the creative act of composing by means of algorithmic composition Central to the investigation are the compositional strategies of 12 composers which were documented through a dialogic and cyclic process of modelling and evaluating musical materials The aesthetic premises and compositional approaches configure a rich spectrum of diverse positions which is reflected also in the kinds of approaches and methods used These approaches and methods include the generation and evaluation of chord sequences using genetic algorithms the application of morphing strategies to research harmonic transformations an automatic classification of personal preferences via machine learning and an application of mathematical music theory to the analysis and resynthesis of musical material The second part of the book features contributions by Sandeep Bhagwati William Brooks David Cope Darla Crispin Nicolas Donin and Guerino Mazzola These authors variously consider the project from different perspectives offer independent approaches or provide more general reflections from their respective research fields

**Music in the Social and Behavioral Sciences** William Forde Thompson,2014-07-18 This first definitive reference resource to take a broad interdisciplinary approach to the nexus between music and the social and behavioral sciences examines how music affects human beings and their interactions in and with the world The interdisciplinary nature of the work provides a starting place for students to situate the status of music within the social sciences in fields such as anthropology communications psychology linguistics sociology sports political science and economics as well as biology and the health sciences Features Approximately 450 articles arranged in A to Z fashion and richly illustrated with photographs provide the social and behavioral context for examining the importance of music in society Entries are authored and signed

by experts in the field and conclude with references and further readings as well as cross references to related entries A Reader's Guide groups related entries by broad topic areas and themes making it easy for readers to quickly identify related entries A Chronology of Music places material into historical context a Glossary defines key terms from the field and a Resource Guide provides lists of books academic journals websites and cross references The multimedia digital edition is enhanced with video and audio clips and features strong search and browse capabilities through the electronic Reader's Guide detailed index and cross references Music in the Social and Behavioral Sciences available in both multimedia digital and print formats is a must have reference for music and social science library collections

*Music and AI* Alexandra Bonnici, Roger B. Dannenberg, Steven Kemper, Kenneth P. Camilleri, 2021-03-16

**Business With a Conscience** Joan Marques, 2021-12-07 Practicing business with a conscience leaves no sector untouched It trickles into how we treat our employees approach our work in general address stakeholders engage in accounting financial and production management practices implement and manage information technology communicate on a direct and indirect basis and market what we stand for Business has encountered an interesting evolution in the first two decades of the twenty first century with social media as a catalyst aiding greater understanding and improvement regarding the critical value of soft skills workplace diversity change readiness moral responsibility sustainable awareness and a general socially responsible mindset This amalgamate spirit of business as we envision it in both the near and far future has found its way in all segments of business education research and practice Adhering to the global trend of increased responsibility and evoking a constructive change in the narrative of business this Research Companion serves as a critical reference work for business scholars and practitioners in various settings It brings together contributing scholars from multiple business areas from a variety of cultures and locations of the world in order to achieve the compilation of a reference work that will find an expansive appeal Including insights from the broad business spectrum ranging from internal managerial practices to strategic applications including international sensitivity this volume highlights the urgency for increased awareness in business decision making on all fronts It will be of great value to researchers academics practitioners and students in the fields of corporate social responsibility business ethics leadership organizational studies and entrepreneurship

**Hidden Structure** David Cope, 2009-06-01 Today's computers provide music theorists with unprecedented opportunities to analyze music more quickly and accurately than ever before Where analysis once required several weeks or even months to complete often replete with human errors computers now provide the means to accomplish these same analyses in a fraction of the time and with far more accuracy However while such computer music analyses represent significant improvements in the field computational analyses using traditional approaches by themselves do not constitute the true innovations in music theory that computers offer In Hidden Structure Music Analysis Using Computers David Cope introduces a series of analytical processes that by virtue of their concept and design can be better and in some cases only accomplished by computer

programs thereby presenting unique opportunities for music theorists to understand more thoroughly the various kinds of music they study Following the introductory chapter that covers several important premises *Hidden Structure* focuses on several unique approaches to music analysis offered by computer programs While these unique approaches do not represent an all encompassing and integrated global theory of music analysis they do represent significantly more than a compilation of loosely related computer program descriptions For example Chapter 5 on function in post tonal music firmly depends on the scalar foundations presented in chapter 4 Likewise chapter 7 presents a multi tiered approach to musical analysis that builds on the material found in all of the preceding chapters In short *Hidden Structure* uniquely offers an integrated view of computer music analysis for today s musicians

*Tinman* David Cope,2008-12-04 Offering insight into the creative processes of a contemporary composer Tinman presents 150 vignettes from author David Cope s life Some of the notable individuals discussed in this innovative biography are John Cage Karlheinz Stockhausen Pierre Boulez Aaron Copland Warren Zevon Carl Sagan Frank Drake Douglas Hofstadter Arthur Knight Danny Glover Steven Spielberg George Lucas Dorothy Freeman Arthur C Clarke Isaac Asimov and Philip Jos Farmer Tinman offers a fond music journey including two encounters with Bach Rachmaninoff s classic Prelude in C sharp minor Beethoven s Fifth Symphony Pierre Boulez and the sadness of Igor Stravinsky s death The title borrowed from L Frank Baum s book *The Wizard of Oz* is an aphorism affectionately attached to Cope in the late 1990s The reference reflects the many attitudes about his work with his computer music program *Experiments in Musical Intelligence* critics felt the results of this program lack heart Though Tinman covers many other aspects of Cope s life from his love of the cello to his days as a graduate student at the University of Southern California and to his work as a composer author and teacher the main theme centers on his search for self identity

**Choice** ,2006 [The AI Music Problem](#) Christopher W. White,2025-06-16 Music poses unique and complex challenges for artificial intelligence even as 21st century AI grows ever more adept at generating compelling content *The AI Music Problem Why Machine Learning Conflicts With Musical Creativity* probes the challenges behind AI generated music with an investigation that straddles the technical the musical and the aesthetic Bringing together the perspectives of the humanities and computer science the author shows how the difficulties that music poses for AI connect to larger questions about music artistic expression and the increasing ubiquity of artificial intelligence Taking a wide view of the current landscape of machine learning and Large Language Models *The AI Music Problem* offers a resource for students researchers and the public to understand the broader issues surrounding musical AI on both technical and artistic levels The author breaks down music theory and computer science concepts with clear and accessible explanations synthesizing the technical with more holistic and human centric analyses Enabling readers of all backgrounds to understand how contemporary AI models work and why music is often a mismatch for those processes this book is relevant to all those engaging with the intersection between AI and musical creativity today

**Current Musicology** Austin Clarkson,2006 **Tinman Too** David

Cope,2012-09-27 Continuing the insights into the creative processes of contemporary composer David Cope Tinman Too presents another 150 vignettes from the author s life begun in his previous book Tinman Some of the notable individuals discussed in this innovative autobiography are Alfred Hitchcock Buckminster Fuller Benoit Mandelbrot Vincent Price Jerry Lewis and Philip Jos Farmer Tinman Too offers a fond music journey including encounters with William Schuman Max Mathews Lejaren Hiller John Adams Donald Erb Mort Subotnick Walter Piston Karel Husa and Witold Lutoslawski The title borrowed from L Frank Baum s book The Wizard of Oz is an aphorism affectionately attached to Cope in the late 1990s The reference reflects the many attitudes about his work with his computer music program Experiments in Musical Intelligence critics felt the results of this program lack heart Though Tinman Too covers many other aspects of Cope s life from his love of the cello to his days as a graduate student at the University of Southern California and to his work as a composer author and teacher the main theme centers on his search for self identity

**International Workshop on Models and Representations of Musical Signals** ,1992 **Creativity & Cognition** ,2002 *Proceedings of the Twelfth National Conference on Artificial Intelligence* American Association for Artificial Intelligence,1994 **Library Literature & Information Science** ,2007 An index to library and information science literature *Proceedings of the ... International Computer Music Conference* ,2002 **Virtual Music** David Cope,2004-01-30 Virtual Music is about artificial creativity Focusing on the author s Experiments in Musical Intelligence computer music composing program the author and a distinguished group of experts discuss many of the issues surrounding the program including artificial intelligence music cognition and aesthetics The book is divided into four parts The first part provides a historical background to Experiments in Musical Intelligence including examples of historical antecedents followed by an overview of the program by Douglas Hofstadter The second part follows the composition of an Experiments in Musical Intelligence work from the creation of a database to the completion of a new work in the style of Mozart It includes in sophisticated lay terms relatively detailed explanations of how each step in the process contributes to the final composition The third part consists of perspectives and analyses by Jonathan Berger Daniel Dennett Bernard Greenberg Douglas R Hofstadter Steve Larson and Eleanor Selfridge Field The fourth part presents the author s responses to these commentaries as well as his thoughts on the implications of artificial creativity The book and corresponding Web site includes an appendix providing extended musical examples referred to and discussed in the book including composers such as Scarlatti Bach Mozart Beethoven Schubert Chopin Puccini Rachmaninoff Prokofiev Debussy Bartok and others It is also accompanied by a CD containing performances of the music in the text **Anais do I Simpósio Brasileiro de Computação e Música, Caxambu, de 01 a 05 de agosto de 1994** Sociedade Brasileira de Computação. Congresso,1994 **A Dialogue on Consciousness** Torin Alter,Robert J. Howell,2009-11-05 What is consciousness Is it a physical or a non physical phenomenon If it is physical why does it elude scientific explanation If it is not physical how can it be explained A Dialogue on Consciousness introduces readers in dialogue

form to the problem of consciousness it explores the main arguments for and against physicalism the view that consciousness is entirely physical and the several levels of debate surrounding those arguments The dialogue takes place in a university library after hours where the two protagonists impoverished graduate students Tollens and Ponens sleep in lieu of proper accommodations Through the course of five nights and a Saturday morning they quote key passages from classic and contemporary texts while discussing the major theories on the subject Frank Jackson's knowledge argument philosophical zombies the inverted spectrum epiphenomenalism neutral monism panpsychism the problem of mental causation the ability hypothesis the phenomenal concept strategy and more The dialogue ends with the students contemplating the merits and drawbacks of modern physicalist views and non physicalist alternatives While A Dialogue on Consciousness is an entertaining and accessible introduction to some of the most complicated issues in contemporary philosophy it does not forego rigor Arguments and responses are precisely formulated and discussed in non technical terms Positions are considered with the care that they receive in professional literature An expansive categorized and annotated Reading Suggestions list is included at the end of the book to direct readers to the most relevant and helpful primary sources Ideal for courses on the philosophy of mind and on consciousness the book provides a thorough up to date orientation to the debate about consciousness and physicalism

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