

A PERSPECTIVE ON ART, SCIENCE AND TECHNOLOGY INTERACTION: A DIALOGUE BETWEEN INTERACTIVE MUSIC COMPOSITION, MIXED REALITY AND NEUROSCIENCE

JÔNATAS MANZOLLI

Interdisciplinary Nucleus for Sound Studies
Music Department, Institute of Arts
UNICAMP
jonatas@nics.unicamp.br

Starting upon a quotation from the Greek composer Iannis Xenakis: “*I do not think that any attempt to consider music like a language can be successful. The sub-structure of music is much closer to the sub-structure of space and time. Music is purer, much closer to the categories of the mind*”, this talk discusses on a new perspective that can be discerned in the research being currently conducted on creativity. It concentrates on a new academic paradigm that lay at the intersection between Art, Science and Technology. Are there some concrete approaches that already integrate them? This question will be elucidated with examples of interactive performances that dialogue with computational neuroscience, biomimetic, robotics and computational models applied to musical analysis and composition. They were conceived to combine multimodalities using interactive media and improvisation, to explore digital immersion and augmented cognition and to study human cognition and creativity using computer music, computer graphics, sensory devices, bio-signals and motion caption.

BIO NOTES

JÔNATAS MANZOLLI (BMath, BMUS, MMath, PhD), composer and mathematician, tenured professor at the University of Campinas (UNICAMP), Brazil, explores with passion and dedication the complex interplays between Music and Science. Beyond his activities as Professor, he is research leader of NICS, the Interdisciplinary Nucleus for Sound Studies, at Unicamp. He worked throughout his career in international institutions, starting with his PhD at University of Nottingham, UK, and studies in algorithmic composition at the Sonology Institute, The Netherlands. He has been a guest researcher at the *Institute for Neuroinformatics* of the ETHZ in Switzerland, from 1998 to 2004, and a visiting professor at the *Synthetic Perceptive, Emotive and Cognitive Systems (SPECS)* Group at the Universitat Pompeu Fabra, Barcelona, since 2005. He also collaborates with the *Input Devices and Music Interaction Laboratory* of the McGill University, Montreal and the Music Representation Group of the *Institut de Recherche et Coordination Acoustique/Musique*, IRCAM, Paris. He has lectured and given concerts in Japan, Singapore, Austria, France, the Czech Republic amongst other countries. Jônatas Manzolli's research covers all forms of dialogue between Science and Music, including the use of sound in alternative forms of knowledge building. He is a man who wears many hats, all of which fit him well. He attributes his success to an excellent balance between formal and scientific concepts combined with artistic creativity. He teaches Composition and Music Technology and has developed software for a variety of applications. As a consequence, some of his most notorious achievements have emphasized the delicate relationship between man and machine, including the use of artificial intelligence as interface between orchestra, digital music instruments, percussion and chamber music. His works using digital technology include the interactive compositional system *Vox Populi* (1997), applications of Neuroinformatics Technology in the *RoBoser* project (1998-2002), the sonification for the *Ada: intelligent space* that was presented at the Expo.02, Switzerland, with close to 500.000 visitors (2002), an interactive multimedia performance *re(PER)curso* (2007) premiered at the Museu d'art Contemporani, Barcelona, Spain, and the soundtrack of the *Multimodal Brain Orchestra*, premiered at the close session of the *Science Beyond Fiction* Conference in Prague (2009). His compositions also include chamber music and orchestral settings such as his *Reflexões* for Symphony Orchestra and interactive audiovisuals (2011), *Cantoria* for String Orchestra (2012), *Reação em Cadeia* for 21 Violoncellos (2013) and *Salmo 23* for four Soloists, Choir and Orchestra (2015). His *Descobertas* (2016) integrates dance, chamber and vocal music in a multimodal opera accomplished with real time immersive visuals and an interactive sound diffusion system.

