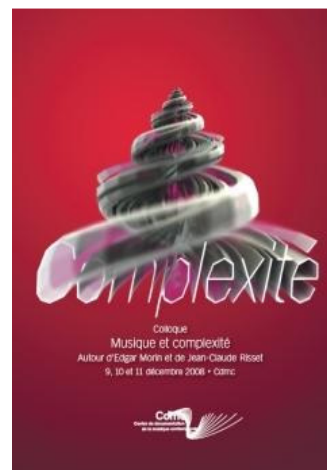


# Musique et complexité

## autour d'Edgar Morin et Jean-Claude Risset

Colloque  
9,10, 11 décembre 2008  
• Cdmc



## Texte de John Chowning

### Homage to Jean-Claude Risset

It is my honor to write these words in tribute to my inspiring colleague, Jean-Claude Risset, for this celebration of his musical and scientific contributions on this, his 70<sup>th</sup> birth year. In 1964, enabled and guided by Max Mathews, we both began this grand adventure of computers and music, Jean-Claude Risset at Bell Telephone Laboratories and I at Stanford University. Standing behind Max Mathews at Bell Laboratories was John Pierce, then director of research, who not only provided the corporate protection that allowed Mathews to pursue his decidedly artistic interests using computers, but who also contributed seminal ideas to this incipient field. Following his retirement from Bell Laboratories, Pierce pursued fulltime his musical research interests and remained through his life an outspoken admirer and champion of Jean-Claude Risset's research and compositions.

Risset's first research using computers focused on the analysis and synthesis of trumpet tones, a class of timbres that had eluded previous attempts at analysis. This work, exemplary of all of his research – a fusion of his scientific knowledge and his phenomenal ability to hear the internal structure of sound – uncovered the acoustic “signature” of this class of timbres. The

unprecedented success of this research set apart computer based acoustic analysis from the preceding technologies because of its generality, precision and reproducibility. In addition, Risset realized substantial reduction in the amount of data required to reproduce these tones through careful subjective experiments that not only contributed to computational efficiency but elevated psychoacoustics to a position of direct musical relevance. A few years later, in 1971, I exploited these results to make a critical advancement in the development of Frequency Modulation synthesis.

From the beginning of his work Risset's scope included auditory perception, a field that he saw early on as critical to the evolution of the medium of computer music – and to which few other technology oriented musicians paid attention. Risset's penetrating understanding of this often speculative scientific field let him create compelling auditory illusions and perceptual paradoxes that not only enriched the field of research but which he magically integrated into his compositions.

Based upon his success in synthesizing brass timbres, Risset extended this approach of analysis through synthesis to include a number of complex and refined timbres that indicated further the unlimited possibilities of this new medium. By 1969 he had compiled this work into *An Introductory Catalogue of Computer Synthesized Sounds* that comprised a complete description of these timbres—their inner acoustic structure. For the incipient field of computer music, this catalogue quickly became an enticing beacon for that which was possible.

The last entry in the catalog is of particular importance because it defines an altogether new possibility in creating sound that has had far-reaching consequences. Risset, in an extraordinary moment of insight and invention, realized that the spectrum of a sound could be *composed* such that the frequencies of its partials are derived from a pitch space. In nature, the frequencies of a sound's partials, whether harmonic or inharmonic, are locked within boundaries defined by the source's physical properties. Risset had un-locked timbre or the quality of a sound from a physical source, creating complex structured sound spectra that cannot exist in the natural world— inharmonic spectra that are precisely organized, supple through time, that cohere, and are imprinted with pitch

material, providing an intimate structural link to the music of which it is a part. He had opened the door to the concept of *composing spectra*, an idea that is at the root of my own composition *Stria*; an idea that has been imaginatively extended beyond computer synthesized music and embraced as a new musical aesthetic by composers of acoustic media.

The totality of Risset's body of work constitutes a remarkably rich contribution to the domains of both science and music. But he has linked his work—his science also finding expression in his music, a part of each sharing the same frame. It is this, his presence as both scientist and artist that has made Jean-Claude Risset such a commanding and unique cultural force.

*John Chowning*  
*December 1, 2008*  
*Palo Alto, California*

- Ce texte dans sa traduction française a été lue et peut être entendu sur le site du CDMC : <http://www.cdmc.asso.fr/>.
- Il sera publié dans un livre rassemblant les actes du colloque.