



Cross-Disciplinary Interplay  
between the Humanities,  
Technology and Musical Practice

**Thursday,  
February 16, 2012.  
2:15-4 p.m. in U73.**

Guest lecture in the seminar  
series

**Topics in the Aesthetics  
of Music and Sound,**

<http://soundmusicresearch.org/seminarsspring2012.html>

## **Sonification: From Signal to Sound**

**Kristoffer Jensen**

Assoc. Prof., Dept. of Architecture, Design and Media Technology, Aalborg University Esbjerg

**Laurent "Saxi" Georges**

Musician, Composer, Researcher.

**Abstract:** All signals can become sounds. This is commonly called *sonification*.

Research regarding sonification has profound philosophical implications, since information which has not been isolable and identifiable now is - by virtue of its having an audible manifestation. The technical and sonic material will be presented such a fashion as to stimulate philosophical and cross-disciplinary discussions of the epistemological and aesthetic issues raised by this approach.



In this presentation we will present the theories and algorithms of time-frequency inversions. A particular method for obtaining sounds is investigated here. Taking an existing sound as the point of departure, the transformed signal or shape of the signal is here considered as a sound itself. By calculating the spectral and temporal envelopes, and replacing one by the other, subtle but interesting effects are obtained. In contrast, by replacing the sound by the Discrete Cosine Transform (DCT) of the same sound, a much more important change is produced. In particular, in the case of inharmonic or unvoiced sounds, such as the cymbal or the unvoiced consonants of speech, interesting textures are obtained. For most harmonic sounds, another harmonic sound is obtained by the DCT. If,

finally, the envelope switching is carried out, some of the original qualities of the sound are re-introduced. This work has been done for creative and pedagogical reasons. It extends the range of sound textures for contemporary music creation, and it also extends the number of means for understanding the implications of spectral and temporal envelopes, as well as the relationship between a signal and the Fourier/Cosine transform of the same signal.

Demonstration of the method will be performed live, and audience and presenters will be able to hear sounds of their own making in the transformed reality.

**ALL ARE WELCOME!**