

## Quantasonic (installation)

A research initiative by Voldemars Johansons & Tom Tlalim

### Synopsis

Quantasonic is a modular data synthesis and processing environment, aimed at creation and control over complex sound structures and sets of synthesis parameters. An organization of parameters is defined by n-dimensional data matrix (shape) that contains large number of particles and/or number of dimensions. Modern synthesis environments are capable of (re)producing these synthesis structures sonically, but for human performer/composer the causality is often inconceivable due to character of human perception. To enhance the intelligibility of resulting sound objects at creation stage and establish a coherent morphology of synthesis processes, we propose spatial and visual representation of the synthesis data structures part of composition and performance environment.

At the core of the environment lies the notion of space and abstraction. A space is a basic concept and entity, well conceived by human perception, largely by visual means. Any organization of matter in space, real or virtual, is instantly recognized as a structure or a shape. By recognition, a structure is justified in perception as a form (abstraction process), thus greatly reducing the number of parameters involved in the perceptual process. It's noted that recognition can greatly enhance the process of controlling and learning; undoubtedly this effect is valid in musical context as well.

### Spatial representation

One of potential *modus operandi* of Quantasonic environment is spatial data installation. The environment is interpreted approaching the idea of modeling the virtual space where data processing takes place. This setup suggests spatial representation of sound: the sonic results of synthesis particles are distributed between eight speakers placed in corners of the room, so that the

particle locations in data environment correspond in acoustics of actual room. Similar approach applies to visual representation: within the *OpenGL* environment where control-object is rendered, four virtual cameras are placed facing opposite directions. The output of these cameras is projected to four video screens that form a rectangular shape, enveloping a space, large enough for viewers to enter. By this arrangement, the viewpoint is positioned in the center of environment, inside of control-space.

The time structure of musical content of installation is designed according to semi-automated approach. Composition follows a path chosen by self-generative algorithm, with non-linear deviation shaped by the presence of visitors inside of environment. The knowledge of presence within environment is acquired by means of sensor technology.

