

# Q- quanta of sound

**Paola Lopriato,**

paolalopriato@hotmail.com

Planetary Collegium, School of Art and Media,  
Roland Lewinsky Building, Plymouth University,  
[www.paolalopriato.com](http://www.paolalopriato.com)

## Abstract

There are great similarities between the behavior of electromagnetic wave phenomena and phenomena in the acoustic domain, and those correspondences inspired the work "Q" (quanta of sounds). The interactive installation takes as its point of origin of the electricity distributed in the spectrum of audible sounds generated by the instrument (in this case the voice of audience captured by microphones), treating it and returning it with profound deviations in time and space. The energy distribution in the spectrum of the acoustic sound is its own identity, its character, a kind of genetic code or fingerprint that makes the event unique and unrepeatable. The patch configured with the software MAX / MSP is responsible for analysing the energy distribution (energy of sound) by dividing the spectrum in typical critical bands that are also the one with which works the basilar membrane, located in the cochlea. The energy (of the original sound) captured in the 25 critical bands will be analysed and then returned in time in small packets (quanta) no longer in a synchronized manner but with appropriate time intervals that make more distinct and perceptible their presence, opening like a ray of light refracted by a prism.

## Q

Similarly, the original sound source (where the microphones/people's voice are located) will no longer be the location (not the only one) of the "quanta of energy" which will instead be projected in the surrounding acoustic space in every direction. Thanks to this irradiation in time and space, the energy (of the original captured sound) contained in the acoustic spectrum will be perceptible in a direct way in its essential components. As anticipated, the energy distribution in the spectrum of the acoustic sound is its identity while the quantization process and irradiation of the acoustic energy in different time and directions provide an opportunity for exploration of the sound generated by people's voices and this process will highlighting new variations of that identity of the sound, normally trapped in the structure of the sound itself. The release of the energy within the sound and its expression through this alchemical process put in place by the new dimensions of space and time, define a new identity or better yet a different way of reading what is happening. Element we are aware that will emerge during the design and the realisation of the process:

- To involve the audience profoundly in an experience that

**Alfonso Belfiore**

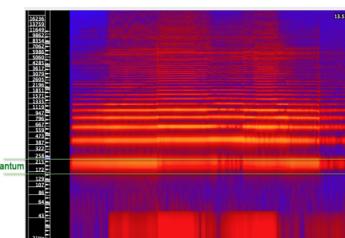
a.belfiore@conservatorio.firenze.it

Conservatory L. Cherubini, Music and New Technology  
Department, University of Florence, piazza belle arti, Florence

is both active and passive (people are performers and audience at the same time) Accordingly, our efforts will be mainly directed to: Stimulate interaction through an immersive and multimedia environment

## Structure and description of the installation

This installation is a project that translates data from the acoustic domain analysing the sound energy distribution in 25 critical bands and return that energy with different locations, strength, and different time. In this installation the translation of the original sound energy is also used for matter manipulation. These data are captured from people's voices through microphones. The sound energy captured is analysed from the Max Msp Patch and the parameters of the sound are returned accordingly to the 25 critical bands filter. The interactive installation



involves two different settings in the same room:

**A: The microphones in the metallic sculpture**, that are used to capture the original sound energy from the audience

**B: a tank of water** in which people can see matter manipulation.

The main features of **A setting (INPUT)** are:

- Possibility for audience to chose to become the performer/trigger of the installation
- Tactile element, it is possible to alter and manipulate the shape of the sculpture in order to drive people to a more complete and corporeal involvement with the installation.

The main features of **B setting (OUTPUT)** are:

- Letting people see how the translation and delivery of quanta from the original sound energy will affect matter (water and its stationary waves).