3-D Sound Demonstration: "Sex/Window"

Gary S. Kendall
Center for Music Technology
Northwestern University
Evanston, IL 60208
g.kendall@wv.edu

keywords: 3-D sound, image, distance, diffuse sound fields

ABSTRACT: Demonstration of 3-D spatial processing techniques in the first section of "Sex/Window", a composition designed for an audio reproduction setting in which each listener sits on the floor between a pair of loudspeakers.

Audio Reproduction Setting

Listeners will hear a demonstration of 3-D spatial processing techniques in the first section of "Sex/Window", a composition designed for an unusual audio reproduction setting. Listeners to "Sex/Window" are instructed to sit comfortably on the floor in a darkened room with loudspeakers placed slightly above ear level to each side of the head. This provides a reproduction setting in which the head is clearly centered between the left and right loudspeakers but in which the loudspeakers are positioned much farther to the sides than in traditional stereo reproduction. Like headphone reproduction, there is one transducer directed toward each ear, but, unlike headphone reproduction, the ears are not acoustically isolated. This unique reproduction setting necessitates the creation of customized spatial processing cues. It also provides an audio setting in which spatial effects are very effective and are particularly relevant to the composition’s subject.

Compositional Subject

The idea for the composition originated in the thought that there is always a window open to a more spiritual way of thinking in any situation. Within our contemporary culture, nothing is conceived as farther away from spirituality than sex. Spirituality and sexuality are thought of as incompatible, if not complete opposites of one another. The “rationalized” preparation of the listening space and the discipline of the relaxed listening posture is linked to the role of the composition as a meditation on the relationship between sexuality and spirituality. The composition utilizes sound sources that are sexual in nature or origin while processing them in a way that comments on ontological connections between spirituality and sexuality. The listener is invited to break normal listening habits and to orient listening toward 3-D spatial relationships.

3-D Spatial Effects

The 3-D spatial effects incorporated into the composition include the positioning of sound images in azimuth and in elevation, the control of image width, the internalization and externalization of sound images, the manipulation of distant cues for images near or far from the body, and the simultaneous presentation of identical sound images in different locations. This broad range of spatial effects is achieved through a diverse collection of spatial processing tools that were originally developed for traditional stereo reproduction. The techniques were adapted to this new setting by interactive adjustment of the signal-processing parameters.

Acknowledgments

Special thanks to Matt Moller for his help with the NT/Effects software.