The Theater of Hybrid Automata

General Description:

The Theater of Hybrid Automata consists of and operates in two dialectically engaged spaces: the actual and the virtual. The actual is the physical stage which supports the robotic and space calibrating hardware while the virtual is present in the form of data-based media. Fundamentally it is a computer based interactive environment, incorporating video, electronic sounds and robotics under realtime control of voice, sound, gesture and text through digital software. The software takes an active responsibility for the management of a robotic camera, speech recognition box, video laser disc player, loudspeakers and lights.

While my ambition is to continuously intercept and exercise a variety of machine to machine and machine to human communications through an underlying system of codes, this activity also promises to articulate the possibility of a new aesthetic structuring: the specification through software design and hardware integration of an automated theater where an aesthetic/experiential confrontation between a physical space and its synthetic model can be composed.

While *The Theater of Hybrid Automata* is an attempt to employ the instruments of new media in the operation of a dramatic space, its construction derives from a long tradition of dramatic and spatial experiments that form a critique of psychological drama as presented in film and theater. My wish is to explore something that appeals to human perception from a different perspective, one that addresses more abstract and open-ended genres, expressions, and methods of representing principles and tendencies from beyond our psychologically based experience. I am interested in making models for alternate states of awareness.

Project History:

After my encounter with 3D-animated computer image generation in the late eighties, I suspended my video image making and began to probe the relationship between objects and space. While "digital space" primarily offers expanded concepts of the world as seen through the camera, I was

Technical Description:

The Theater of Hybrid Automata is an ongoing project involving a pool of enlightened electronic tools configured as a virtual reality construct coupled to an electronically controlled stage. At its core is a space-exploring machine which *unites a configuration of physical sensors interconnected by various communications protocols:* a RPT (rotate, pan, tilt) robotic head capable of moving a video camera through an unlimited orbital range of all three axes, a pair of opposite-facing infrared transmitters, a set of position calibrating indexes, and motion control motor drives. These devices function within two main space-related operations: the "pointer" mode in which the system points to prescribed locations according to a computer program, and the "locator" mode in which sensors randomly scan discrete areas of space, reporting on the coordinates. As the infrared transmitters rotate through space, stepping through various spatial locations, their coordinates are *continuously relayed to their receivers. These receivers map the transmitter positions and an audio sampler is triggered to retrieve specific words and* sounds from memory.

Through MIDI communications protocol, a single computer mediates the entire environment, assigning reports from the sensors and managing all other components of the *Theater.* Attached to the computer is a speech recognition system *capable of listening and speaking in response to a learned set of verbal commands. Also under computer control is a laser disc player* with random access to images. Its command vocabulary includes: instantaneous access to image locations, forward, backward, slow, fast, and variable speed motion. A lighting grid is also computer controlled as is the robotic camera head (RPT). Video images from both the camera and laser disc are projected onto screens. The entire construction is confined inside a *room-sized cube (10 X 10 X 10 feet), framed by lightweight aluminum tubing on which are mounted the projection screens, calibration targets,* lights and six loudspeakers. *The Theater of Hybrid Automata* is to be observed from the outside with the cube functioning as a transparent exo-skeleton upon which the various performing components are affixed and displayed.

Woody Vasulka, 1994

compelled to confront this newly acquired workspace as a virtual representation constructed within the computer, simultaneously coupled to an actual physical construction assembled in the form of an electronic "stage."

In 1985, Steina Vasulka collaborated with singer Joan La Barbara on a series of interactive compositions for which I designed the interactive media components. These were summarized in La Barbara's theatrical project *Events in the Elsewhere* which largely used design components of what was to become *The Theater of Hybrid Automata*. With the subsequent addition of a "cube" structure proposed by David Dunn, the system became a complex audio-visual machine. In this configuration the *Theater* was presented at Ars Electronica Festival in Linz, Austria in 1990. The following year the system acquired a MIDI violin as a control device and a laserdisc was added as part of the realtime interactive display for a performance at L'Immagine Elettronica Festival in Ferrara, Italy. For this performance the *Theater* included *Pariah*, a work designed for solo performer (David Dunn) based on our work with actor Tim Thompson. The *Theater* was awarded the L'Immagine Elettronica Prize. Last fall, it was exhibited at Artifices 2 in Saint Denis, Paris.