Cartesian Chaos
Peter Weibel / Bob O'Kane

Terminator II
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Peter Weibel/Bob O'Cane: Das Tangible Bild

"Cartesian Chaos" is an interactive installation by Peter Weibel and Bob O'Kane. This installation is the second of a series dealing with the idea of personal or group interaction in a "Virtual World". The concept deals with a direct interaction of the viewer with his / her own image, as well as the image of the other people in the space. The "traditional" concept related to virtual reality is where a person deals with images and objects from a virtual or imaginary world. In "Cartesian Chaos", the person interacts with images from the real world, specifically, the images of the people sharing the"space" with you. Also, the interface is a real, active device. Not as something as passive as a"data glove" or "virtual wand" that exists in other systems. The person deals with an interface which is a direct represention of the image with real tactile feedback.

The "real" space is defined by the viewpoint of a video camera. This image is read in and digitized by a Silicon Graphics 320VGX computer.

The interaction is through a short wooden platform (2.5 m x 2.0 m x 2 cm) covered with 50 square meter wooden tiles. Attached to the bottom of the tiles are sensors which measure how much the tile bends under the weight of the viewer(s). These measurements are read in by an external computer with an A / D converter. These numbers are then transferred to the Silicon Graphics computer via serial connection between the two machines. The computer then applies the measurements as forces which affect a set of imaginary springs. The springs, being calculated using physical laws, transmit the forces throughout the "grid". The image from the real world is then texture mapped onto the surface of this "grid". The final effect is that when the viewer walks across or jumps on these tiles, the image on the screen (video projection) is deformed perspectively being calculated from the force used to bend the wood tile. The viewer will deform a projected image of himself and other people in the viewer space by stepping around. What the users are interacting with is an image of the space and of themselves as observers (in real time) with which they can deform by changing their position on the platform and also by their style of moving (fast, slow, large steps, heavy or light steps, etc). In fact, the computer creates a simulation of the image as if the screen would be of rubber. The origin of the perspective distortion is directly related to the viewers' position on the floor.

What makes this piece different from other virtual reality simulators is that it gives the user:

I: A direct and real-time feedback of the virtual object. (You feel the wood bending)

II: A realistic image of the users' environment instead of an iconic or symbolic representation of the 'space'.

What makes this piece different from the "Tangible Image":

I: The viewer is interacting with the piece just by their presence on the floor while in the "Tangible Image", the person must actively touch the rubber screen.

II: The installation of the "Tangible Image" had the interface outside of the view of the camera while in"Cartesian Chaos", the floor is directly centered in the space of the video.