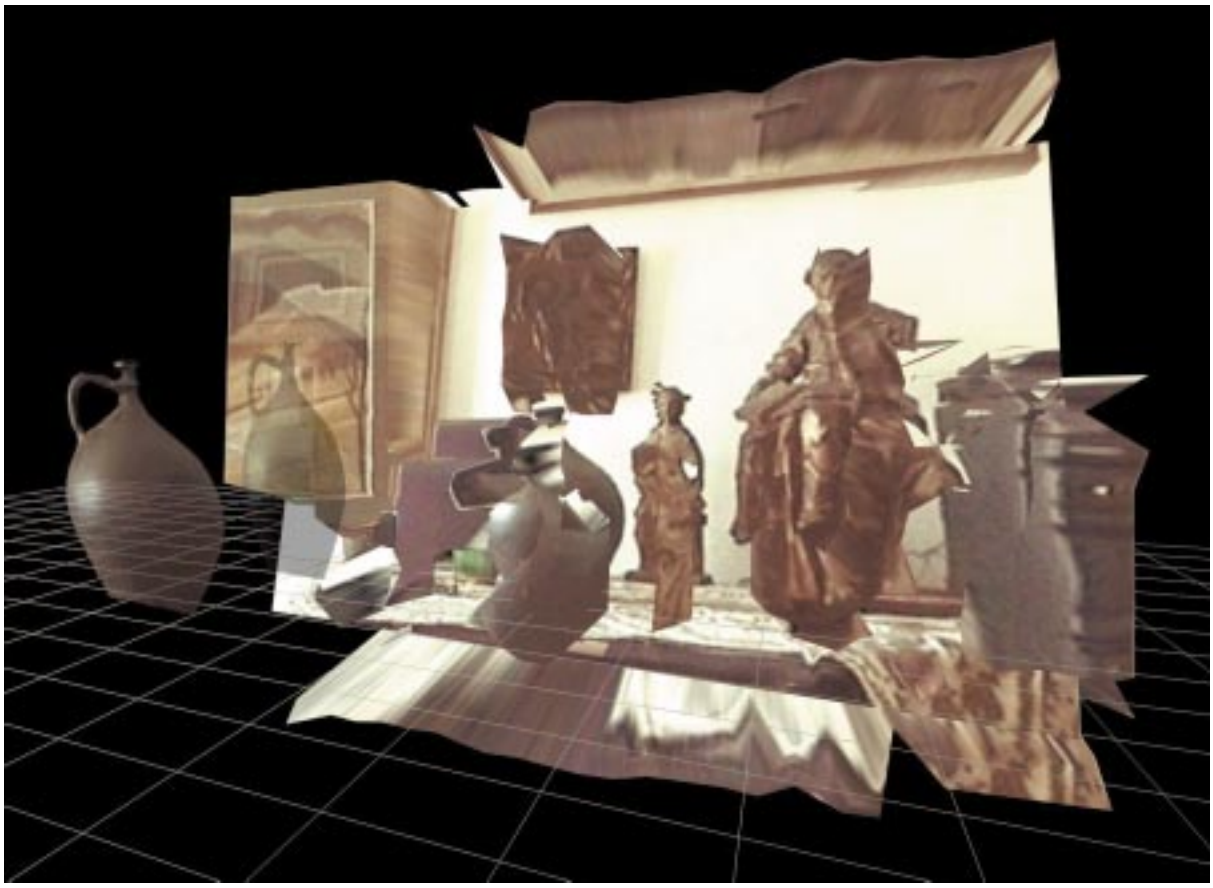
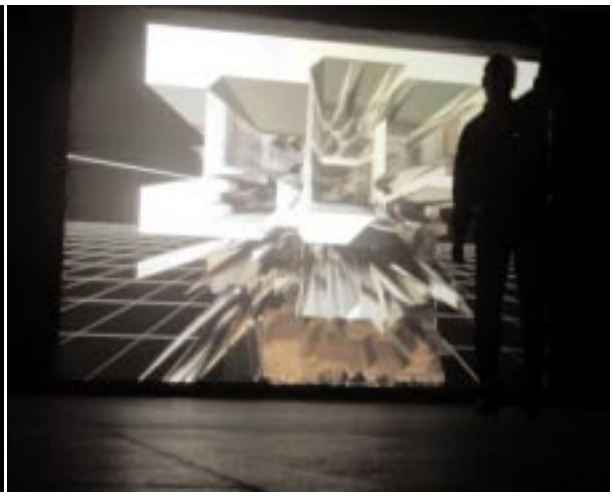
Promenade

a VR project by Zoltán Szegedy-Maszák and Márton Fernezelyi



The project „Promenade" intends to examine the connections between „real" and virtual space, „real movement" and the illusion of motion. Using the handheld navigation device the visitor can explore virtual rooms by taking a walk in the real space of the exhibition room. The unusual spatial illusions displayed in the halls of Promenade are addressing the ambigous relations between the three dimensional space and its two dimensional representation as perceived from a dynamic, moving viewpoint.

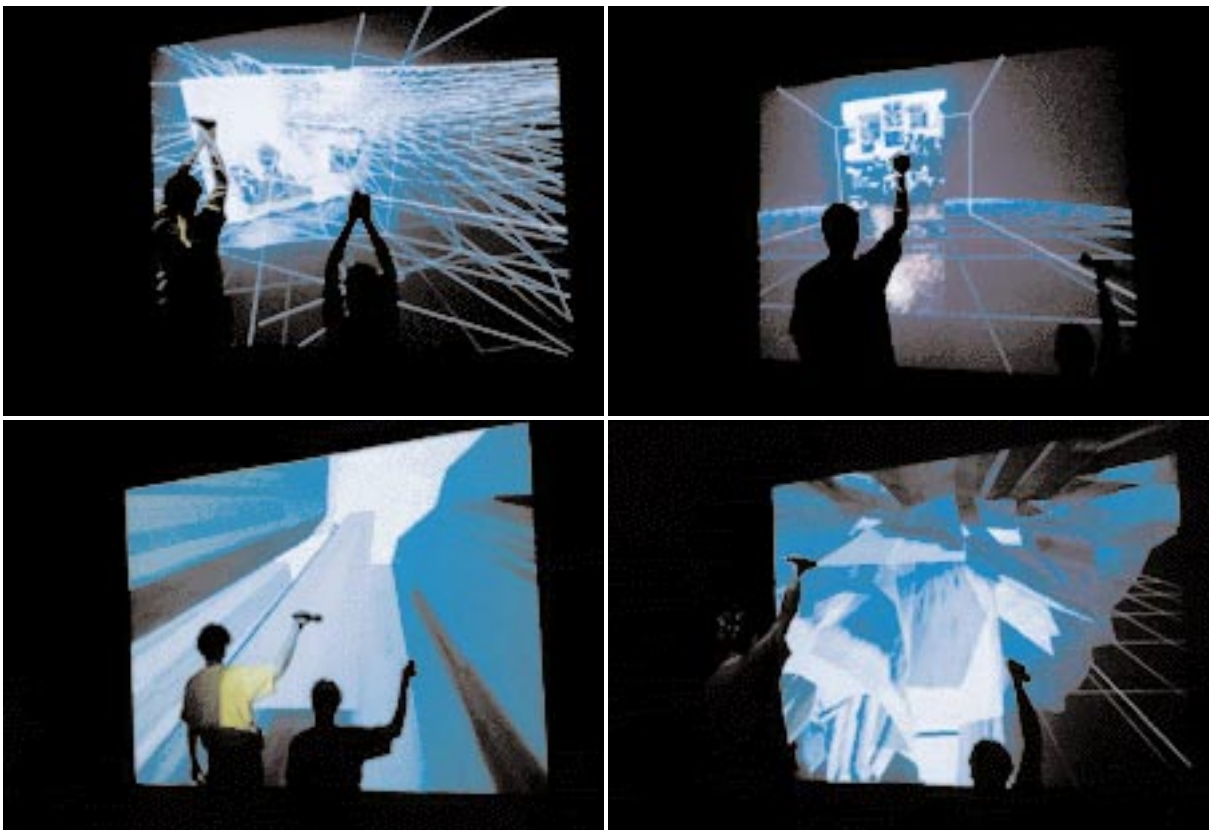


PROMENADE

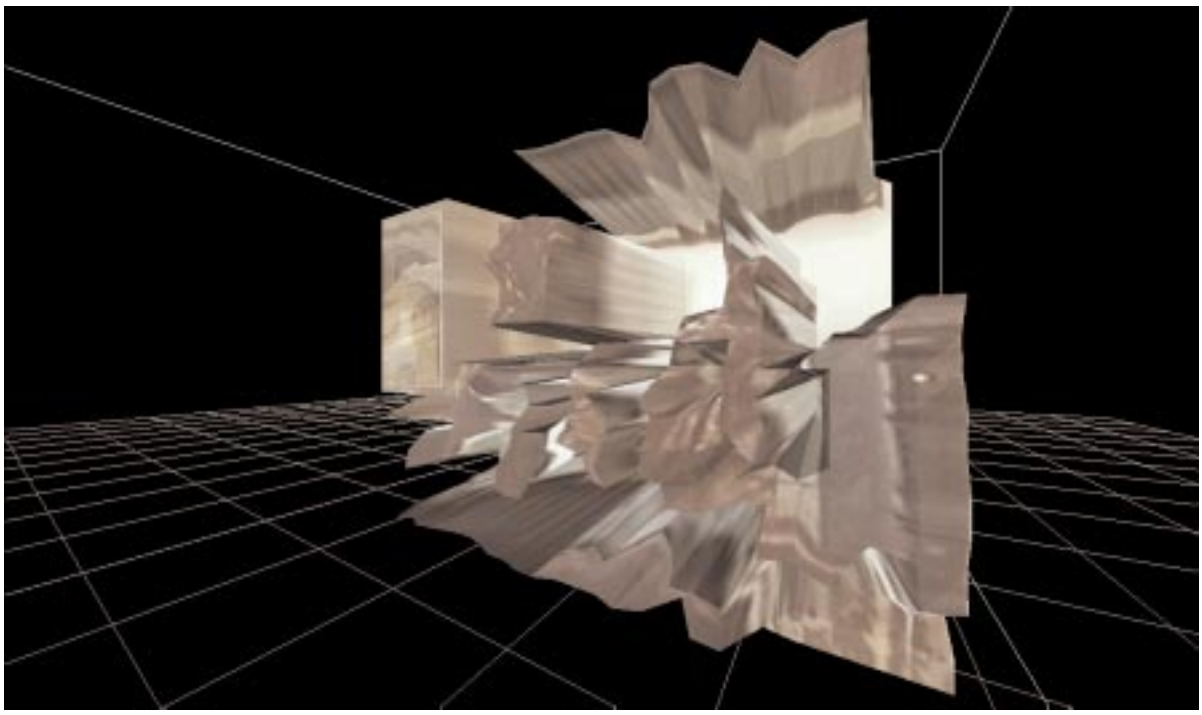
C³

Founders:

C³: Center for Culture & Communication - Országház utca 9, Budapest H-1014, tel.: +36 1 4887070 fax: +36 1 2146872 info@c3.hu, http://www.c3.hu/



The interface of Promenade is an ultrasonic position tracker built into a torch: the position measured by the tracker directs the position of the viewpoint in the virtual space. By walking in the exhibition room while holding the navigation-device the visitor can explore the dynamically changing virtual space, in which the geometry of the scene is continuously being modified according to the viewer's motion. By approaching the projection screen (virtually stepping through the picture) the visitor can step into a new space: in a certain distance the virtual world will automatically switch to the next room, where other perspective-tricks await the visitor.



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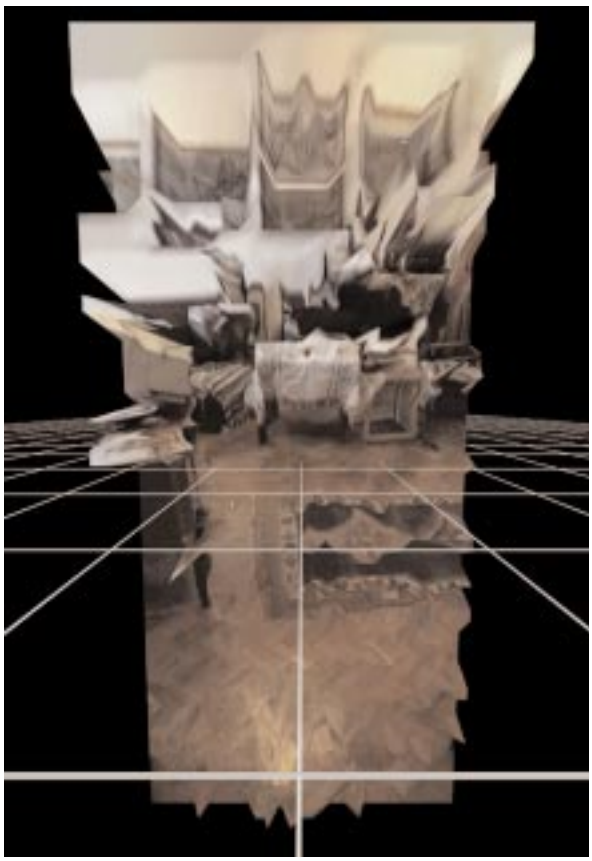

A new, more spectacular stereoscopic version of Promenade has been realized in 2002, allowing a much more immersive experience for the visitors than the original one.

Technically speaking the immersive enviroment is achieved by using passive stereo projection: two data beams equipped with polarization-filters are projecting the image of the virtual space - rendered in real time - from two different viewpoints corresponding to the position of the human eyes. The visitors can enjoy the realistic spatial illusion by taking disposable 3D spectacles, cotaining a vertical and a horizontal polarization filter for each eye, thus admitting only the light from the corresponding projector.

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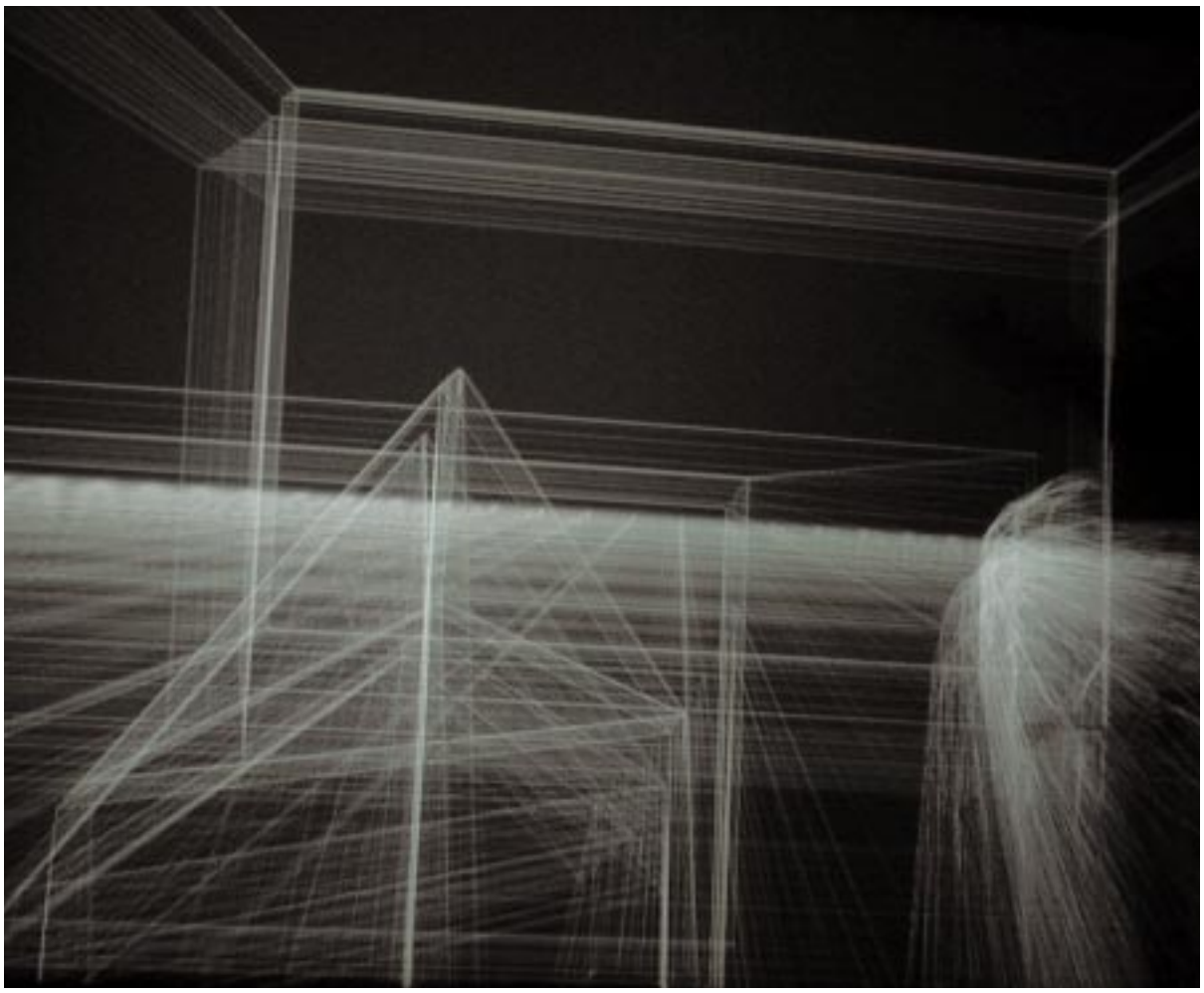

Promenade - technical description

The environment of the real time VR visualisation are VRML scenes, controlled by a Java application which is continously reading out the position data from the tracking system, and directs the virtual camera viewpoints according to this data. The “behaviour” of the 3D scenes, objects etc. are controlled by internal VRML scripts.

To produce the stereoscopic illusion, a dual-head display card is used. The stereo-pairs - rendered in real time from two viewpoints - are embedded in a double-screen wide HTML page. Two data-beams are projecting the two sides of the HTML page, using linear polarization: one projector’s image is vertically, while the other’s is horizontally polarized. Visitors should use disposable 3D spectacles with linear polarisation lenses.

The interface for interacting with the VR world is a custom made ultrasonic system developed in C3 between 1999 and 2002. The tracking system is connected to a server computer, which runs the software for the data-analysis, and acts as a web-server for the second computer doing the real-time vizualization. The two machines are interconnected via a local 100Mbit ethernet network.

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