

making UNMAKEABLE LOVE

Re-Actor

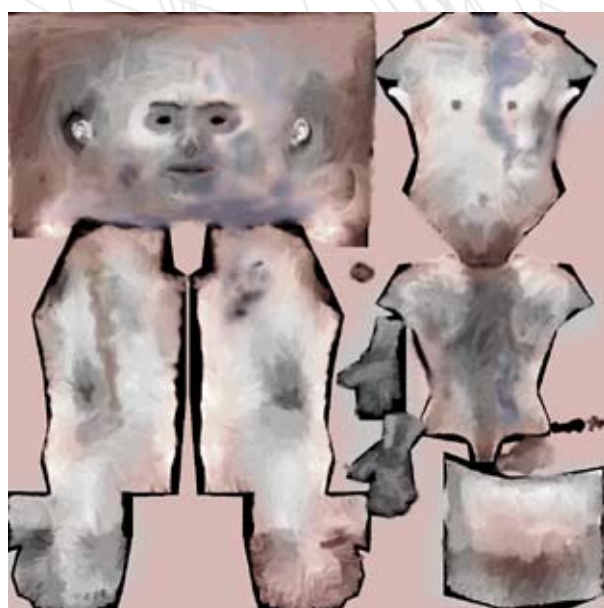
The history of the cinematic experience is a rich chronicle of viewing and projection machines. Before Hollywood imposed its set of ubiquitous formats, there were a myriad of extraordinary devices, like the Lumiere Brothers Photodrama, the Cyclorama, Cosmorama, Kineorama, Neorama, Uranorama and many more. The Kaiserpanorama – a stereoscopic cylindrical peepshow – is an especially relevant forerunner of a newly configured display system, Re-Actor. Re-Actor evolved from Museum Victoria's highly successful Virtual Room <<http://www.vroom.org.au>> produced in 2003 for VROOM Inc, a consortium of Melbourne universities including Swinburne University of Technology, Monash and RMIT. The uniqueness of this system was its ability to conjure a persuasive and coherent three-dimensional virtual reality within an architectonic enclosure that the audience could freely circulate around and gaze into. Re-Actor has been conceived to offer a mobile and versatile platform for sophisticated artistic and cultural manifestations.



Scaling body and space

In his prose work *The Lost Ones*, Samuel Beckett he describes a community of about 200 people who inhabit a cylinder that is 50 meters in diameter and 18 meters high.

In UNMAKEABLE LOVE this community is scaled down to 30 characters that inhabit a hexagonally shaped room that is 5.5 meters wide and 3.5 meters high. To reflect the body:space ratio that Beckett proposes, its characters are reduced to approximately half life-size.



Motion capture, modeling, animation and shaders

Three actors performed over 300 motion captured sequences that became the primary resources for the real-time behaviors of the characters in UNMAKEABLE LOVE. Each character is a 12,000 triangle polygonal model with a 1024x1024 texture and is animated by a 53-bone skeleton. They also feature an external shell model, which creates a visible outline when the internal model deforms. Motion capture was used to create the animations, with additional finger animations added afterward by hand. Real-time rendering of the characters using the XNA engine allows for dynamic lighting, controlled by the viewers. Six volumetric light beams, casting shadows onto each other and the environment, light the characters.

Coding The Lost Ones

Beckett's text, scientific in its exactitude, is capable of being analyzed and coded into software algorithms that computationally animate virtual representations of his characters. In UNMAKEABLE LOVE these virtual representations then become the seemingly self-motivated narrative agents of Beckett's scenario.

The world of UNMAKEABLE LOVE consists of the Searchers always active and searching in vain; the Sedentary who no longer move around and are only occasionally roused from their lethargy, and the Defeated for whom all hope is gone, slumped and vaguely stirring in the perimeter of the enclosure.

Each group with their specific behaviors is largely confined to particular zones inside the hexagonal space and permitted occasional interactions, moving between zones and at rare junctures switching identity. Now and then they beat themselves, or examine each other looking for the birthmarks of identity, and very rarely they collide in frenzied sexual encounter. Violence sporadically breaks out, it's muted thuds audible in the rustling of their dry skin that permeate the audible world.

Hardware Architecture

Re-Actor is operated by a quad-core server that is connected via Gigabit Ethernet to the system architecture. The server broadcasts its simulation-state to six Nvidia GTX 280 graphics display workstations. The workstations are connected to six pairs of high-resolution (1050 x 1400 pixel) projectiondesign F20 DLP projectors. Each pair displays a stereoscopic image on each of Re-Actor's six Harkness back projection screens.

Six custom-made torch-interfaces are positioned in front of each screen and six infra-red video cameras are positioned above each screen. The server receives and processes angular data from the torch-interfaces and video data from video-capture cards. Audio is processed using an RME-Fireface 400 interface, and six active Genelec speakers transmit the sound in the installation space.

Augmented Reality

To explicitly articulate the conjunction between the real and virtual spaces in this work, the viewer's virtual torch beams penetrate through the container and illuminate other viewers who are standing opposite them on other sides of the installation.

This augmented reality is achieved using infra-red cameras that are positioned on each screen pointing at its respective torch operators, and the video images are rendered in real time onto each viewer's screen so as to create the semblance of illuminating the persons opposite them.

The resulting ambiguity experienced between the actual and rendered reality of the viewers' presences in this installation, reinforce the perceptual and psychological tensions between 'self' and 'other'.

Interaction design

The technological infrastructure of Re-Actor is a five-meter diameter hexagonal construction with six rear-projected screens and stereoscopic 3D viewing using twelve projectors, passive Polaroid filters and glasses. UNMAKEABLE LOVE in Re-Actor offers a physically immersive three-dimensional space of representation that constitutes an augmentation and amalgamation of real and virtual realities.

It is a hybrid location-based manifestation that operates both as an individual and socially shared experience, and its interactive modalities of operation incorporate the kinaesthetic dimensions of human apprehension to establish a congruence of human and machine agency. UNMAKEABLE LOVE uses six torches, mounted in front of these screens, to enable the visitors to peer into the virtual world. The virtual light beams generated by these interactive torches intersect and illuminate the computer-generated figures that inhabit its virtually represented interior.

UNMAKEABLE LOVE

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Directed by Sarah Kenderdine and Jeffrey Shaw
Modeling and animation: Conor O'Kane
Software: Scott Ashton
Systems integration: Yossi Landesman
Motion Capture Lab, Deakin University: directed by Kim Vincs
Motion capture technician: Daniel Skovli
Motion capture artistic directors: David Pledger (NYID)
Sarah Kenderdine, Jeffrey Shaw, Jean Michel Bruyere
Motion capture actors: Gerard Van Dyck, Dianne Reid, Fiona Cameron
Architecture: Re-Actor (© 2008 Sarah Kenderdine, Jeffrey Shaw)
Projectors: F20SX+ kindly sponsored by Projectiondesign, Norway
Production Partners: Museum Victoria, the UNSW iCinema Centre and EPIDEMIC.
Poster Design, Volker Schubert (www.circlegroup.com.au)

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© Sarah Kenderdine and Jeffrey Shaw 2008
Design consultant: Paul Bourke
Engineering design and realization: Nelissen Dekorbouw
Projectors: F20SX+ kindly sponsored by Projectiondesign
Production Partners: Museum Victoria, the UNSW iCinema Centre and EPIDEMIC.

<http://unmakeablelove.org>

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