

Light Tracer

Project Website: <http://lighttracer.darcy.co.nz>

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Project Summary

Light Tracer is an interactive installation which invites the participant to write, draw and trace images in real physical space. The participant is situated in front of a screen reflecting their own image, and by manipulating a series of light sources the participant can leave marks on the screen such as drawings, messages, and trace out physical objects such as faces, hands and bodies (See Figures 1-4). *Light Tracer* utilises a live camera and a custom software 'patch' written in the *Max/Msp/Jitter* programming environment.

Concept

Light Tracer builds upon ideas from my research (Willis, 2005), which has sought to develop the association between the creative involvement of the user, and successful engaging interaction.

The basic idea behind *Light Tracer*, was to create something which allowed others to create. Resultantly *Light Tracer* itself does not have any pre-installed imagery or artwork, but instead relies upon the total involvement of the participant to become the creator. Questioning the roles of authorship and the art-spectator relationship.



Figure 1, Writing with *Light Tracer*.

The Empty Receptacle

In 1966, Roy Ascott, one of the foremost artists to work with interactivity, suggested the role of the artist could be to provide 'a more or less empty receptacle (the canvas) into which the spectator can project his own imaginative world' (2003, p.128).

Light Tracer in many ways acts as an empty receptacle, which begins life empty and is filled with the markings of its users as time progresses. The participants involvement and contributions are paramount, and ultimately determine the success or failure of the work. *Light Tracer* seeks to encourage full audience participation by tapping into the desire to be creative and express yourself.



Figure 2, Installation View of *Light Tracer*.

Technical Summary

Light Tracer was developed in the *Max/Msp/Jitter* programming environment and works by analysing a realtime camera image and overlaying the brightest areas marked out by the user to create drawn image.

The user can choose from a selection of pen-lights and battery powered torches to emit light, or alternatively use any light emitting everyday devices they may have with them, e.g. cellphones, lighters and so on (See Figure 3).



Figure 3, Using the light emitted from a mobile phone to draw.

Each device offers a different way to mark out imagery on screen; brighter torches make it possible light up an object such as ones face or hand and trace its likeness on screen (See Figure 4).



Figure 4, Tracing with *Light Tracer*.

Imagery created by the participant is stored in layers which fade over time (See Figure 5). These layers are then archived and displayed on a replay screen, allowing participants to view both their own creations and the creations of others.

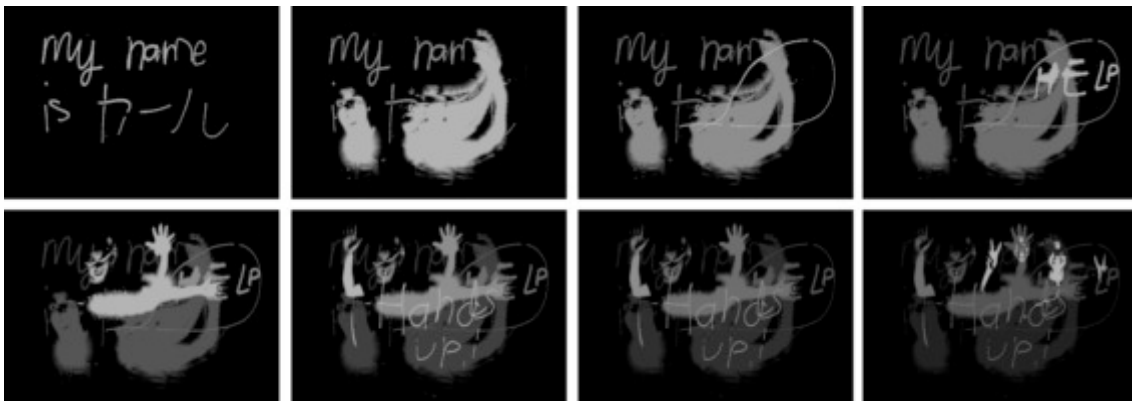


Figure 5, Image sequence created with *Light Tracer*.

Conclusions

Through the use of *Light Tracer* an array of interesting and creative imagery can and has been created (See Figure 6), however in many respects the *experience* of the interaction is of greater significance than any selection of works created with *Light Tracer*.

Andrew Polaine, a founding member of media collective *Antirom*, sees this point as pivotal to successful and engaging interaction, stating within their work 'the purpose of the interaction was the experience of the interaction' (2004).



Figure 6, Imagery created with *Light Tracer*.

Rather than valuing the user created works, or even *Light Tracer* itself as an art object, the focus remains on the positive creative experience that can be offered to the user.

To provide such an experience, the interaction itself must be as open as it can be, without becoming overly complicated and difficult to use. Too often interactive works fail to be truly interactive, by only offering what new media theorist Lev Manovich labels *branching-type interactivity* (2001, p.38), akin to a hierarchical series of interactive options. Andy Lippman of the MIT Media Lab sees the ideal interactive model as ‘a conversation versus a lecture’ (Brand, 1988, p.46) and labels such branching-type works as *selective* rather than truly *interactive* (Ibid).

In this sense *true interactivity*, if you can label it as such, allows the user to create an experience that is truly unique to them, and only them. This goes beyond pseudo-random system behaviour and instead relies upon the creative use of the system by the user, to extract such an experience.

Perhaps the most satisfying part of producing and exhibiting *Light Tracer*, is to see *how* people use it and what they create. Ascott notes that while ‘the general context of the art experience is set by the artist, its evolution in any specific sense is unpredictable and dependent on the total involvement of the spectator’ (2003, p.111).

Exhibition

Light Tracer was exhibited in a gallery context during November–December 2005 in Sydney, Australia, and was received with huge enthusiasm by its participants. However the effectiveness of the gallery context has very much been put under question in recent theory and practice by interactive artists, curators, and theorists. Interactive art differs on a fundamental level from conventional object-based art, with audience participation not just *preferred*, but *required* for the artwork to function at all.

Christiane Paul (2005) of the Whitney Museum of American Art, confronts this issue in a paper for the inaugural *Refresh!* conference on new media art history: ‘The basic rule of museums, “Please do not touch the art,” suddenly does not apply [to interactive art] anymore and large segments of the audience are still hesitant to physically engage with the artwork in a gallery space.’

Light Tracer is therefore suited to non-gallery contexts such as public spaces, festivals and other social spaces where users can interact and participate at their leisure. In July 2006, the ‘Building Interactive Playgrounds’ exhibition in Arezzo, Italy, placed *Light Tracer* inside the clubbing context of ElettroWave music festival. Over two nights, from dusk till dawn, thousands of eager users experimented with *Light Tracer* and expressed their creativity through drawing (See Figure 7).



Figure 7, Users interacting with *Light Tracer* at ‘Building Interactive Playgrounds’ in Arezzo, Italy.

Installation Setup Information

Light Tracer is installed in an partially enclosed area, with imagery back-projected onto rear-projection vinyl. This allows the user free range of movement to approach the screen and create. While the area behind the screen is secured or sealed off from the public, the area in front of the screen is an open space for participants to interact draw and write (See Figure 8). It is important that the light levels in the space are controllable; *Light Tracer* requires an ambient, dimly lit space and will not function outdoors during the day or in brightly lit spaces.

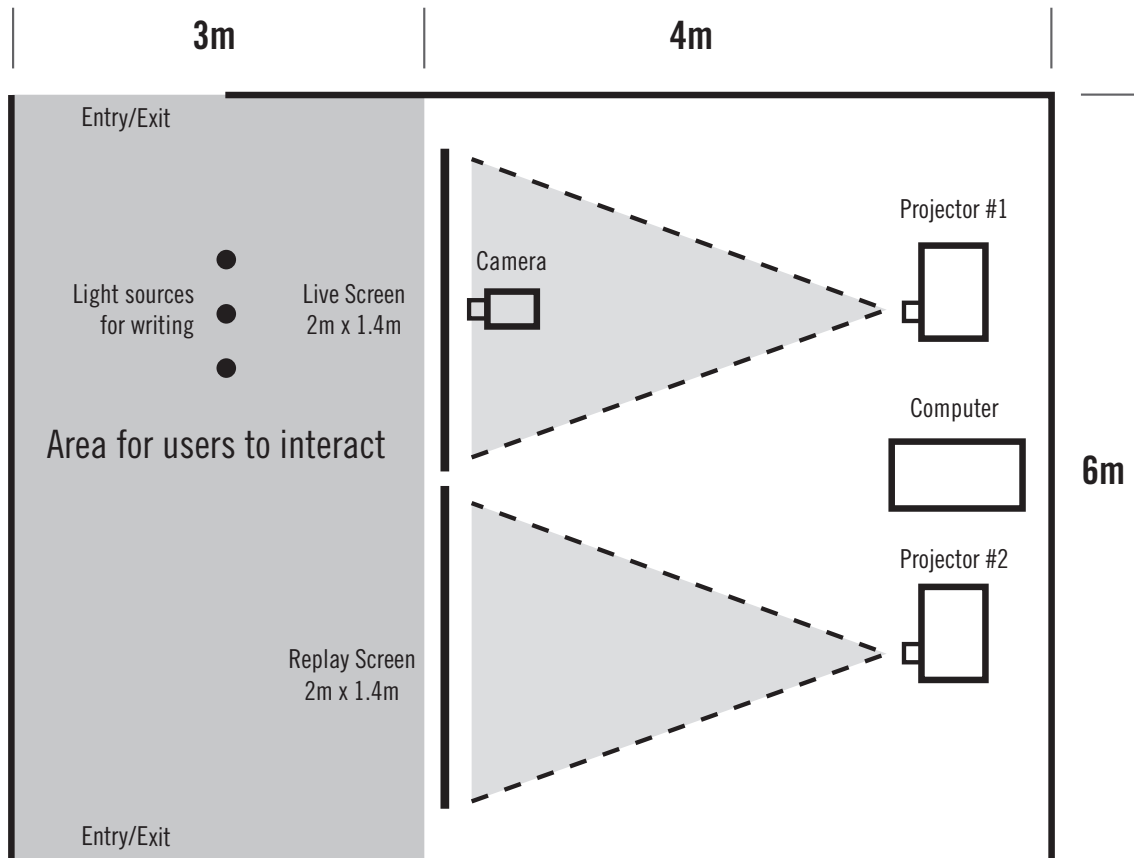


Figure 8, *Light Tracer* exhibition plan.

Light sources (small torches/pen lights which run on batteries and emit light using a momentary switch) are hung from the roof on wires, allowing users to experiment freely with different colours and pen sizes. Other light emitting everyday devices that participants may have with them, eg cellphones, lighters etc..., can also be used with the system to make marks onscreen.

Technical Specifications

Light Tracer requires the following standard consumer level equipment to be supplied by the organisers. In addition to 3 light sources supplied by the artist.

- ❖ Apple PowerMac G5/Mac Pro (Intel) computer (OSX) - Dual 2.0ghz+, 2gig RAM, w/ dual monitor card.
- ❖ Projector (x2) 2000+ ansi lumen, XGA resolution, contrast ratio approx 500:1 or above. Due to the black vinyl used for the screen, dimmer projectors will result in a dull image.
- ❖ Plinths (x2) to place the projectors on. 75cm high. Small tables can be used as an alternative.
- ❖ DVI/VGA Cable (x2) to connect computer > projector.
- ❖ Rear-projection screens. Black vinyl screen 2m x 1.4m (x2) and framing. Available here: <http://www.rosco.com/us/screens/roscoscreen.asp#Black> and framing - typically made from aluminium tube or wood.
- ❖ Velcro - Industrial strength, Black, 1 inch wide tape - 14 metres required. http://www.velcro.com/CONSUMER/products_is.htm Used to fix the screen to the framing.
- ❖ Ambient lighting. Two low-wattage dim-able (10-20W) lights.
- ❖ Wire cable (coiled w/ black plastic coating) - 1mm thick to secure the light sources and hang the camera.
- ❖ DV camera, 3CCD or similar for low light conditions. Camera needs to be capable of a 1/12 or 1/15 speed slow shutter setting to prevent lines drawn appearing dotted. The Sony VX1000, HDR-FX1, Cannon XL-1s and the Panasonic DVX100A (*not* the DVX100 which lacks the slow shutter feature) have been tested with *Light Tracer*. Judging by specifications the Sony VX2000/PD150, Panasonic AG-DVX100B and the Canon GL2 (but not the GL1) should also work. Of these cameras I would recommend the Panasonic DVX100A.
- ❖ 10m Firewire Cable (6pin to 4pin). <http://www.1394store.com/eshop/product.asp?dept%5Fid=62&pf%5Fid=0814C%2D10>
- ❖ AA Batteries to power the light sources.

Light Tracer needs to be maintained by simply having the computer, camera and projectors turned on and off at opening and close of day. Installation and de-installation of the work consists of mounting 2 screens, a camera and 3 light sources in the space. Installation of the work can (if required) be carried out by people other than the artist.

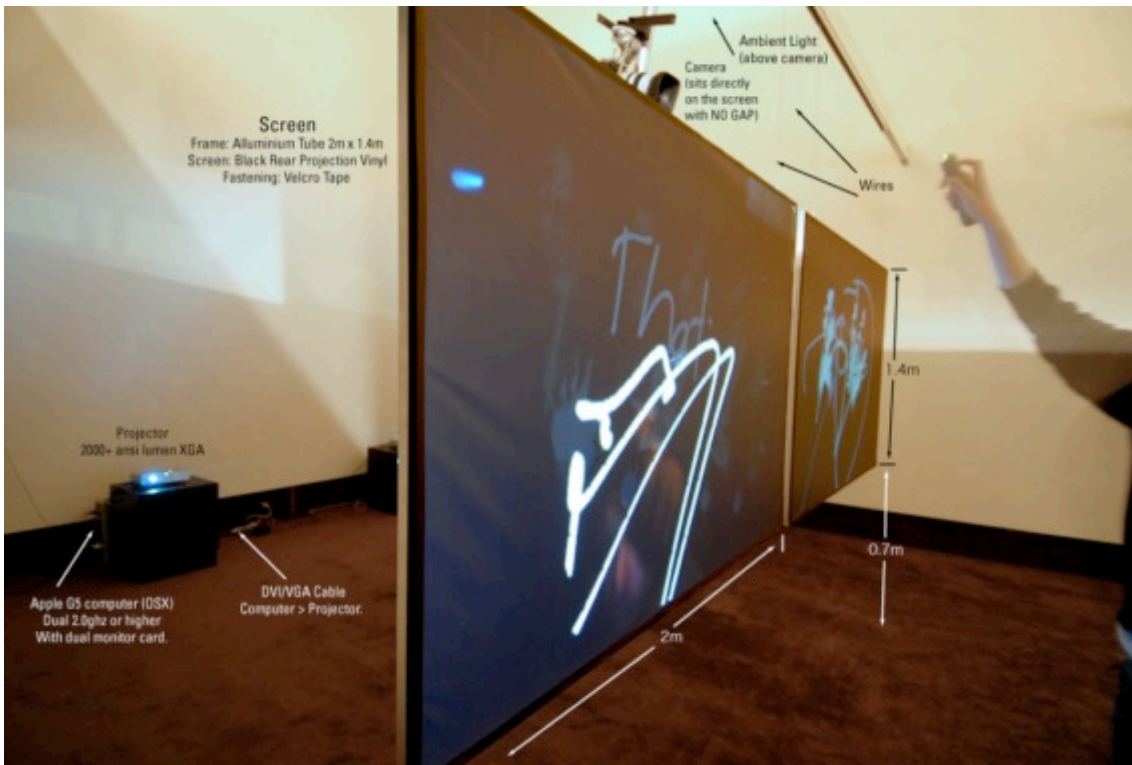


Figure 9, *Light Tracer* exhibition layout and dimensions.

Biography

Karl D.D. Willis is a Tokyo based interaction designer/media artist, and currently a research student at the University of Tsukuba in Ibaraki, Japan. His research focuses on examining what contributes to an engaging interactive experience, and moreover the relationship creativity has to the engagement of the user.

An ongoing theme in his work involves the creation of systems for user creativity. The *Light Tracer* project has to date been exhibited in a diverse range of events, from music festivals to conferences to featuring on broadcast television; taking place on both sides of the globe in Italy, Denmark, Japan, Australia and New Zealand.

He has previously collaborated with Nao Tokui on *Sonosphere*, a generative audio software application and its subsequent exhibition at the NTT InterCommunication Centre in 2004.

Bibliography

Ascott, R. 2003, *Telematic Embrace: Visionary Theories of Art, Technology, and Consciousness*, ed. E. Shanken, University of California Press, Berkeley, California, London.

Brand, S. 1988, *The Media Lab: inventing the future at MIT*, Penguin Books, New York, N.Y., U.S.A.

Cameron, A. 2004, *The Art of Experimental Interaction Design*, Idn, Hong Kong.

Manovich, L. 2001, *The Language of New Media*, The MIT Press, Cambridge, Massachusetts, London, England.

Paul, C. 2005, *Challenges for a Ubiquitous Museum: Presenting and Preserving New Media*, Refresh! First International Conference on the Histories of Media Art, Science and Technology, 28 September - 1 October, 2005, Banff New Media Institute, Canada, URL: <http://www.mediaarthistory.org/Programmatic%20key%20texts/pdfs/Paul.pdf>, (accessed 24 April 2006).

Polaine, A. 2004, *The Playfulness of Interactivity*, Fourth International Conference on Design and Emotion 2004. Middle East Technical University, Ankara, Turkey, Middle East Technical University, Ankara, and The Design and Emotion Society, (CD-ROM).

Willis, K. 2005, *User Authorship and Creativity within Interactivity*, URL: http://www.darcy.co.nz/folio/research/research_paper_final.pdf (accessed 24 April 2006).