

Entanglement

Juan Pampin
Center for Digital Arts and Experimental Media
University of Washington, Seattle, USA
pampin@u.washington.edu

Eunsu Kang
Center for Digital Arts and Experimental Media
University of Washington, Seattle, USA
eskang@u.washington.edu

Joel S Kollin
Center for Digital Arts and Experimental Media
University of Washington, Seattle, USA
jkollin@u.washington.edu

Introduction

Entanglement draws a symbolic acoustic line between two distant locations. A hyper-directional sound beam linearizes the acoustics of the two galleries creating the illusion of a single, infinite line of sound into which both sites get trapped. This fragile acoustic construction can be physically disturbed by the participants at each location. Using their body, participants can interfere with the acoustic waveguide, spilling over particles of

the linear sound field into the room as they block their transit to the other site. The piece not only provokes the “entanglement” of the participants with their own sonic perception locally but also remotely, as the acoustic shadow of their bodies gets cast onto the other space. In this way, *Entanglement* explores the concept of “tele-absense” (rather than tele-presence), using a virtual acoustic channel to telematically project the disembodied presence of participants interacting with the acoustic waveguide.

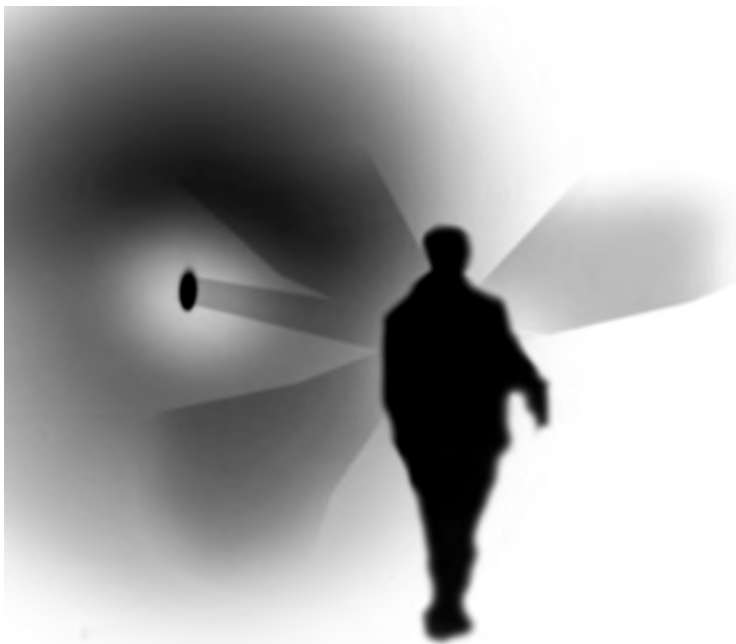


Figure 1: Visitor breaking the sound beam, as particles of sound reflecting off the torso spill over into the space.



Figure 2: Detail of *Entanglement* installation at 911 Media Arts Center, Seattle, showing directional sound system inside a tunnel in a fabric wall.

Questions

Entanglement was commissioned by 911 Media Arts Center and SOIL Gallery in Seattle for their 2008 “Simultaneity” show. The premise of the show was to have pieces happening simultaneously at both venues, located at opposite sides of Seattle’s downtown area. We started to conceive *Entanglement* by asking ourselves the following questions:

- How can a symbolic acoustic line be drawn between two distant locations?
- Could we linearize the acoustics of the two places and create the illusion of a single, infinite line of sound trapped between the sites?
- Supposing such a fragile acoustic construction could be realized, could it be physically disturbed by visitors at each location? In what way?
- How could this disturbance provoke the “entanglement” of visitors with their own sonic perception not only locally but also remotely with visitors at the other location?
- Finally, how could we create a sonic experience that is physical, in which our body takes as a central role as our ears?

A set of concepts emerged as answers to these questions, which served as driving forces for the design of the piece. Each of these concepts is presented in the following paragraphs.

Environment

One of the goals of the piece was to create a continuous “place”, a linear environment across the city. For this purpose, we had to first transform the “void” space of the art gallery: the aseptic “white cube”. Furthermore, we had to deal with its inexistent sonic environment, transforming it into an identifiable soundscape. Therefore, creating a continuous visual and sonic environment that would span across the two sites, was one of our main tasks for the piece. We considered the two sites as two faces of the same environment, conforming a singular “place” that could be inhabited at both sites. Rather than attempting to differentiate the two sites, our attempt was to create a uniform visual and sonic environment out of two complementary spaces and sounds. More explicitly: our goal was to create a subtle double ambiguity between the sonic and visual components of the sites, rather than representing a pedagogical A/B setting.

Stream

The natural metaphor of a stream could be used to describe the acoustic environment of the installation. A sound stream transects the two galleries diagonally. Locally, the particles of the stream travel from one corner of the room to the other, where they get captured

and sent over to the other site. This conforms the stasis of the sound environment.

Perturbation

People visiting the environment alter its stasis only if they enter into the sound stream crossing the room. When the stream is perturbed, the sonic flux is partially or totally interrupted, and its particles spread around the space (not unlike what happens when we interfere a narrow but powerful stream of water. See Fig. 1). A local perturbation of the stream produces one remotely, changing the acoustic conditions of the other site. Remotely, the local flux interruption is perceived as an “acoustic shadow”: a ghostlike acousmatic presence.

Tele-absence

By exploring the acoustic space of one site, people transform the acoustic environment of the piece both locally and remotely. They get channeled away through sound. The piece explores the concept of “tele-absense”(rather than tele-presence), using a virtual acoustic channel to telematically project the disembodied presence of participants between the two sites.

Multi-layered complexity

Entanglement is a complex multi-layered environment. Upon entering either site, people see two dimly lit shapes in near-total darkness, one at each corner of the gallery, corresponding to the beginning and terminus of the sound beam. Participants need to adapt to its darkness, and thus have to rely mostly on their ears to make their initial explorations of the space. As the visual environment reveals itself dynamically, several aspects of the sonic environment also do so, depending on how much participants block the sound stream and for how long.

There is an exchange of sound happening locally: particles forming the sonic stream out of the sound canal (see Figure 2) spread around the place with body blockage, as the ones coming from the other gallery (first floating inorganically around the room) get attracted into the canal, opening a focused acoustic window into the other site. Remotely, these interactions are reflected

as sonic interruptions of the sound stream which also transform its texture. Only if the sound stream is broken simultaneously at both sites a new layer of the installation reveals itself, which emphasizes the acoustic time delay between the two locations (approximately 7 seconds for 2.5 linear miles).

Final comments

Entanglement presents an enigmatic, composite, autonomous environment which never reveals itself completely. The piece attempts to challenge the concept of “tele-presence” by introducing the one of “tele-absence”. It creates a channel of communication between the two sites that requires the use of our body and ears, not our voice. Finally, there is a subtle dialectical relation between the extremely physical local experience of sound and the remote disembodied tele-absence of the participants. While locally their body gets trapped among the particles of the sound stream, remotely only the acoustic contour of their body — built out of the same spread particles — gets cast as a shadow.

Documentation

Detailed documentation for the project can be found on our website: <http://www.dxarts.washington.edu/entanglement>

Acknowledgements

This collaborative installation was part of the Ultrasonic Sound Beams in Media Arts research project, supported by the Center for Digital Arts and Experimental Media (DXARTS), University of Washington (www.dxarts.washington.edu). The authors would like to thank all of their colleagues at DXARTS who made *Entanglement* possible, especially Shawn Brixey, Anna MacDonald, Mike McCrea, Elizabeth Buschmann and Rich MacDonald.

Pampin, Juan; Kollin, Joel; and Kang, Eunsu. 2007. “Application of Sound Beams in Performance and Sound Arts.” In the *Proceedings of the 2007 International Computer Music Conference*. Copenhagen.