

## Untitled

**Brad Newman**  
**MFA Thesis Proposal**

Division of Interactive Media  
School of Cinema-Television  
University of Southern California  
May 7<sup>th</sup>, 2005

### Abstract

(Untitled) is a cooperative play experience involving puzzle solving and improvisational expression between 4 participants in a physical installation. The experience uses the power of the "magic circle", immersive environment design and intuitive interfaces to achieve creative and intimate interactions between participants. The experience takes place within a small tent-like structure where participants sit in a circle around a central physical interaction device consisting of various intuitive and gestural sensors. Participants receive feedback from real-time graphics projected onto the surface of the "tent" from above, along with surround sound. Through play mechanics involving touching and cooperative movement, (Untitled) seeks to engage participants in more intimate communication with the system as well as each other.

### Motivation / Background

(Untitled) follows from my interest in:

- The power of play to decrease social barriers and establish uniquely positive connections between participants.
- New forms of communication possible with interactive media.
- Tangible interactive devices that offer more visceral interaction
- The power and uniqueness of immersive experiences to frame and focus interactions.
- Communication between live performers

When we enter into a game, we enter into what Johan Huizinga calls, among other things, a "magic circle"<sup>1</sup>. Whether it's a basketball court or an online world, we are conscious of the fact that we are crossing a boundary and entering a space where many of the normal social rules are left outside. Before entering this space, we must willingly adopt what Bernard Suits termed a lusory attitude<sup>2</sup> – an acceptance of the irrational rules and limitations necessary as part of the social contract of playing. We do this in service of achieving the beauty and pleasure of play.

While competitive games have their place, I'm interested here in cooperative play between a group of participants and a game system. When we engage in cooperative play successfully, we experience a greater appreciation of the creative potentials of our collective psyche. Like a climactic brainstorming session, cooperative play can culminate in truly sublime moments of social interaction.

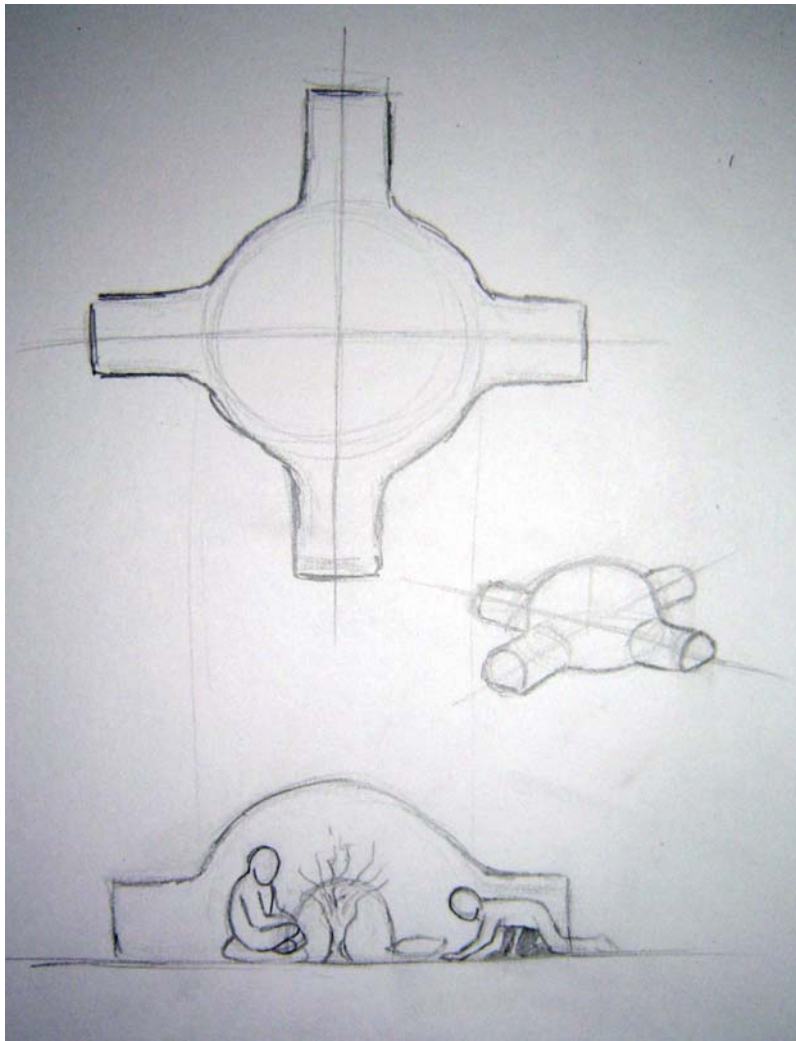
How can a cooperative play experience be structured to use the social contract of the magic circle, and the sublime potentials of play to create more intimate and healing interactions between participants? To what level can intimacy be established and advanced while maintaining trust and playfulness? How can you seduce participants and lower social barriers? How can you create more meaningful play and interactions? What ways can you provide some individual expression and exploration within the communal experience? What sort of technology is most appropriate for creating this experience, and what sort of tech could create new content potentials?

### Methodology

I will address these questions by creating a series of experiences that flow into each other and culminate in a sublimely intimate interaction. To begin, participants engage in a carefree and accessible game to warm up to one another, and establish a bit of trust; followed by a puzzle game to establish more complex intellectual cooperation and interaction. Providing a meaningful payoff and playful reward to solving the puzzle can make people value the amazing things that can be accomplished as a cooperative group, perhaps increasing the participant's value of each other's individual strengths, as well as increasing trust. Using the energy and state of mind that's been established, it may be easier to persuade participants to become more vulnerable than they normally would by getting them to reveal some personal aspects of themselves in service to the play of the game. The trick would be how to do this while not destroying the trust that's been established and the playful enjoyment of the experience. The culmination involves more expressive and creative interaction between participants and the system.

## Design

At the beginning of the experience, participants enter from symmetrically spaced entrances into a domed tent-like structure roughly 9' in diameter by 6' high and take their seats on cushions placed around the inner circle. Ambient music and sound plays over surround speakers, and the translucent roof of the tent receives projection from above. A biomorphic structure residing in the center (very vague at this point, some hybrid of a tree, fire and bubble) faintly glows (perhaps via an array of embedded LED's) and comes alive when all three participants take their seats. Cameras inside the device and mounted in the roof act as the structure's eyes to observe participant's movement, and tangible tendrils jutting from the device allow for direct physical interaction. Capacitance and ultrasound sensors allow for intuitive interactions based on people's spatial proximity. When participants move in a certain manner or hold hands to form a circular link, the projections and sound react accordingly. Each person has unique imagery and sound that is generated based on their movement, and the manner with which they need to move their body to achieve a goal is unique, with the aim of combining the participants into a sort of unified gestalt when they act cooperatively.



To go into some detail, the experience begins with a fun and joyful activity such as popping or bouncing around virtual objects and sounds. A method of sensing touch and linking between participants, possibly with a variable resistor, is used to reward interaction that is more fun than when participants act separately (e.g. what were separate musical notes or chords unites into a song.) This also serves as a way of acquainting people on a more intimate level and getting them used to the methods of interaction.

Puzzle solving or a building blocks game follows this to engage participants in a more complex and communal goal driven activity (for example, building some virtual device via stacking, linking, or assembling of individual parts). The parts have many ways of being combined into unique entities, and upon completion, the virtual device comes alive and integrates with the physical device in some meaningful manner. Interaction at this point becomes more expressive and involves completing, moving, and breaking the ring of hands. These moments of expressive interaction generate live music and visuals that reach a climactic moment for the participants as well as the outside observing audience.

To address issues of expectations, to some extent the experience is designed to be mostly undefined at the beginning in order to preserve the ability of the audience to feel vulnerable. Part of the piece involves puzzle solving and discovery through exploration, so not giving away solutions and surprises, easter eggs, etc. is also important. In order to not let this barrier of entry rise too high (and to put people's minds at greater ease while not destroying the mystery of the piece), awaiting audience members are able to partially observe participants inside through the translucent outer shell / screen.

How exactly the experience will begin, end, and how the participants know are not clearly determined at present and will require more R & D into game design and playtesting. These moments should be mostly self-evident to the participants, while iconographic and symbolic animated imagery provides explicit instruction at the beginning and throughout the middle of the experience. However, words are never used. To signal to others outside that another person is wanted for play, each tunnel leading to an empty seat pulsates subtly with light until someone enters and is seated.

To elaborate, the system has a stasis level that it exists at with no interaction. When someone enters and moves their hands around, hidden interactive elements sprout, emerge, and reveal themselves for further interaction (see examples: Endo<sup>4</sup>, Levin<sup>3</sup>, Smith<sup>5</sup>). A single person may sit and interact with the system to a culminating point and exit, however this culmination point rises in terms of complexity and dynamism with each additional participant. The increase is more exponential than additive, as elements like toys, creatures, and devices within the experience multiply, and can be integrated and interacted with in a more interconnected and dynamic manner.

The audience is very broad, and intended to include anyone who is able to interact.

## **Schedule**

### **May-July**

- Prototype Games and begin conducting playtests
- Begin looking for a space
- Continue Research
  - o similar cooperative games
  - o game design
  - o sensors and their precise abilities
- Continue Studying Software
  - o MAX-MSP/Jitter
  - o Flash
  - o Processing / OpenGL

### **August**

- Continue Playtests
- Finalize the software approach as much as possible
  - o How computer vision tracking will pass information to the real-time graphics generator.
  - o What will be used for real-time graphics
- Finalize the hardware approach as much as possible
  - o Placement of sensors and cameras
  - o Projector and speaker setup
- Finish preliminary physical design of structure
  - o begin building prototype
- Approach engineer(s) for assistance

### **September-October**

- Design and begin prototyping programs and patches
- Determine materials that will be used in the final structure
- Begin animating and writing any necessary music

### **November-Dec**

- Playtest prototype
- Redesign and continue iterative development

### **Jan-Feb**

- Playtest Redesign
- Continue production

## **March-Apr**

- Finish Production
- Exhibit

## **Budget**

G5 (1) - /na

Cameras (1) – \$1-200

Firewire, Manual Exposure control, low-blooming if possible, wide angle lens (at least 60 degrees)

Firewire Extension Cord - \$30

Projector (1) - /na

Mirror (1) –

~ 20" square with 45 degree angled mount

Front Surface Glass Mirror – \$50-100

Front Surface Foil Mirror – unknown, but due to lower quality optics, should be cheaper than glass. The lighter weight of foil could be an advantage to installing

Structure - \$150

Fabric - \$80 – Dense weave synthetic.

Aluminum tubing - \$70

Central Interface Device and Sensors - \$3-400

Theremin Kit - \$100 or less

Basic Stamp - /na

Additional Parts – yet to be determined

Speakers - /na

Software Engineer - negotiable

Space – unknown

## **Committee Members**

Tracy Fullerton, *Visiting Assistant Professor*, USC School of Cinema-Television, Division of Interactive Media

Perry Hoberman, *Visiting Associate Research Professor*, USC School of Cinema-Television, Division of Interactive Media

Jarrell Pair, *Program Manager*, USC Institute for Creative Technologies: Mixed-Reality Research and Development

## **Works Cited**

1. Johan Huizinga - *Homo Ludens: A Study of the Play Element in Culture* (Boston: Beacon Press, 1955)
2. Bernard Suits, *Grasshopper: Games, Life, and Utopia* (Boston: David R. Godine, 1990)
3. Golan Levin - <http://www.flong.com/>
4. Toshi Endo - <http://www.safeplaces.net/sp.htm>
5. Patrick Smith - <http://www.vectorpark.com/park.html>

## **Additional List of Works**

6. Bernie DeKoven – *The Well-Played Game* (New York: Doubleday, 2002)
7. Andrew Fluegelman and Shoshana Tembeck - *The New Games Book* (New York: Doubleday, 1976)
8. Katie Salen and Eric Zimmerman - *Rules of Play* (Cambridge: MIT Press, 2004)