February 2, 2000

Plasm: In the Breeze

A Proposal for Installation in Point of Departure, SIGGRAPH 2000

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1. Project name:

"Plasm: In the Breeze"

2. Primary contact:

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3. Overview:

Plasm: In the Breeze harkens back to the tire swings of our youth. Using a pair of physical tire swings viewers influence the rendering of a synthesized creek. Swinging out over the imagery, their passing leaves phosphorecent ripples in the "water" below, as they "joust" with the a-life teeming through the "creek". The swings are physically coupled, so the body action of one swinger effects the path of the other.

4. Description of the experience:

Viewers are enticed to wander onto the floor of projected imagery and take a swing on one of the two single rope swings. As they swing in different directions they will notice they are leaving traces of their passing on the underlying scene, their shadow on the floor acting as a paintbrush, stirring up the flow of images below. Less adventurous viewers can participate by helping push the riders around, or verbally encourage them to try and effect some particular change.

5. Description of how attendees will interact with your exhibit:

Like the slow, pendulous, swings out over the creeks of our youth, Plasm: In the Breeze is very easy to engage, you just hop on and swing. This full body involvement offers a more visceral interaction with the display than the usual "hands at a distance" interface. Visitors can jump on easily, and will tend to move along after they have had enough, providing an accommodating means of crowd control. When no one is swinging, the "creek bed" will cycle through recent and favorite sequences from past performances. As the two swings are hung from a connected structure they will interact in ways similar to swings hung on different, nearby tree branches. This will make each viewer's experience dependent on the other's swinging/hopping behavior, adding to a sense of mutual engagement.

6. What the installation looks like:

A slightly darkened area with white carpeting is illuminated by two overhead video projectors. In the center of each projected image hangs a single rope swing with a disk large enough to stand on at the bottom of it.

7. Description of the look/sound/feel of the computer-generated material:

The swings will be instrumented to allow their position and occupant weight to be fairly accurately determined. These parameters will be fed into various themed image generation routines to drive the projectors. A simple example is one that just leaves a trace of the riders path behind in the projected image. More complex is one that uses the position to control a "flashlight" that is illuminating an underwater scene. This imagery has to be fairly coarse/easily understood since fine details will not be evident in the nap of the carpeting. Other imagery may consist of a 3D rendered ever receding crevice, fields of flowers erupting with constantly changing colored blooms, simple ripples like those left by a duck taking off over a still lake... we plan on having several entertaining selections to cycle between.

8. Description of the potential cultural impact:

Today's society is getting more and more computerized. During this transformation, person to person contact is becoming increasingly stylized. Plasm: In the Breeze, instills a playful/personal air into the user/computer mix as a direct antidote to the formality of so many modern interfaces. We are using three distinct approaches towards this end. - "Meeting at the creek" evokes a shared experience, totally missing in today's encounters with machines. - The explicit abstraction used to convert swinging motions into imagery control parameters challenges the one-to-one mapping of conventional machine control. - Full body engagement sensing allows for a multiplicity of inputs at one time. We believe each of these approaches reveals an important experience for people to encounter. Taken all together they may cause folks to think twice about their daily routine with their machines.

9. Background and history:

Who created the project?

"Plasm: In the Breeze" is the latest in the Plasm series, a progression of first-person interactive art installations begun in 1985. The Plasm crew has evolved continually over the life of the series. Artists for "In the Breeze" are Rob Myers, Peter Broadwell, Rebecca Fuson and Delle Maxwell.

Where was it created (organization/context)?

Over 15 years and 8 public installations, the Plasm series has established its own context, weaving together a collective passion for public encounters with high technology, multi-user shared spaces, self-motivated artificial life forms, emergent behaviors in virtual ecologies, whole-body input techniques, and haptic interfaces. Plasm is a moonlight project, created in off hours at the crews' studios, offices, and homes.

What are the goals/mission of this project?

- Pursuit of the artistic and playful, seeking to counter the often dreary and sometimes objectionable uses computers are put to.
- Extend the vocabulary of interface techniques. Explore the use of force-sensing technology to detect subtle body-stance input in an un-self-conscious interface.
- Anticipate the future. Explore the real-time adaptive media all desktop machines will be capable of a few years hence.

Who is the target audience for the project?

Those SIGGRAPH attendees who are willing to wander by "Plasm: In the Breeze" and engage in the novelty, aesthetics and experience of our interface.

What innovations have been employed in terms of development methodology and new technologies?

- Harnessing the user's swinging and hopping as input parameters without the hassle of "suiting up" devices

- The swings cover more area than a simple magnetic sensor can sense easily and we don't want to be worrying about visual occlusion that might allow optical tracking... fortunately Space Age Controls, a company in the LA area has just the thing - a displacement measurement device that is sensitive enough to track the swing position up near the pivot point.
- Internet-based coordination during development
- Adaptively animated imagery based upon artificial life algorithms, reaction diffusion equations and others.

10. Technical information:

2 - Silicon Graphics 320's perform the image generation and massage the sensor input into meaningful control parameters. The two machines share data across a dedicated Ethernet network.
2 - Sony DLP3000's, very bright projectors that can be mounted overhead easily.
Custom software for the sensor massaging, image generation, sound management.
Overall framework will use the Blendo media synthesis engine: A real-time scene generator and video compositor, developed at Sony's US Reseach Labs, and proposed for X3D, the Web3D Consortium's planned successor to the VRML97 delarative 3D animation standard.

11. Operations:

Layout:

The swinging zone of the installation occupies a 20'x30' space. A 5'x5' pipe-and-drape enclosed equipment area should be nearby. The swinging zone should be readily accessible from many sides, so that passers-by may just walk up to the swings and enjoy the show. Depending on the building specifics we can either support the swings with scaffolding from below or suspend them from the building structure above. We would prefer to suspend them, using side sway-prevention rigging to contain the extent of the swinging.

Traffic:

We expect people to be engaged for one to three minutes each. The two swings allow for multiple levels of participation; two people at a time can be actively swinging, their friends can be giving them pushes to alter their ride, surrounding onlookers can chime in with verbal encouragement, while the reticent just stand back watching the scene. We expect this tiered participation to serve as a natural traffic control mechanism, producing a continuous flow through the experience.

Power requirements:

Our installation will be running 2 desktop workstations with some speakers attached, 2 video projectors and some small sensor units. We estimate that 4 - 20 amp drops will be sufficient, 2 for the workstations/speakers, 2 for the suspended projectors.

Lighting requirements:

Control of the overhead lighting is crucial. The overhead projection will be washed out without carefully crafted lighting conditions.

12. Group profile:

An overview of the team and its experience and background.

Founders of the Plasm series, Peter Broadwell and Rob Myers, have been hacking at the edges of art and technology for the past 20 years.
Peter Broadwell holds a degree in Applied Mathematics from University of California Santa Cruz. Presently a Thinker at Sony's US Research Laboratory's Distributed Systems Lab he has also participated in a few Silicon Valley start-ups including Haptek, 3DO, and Silicon Graphics.
Rob Myers has led the design and development of a wide range of real time interfaces first at Silicon

Graphics and now at Sony's US Research Labs. He specializes in the shaping of 3D and rich media environments from teleconferencing to interactive television to VRML. Rob's background includes 26 years of commercial graphic design experience in print, film, video, and computer graphic media. He received his degree in Architecture from the School of Architecture and Fine Arts at the University of Southern California.

Rebecca Fuson holds a degree in Interactive Media from Mills College. She joined the group in 1991 to field "Plasm: Above the Drome." Since the she has contributed to 2 subsequent pieces, "Plasm: A County Walk", presented at ISEA 1994 and "Plasm: Yer Mug" show at SIGGRAPH 1996. Rebecca has been a professional dancer, typographer and illustrator. From 1993 - 2000 she was at Interval Research where she helped mount 3 sessions of the "New Voices, New Visions" digital art competitions and more recently contributed to the concept design and prototyping of the installation piece "Portable Effects". Currently enjoying a severance package from Interval she will probably be doing something completely new by the time you read this.

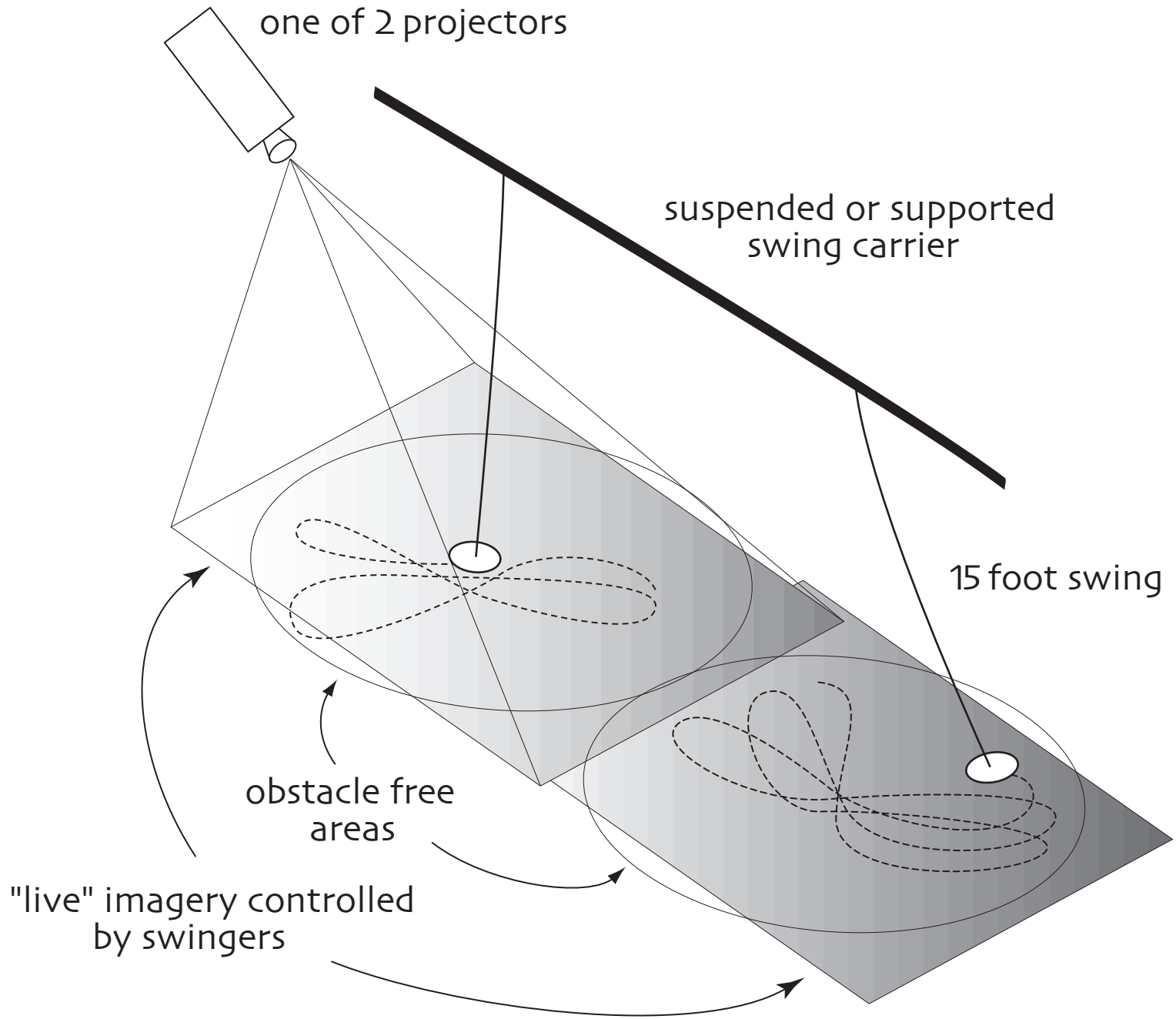
Delle Maxwell is a designer, long interested in the combination of 3D animation, visualization, and user interface. She was art director on the three Geometry Center videos that have been shown at the SIGGRAPH Electronic Theater, and at many other venues around the world: "Not Knot", "Outside In", and "The Shape of Space". She has also worked with the Cosmo Software group on VRML development, showing the "Tenochtitlan " project at the SIGGRAPH Digital Bayou in New Orleans. She also has been involved in numerous user interface design projects. In addition to working on this project, she is currently working with the Blendo/VRML group at SONY's US Research Labs.

List any projects by this group or organization that have been in any part of a past SIGGRAPH conference.

1985 Plasm: A Fish Sample. SIGGRAPH Art Show, San Francisco.
1986 Plasm: A Fish Sample. SIGGRAPH Invitational Retrospective Art Show, Atlanta.
1988 Plasm: A Nano Sample. SIGGRAPH Art Show, Atlanta.
1991 Plasm: Above the Drome. SIGGRAPH Tomorrow's Realities Gallery, Las Vegas.
1996 Plasm: Yer Mug. SIGGRAPH Digital Bayou, New Orleans.

Appendix 1.

Diagram of the swings


one of 2 projectors
suspended or supported
swing carrier
15 foot swing
obstacle free
areas
"live" imagery controlled
by swingers