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# Exploring Participatory Performance to Inform the Design of Collaborative Public Interfaces

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**Abstract**

We describe a new application of interactive participatory performance in interaction design. Our pragmatic strategy permits us to use performance as an investigatory tool in the exploration of user behavior. By taking a holistic view of the evaluation of the interplay between the designed artifact (the performance content) and the people who interact and relate to it, we can extract insights from the performance with the intention of informing the process of designing interaction mechanisms for more conventional public interfaces.

**Keywords**

Performance, interactive art, aesthetic experience, collaborative system design

**ACM Classification Keywords**

J.5. Arts and Humanities, Performing arts (e.g., dance, music). H5.3. Group and Organization Interfaces, Collaborative Computing, Evaluation/Methodology.

**Introduction**

If asked to describe a traditional “performance,” one would likely imagine a unidirectional scenario whereby observing audience members receive the skilled presentation of an artistic work interpreted by trained, perhaps professional actors, musicians or dancers. Participatory interactive

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performances, however, leverage the use of interactive technologies to modify the directionality of the performance experience to add an additional layer of audience involvement – allowing participating audience members’ contributions to modify and manipulate the development of the ongoing performance.

In 2007, our research team was commissioned to create a participatory art piece, *dream.Medusa* [5], for the Nuit Blanche festival in Toronto, Canada. It was intended simply to be enjoyed as a piece of art, however, during the course of performing the piece in several international art festivals, we became intrigued by the way participants interacted with the system and the interpersonal dynamics which developed between the novice participants, the experienced performer, and the observing audience. We realized that *dream.Medusa* was providing us with a platform to investigate collaborative creative behavior in a unique public setting. We began to see potential for using the participatory performance environment as an explorational tool in the design process, using the creation and observation of legitimate performance works in order to inform and refine the design of collaborative systems.

A similar approach, linking performance methodology and artistic interface design has previously been explored by Schiphorst [4]. We, however, propose that insights obtained from an artistic realm are applicable beyond the strictly defined “performance” context into the design of more traditional publically viewable collaborative systems.

Our goal is to address the relationship between participatory performance and the design of publically

viewable collaborative environments. We will discuss how we used a pragmatic approach to reflect upon the *dream.Medusa* performance experience in order to focus and structure participant observation and interviews. We will identify the insights that this process yielded regarding the participants’ experiences, and conclude with our proposal for using the obtained insights in future collaborative system design.

### **Participatory Performance and Public Interfaces**

As interface design researchers, we are interested in the phenomenon of human behavior and experience exhibited during a participatory performance such as Jennifer Sheridan’s *iPoi*, in which she allows observers to transition from their passive role of audience to become active participants who accompany trained performers in a live multimedia performance using augmented poi devices to control responsive video and sound [2]. While the *iPoi* performances can stand alone as viable pieces of media art, we believe that observation of the participants’ collaborative behavior yields insights which could be used to shape the future design of applications to which similar sociotechnical considerations apply.

While they are not literally “performing,” participants who interact with multi-user publically viewable applications, such as large-screen responsive video displays situated in public spaces, share a number of experiential qualities with participants in an interactive performance. Publically viewable collaborative systems require participants to interact while being observed by passersby in the environment, and may involve interactions which are creative or exploratory in nature. Issues of participant anxiety about being observed, wishing to appear competent in front of onlookers, or

desiring to master the interface and explore the boundaries of the interaction paradigm are still present whether the interface in question is part of an artistic performance or simply a collaborative interface which is publically observable, such as a virtual shop window interface in a public street.

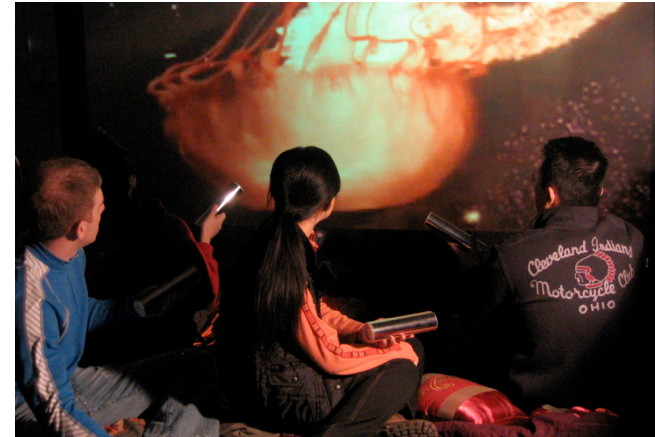
### ***dream.Medusa: a Pragmatic Exploration***

To translate observations made in the performance realm to a more generalized discussion of collaborative public behavior, we must first address the aesthetic experience of participatory performance, in order to better understand the relationship between the creative content and the experience of those who perform, participate and observe. To do this, we investigate our participatory performance, *dream.Medusa* guided by the pragmatic framework devised by McCarthy and Wright [3].

Pragmatic approaches to the exploration of aesthetic experience encourage a holistic assessment evaluating the interplay between the designed artifact (the performance content) and the people who interact and relate to it. Pragmatic exploration encompasses more than an analytical assessment of the aesthetic attributes of the performance content. Instead it focuses on the relationship between the design and the way the design is received, grounding the aesthetic experience in the context of each participant's life and individual perceptions. McCarthy and Wright suggest that pragmatic aesthetics allow us insight into how individuals' contextual relationship with designed interactions shape their experiences. This approach can therefore allow us opportunity for critical reflection upon how the *dream.Medusa* performance experience is perceived by the participants who interact with the



**figure 2:** Participants hold interactive objects in their hands. The mirrored tubes conceal Nintendo Wiimote controllers. An accelerometer inside each Wiimote is mapped to a specific aspect of video playback (colour balance, edge detection, etc...) so each participant has control over one parameter in the video performance they are collaboratively shaping.



**figure 1:** The performer and the participants share an intimate space, gathered together on a lavish pile of pillows and blankets placed on the stage

performer, the audience, and the multimedia content designed by the creative team.

*dream.Medusa* takes place in a traditionally staged environment (see figure 1.) A performer (Taylor, a classically trained soprano) initiates the performance by manipulating colours and images in a responsive video stream using the dynamics of her singing voice. As the piece progresses, four participants, who were previously selected from the viewing audience and invited to join Taylor on the stage, are encouraged to collaboratively control an abstract video depicting drifting and weaving jellyfish by manipulating interactive devices (see figure 2.) The participants are given no instruction about how their manipulation of the objects will affect the video. Rather, they are encouraged to explore the interaction space and enjoy the aesthetic experience of the performance, which is

meant to simulate a lucid dream in which each of the participants can make changes in the dream world.

### **Four Threads of Experience**

Guided by McCarthy and Wright's framework for the holistic examination of aesthetic experience we can describe the participants' experience of *dream.Medusa* in terms of four threads, the "sensual," "emotional," "compositional" and "spatio-temporal."

#### *The Sensual Thread*

The sensual thread of aesthetic experience refers to the use of sensual cues to trigger "pre-reflective" and "visceral" responses. Our performance was designed with the primary intention of using audible, visual, and tactile cues to shape the character of the performance experience in a way that facilitates a sense of hypnotic intensity and collective intimacy, allowing participants to feel secure enough to explore within the performance frame and encouraging a feeling of immersion and connectedness between the performer, participants, and audience. Ethereal ambient sound, rhythmic and drifting videos of translucent jellyfish, and soft satiny bedding to surround the participants were designed to evoke a sense of peace and other-worldliness.

#### *The Emotional Thread*

The emotional thread addresses the interpersonal dynamic created as participants perceive their own experience, and project and ascribe motivations to the people around them. In a participatory performance context, participants' self-perception is shaped in part by their own history, their self-esteem and self-consciousness, and their attitudes towards being in a visible and conspicuous setting. While the participants

monitor and judge their own individual performance, they also can imagine being judged by one another, the performer, and by the viewing audience, to whom they may ascribe varying motivations – they may imagine them to be welcoming, indifferent, or hostile. These ascribed emotions may then, of course, affect the participants' emotional state and perception of the experience.

#### *The Spatio-Temporal Thread*

The spatio-temporal aspects of participatory performance centre primarily upon the fact that each invocation of the performance event is unique. Even if the same group of randomly selected people was allowed to undertake the performance in the same venue, they would never be able to viably duplicate their performance since the interaction mechanisms are non-discrete, making the performance paradigm ephemeral in the extreme. Additionally, the spatio-temporal thread addresses the issue of *place*. The physical space within which the performance is undertaken, the cultural context of the city within which it is produced, and the perceived prestige, openness, or professionalism of the sponsoring venue or event all affect the way participants experience *dream.Medusa*.

#### *The Compositional Thread*

The compositional structure of *dream.Medusa* was created in such a way as to encourage a narrative structure which allows participants to develop a sense of control and creative agency. They are encouraged to manipulate visual effects through a mysterious tangible interface. The responsive visual effects are continuous rather than discrete, and the mechanism of interaction is subtle and explorational rather than obvious and readily controllable. The composition is designed to

allow participants to gain creative agency through experimentation with the interface, and ultimately begin to contribute to the performance development in an intentional way.

### **Investigating Participants' Experiences**

We were interested in exploring how invested, immersed, and present our participants felt in the *dream.Medusa* performance. The primary goal of the art piece was that the participants be able to experience what Csikszentmihalyi terms “flow” – utter attunement and involvement in an experience, characterized by the loss of self-consciousness and an intensity of concentration and focus on an activity [1]. We wanted our participants to feel a sense of creative agency in the performance approximating the flow sensation that a trained performer might feel when practicing his or her craft. In evaluating how to best achieve this goal, we hope to discover elements of design strategy which might be successful in encouraging a similar sense of presence and satisfaction when applied to more conventional public and collaborative interfaces.

In determining how best to evaluate our participants' experiences with *dream.Medusa*, an important consideration for us was the maintenance of the authenticity of the performance experience. Consequently, we structured interview sessions such that they were individually administered to each of the four participants outside of the concert venue immediately following the performance. The individuals that escorted and interacted with the participants were skilled interviewers, and were briefed on the necessity of maintaining a relaxed and creative atmosphere to keep participants feeling comfortable during the

interview process. We felt it critical that our participants not be made to feel as if they had been snatched out of an artistic mindset and whisked into a science experiment. Indeed it was crucial not to corrupt their experience entirely and to avoid undermining both the quality of their provided insights, and also their ability to internalize and appropriate what we hoped had been a positive and creative personal experience.

We wished to include in our interview elements derived from Csikszentmihalyi's description of flow, as well as Witmer and Singer's classic questionnaire measuring presence in virtual environments [6]. However, to reduce the sterility of the interview format, we took care to soften the language of the dialogue. We encouraged participants to qualitatively describe their experience using emotive and descriptive terms. The series of questions was organized to reflect McCarthy and Wright's framework exploring the four threads of aesthetic experience. This provided a coherent structure for our interview subjects, directing them through an exploration focused sequentially on their perception of the sensual, emotional, spatio-temporal and compositional aspects of the experience. Each interview session lasted roughly 30 minutes.

### **Applying Participant Feedback to Design**

As expected, participants reported a significant amount of attentiveness to the emotional aspects of the experience – in particular, each participant was very aware that they were being watched. This self-consciousness is obstructive to flow and reduces enjoyment of the interactive experience. Any system that requires users to interact in a publically conspicuous way must address this concern in order to

*"I came in cold, I wasn't expecting to be up on the stage, I was going to be in the crowd. And I was very much conscious of the fact that there were cameras on us when I first sat there, and there were a lot of people in the crowd, more kept coming in... but the second it started, I mean, I completely lost track of what was going on. I would say it was almost 100% absorbing."*

*"I was very keen to ask the guy next to us if he could work out what his remote was doing, and I also wanted them to stop at certain points, I wanted to tell them all to stop so I (laugh) could work out what I was doing, you know, but I felt that that might have been a little rude! (laugh)"*

*"That idea of trying to control something that you're aware that you may have some control over but that you're actually not quite sure how to control. Yeah, I mean that kind of works for me [...] It was enjoyable to be part of the performance, to have some kind of control, no matter how concealed that control was to me it was still, you know it was a challenge and a challenge is always fun and exciting and interesting."*

reduce users' distraction due to "stage fright." Our participants, however, noted that the sensual components of the performance (the hypnotic visualizations and the relaxing ambience of the musical performance) helped to focus their attentions and reduce their anxiety. A public interface, such as a large screen display requiring users to make physically conspicuous gestural interactions, could attempt to reduce user self-consciousness through the same technique of distraction via audio-visual immersion in a sensually pleasing atmosphere.

Users also described a desire to explicitly collaborate with one another, wishing they could assist one another or strategically combine their individual video manipulation effects to create more complex visualizations. They expressed concern, however, whether direct communication and planning between participants was appropriate, or if it would disrupt the aesthetic experience of the performance. While this effect may be more pronounced in a "performance" environment than it might be in other forms of collaborative applications, we plan to ensure that in future development of publically viewable applications communication between participants is encouraged or even facilitated.

Compositionally, *dream.Medusa's* interface was designed to be explorative and mysterious. It was intended to encourage participants to discover and master the interaction technique through focused attentiveness to their actions and their results. We hoped that this would increase their engagement with the experience. Our participants provided mixed feedback upon this notion. Several of them enjoyed

the experience of gradually achieving creative agency through experimentation, while others indicated that this strategy was frustrating, leaving them feeling unsure of their competence when they could not be certain how to control the environment. We plan to adjust our interaction techniques to maintain the sense of explorative discovery, but provide an easier learning curve to reduce frustration.

Our future development requires us to iteratively refine our performance practice and create a new piece of participatory interactive art. After the effectiveness of our refinements is evaluated, we intend to apply the insights we have gained from the performance experience to the design of a more generalized publically viewable collaborative application.

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