For Every Action: Interactive Installations in Liminal Spaces

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Abstract

Liminal spaces are transitory spaces between two areas or states. Such areas can be tied to established social behaviour protocols, which, if broken, can create uncomfortable situations. My over-arching goal for my doctoral research in Computational Media Design is to create interactive installations in liminal spaces that encourage viewers to reflect on and question these social protocols. My work to date realizes this in two art pieces: *A Delicate Agreement,* and *Conditional Balance*, each exploring a different instance of liminal space*.* In the remainder of my doctoral research, I aim to create two more installations that further explore this space

and contribute to informing the design of both interactive art and technologies for interaction design.

Author Keywords

Interactive installations; interactive art; joint and shared authorship; user experience; liminal spaces.

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction and Background

My doctoral research practice arises from my observations of people's relationships and interactions with each other in liminal spaces. My research questions are: (1) How can interactive art bring people together in liminal spaces? (2) Can this inform the design of interactive technology for helping people connect and engage with each other in the same physical space? (3) How can the processes established in this practice-based research inform future endeavours for designing for engagement with site-specific interactive installations?

Liminal spaces refer to transformational or transitory spaces between two areas or states [10]. This concept can be applied to both physical and digital spaces [11], as well as to ideas and cultures [13,14]. People often
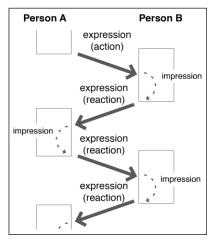
Figure 1: An illustration of Goffman's cycle of expression and impression, or action and reaction, between two people who are interacting with each other.

use digital technology to ease their discomfort around liminality [12], which is what my research aims to investigate and address. In the context of ideas and cultures, liminality occurs during the margin phase of a rite of passage: in the margin, the person's role in society is unclear, bringing about an opportunity for reflection, idealizing and comradeship [5]. This phase is mirrored in the process of interdisciplinary art-computer science collaboration, a space that my research inhabits. Consequently, I explore the liminal space between these disciplines. In my research, I draw upon this background as a basis for examining everyday practices in liminality.

I am conducting qualitative observational studies based on these questions to examine lived experience within liminal spaces. I then apply the findings of these studies and social interaction theory to the design and creation of interactive art installations that can challenge and transform liminal spaces and the experiences within them. At its foundation, my work leverages aspects of human-computer interaction (HCI) and practice-based research.

The study of people interacting with technology in public places is well established in HCI [3,8]. Many interdisciplinary artists have explored the way that people inhabit public spaces. Jeremijenko places interactive technology in familiar objects in urban parks that can necessitate a change in how people experience the space [4]. Saliba examines the practice of waiting in a liminal place by capturing snapshots of strangers [9]. Within this setting, Goffman's theories about action and reaction [2], illustrated in Figure 1, provide a different perspective where I explore possible styles of interactivity for liminal spaces, therefore combining technological intervention in public places with the examination of behaviours and interactions, as shown in my interactive installation *A Delicate Agreement.*

In PhD research based in creative practice, contributions to knowledge can reside in artifacts created in the research process, presented in tandem with a written thesis [1]. As such, my PhD research will be presented as a written dissertation and a series of exhibitions and associated articles.

Interactive Installations

My work to date has resulted in two interactive installations designed for liminal spaces. The collaborators involved in the creation of the installations were highly skilled in their initial roles in the piece to ensure that the final result both met our aesthetic standards and was able to withstand eight to ten consecutive weeks of deployment for exhibition under low maintenance.

A Delicate Agreement (Figure 2.A) is a site-specific installation that explores the liminal time and space of an elevator ride [7]. In this piece, I investigated passive interaction via custom designed and built gaze-trackers to heighten people's awareness of rituals and behaviours in a familiar liminal space. Viewers are presented with a false set of elevator doors augmented with a pair of peepholes looking into the "interior" of the elevator – two monitors set up behind the doors

Figure 2. *A Delicate Agreement.* 2a: Two viewers interacting with the installation. 2b: A still of two characters inside the elevator. 2c: A character in the elevator returns the viewer's gaze when she realizes that she is being stared at.

displaying an actively composited stop motion animation of a cast of sixteen characters riding the elevator together (Figure 2b). Each character has a set of pre-recorded photo sequences shot on a theatrical set that illustrate a range of possible behaviours that can be performed. Depending on input from the gaze of the viewer and the behaviour exhibited by the character riding in the opposite side of the elevator, the character personality software chooses an appropriate reaction for that character to perform. Viewers gazing through the peepholes, shown in Figure 2a, can trigger a reaction from the characters in the elevator if they stare at a character's face for long enough: each character will stare back at the viewer and react differently (Figure 2c), bringing awareness to the viewer that their interaction with the piece is affecting its ongoing state.

Conditional Balance (Figure 3) addresses the changing relationship between viewers and an interactive artifact

in a gallery space [6]. It reflects upon the risky nature of collaboration by making explicit the possible misunderstandings and tensions that can arise. While contemplating a porcelain sphere atop a narrow plinth, two viewers become participants in the piece and cause the sphere to wobble with increasing intensity or smash on the floor simply by entering each other's intimate space while standing in front of the work (Figure 3b). Shards of previously broken spheres pile up on the floor around the piece, revealing the glazed interior of the spheres as well as the possible outcome of engaging with the work.

Research Objectives

My basic contributions will be four interactive installations all related to my theme of liminality. Each will consist of an associated exhibition and publication, as has already been completed for the first two interactive installations. It is my hope that by instigating discussion and increased awareness of

Figure 3: *Conditional Balance*
3a: A view of the installation in the gallery space. 3b: Viewers interacting with the installation.

rituals in liminal spaces, my installation pieces can be a step towards mitigating discomfort in these spaces. I am particularly interested in how my work can contribute to knowledge in the areas of interactive art, interaction design and HCI by applying the lessons learned in my practice and making use of the theoretical background to explore and explain different phenomena occurring in each field.

Acknowledgments

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