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Master's Thesis

Academic Year 2015

Design and Implementation of the Surreal
Interactive Movie Environment SIME

Graduate School of Media Design,
Keio University

Taylor Martin

A Master's Thesis
submitted to Graduate School of Media Design, Keio University
in partial fulfillment of the requirements for the degree of
MASTER of Media Design

Taylor Martin

Thesis Committee:

Associate Professor Kazunori Sugiura	(Supervisor)
Professor Naohisa Ohta	(Co-Supervisor)
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Abstract of Master's Thesis of Academic Year 2015

Design and Implementation of the Surreal Interactive Movie Environment SIME

Category: Design

Summary

The Cinema has a longstanding history and a highly developed language of its own. Since the inception of the movie experience, attempts at an interactive cinema experience have been made. However, these attempts have all relied on a system of self-denial and identification with a persona, as well as a lack of relationship with real space. The aim of this research is to develop a new interactive cinema environment, S.I.M.E., to fill the gaps between virtual reality, which relies on full immersion in a digital space, and the cinema itself, which relies on denial of the self. S.I.M.E. aims to create an interactive cinema experience which encourages the spectator to co-create the narrative, while maintaining a meaningful relationship with real space. The evaluation of the environment relies on feedback from spectators and users, and their reports of effectiveness of the systems. This research provides insight on three prototype systems; the first tested using quantitative methods, and the following two using qualitative methods. The results of the three prototype tests show that S.I.M.E., which relies on creating and maintaining a meaningful relationship with real space, provides spectators and users with an enhanced point of identification with the self. Users report feeling as if they are co-creators of the filmic text. Users also report feeling as if they themselves are a character in the filmic text. Overall, S.I.M.E. provides users with an enhanced interactive experience, without relying on a persona character as a point of identification.

Keywords:

Graduate School of Media Design, Keio University

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Chapter 1

Introduction

This section serves as an introduction to the materials and research presented by this thesis. It begins by exploring the background and motivation that served as a point of origin for this research, and expands upon basic problems that worked to form the concept and preliminary ideas that formed the backbone of this research. Finally, the overview of the structure of this thesis will be discussed.

1.1. Background and Motivation

After spending several years engaged in the textual research and development of traditional cinematic methods through undergraduate research, it became apparent that there were ideological issues being cultivated through the structure of cinematic language and the apparatus itself. Beyond these issues of the apparatus, it emerged that through the study of mainstream media that such media, as a whole, is moving along a trajectory towards smaller and more directly interactive media experiences.

Due to the increasing convergence of media types, we realize that digital displays, video games, smartphones, and computers are all becoming more and more interactive. Meanwhile, the cinema rests as an archaic salute to the past, remaining the same, changing little, innovating hardly at all. 3D experiences serve as hardly more than a weak attempt to boost cinema attendance and ticket sales, with little success in actually increasing attendance as a whole. 4D cinema experiences and efforts to create a sort of interactive cinema experience without any

true interaction have come and gone repeatedly over time. The cinema as we know it is in danger of elimination in favor of short, user-generated video clips and user created content. The historical film engine is in a state of crisis, at the verge of extinction.

The world is changing. Direct engagement with users is becoming a more and more essential aspect of media consumption and an essential element in successfully targeting consumers. Through inspection of these issues, we begin to realize that a type of cinema that targets users directly by providing them with an individual and unique ability to alter the storyline is essential. Consumers and spectators are no longer satisfied with simply consuming media uncritically. They want to be active in their spectatorship. They desire to see their own efforts mirrored in the final outcome of the media they consume. Thus, it became clear that a new type of interactive cinema must be developed.

A large portion of this research was developed in cooperation with another researcher, Roosa Jokiaho, who published research based on two shared prototypes, under the name S.I.M.S.. [17] The prototype names were later changed from S.I.M.S. to S.I.M.E. to reflect the emphasis on environment over system. Jokiaho's research also focuses on the use of real space, but the research position is opposite this work. Jokiaho's research asserts that a relationship with real space enhances viewer immersion. [17] This research rejects that claim, and instead argues that a relationship with real and digital space prevents immersion, and enhances spectator identification with the real world, and the self. Jokiaho's research also comes from the perspective of game design and its related theories [17], while this research is placed critically from a film theory perspective.

While there are many technical parallels to be drawn between Jokiaho's research and the work presented in this thesis, the foundations and aim of the two sets of research are at opposite ends of the spectrum. So, although Jokiaho's published work and the works presented here are based on the two prototypes developed in cooperation, the actual research content of this thesis is in direct contrast to Jokiaho's research, and provides a new and original perspective to the two prototypes, while providing a final prototype to expand on the theories developed together.

1.2. Goal

Throughout the history of cinema, there have been many attempts at creating an interactive cinema experience. Many efforts have focused on the realm of gaming or virtual reality (VR), which rely on two important factors: identification with a character or persona; and full immersion in the diegetic text.

Issues with self-forgetting, or identification with a character or persona are many and varied. For example, in mainstream media, representation of characters is limited to the ideological ideal, or the societal majority. A member of a minority group is hard-pressed to find media that tells a story that reflects on their own experience. Representation of a limited majority group is extremely problematic, and something that minority groups have railed against since the beginning of widespread media. These minority groups are forced to abandon their own experiences in order to find a place for media consumption. Further, while full immersion in the diegetic text is an exciting concept for development of VR technologies that aim to encourage this self-forgetting, it is problematic in that it underscores these larger issues. Even more problematic is the fact that these VR and interactive apparatuses are single-function and outside of the range of the average consumers monetary constraints. Accordingly, users who are able to engage with these contents are typically privileged members of the upper middle or upper class. An interactive cinema that does not rely on identification with a textual persona, does not encourage self-forgetting, and encompasses the trajectory of media convergence is lacking entirely from the mainstream, and even subcultural media.

The intention of this research is to provide an interactive cinema environment that provides a meaningful relationship with real space, does not rely on self-forgetting instead, encourages identification with the self and the selfs lived experiences and provides spectators and users an opportunity to fulfill their desire to co-create the text as they experience it. For the purpose of this research, there will be no distinction made between a spectator and a user.

S.I.M.E., or the *Surreal Interactive Movie Environment* and its related research aspires to fill the gap between VR, video games, and the cinema in a manner that is accessible to the average spectator.

1.3. Thesis Overview

This thesis follows a five chapter structure. The first chapter serves as an introduction to the issues and background related to the area of research. Chapter 2 outlines related theories in order to explain why this research is necessary and sets forth examples of related works in the research area, while providing context through a series of pros and cons. The related works are broken down into three areas: works that rely on spectator immersion, virtual reality works, and interactive works. Through this survey of related works, this chapter illustrates which areas are in need of further development and exploration. Chapter 3 focuses on the concept development and design development of S.I.M.E. by first exploring the results of a series of preliminary fieldworks, and then providing a methodology for the evaluation of the research prototypes. Finally, Chapter 3 provides a look at the design for the S.I.M.E. system. Chapter 4 shows the implementation of the previous chapters design through a series of three prototypes. The first, evaluated through quantitative methods, and the second following prototypes through qualitative evaluation. The results are discussed at the end of each section, with the overall evaluation being provided at the end of the chapter. The final chapter proposes to bring all of the data together into a final conclusion, while providing insight regarding other future works and research which may be conducted for a deeper understanding of the issues.

Chapter 2

Literature Review

This thesis examines the significance of both exclusivity and functionality. It is important to outline the limitations of the research, to present an overview of the research which is available on a wider scope, to include a description of the purpose of the prototypes that have been created up until this point in time, and to review the research conducted and relied upon herein. Thus, in the pursuit of executing these factors to their fullest extent, this chapter is divided into several sections and subsections. First: a brief outline of the scope of research will be provided. Following this, selected literature will be presented and reviewed in relation to points of significance regarding theoretical background; this will be accompanied by a selection of related works that provide insight on previous research accomplished within the same field of interactive cinema, and related outliers. Theoretical research will provide a backdrop of spectator theories in relation to the proposed concept, S.I.M.E. Related works are presented with the purpose of exploring pros and cons, while simultaneously enhancing understanding of said works influence on the framework development process of S.I.M.E.

The research presented in this thesis was conducted over the course of a two year Masters Program, with emphasis between September 2013 and June 2015. In consideration to the time limit, it became essential to narrow the focus of research in order to preserve academic integrity and relevance to the field. With these specific limitations in mind, this thesis and accompanying series of prototypes focuses on proving the proposed concept and its relevance to the field of research through exploration of a primary data set and outline of design concepts. Through

this research, there is the hope that further development in the area of spectator position and interactive cinema can be stimulated, following the guidelines and recommendations based on the presented data sets.

2.1. Extended Background and Definition of Basic Concepts

This thesis deals primarily with the formation of a new subject position; in the interest of this, it is important to outline existing theories on subject position, and to discuss how they relate to the spectator in terms of existing cinema and interactivity.

2.1.1 Metaphysical Subject-Position

Indeed, while a spectator is not identical to a subject, Immanuel Kants works and research on metaphysical subject-position provide a good point of reference when contemplating the apparatus of the cinema. In his works, Kant opines that the self modifies that which is observed through a series of pre-suppositions or justifications independent from experience; simply, a priori. [18] Kants works on the impossibility of objective observation of an object have been repeatedly dissected and applied to film theory over time. In consideration of expediency, these theories will not be discussed in depth in this thesis, but instead accepted as themselves a priori of theory. Accordingly, one can not experience the cinema without referencing a series of presuppositions from their own individual experience. However, the cinematic apparatus itself relies on denial of the self, and in the same manner, denial of the lived experience. This concept will be discussed at length below. The important distinction here is that the cinema as we know it relies on a series of denials and paradoxes in order to create meaning. This thesis will endeavor to eliminate some of these paradoxes in order to create a true self-identifying position.

2.1.2 The Physicality of the Cinematic Apparatus

In analyzing the construction of a new subject position, it is essential to contemplate the effects of the physical cinematic apparatus itself. In his essays, Jean-Louis Baudry considers the basic cinematic apparatus through psychoanalytical theory. He asserts that, Between objective reality and the camera, site of the inscription, and between the inscription and projection are situated certain operations, a work which has as its result a finished product. [6] Clearly, in this process the spectator is distant from the procedure which resulted in the final product, but Baudry argues that the camera itself takes an intermediate position between shot breakdown and montage. Further, he asserts that the screen and projector restore something which is lost in the process of editing and shooting, and help provide a transformation leading to the work itself; not objective reality, but something which has been taken from objective reality. [6] More specifically, the spectator should be made unaware of the process of filmmaking in order to take ideological meaning from the film.

The Paradox of Cinema

Baudrys work - and the work of this thesis - focus little on the filmic text (story, cinematic technique, etc; although it must be stated that in the case of cinema, to separate oneself from the text entirely is a fallacy and an impossibility) but focus mostly on the technical foundation - in this case, design concept - and its specific ideological effects on the spectator.

Baudry argues that the composition of a shot, consideration of structural essentials (such as vanishing point, which will be discussed further), and the placement of the camera provide a fixed point, ". . . by reference to which the visualized objects are organized . . . specifies in return the position of the subject the very spot it must necessarily occupy. [6] The combination of these physical essentials provides an ideal vision, and, Baudry asserts, an assured and necessary transcendence. In evaluating the concepts in this thesis, the metaphorical transcendence Baudry describes is an essential consideration. Moreover, it is essential to remember that the cinema as it exists relies entirely on a suspension of self, relying on a system that it simultaneously uses and conceals. Thus, a spectators awareness of the apparatus detracts from the cinematic experience. One can not watch a

film and be aware of themselves watching a film; instead, one must forget the self and turn over to the cinematic diegesis in order to create meaning. [6] This is the paradox of cinema, and the obstacle that this thesis proposes to resolve.

The Transcendental Subject

In his essays, Baudry discusses the concept of the Transcendental Subject very briefly. It is his opinion that the cameras mobility fulfills some of the conditions that must be met in order to manifest a Transcendental Subject, and that through the representation of an objective reality by application of image, sound, color, and movement, this augments the possibility of the subject. [6] The fallacy in this position is simply a limitation of the technology of the time. It is the intention of this thesis to expand upon his position in order to provide true access to a Transcendental Subject position. Truly, as Baudry himself points out, in experiencing cinema, the world is not open and unbounded, but is limited by framing, distancing, and intentionality. He describes the text as, . . . an intentional object, implied by and implying the action of the subject which sights it. [6] This thesis and the accompanying prototypes aim to destroy the bounds and limitations that Baudry describes, or at least begin to move in that direction.

2.1.3 Spectatorship and Points of Identification

To further outline the research area, we will now turn to establish what is widely accepted as the three existing points of identification for a spectator. [6] First: identification with the camera; second: identification with the textual image; third: identification with the audience and the self.

Identification with the Camera

Here, we must return again to the reference of the vanishing point, mentioned very briefly above in reference to the Transcendental Subject. [6] The vanishing point, in its most basic definition, can be described as the point at which the spectator-subject rests. That is, the point at which the camera itself rests. This invisible subject position is created by the cinematic apparatus, and is used to create meaning and identification with the filmic text. The placement of the

camera, and thus the placement of the projector force the spectator into a place of identification with the camera. [21]

As Metz asserts, . . . as he [the spectator] identifies with himself as look, the spectator can do no other than identify with the camera, too, which has looked before him at what he is now looking at . . . during the projection this camera is absent, but it has a representative consisting of another apparatus, called precisely a projector. [21] This physical layout determines the spectators metaphysical point of identification, and forces ideological association with the filmic text (see Figure 2.1).

Figure 2.1: The Cinematic Apparatus
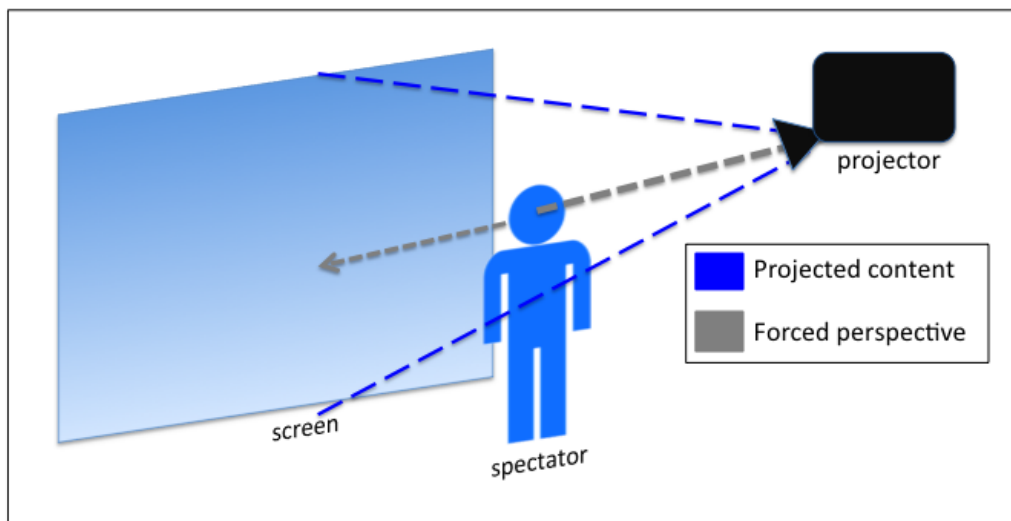
This identification with the camera explains why, when watching a film, the language of cinema can be easily understood. For example, the spectator can understand panning shots, although he himself is not in motion. [21] This point

of identification is powerful and godlike - seeing, but unseen and is thus often described as transcendental, or the ultimate signified. [21]

However, this spectator-subject position cannot be described as truly transcendental. While the spectator, as described, can see while being unseen, they lack control over their own gaze. They can certainly shut their eyes and choose not to see, but they cannot take control over the apparatus. This, first of all, creates a space for problematic associations and abuse of the apparatus; and second, creates a space for the paradox of cinema to collapse entirely under the threat of awareness of the apparatus by the spectator.

Identification with the Image

The second point of identification is perhaps the most obvious: identification with the textual image. Mulvey asserts that this is made possible through, . . . the processes set in motion by structuring the film around a main controlling figure with whom the spectator can identify. As the spectator identifies with the main male protagonist, he projects his look on to that of his like, his screen surrogate, so that the power of the male protagonist as he controls events coincides with the active power of the erotic look, both giving a satisfying sense of omnipotence. [25]

That is to say, the spectator is watching the protagonist as the protagonist is watching and controlling the textual events. [21] While the spectator identifies with the protagonist, he is made unaware of the powerlessness of his own gaze, and holds the illusion of control through the protagonists control of textual events. [25] This is the cinemas solution to the problems generated by identification with the camera-subject.

Identification with the Self

The third point of identification is the most ambiguous, and incidentally, the focus of this thesis. The point of identification with the self is difficult to describe, but an essential point of identification. Metz suggests that the cinema is sometimes responsible for, . . . suggesting to the spectator the vector along which his permanent identification with his own look should be extended temporarily inside the film (the perceived) itself. [21]

Mertz goes on to suggest, as an example, that uncommon framings make the spectator more aware of what he calls a presence-absence (present physically, but absent from the filmic text), or that a character looking offscreen at another makes the spectator aware of his own presence-absence. The offscreen character is, presumably, looking at the onscreen text, and the spectator thus becomes aware of his own gaze. Identification with ones own look, in the case of cinema, is argued to be secondary to identification with the apparatus, while simultaneously being upheld as the foundation of the cinema, [21] as without identification of the spectators gaze, it is impossible to view a film.

2.2. Review of Related Works

This thesis was developed with the prior listed theoretical background in mind. From this point, it is essential to consider and review existing works that are related to the field of cinema, and more specifically, interactive cinema. This section will divide the existing works deemed most relevant into three categories, and review them according to the following criteria: spectator immersion, virtual reality, and interaction.

2.2.1 Spectator Immersion

In terms of spectator immersion, a good example of an interactive experience that relies on this is The CAVE, developed by the University of Illinois in 1992. This system is considered to be an excellent resource for computational science and engineering sciences. [13] The system relies on multiple screens, with images being projected both on the screens and on the floor. Users wear a location sensor, and are able to move through physical space while wearing stereo glasses for a 3D experience. The system allows for multiple users to experience the system at once, with one user being in control of the experience through the use of a 3-button controller. The location tracker sends information to the system, which then updates the perspective, so spectators and users can engage with the system without using a VR headset. Tools like the CAVE and other similar tools are a good basis for immersive 3D simulations, and can also be used for narrative purposes. However, while users can move through physical space, they do not

create any kind of relationship with the space, and interact only with digital objects. Similarly, while other viewers are able to join the controlling user in the experience, they are just spectators and are unable to interact with the experience in any way. For them, the experience is no different than watching a regular film.

Another example, Aspen Moviemap (1978), uses multiple laserdisc players and digital screens to create the experience of moving through digital space. [26] Users are able to look where they please by interacting with buttons on a digital screen, which then sends information to change the direction of the displayed image. As a more contemporary example, the experience itself is actually quite similar to Google Maps in its execution. It is immersive in the sense that the spectator is able to control the direction of the camera at any point of the experience, and can look where they desire. However, the system is lacking in narrative, and therefore functions as more of an interactive but empty set to explore a space rather than as an interactive narrative film. The lack of a narrative structure makes it difficult to identify with anything at all, leaving much work to be done in this area.

Another example worthy of note is *Landscape One* (1991), a more sophisticated and interactive cinema experience that also worked with the exploration of space. The system relies on multiple projections. A landscape is projected on four walls, providing an immersive 360 degree experience. The spectator joins a family on a picnic, and is provided a space for multiple outcomes and the exploration of digital space. While *Aspen Moviemap* was lacking in that it did not provide users with the ability to form a relationship and/or point of identification, interaction with *Landscape One* absolutely requires it. [5]. In order to explore the space and unlock events, the spectator must create a relationship with the digital characters. If successful in creating a relationship with the digital characters, the user is then led through digital space by the character, with the scenery changing around the stationary spectator. This is an excellent example of using interactive narrative to create new and exciting points of identification; however, the system is lacking in a relationship with anything but digital space, which still leaves ample area for improvement. Further, the narrative is limited to an exploration of space, and does not follow a narrative arc.

2.2.2 Virtual Reality

Virtual Reality is an important area of work to consider when evaluating interactive cinema. There are many clear parallels to be drawn, and it is important to think about how these works can be applied.

One such example is arcade virtual reality games like Sports Fishing (1994) or SEGA Ski (1994) [15], which require the user to engage in a specific activity with game incentives through the use of a physical apparatus. Specifically, Sports Fishing is a virtual reality game in which users sit in a seat and engage through interactions with a full-sized fishing rod and reel to catch digital bass. Users can choose from three difficulty settings, and watch from a first-person perspective as they try to catch fish at the right moment. Similarly SEGA Ski has users stand on a platform with two sliding foot controllers while holding on to handles. Users watch a digital screen from a third person perspective, and attempt to dodge obstacles as their digital persona mimics their real-life actions to ski down a slope. A myriad of similar VR sports games have followed, each using the same or very similar formulas as SEGA Ski and Sports Fishing.

Both of these early VR games offer spectators the chance to interact with digitally displayed content by negotiating with real objects. While Sports Fishings first-person perspective allows the user to interact with the content without the intermediary of a digital persona, the system, and others like it, are lacking in their failure to provide a narrative structure. These games rely on a system of rewards and incentives, and lack a real story arc of which interactive cinema should provide. Similarly, the single-functionality of the systems do not allow for deep interaction and development of more meaningful relationships with the diegesis. While users are able to get an enjoyable experience out of such games, there is still a space for further improvement from a cinematic and interactive perspective. Further, the system itself is expensive to own, and not easily shared outside of the arcade experience.

Another example is slightly more contemporary, but follows the same basic structure. Sonys recently released first-person shooter demo requires the user to don a Morpheus immersive headset and hold two controllers, one in each hand. The experience, including a headset for binaural audio, is totally immersive. Users engage with characters and digital items by moving their controllers, and holding

and releasing triggers to pick up or use items. Users can move through digital space and look around to see more of the area. In terms of immersion, the demo is very impressive, and there is much to be taken away from it. However, this system relies on full immersion, and has no relationship with real space. Spectators must immerse themselves fully in digital space in order to interact with the contents. Further, much like SEGA Ski, the Sony demo relies on users identifying with a digital persona, rather than identifying with the self. Similar to the issue of the SEGA VR examples, the set-up and headset, is not easily accessible by the average spectator, and once released to the general public, will be expensive and single-function. In this sense, there is still incentive for an alternate experience to be developed.

A yet further similar experience is military VR simulations, which give users the chance to test flight simulations in order to prepare themselves for real combat. These systems vary in specifics across the board, but commonly rely on haptic feedback to give users the sense that they are actually in flight. The simulations are usually set up to give visual feedback that matches the interior of an airplane, by either using headsets, a physical apparatus, or a series of digital screens. [29] These systems are very realistic and immersive in their experience, but like the early VR games, lack an expansive narrative to guide the user through the experience. While these systems allow the user to engage with the experience as their real selves (a test pilot experiences the system as if he were flying the plane himself, not as a persona or enhanced version of himself), they do not allow for a narrative structure.

Other comparable examples are systems that create 3D virtual reality avatars for at-home rehabilitation, or connection with doctors in areas that do not have them readily available. [28] Such a system, initially developed at the University of Texas Dallas, uses multiple 3D cameras to create two separate avatars of people in different locations, then combines them in the same digital space. Haptic devices allow doctors to feel physical feedback from patients in other locations, so they can correct them in physical therapy. These systems, while very sophisticated in offering a new kind of digital experience, are limited, like military combat simulators, due to the lack of a narrative and failure to provide a meaningful relationship with real (not digital) space. These highly developed and sophisticated examples

still leave some space for further development in terms of an interactive cinematic experience.

In terms of interactive narrative, there are a series of short interactive VR films released on the Oculus VR headset device. One such example is *Lost*. [9] The story takes place in a forest, with the user watching, as in traditional narrative, from a god-like perspective of seeing, but with limited interaction. The user is able to look around for a fully immersive VR experience, but motion through digital space is very limited, and is at a fixed perspective. Action is limited to one point, with the surrounding areas being visible and accessible, but with little taking place in those areas. This film has spectators watch a robot hand move through the forest in search of its body. Interaction is very limited, with observing the scene while being tracked by a digital firefly being the only interactions of the film. The immersive experience is exciting, and *Lost* provides a kind of short, character-driven narrative, but like other immersive VR experiences, does not engage with physical space in any manner. It is also very lacking in its interactivity, with users being unable to make any change in the storyline, and being limited to merely becoming a somewhat active spectator who is able to look where he or she pleases. In terms of interactivity and relationship with real space, there is still ample room for development, and a clear absence of the opportunity for origination of a meaningful interactive cinema experience.

2.2.3 Interaction

When analyzing interactive cinema, it is of course important to reflect on the features and uses of interaction. One example of a system that relied on interaction was *Kinoautomat* (1967), a one hour film which had multiple outcomes. Two on-stage members, who helped spectators know when to interact with the text, moderated the experience. The film presented a series of moral dilemmas with two outcomes, which spectators interacted with by voting at key points of the story. They could press either a green button or a red button, and the collection of votes determined the outcome of the film, and which scene would play next [19]. The system relies on stopping the diegesis at eight key moments for a collection of votes. In doing so, the story is disrupted each of the eight times.

The experience demonstrates a great example of how to provide a narrative

with many different branches and possible outcomes, with clear interactions that show an obviously connected outcome. However, the interactions themselves are limited. One type of interaction is repeated, and interactions are limited to group decisions. An individual spectator is not able to interact with the narrative individually. Further, the system relies on having the spectator view the film as an outsider who is seeing but not seen. This is the same system as a regular narrative film, with the spectator identifying with the main character rather than the self. The use of interaction in this film leaves a vacancy which can be filled by another system.

Another more contemporary example of a narrative film which relies on single-function interaction is *Late Fragment*, a highly cinematic interactive DVD experience which prompts the user to press the enter button on their home controller at the correct time. [19]The interactions are simple and clear, with obvious connections between the users input and the resulting output. However, the system itself is not terribly sophisticated. If the user fails to press the button at the correct moment, the video can loop, and the spectator can be forced to watch the same scene again. This solves the problem of directly interrupting the diegesis, like the moderators do in *Kinoautomat*, but presents a new type of interruption. Aside from this, it is a very similar system with the same positives and negatives as *Kinoautomat*.

While it was already mentioned in the Immersion section of this chapter, *Landscape One* is also worth mentioning again in terms of interaction. The interactions with characters in the experience ranged from speaking directly to characters through microphones, using touchpads, and interacting with motion detectors. Of all of the listed examples in this section, *Landscape One* is arguably the most sophisticated. In terms of interaction, it offers a great foundation for further exploration and development. However, it still maintains the same issues of meaningful relationships with real space and narrative structure as discussed in the previous section.

Further, there are works like *The Witness*, [4] a smartphone based interactive cinema experience released in 2011. This experience relied on augmented reality and direct interactions to have spectators solve a crime. This work is the most similar to S.I.M.E. of all related works. *The Witness* utilizes GPS functionality

through an app, and allows spectators to experience the film as it plays over the actual location through their smartphone. When facing the phone screen at certain specific locations, the film content will play. In the case of this experience, the content has been shot in the actual location of the screening. Spectators can then interact with the content like a choose your own adventure book, and determine which path the story takes based on their direct interactions.

Spectators were selected in limited concentrations to participate in the event. Spectator participants were determined through random selection, after entering to be eligible through an online application. Spectators had to move across an extended physical landscape of the city of Berlin in order to experience all of the contents. Although the smartphone application provided an opportunity for widespread dissemination, in the case of this example, the dissemination method was limited to a short event and exclusive screening.

Another example of a mobile-based interactive game is Googles *Ingress*, which also uses location technology to create a virtual map of interactions. The story has a sci-fi background, with users competing in two factions to secure portals that are located in real geographic locations. Users must first travel to the designated locations (placed all over the globe), and once within range of the digital portals or items, interact with them through their smartphone. [2]*Ingress* is accessible to users on both Android and iOS devices, and has a wide following of users across the globe, totaling over 7 million unique downloads in 2014. [1] The system allows users to collaborate with one another to solve missions.

Ingress creates a meaningful relationship with real space by requiring users to engage with the map and their own mobile phones GPS functionality. It also requires direct interactions in order to unlock new content. However, the system itself provides little to no cinematic content. While the interactions are quite sophisticated, the design of the display is simple. The system is an excellent example of a GPS based game, and provides an excellent jumping-off point for further exploration of interactive cinematic contents.

A final example of an interactive related work that utilizes a mobile phone system is the film *App*, released in the Netherlands in April 2012. This film, screened in a regular theater, has film contents enhanced through interactions with a separate downloadable mobile phone app. [3] The app relies on Automatic

Content Recognition, or digital watermarking, to trigger the timely release of additional materials or other interactive contents through the application.

*App*s use of dual screens and digital watermarking-based interactive materials is an interesting development for interactive cinema. However, the system still requires users to stay in place, as in traditional cinema, and doesnt provide an opportunity for co-creation of contents through interactions. While the interactions it provides are an interesting starting point, there is still much room for further development.

2.3. Summary of Issues

In sum, when reviewing related theoretical and created works, it becomes clear that while interactive cinema has a rich history, there is still a gap that needs to be filled. There have been many attempts at creating an interactive cinema experience over the years, and in fact since nearly the beginning of the existence of cinema. Different systems have attempted to tackle this issue from various perspectives. However, despite the many attempts that have been made, there are still a multitude of different ways to view and confront the problem of creating a more meaningful interactive cinema experience. The objective of this thesis is to approach this issue from a new perspective, and explore a new direction of interactive cinema without relying on spectator immersion.

The use of cinematic language and the apparatus as an ideological weapon [25] has been much discussed by theorists and critics alike. Cinema has long been used as a tool to uphold and form cultural expectations and norms, whether they be problematic or generally accepted. The existing cinematic structure as it is presented today relies on sets of multiple and conflicting points of identification that must be held simultaneously [7]. Interactive cinema, films, and games all rely on denial of the self, leaving a space in which a new type of interactive cinema can be created.

The reviewed works all propose interesting developments and perspectives. However, in reviewing these works, it is revealed that they are all lacking in certain points which S.I.M.E. intends to address. Many of the systems lack a clear and highly interactive system. Others lack a relationship with physical space.

Many more are lacking a point of identification with the self while maintaining a narrative structure. All systems, while arguably achieving their individual goals, fail to satisfy or to successfully address all of these points simultaneously. It is the goal of S.I.M.E. to provide a system which can fulfill all of these needs; needs which are clearly desired by the average spectator as discussed further in the following chapter.

Chapter 3

Concept, Design and Methodology

The S.I.M.E. concept was developed after consideration of both theoretical concepts and related works in the interactive cinema field. The goal of S.I.M.E. is to provide an accessible and sophisticated interactive cinema experience to the general public at large, not limited to the affluent or academic, and to encourage the average spectator to develop highly critical and active movie viewing habits. In order to understand the needs of the average spectator, a series of surveys were conducted. The findings will be discussed in this chapter, as well as their influence on the S.I.M.E. prototype.

3.1. Methodology

3.1.1 Fieldwork

In order to understand the needs of the average spectator, a series of surveys of the general public was collected. The first survey was a general media engagement survey, designed to collect information on the viewing habits of the average spectator. This survey was collected over the course of two weeks, and contained a random sample of 100 respondents. Details pertaining to this fieldwork can be found in the table below.

Data from this sample was collected from respondents between the ages of 18

Table 3.1: Fieldwork 1 Respondents Data

Film and Digital Media Engagement Survey	
Total Respondants	100
Male	12
Female	83
Other/decline to state	5

and 75+, with the majority of respondents falling between the ages of 18-24 (57%) or 25-34 (28%). Most respondents reported some level of higher education. This survey included questions about the type of media respondents were interested in, movie watching habits (location, frequency, motivation), satisfaction or dissatisfaction with the film experience, and interest in further developments. In total, the survey contained ten multiple-choice questions.

In order to determine where the problem area existed for the average spectator, respondents were asked a series of questions to help identify where they felt the existing cinema and interactive cinema experience was lacking. A detailed breakdown of this information can be found in the table below. Out of 100 respondents, two skipped the following section.

Table 3.2: Fieldwork 1 Respondents Desires

Satisfaction Levels		
I have been dissatisfied by the ending of a story.	82	83.67%
I have wanted to change the direction of a story.	69	70.41%
I have wanted to explore parts of a story in further depth.	82	83.67%
I have wanted to become a character in a story.	50	50.02%
I have wanted to interact directly with characters/elements in a story.	56	57.14%
I have been dissatisfied by representation of characters in a story.	70	71.43%

While respondents all reported that they enjoyed engaging with different types of media, they seemed to find that overall, the current situation was lacking. A notably large percentage of respondents reported that they were either dissatisfied with the ending of a story, or wanted to explore a story in further depth. Still notable, many respondents reported that they were dissatisfied with representation of characters in a story.

Further, respondents were asked about their level of interest in experiencing a film where they could directly influence the outcome of the story. A detailed breakdown of their responses can be found in Table 3.3.

Table 3.3: Fieldwork 1 Respondents Interests

Respondents level of interest in directly influencing the outcome of a story		
Yes, very much so.	45	45%
Yes, somewhat.	49	49%
No, I'm not interested.	6	6%

The result of this section of the survey showed that overall, respondents were interested in and open to experiencing an interactive movie environment. With only 6% of respondents feeling disinterest, and 94% reporting at minimum some level of interest, the desire to interact with a film seems to be fairly clear cut. With these results in mind, and the reported dissatisfaction with the existing experience, the second fieldwork survey was conducted.

The second survey was a more specific film spectatorship survey, collected over the course of several days. This survey was designed to collect more detailed information on the types of spectatorship media consumers engaged with, and contained a random sample of 74 respondents.

The survey was seven questions, and the sample group ranged between 18 and 74, with most respondents falling between the ages of 18-24. This sample group was not asked to provide information on gender. Most respondents from this sample reported some level of higher education. A detailed breakdown of the respondents backgrounds can be found in the tables 3.4 and 3.5.

Table 3.4: Fieldwork 2 Respondents Data

Respondents age range		
18-24	54	73.97%
25-34	10	13.7%
35-44	3	4.11%
45-54	2	2.74%
65-74	4	5.48%

Table 3.5: Fieldwork 2 Respondents Extended Data

Respondents level of education		
In high school/some high school	4	5.48%
Graduated high school	20	27.40%
In college/some college	27	36.99%
Graduated college	12	16.44%
Some graduate school	5	6.85%
Completed graduate school	5	

The survey contained a series of questions ranging from considerations when viewing a film, respondents level of critical thinking when consuming media, their concerns about representation in the media, and what they thought would be an effective tool in altering representation in the media.

While a very high percentage of respondents considered basic film concepts like storyline, visual effects, and audio design, there was also a reasonable response from viewers who considered deeper concepts. 31% of respondents considered what ideological constructs went into producing a film, and 46% watched film with consideration of representation of minorities in the filmic text.

In spite of these smaller percentages of reported critical thinking or consideration when watching films, 63.1% of respondents definitely considered themselves to be critical consumers of media, and 27% reported that they might be critical consumers of media.

When asked if there is a problem with representation in media today, an overwhelming 86.49% reported that they do in fact see a problem with representation in the media they have access to. Those who answered yes supplied information on what they think might be a solution, which can be seen in table 3.6.

Finally, respondents were asked what they thought would be the most interesting type of interaction if they were to experience an interactive film. Their responses can be summarized in table 3.7.

Overall, the two surveys provided valuable insight into the needs and desires of the average spectator. Some of the most important findings can be summarized by the following four points:

- Spectators are dissatisfied by the current cinema/interactive cinema experi-

Table 3.6: Fieldwork 2 Respondents on Media Representation

What respondents think would help representation in the media		
Better access to media for the general public	31	47.69%
Better access to creative outlets for minority groups	50	76.92%
Direct interaction with the media they consume	24	36.92%
Active control over they media they consume	24	16.44%
Other	4	6.85%

Table 3.7: Fieldwork 2 Respondents Interests

What types of interactions respondents want to experience.		
Control over the camera's gaze.	12	16.22%
Direct interactions with characters.	23	31.08%
Appearing as myself/having my friends appear in the film	10	13.51%
Changing the storyline/having multiple endings.	29	16.44%

ence.

- Spectators want to interact more directly with the media they consume.

- Spectators are concerned about representation in the media they consume.

3.1.2 Methodology for Design and Implementation

After a survey of related works and theories related to interactive cinema, and conducting a series of field research surveys, it was decided that the focus of research for S.I.M.E. would be developing a new spectator position for the average viewer, so that they can consume media in a critical and meaningful way without losing identification with their own self. It was decided that this spectator position would be developed through a series of interactions, summarized by the following 10 points:

- Removal of the hero character.

- Direct and indirect interactions with real objects.

- Sophisticated interactions with real objects.

- Digital interactions with non-physical objects.

- Movement of characters through real space.

- Direct and indirect interactions with textual characters.

- Alterability of the storyline.

- Removal of aspects of immersion.

- First-person perspective for the spectator.

- Introduction of spectator as character.

When watching a film, a spectator is faced with a series of simultaneous points of identification. In the specific case of watching a non-interactive film, the points of interaction, discussed above, encourage three points of identification that are in both in constant conflict with and rely upon one another. Figure 3.1.2 describes the general experience for a spectator.
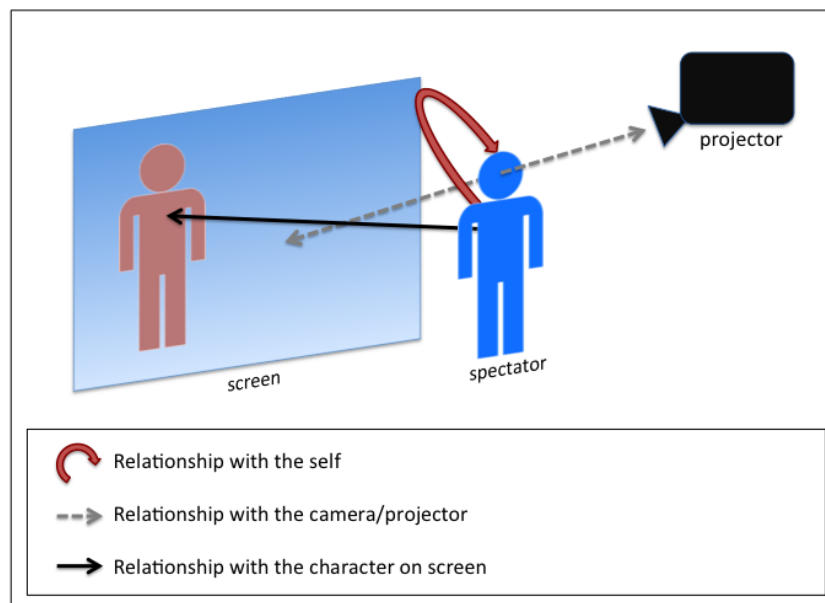

Figure 3.1: Diagram of the Three Types of Identification

In terms of game theory, Jarvinen argues that, "In games where the component-of-self functions as the representative player, the degree to which a player adopts the goals of the character-of-self for oneself is a matter of motivation and engagement with the game system." [16] In this case, identification with the subject-object is strengthened by applying attributes to the character that could be seen as empathetic or relating to the self. Game theory relies on the concept of recognizing the self within a character, aligning the self with the characters goals, and a sense of allegiance to the character through moral evaluation. These processes have also been applied somewhat to film theory as well, in the case of comprising sympathy for a character, [11] so it is easy to make the jump between the two alternating theories.

When combining these concepts to create what is considered interactive cinema today, they can be described as virtual reality, or cinematic video games. In this case, the existing content is not film, but a type of interactive game with a high cinematic quality. This lack of film content is what sets it apart from cinema. Beyond this, existing VR technology, while becoming more accessible every day, still exists outside of the mainstream. It is something that is accessible and usable by gamers with expendable income, who want to take their gaming experience to the next level. VR technology is not accessible on a wider scale, because it is not a part of the mainstream, and the technology that does exist is more expensive than most consumers are willing to expend. This is one of the biggest limitations of interactive cinema as it exists in the mainstream today, and something which S.I.M.E. desires to supplement in order to provide a widely dispersed and easy to access interactive cinema environment. By using cheap and widely available technologies, itis a goal of S.I.M.E. to bridge the gap between cinematic games, which do not provide a true interactive film experience, and VR technologies, which are not widely accessible to the general public. Through this, S.I.M.E. hopes to encourage spectators to develop a more meaningful identification with the self.

In the case of S.I.M.E., it was determined that identification with the hero character (described in the previous figure) would be eliminated altogether in order to enhance a stronger point of identification with the camera-eye. Goals and direct interactions were added to encourage identification with what Jarvinen

calls the character-of-self. However, in order to maintain theoretical attachment to the camera-eye, all textual images were to be captured by physical camera, in real space. By encouraging awareness of real space, it was hoped that spectators would not engage in full immersion, as in the instance of VR, but keep an awareness of the Self as it exists in everyday life.

S.I.M.E. is an experimental environment that allows spectators to experience a film without the paradox of self-denial. Jarvinen argues that when spectators play a game, they must deny identification with the self in order to identify with the player character. [16] This can also be applied to film theory, and further, interactive film theory. Spectators and users of an interactive cinema system must generally deny identification with themselves in order to suspend disbelief and follow the hero character through the story. Even if it is a first person experience (for example, VR games), the spectator or user must suspend identification with the self in order to become the first-person player character. SIME attempts to overcome this barrier by developing an environment where the spectator or user can identify with themselves as they exist in day-to-day life.

The functions and characteristics of S.I.M.E. were developed according to the theories discussed previously in this chapter, and influenced by the limitations of existing interactive cinema solutions discussed in chapter 2. Finally, the specific fine-tuning was determined by the series of fieldworks discussed previously.

The fieldwork discussed in the previous section helped identify what spectators want to see in an interactive film. After taking these findings, and the literature discussed into consideration, the most important proposed elements of S.I.M.E. can be summarized by the following 5 points:

- Creates a relationship with real space.

- Spectator identifies with the self.

- Technology is readily available.

- Uses images captured by a physical camera.

- Provides a traditional narrative.

The S.I.M.E. concept is defined by its desire to offer an easily accessible interactive film experience that utilizes a combination of real space and digital space.

The most important elements will be discussed further in the Design and Implementation section of this chapter.

3.1.3 Methodology for Data Acquisition

The data sets presented in this thesis rely on a dual series of prototypes that were created over the course of a two year Masters Program. These prototypes were tested by a random sampling of spectators, mostly living in Tokyo, Japan and the surrounding areas.

The method of data collection included distribution of paper surveys that were completed by spectators directly after experiencing the films, in English and Japanese, video and audio content collected during screening of the films, and digitally recorded interviews with spectators after experiencing the films.

Japanese survey responses were translated to English in order to be evaluated. English and Japanese survey responses were analyzed into data sets that could then be translated to charts, graphs, etc. Video content was archived, and interviews were transcribed to English for further analysis of spectators responses.

3.1.4 Methodology for Evaluation

Evaluation of data sets was analyzed according to chart and graph data that was generated by data acquisition. Evaluation of interview data was analyzed according to language, and organized into matching chart and graph data sets regarding positive, negative, or ambiguous responses.

3.2. Design and Implementation

As discussed, the S.I.M.E. concept relies heavily on four main elements for its execution. The main points of the S.I.M.E. concept correspond, conveniently, to its name: Surreal Interactive Movie Environment.

First, it is essential that the system take into account the need for real space. As it is a surreal movie system, S.I.M.E. relies on spectators maintaining a meaningful relationship with the space in which they exist. This can be executed in a number of ways. First, the narrative can be screened in an everyday life space,

separate from traditional movie houses or theaters; second, movie content can continue outside of the screen and into real space; third, movie content can share a relationship with real space through text or diegesis. The S.I.M.E. design is constructed without the necessity of a specific location. That is, it can be experienced in any everyday space, without limitation.

The second element of interest is interactivity. Spectators must not engage with the content passively, but must interact directly with the diegesis. This is executed through interactions with physical objects that are related to the storyline, natural behaviors that are collected by sensors and then applied to the storyline, or direct interactions with digital objects.

The third element of S.I.M.E. is the movie element. While it exists as an experimental environment, S.I.M.E. relies on traditional narrative structures that work to encompass the spectator in his or herself as a functioning character within the diegetic text. While the main focus of S.I.M.E. is on spectator relationship with space and self, and interaction with the text, the importance of storyline and narrative can not be understated. Narrative structures work to enhance the S.I.M.E. experience, and guide spectators through multiple storylines in a clear and easily digested manner.

The final core element of S.I.M.E. is the environment itself. In order to negotiate the interactions between sensors, film, and spectator, there needs to be an easily accessible system in place. The S.I.M.E. environment is designed with this in mind, and attempts to negotiate these three factors smoothly and without any excessive delay.

The combination of these four elements is what composes S.I.M.E.. The hope is that with all four elements functioning properly, S.I.M.E. will provide a new interactive cinema environment that the average person can take part in without any undue financial stress. The goal is that this environment will create a valuable cinematic experience that will allow spectators to experience the same film again and again in different ways, while not compromising their essential relationship with the character-as-self.

With these concepts in mind, the S.I.M.E. prototypes were designed and executed. As explained above, the first element of S.I.M.E. is the importance of a relationship with real space. Accordingly, the first series contains multiple phys-

ical screens that guide a spectator through real space. This is executed with the intention of creating opportunities for spectators to take advantage of a screening space in a more meaningful and effective manner. The second series focuses on one mobile screen that can be taken through space. The goal of this aspect focuses on efficient dissemination to spectators that were unable to make it to the event space. In this manner, spectators could still enjoy the film in whatever space is meaningful to them, and engage with the text and everyday space on a broader scale.

The first series of prototypes (two prototypes) was executed in collaboration with Omron, and used the environmental sensors that they offered to the project. These sensors had the capability of sensing a number of environmental aspects, including: temperature, humidity, radiation, pressure, light, and airflow. After initial testing of the sensors capabilities, it was determined that airflow, light, and radiation would be the most effective factors. Due to the difficulties in effecting change in ambient pressure, humidity and temperature, it was decided that these data sets would not be included in the prototypes design.

The final design of the first two prototypes, relied on physical screens and external sensors. The third prototype offers a similar rule set, but rather than relying on exterior sensors, relies on sensors built-in to the mobile tablets design. The third prototype relies on light, gyroscope, and touch sensors. Overall, the three prototypes follow the same design concept, which can be outlined by Figure 3.2.

Figure 3.2: S.I.M.E. Design Concept
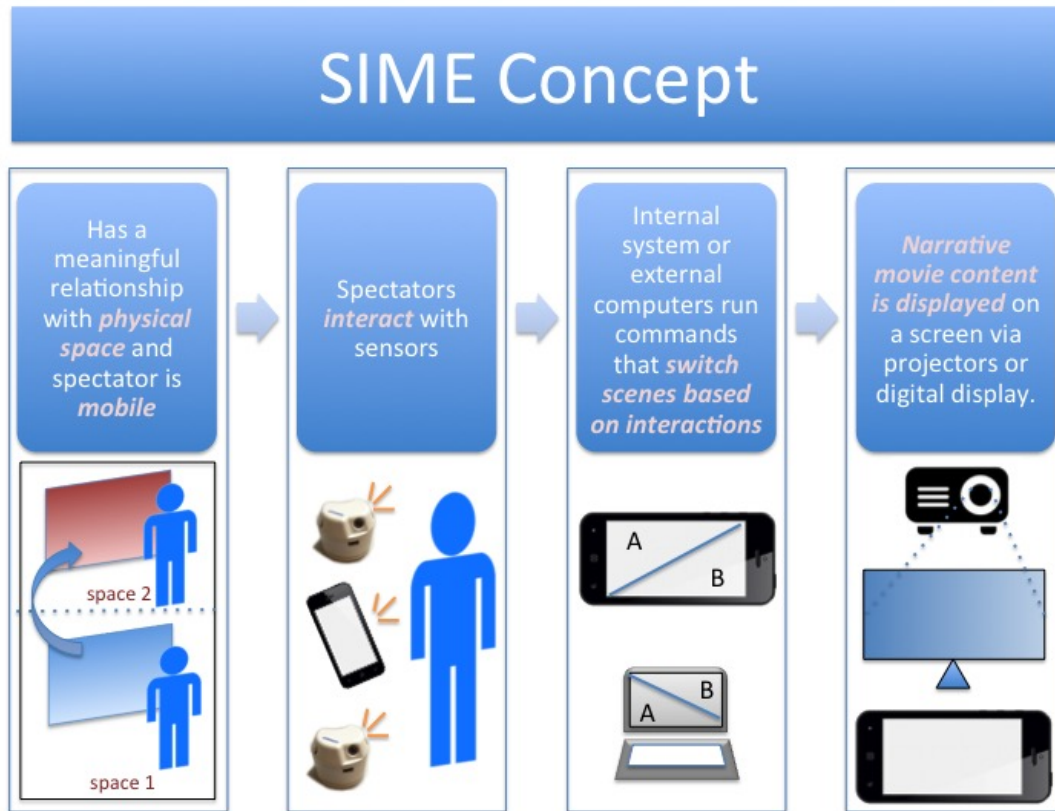
With this design in mind, S.I.M.E. is believed to meet the evaluation criteria outlined previously, and is capable of meeting the goals of this thesis. In doing so, it offers a unique and accessible interactive cinema experience to spectators and stakeholders by providing a new type of spectatorship and identification that has not been provided in other similar experiences. S.I.M.E.'s play on unique relationships with real space, natural interactions, content, and perspective allow a new space in interactive cinema to be carved out.

Chapter 4

Implementation and Evaluation

In this chapter, the three major S.I.M.E. prototypes are discussed and evaluated. As mentioned in Chapter 1, the first prototype was built based on combined fieldwork presented in this thesis, and the initial test of another researcher, Roosa Jokiaho (results of this test and related research does not appear in this thesis, but can be found in her research [17]).

Jokiaho published research based on the first two prototypes that will be discussed in this chapter. Her research focuses on enhancing immersion in the textual image, while this research focuses on inhibiting immersion with the textual image in order to enhance identification with the subject position.

The second prototype was built in order to enhance features of the first prototype, and apply new functionality based on feedback from users of that system. This prototype was an attempt to narrow the scope of the system and test very specific features using an excerpt from a larger story, while attempting to limit the necessary resources.

After testing these two prototypes, it was determined that a third test would be necessary in order to enhance the experience of the system and further limit the necessary resources for the distribution of the environment. As the second prototype proved to have some flaws that needed to be addressed, it was determined that this final prototype would be necessary. The third prototype was built to reflect feedback from the first and second prototypes, and further enhance the functionality of the environment itself. This prototype attempted to build upon features of the previous two prototypes and introduce new interactions that were

not possible in the first two tests. It worked to solve identifiable problems that arose with the previous prototypes by addressing the system from a new platform and perspective.

4.1. Alice in Wonderland

This experiment was conducted in April of 2014 in a restaurant space known as The Queen Alice in Hiyoshi, Japan. The experiment was conducted in the context of a larger event known as the KMD Forum, part of the Keio Graduate School of Media Designs annual public showing of research content and prototypes. The film screened was a short interactive work following the famous *Alice in Wonderland* story, in order to provide an obvious and easy to follow link to the event space, as well as a story that could be easily understood by most audiences. The layout for this test can be seen in Figure 4.1.

4.1

Figure 4.1: Final Layout for Queen Alice Event
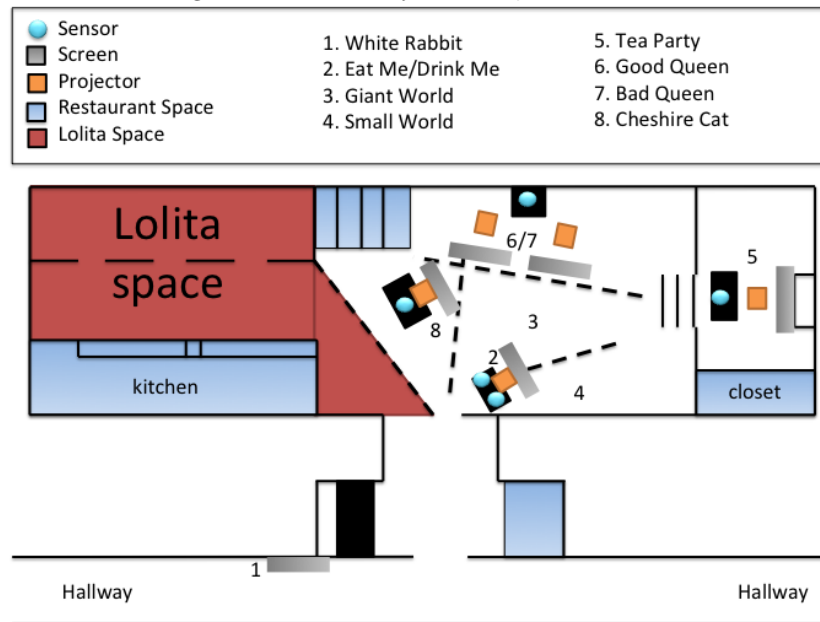
4.1.1 Design of Film and Interactions

The *Alice in Wonderland* prototype was designed to follow the Alice in Wonderland story. The first step was to select the appropriate scenes for shooting and editing. After some evaluation, it was decided that the film would contain the following five scenes (detailed descriptions can be found in the appendix):

- Alice Follows Rabbit: in this scene, the Alice character is introduced, and follows the White Rabbit into Wonderland. Here, Alice beckons the spectator, viewing from outside of the venue, to come into the experience.

- Eat Me/Drink Me: in this scene, Alice is given the choice between a drink that will make her small, and a cake that will turn her into a giant.

- Tea Party: this scene is a celebration of the spectator and Alices unbirthday. It is a party scene.

- Good Queen/Bad Queen: in this scene, Alice encounters either a good queen who provides her save passage to the next section, or a bad queen who chases her to the next section of the film.

- The Cheshire Cat: in this scene, the Cheshire Cat character provides the spectator and Alice with a riddle that they must solve in order to find a happy ending, and escape Wonderland.

As this film was created for event-based dissemination, each scene was designed to be concise and highly interactive with quick turnover. This was in order to encourage an organized high-volume flow of spectators throughout the day, and also to encourage spectators to make quick decisions on interactions without overthinking their impact.

The next step in designing the prototype was designing the interactions and deciding how they would relate to their matching scenes. The selected interactions, using the Omron sensors, were as follows: body radiation, air flow, and light.

The first scene that included interaction was the Eat Me/Drink Me scene; for this scene, two separate sensors hidden in everyday objects were used. In this case, the everyday objects were a juice box (Drink Me) and a fake cupcake (Eat

Me). The sensors were set to collect data relating to radiation from body heat, so, if a user selected one and handled it, they would trigger the sensor, which would in turn change the display to the corresponding scene. If no sensors were triggered, the display would loop a static scene of Alice attempting to decide between the two objects. The interactions can be visualized as in Figure 4.2

Figure 4.2: Eat Me/Drink Me Sensor Configuration
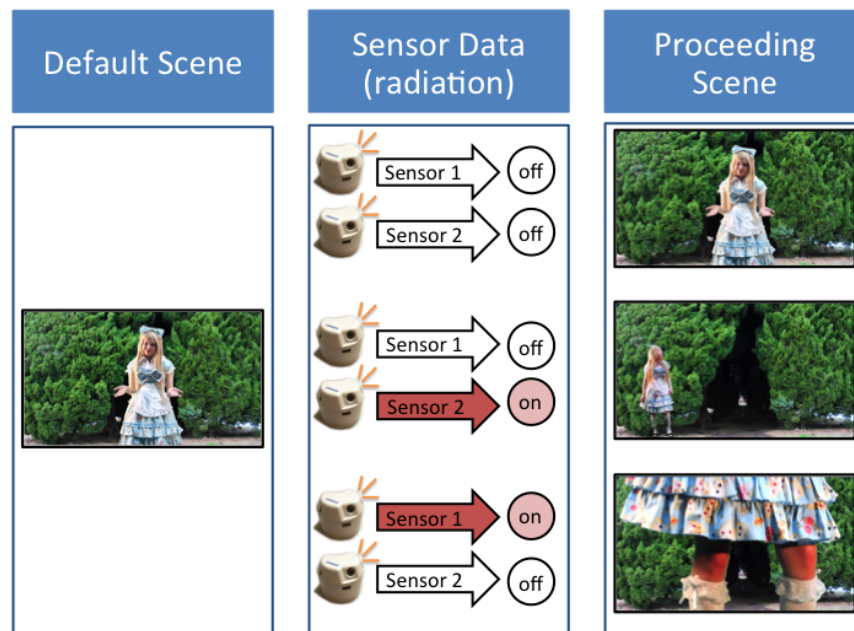
In order to create a relationship with real space, this scene used a combination of real objects and digital space. Alice existed in digital space (behind the display), but the objects she needed to decide between existed in real space (on a table in front of the display). Once the spectator helped Alice make a decision by picking up one of the objects Alice moved through digital space and off-screen into a world where objects are either giant or small (relating to the sensor the spectator selected), and inciting the spectator to follow her through real space. Having Alice leave the frame created a situation where the spectator was able to have a closer relationship with the Alice, as the spectator and Alice both existed outside of the frame in that moment. Having the spectator follow Alice was an attempt at strengthening that bond, so that the spectator could have a feeling of actively engaging with the diegetic text, much in the same way as the characters within

the text engaged. Having a combination of real objects (the two diverging paths, making the spectator feel like they, like Alice, have either grown large or small) and digital text encouraged the spectator to create a stronger point of identification with themselves and with the textual image.

The second scene using interaction was the Tea Party scene. This scene used one Omron sensor that was set to collect air flow data. The sensor was hidden in one cupcake among many similar-looking cupcakes. If, by chance, the spectator chose the cupcake with the sensor inside and, in blowing out the candles, triggered the sensor, then the display in the next area was switched to the Good Queen scene. If they did not trigger this sensor, then the Bad Queen scene would play upon their arrival in the next area. This interaction was not immediately apparent, and relied on triggering more than one sensor. The sophisticated interactions it relied on will be discussed further in the Good Queen/Bad Queen scene portion of this chapter. The interactions used in the Tea Party scene are visualized in Figure 4.3

Figure 4.3: Tea Party Sensor Configuration
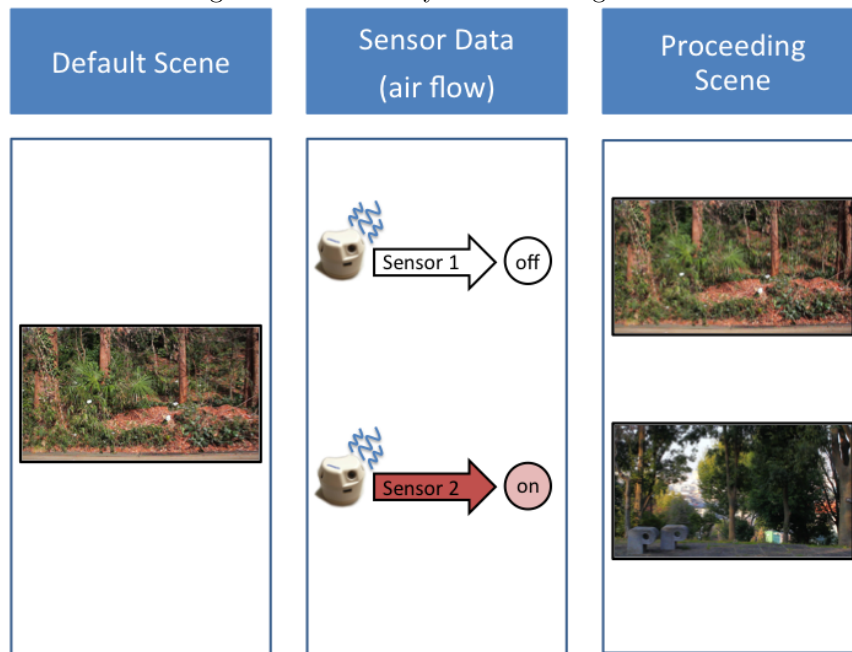
In order to create a relationship with real space, the content of the Tea Party scene was filmed in the same location in which it was screened. The digital content

showed many characters gathered for an Un-birthday Party, with the tea party table coming directly up to the edge of the screen. At the point where the table ended, a table was placed in real space, and the tea party continued through to real space. Through this combination of real and digital space, the spectator was able to have the experience of joining the party with the digital characters, until they were directed to choose a cupcake by one of the party attendees.

The third scene - the Good Queen/Bad Queen scene - relied on a sophisticated interaction between two sensors. The first, already discussed, was the triggering of the airflow sensor in the Tea Party scene. If this sensor were triggered, the default scene would switch to an empty park. Upon arrival to this area, the spectators presence would trigger the second sensor (radiation of body heat), and the Good Queen scene would play out, where Alice arrives and plays with bubbles before asking a kind Queen for directions out of Wonderland. However, if the user failed to trigger the airflow sensor in the Tea Party scene, and then moved on to trigger the second radiation sensor, the default scene would not change, and upon arrival, Alice was chased away to the next area by a cruel Queen with a sword. The sophisticated interactions used in this scene can be visualized by the Figure 4.4, while the combination of the interactions used in the Tea Party and Queen scenes to create a sophisticated interaction are visualized in Figure 4.5

This scene used similar tactics to the Eat Me/Drink Me scene to create a relationship with real space. By having Alice leave the frame, the spectator was once again able to feel a stronger relationship to the text, as if they were also actively a part of it, and by chasing or following Alice out of the frame, the spectator was able to feel as if they are also a part of the story.

The final scene was the Cheshire Cat scene, where, upon arrival, the spectator was greeted with a riddle that they must solve. A sensor, hidden in a pedestal, collects information relating to the level of ambient light. If the spectator selected the correct object corresponding to the riddle, then they would expose the sensor to the correct amount of light, and the display would switch to show the Happy Ending scene, indicating that the spectator had finished the experience. If not, they would be prompted to go through the experience again. The sensor configuration is visualized in Figure 4.6

40

Figure 4.4: Good Queen/Bad Queen Sensor Configuration
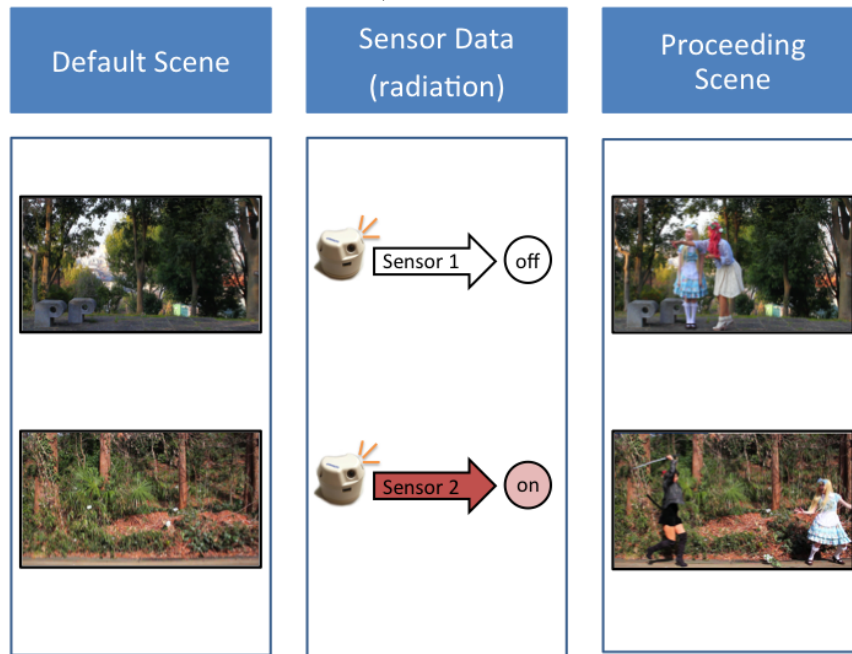
This scene was special, as Alice did not appear, and the Cheshire Cat spoke directly to the users themselves. In the other scenes, the characters did not interact directly with the spectators, but the spectators were able to influence the direction of the film through their actions. In this scene, however, the Cheshire Cat addressed the spectator without the Alice intermediary for the first time. The purpose of this was to test the kind of expereinces which best helped the spectator form a relationship with themselves, rather than a persona, and to test if spectators would be able to accept scenes that did not have a main character appear in the text.

In order to encourage active engagement with the material, and mobility throughout the experience, the layout was designed to use multiple screens, with partitions dividing each scene into different, maze-like sections. Several selections of dreamlike music and ambient sound helped create a surreal, dreamy atmosphere to help the spectator engage with the material without feeling jarred by the unusual relationship between digital image and real space. The only scene containing dialog was the Cheshire Cat scene, which placed emphasis on the event of the digital image interacting directly across the barrier of the fourth wall to speak to the

Figure 4.5: Combined Tea Party and Queen Sensor Configuration
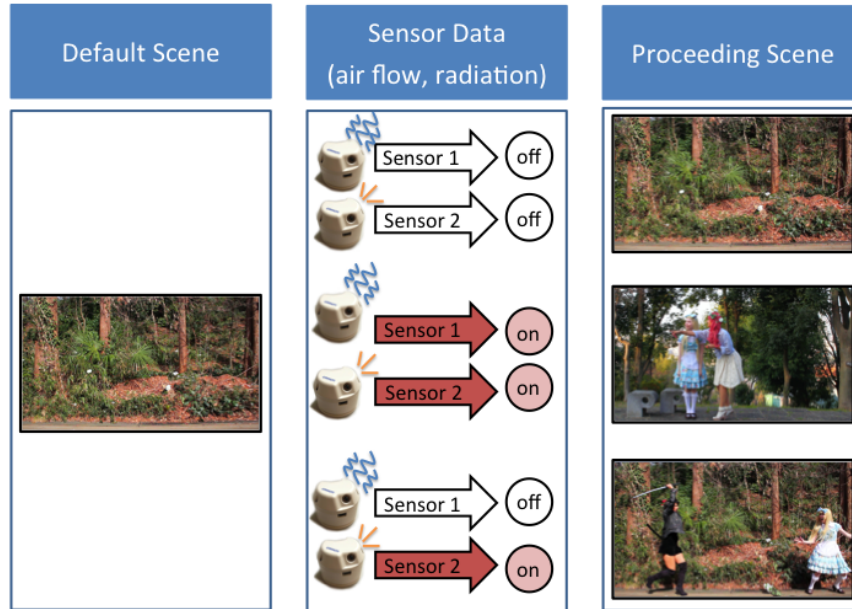
spectator. The use of sound in this way increased the impact of this scene. The final configuration of the Alice in Wonderland system can be found in Figure 4.7.

4.1.2 Evaluation

Overall, the test of the first prototype can be considered a success. The event attracted many potential spectators, and feedback was collected from the majority of the users. Of all attendees who came to the KMD Forum, over 100 came to experience the Alice in Wonderland interactive cinema environment, and 95 users gave feedback; the majority of which was positive (for photos of the event, please see the appendix).

The purpose of this prototype was to determine which types of address best helped a spectator engage with the material in an enjoyable and meaningful way, and to determine if interaction combined with these forms of address could help a spectator feel as if they themselves (not a persona) were an active part in determining the story outcome.

As the interactive film was disseminated at a mid-sized event, it was reasonable

Figure 4.6: Cheshire Cat Sensor Configuration
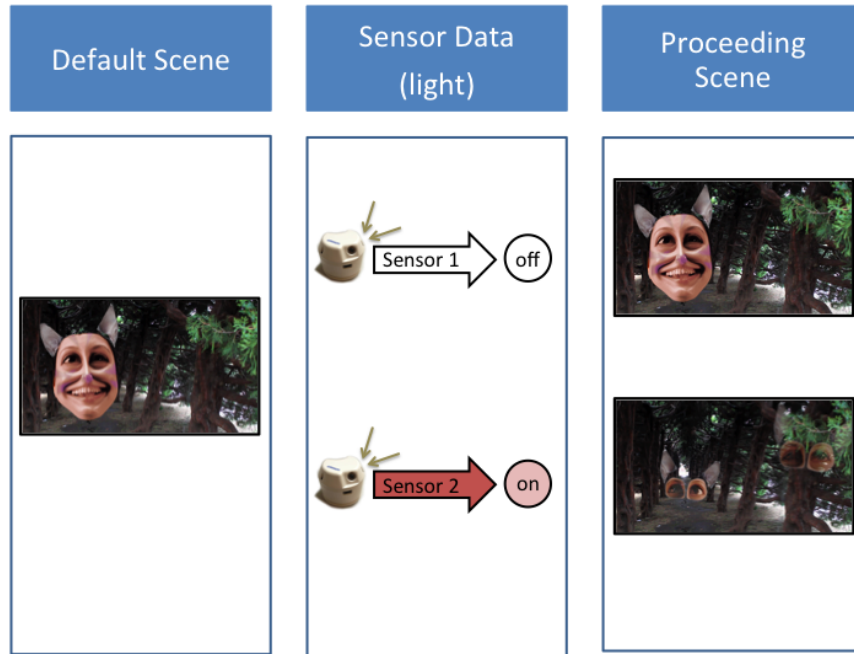
to expect a sizable amount of potential users to come test the system. With this in mind, it was decided that the system would be tested using quantitative methods; collecting feedback in the form of a two-page survey at the end of the experience, in both English and Japanese (for feedback forms, see the appendix). The form asked spectators questions about their opinion of the experience overall, specific parts of the experience, as well as their thoughts on what interactive cinema would ideally be. The feedback table was placed at the exit of the experience for ease of collecting the forms, and spectators were provided with pens and surfaces to write on, after being encouraged to provide any comments they might have.

The feedback forms provided invaluable information and insight regarding the system, as well as interactive cinema generally. The results will be discussed in the following section.

4.1.3 Results

Overwhelmingly, the survey responses for the experience were positive. When asked to rate the experience on a scale of 1-10, the most commonly selected answer

Figure 4.7: Final Configuration for Queen Alice Event
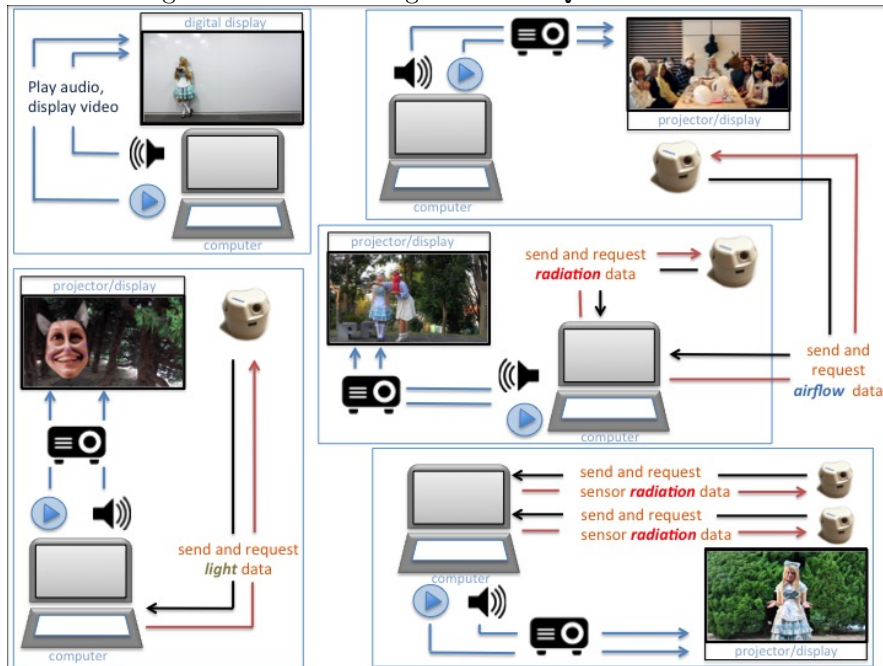
was a rating of 7, with the average falling slightly below. Many spectators reported that they felt more like they were a part of the story through the use of interactive cinema. In doing so, many also said that they felt that they were having a unique experience that no one else could have experienced, and that they felt positive about that experience. Many users reported that they felt better engaged with the text throughout the experience, because the results were sensed and the scenes were changed accordingly without a break in the flow of the text. Many users reported that they felt that the experience made them want to repeat it over and over again in order to determine if they could experience all of the different outcomes, rendering the repeatability factor of the experience was extremely high.

When asked what types of interaction they preferred above all of the scenes, two scenes stood out as the most popular among spectators and users. The *Eat Me/Drink Me* scene and the *Cheshire Cat* scenes were most often selected as the favorite scene, because users felt that they could understand the cause and effect correlation of their actions and what scenes then played. From this data, it seemed that users overwhelmingly preferred clear and direct interactions that left little room for ambiguous connections. Users also expressed that they very

much enjoyed interacting directly with a character, as in the *Cheshire Cat* scene, because it made them feel more like they were an active and recognized character in the movie. Many users expressed that they had an interest in this type of interaction in the future, as well as interactions that were based on sensors that collected data about their unintentional physical reactions, such as heart rate.

According to the survey data, the least favorite scenes and interactions tended to be related to the sophisticated interactions used in the *Good Queen/Bad Queen* or *Tea Party* scene. Users were largely confused about how their actions had affected the outcome, and were frustrated that they could not directly control the scenes in a clear way. While users expressed an interest in having hidden interactions in future works, they reported that it would be best to have a clear link between their interactions and the outcome, so they could understand better what they had done and how it had affected the outcome of the film.

When looking at users responses to what type of interaction they would like to see implemented in general in future works, the top selected interactions were interactions that were based on the users actions, related to interacting directly with the text or characters, or interactions that were natural, such as heart rate or body temperature. Overall, users preferred interactions that had a clear and unambiguous outcome.

Interestingly, while the *Tea Party* scene was often selected as a least favorite scene due to the ambiguous nature of the interactions, many users still selected it as a favorite scene, and reported that they liked that the digital image was a continuation of the physical scene. Users seemed to like the scenes meaningful relationship with real space, because while they were not fully immersed in the digital world, it still felt like the space around them had a surreal relationship with the digital space, and through that, they also had a relationship with the digital space. They also expressed that they appreciated that they were the focus of the scene, as it was their *Unbirthday*, but wished that the digital characters had paid more attention to them. Many users expressed that they wished the digital characters had sang the *Happy Birthday* song to them, and not just the physically present members of the party. When asked how they felt about mixing film and reality, most users replied positively, citing that they felt that it was interesting, and if done correctly could be a powerful tool for future works.

With all the feedback collected, there was a variety of interesting data to be analyzed (for a summary of data, see appendix). Users had a lot of critiques and suggestions for future works. Multiple users expressed an interest in 360 degree cinema or controlling the cameras gaze. Many users wanted more direct interactions with characters. Many reported that they wanted to test the system again and again. Overall the changes that should be implemented in the next prototype, and what should be further tested for effectiveness were determined to be the 5 following points:

- more branches with each individual interaction to increase repeatability.

- more direct interactions with characters in order to improve identification with the self.

- determining which type of interaction (direct or indirect) is most effective.

- determine if each sensor can be used in a more varied and effective manner.

The first test provided a lot of valuable insight into what users preferred, and what they found to be lacking in an interactive cinema experience. Through the first test, concerns rose over whether the experience was easily understood and enjoyable simply because the storyline itself was familiar, so it was also determined that the second test would be an exploration of genre through an original story.

4.2. The Unseen

The second test took place shortly after the KMD Forum, in June 2014. This prototype focused on improving on the shortcomings of the first prototype, and attempted to mediate a better relationship between story and space. While the first test was event-based, and was intended for wide distribution, the second test was intended to be much smaller in order to determine if the system was heading in the right direction. The quantitative data of the first test was useful in finding overall feelings about the first test, but when users felt negative about the experience, they did not report why or how to improve the experience. Because of this, the second test was determined to be smaller. This test was both filmed and

conducted in an empty classroom in the Keio Graduate School of Media Design in Hiyoshi, Japan, using qualitative research methods.

4.2.1 Design and Interactions

The Unseen prototype was a short murder mystery that placed the fates of characters into the hands of the viewer, who appeared as a character in the film. This prototype was an attempt at solving the problems presented by the first prototype, so the survey results and verbal feedback given from spectators who experienced the first prototype was taken into consideration; on top of this, it was determined that the design method itself would be modified to a certain degree.

The first prototypes system design was founded primariliy upon its location. It was to be screened in the Queen Alice, so it was determined from the start that the films story would be *Alice in Wonderland*; decisions about the configuration were secondary. After the story was completely shot and edited, decisions about which interactions would best fit the story were then contemplated. In contrast to this, the second test was approached from a different direction. The first priority was creating an interactive film that increased the number of choices a spectator could make, creating a space for self-identification by making the main character the spectator, and creating a meaningful and interesting relationship with real space. The goal was to create a more sophisticated story that did not lose clarity for the sake of interaction, while using the same tools utilized in the first prototype. With these goals in mind, it was determined that the second test would be an original murder mystery story. In this story, the spectators actions (whether they were aware of it or not) would determine the fates of characters in the story.

The priority of this prototype was not to provide a full interactive film, but to test the new features designed for the system. In order to ensure that time was not wasted, it was decided that *The Unseen* would consist of a few key scenes of what could later become a much larger project if the system turned out to be successful. The scenes contained in this test are summarized by three major scenes:

- *The Party* in this scene where spectators attend a party with both physically present members and characters in the diegesis. This scene contains

a blackout, which prompts one of the physically present party attendees to investigate the source. At the end of this scene, spectators are prompted to make a choice.

- *The Detective* is a character in the digital world who hears a scream and goes to investigate. She returns and provides security footage that she found while searching for the source of the scream.

- *The Photographer* becomes important after it has been revealed that an attack has taken place and a photographer on screen determines that anyone could be a suspect. He shows pictures that he has taken during the party to show who was attending, and who could be a possible suspect.

These three key scenes set the stage for a larger story where the spectator searches for evidence in order to find out who the killer is, proves their own innocence, causes the death of other characters, or falls victim to a killer themselves. However, due to time constraints, it was determined that this would be enough to test the effectiveness of the system.

In terms of interaction, it was decided that the system would rely on a kind of sophisticated but clear interaction. The spectators interaction with a real object would determine the fate of the party attendee who went to investigate the source of the blackout. Their choice determined how she would be murdered, or if she would survive. Immediately following the blackout, the spectator was prompted to select one light source from a total of three in order to see in the dark. Depending on their choice, the party attendee could die in a total of four different ways, with the detective making different inferences on what the murder weapon could be, or the attendee could escape death altogether.

Of all the choices, there was one clear bad choice. If the spectator chose this object and held onto it, the detective would determine that the object they were holding was absolutely the murder weapon, and the spectator would be guilty of murder without room for doubt.

Another bad choice in terms of experience was not choosing any item at all. If the spectator refused to choose an item, the party attendee would return unharmed, and the film would end without any further experience.

In an attempt to minimize the resources required to experience the film, it was decided that the second prototype would take a different path from the first. While the first prototype relied on on/off functions for each sensor (was the sensor being used? If so, it was considered ON), the second prototype attempted to utilize a range of triggers within one sensor, with only one other sensor being necessary to trigger the flow of scenes. That is, depending on which object was selected, the sensor would pick up different levels of light, which would then determine which scene would be played. The second sensor was used to trigger the next scene to play when the lights turned back on. This interaction can be seen in Figure 4.8

Figure 4.8: The Unseen Sensor Configuration

In terms of relationship with space, this test relied on some of the same tactics as the first test, while changing others. Both *Alice in Wonderland* and *The Unseen* utilized having the film screened in the same location it was shot, and used screen

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space and real space in creative ways. However, *The Unseen* navigated a new surreal relationship with digital and real space by having real objects appear in the film as digital content later. More specifically, the objects that spectators selected could then appear on screen as a murder weapon. Again, the party attendee would first appear in real space, and then later as a digital character after she has been attacked.

To further attempt to minimize necessary resources, *The Unseen*, while still using multiple screens like the first prototype, arranged them all in one space in a square pattern rather than spreading them across a maze as the first prototype did. To help create a lively digital space, the screens were utilized at different times. In the party scene, four screens in a square were used to show four different perspectives of the party, and to make the spectator feel as if they were in the midst of the action. The detective scene and the subsequent photographer scenes were shown on opposite sides of the room, so spectators would be forced to move and look around to find who was talking, and the location from where the narrative was coming. Finally, the photographer scene used two screens placed at a 90 degree angle to create the illusion that the photographer was moving realistically through space. More specifically, the photographer moves from the first screen, then walks off-screen entirely, and then reappears again on the second screen, timed as if he has walked from one side of the room to the other in real time.

In order to create a meaningful relationship with the self, the spectators own image appears on-screen. This is to remind the spectator that they are engaging with the film as themselves, not as a persona, and to avoid the self-forgetting mentioned by Jarvenien, and explained in Chapter 3, as a staple of VR and video games.

The system configuration for this prototype can be found in Figure 4.9.

4.2.2 Evaluation

The test for the second prototype helped clarify what was working and what wasnt working for S.I.M.E., and provided some very interesting results. This test, while significantly smaller than the first, helped determine what would become essential for the final prototype; it also clarified what spectators found interesting and engaging, and what they found to be confusing and unnecessary (for photos

Figure 4.9: The Unseen Final Configuration
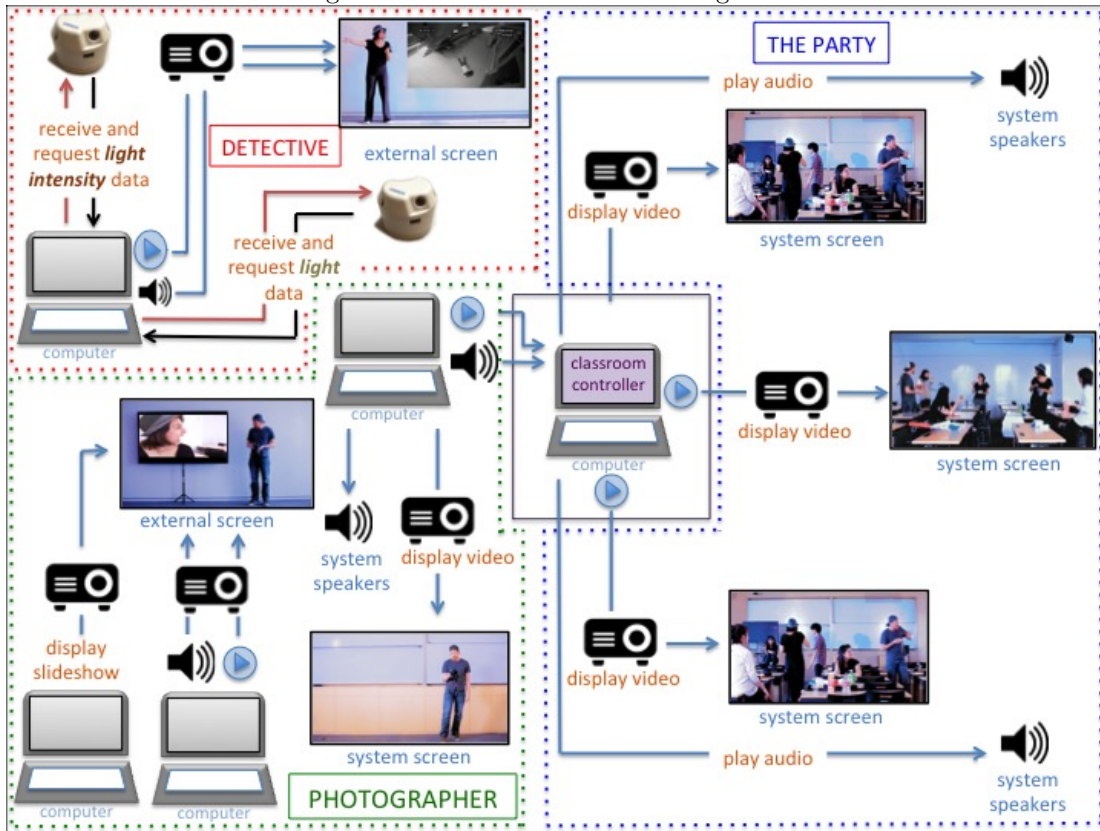
of this test, see the appendix).

The aim for the second prototype was as follows: to test if the new interactions with multiple branches enhanced the viewer experience; to test if spectators could form a stronger point of identification with themselves by appearing as a character in the text; and finally, to test if mixing real experience with digital space could enhance the viewing experience.

As the second test was significantly smaller than the first, it was determined that this test would rely on qualitative, rather than quantitative, feedback and evaluation. This test relied on direct feedback from spectators in the form of an interview after the experience (see the appendix for interview notes), as well as observation during the experience.

While the larger scale of the first test helped provide feedback from a broader

swathe of the public, this test helped provide more concise and specific identification of problems and successes. In the first test, spectators were often hesitant to clarify what they did not like, and in the case that they were unsatisfied, often left portions of the survey blank. In the second test, using face-to-face interviews helped ensure that spectators were clear in their responses, and gave a chance to ask follow-up questions to clarify what was working and what was not. This ensured that the feedback collected from the second prototype would be more in-depth, and could be used to apply constructively to the final prototype.

This test was conducted with seven spectators between the ages of 20-30, all living in the greater Tokyo area of Japan. The spectators were selected based on their interests in different forms of media, in order to ensure that not just one type of viewer, but a varied demographic would be surveyed. Three spectators had an interest in VR and video games, as well as television and movies; two had a particular interest in film; two had no background or interest in any of the above types of media. So, while the test set was indeed small, the test demographic was arguably effective. Their responses and results will be discussed in the following section.

4.2.3 Results

The second test helped provide valuable feedback that showed that while S.I.M.E. was headed in the right direction, there were still places where it could be improved. Spectators responded positively to the system in general, but reported some confusion and ambiguity in other areas.

In terms of identification, spectators reported that they were very surprised to see that they were a character in the film. As the placement of their photo was at the end of the film, most spectators did not realize that they were supposed to actually be an active part of it until that point, and it caused some confusion. No spectators reported realizing that they were supposed to be a character until that point. One spectator in particular, who had no background in either movies nor video games, said that once she saw her photo, she recognized in hind-sight that she was supposed to be engaging as if she was a character at the party, but not before that point.

For the interactive part of S.I.M.E., spectators generally reported that they

felt positively about interacting with real, everyday objects. They felt some confusion about what they were supposed to do with the objects after they selected them, however, and some complained that the lag between selecting objects for interaction and the digital outcome was too slow. One spectator, who had no particular background in video games or movies, reported that her initial interaction during the blackout scene was exciting, but that she felt that the link between the selection and outcome was not coherent enough for her to maintain the same level of excitement.

For the surreal aspect, users particularly enjoyed the motion of characters through space, and responded overwhelmingly positively to the photographer scene, where the photographer moves from a screen on one side of the room to the other. One viewer, who liked watching movies, but had no interest in games, reported that he felt very engaged by being forced to follow the characters movement through space. Another spectator said that she felt that seeing herself in the movie was extremely surreal, and that coupling that aspect with the movement of characters in and out of reality and digital form was very surreal and engaging.

All test users enjoyed influencing the outcome of the story directly, with one saying that it was a bit scary to have that much power over the outcome. Users reported that having five outcomes made them want to try the story more times to see if they could get all of the endings; similarly, they were curious about other types of interactions, and wanted to see if they could interact in unexpected ways to get different outcomes.

Using one sensor to collect data about different levels of light proved to be a bit unreliable. Some users felt frustration when the sensor failed to pick up the right level of light and change the scene accordingly. Occasionally, the sensor picked up a level of light that did not match with the object selected, so the displayed scene would sometimes not match the object selected, which confused users. When the function worked, it proved to be fairly clear to spectators what the connection was, but the function was not reliable enough in its repeatability to be useful as it was tested. With more careful testing and execution, it could be a more useful way to limit the number of necessary resources, but at the time of the test it was buggy at best.

Overall, the feedback from spectators was very useful and informative. Ob-

serving the tests at the time of their execution showed that spectators liked the mixing of reality and digital narrative, with the blackout scene and the photographer revealing the spectator as a subject bringing the biggest reaction from users. The interviews revealed that, like in the first test, users were interested in direct interactions with a clear outcome, and less interested in sophisticated interactions with an ambiguous outcome. The biggest complaint from spectators was that some interactions were unclear, and others were unreliable, but overall the system was enjoyable, and it was exciting to be a character in the film. This test showed that the S.I.M.E. system was moving in the right direction, and that with some alterations it could prove to be a powerful tool for engaging spectators and encouraging identification with the self.

4.3. The Unseen 2

The third prototype attempted to solve several problems that arose with the first two prototypes by making several large changes. Rather than focusing on stationary screens, the final prototype switched distribution methods from event-based to small mobile screens for easier dissemination. This was an attempt to first solve the problems presented by event-based dissemination, and second to solve reliability problems by limiting the number of resources that the system until that point had relied upon (namely, multiple projectors, screens, computers, and exterior sensors). Additionally, the third prototype attempted to clarify ambiguous interactions by relying on clear and concise interactions that provided a directly related outcome.

The test of this prototype took place over May and June of 2015, in a variety of spaces, with a wider variety of spectator types, which will be discussed further in the Evaluation subsection of this chapter.

4.3.1 Design and Interactions

The third prototype was an attempt at expanding upon the storyline and interactions of the second prototype. *The Unseen 2* is less of a sequel, and more of an expansion of the second prototype. This film was a murder mystery, similar to the first, but began with the murder itself, and was set up to allow the spectator

to collect evidence and determine the killer through their interactions. It contained the following 10 scenes:

- *The Murder* scene where a researcher is seen getting murdered by a mysterious character in a lab coat.

- *The Call* scene where the spectator receives a call on their phone from someone identifying themselves as their assistant. They are informed of the murder, and it is revealed that the victim is one of their friends. They are asked to review some evidence that is forwarded via text to their phone, and conduct some interviews.

- *The Crime Scene* where the spectator is given a short tutorial on how to collect and review evidence, then prompted to head out to interview some suspects.

- *The Grad Student* scene where the spectator interviews a grad student who used to work with the researcher before she was blinded by an accident. The spectator collects some evidence from the grad student before heading out.

- *The Call 2* scene where the spectator receives another call from their assistant, who sends them to interview another suspect.

- *The Investor* scene where the spectator interviews a rich man who invested in the researchers research, and lost a lot of money when it failed. The spectator collects several pieces of evidence.

- *The Research Partner* scene where the spectator runs into a suspicious man outside of the lab, who informs him that he is the victims former partner. He asks the spectator to meet him in the lab later so he can give him a lead.

- *The Call 3* scene in which the spectator receives a third call from the assistant, who provides some analysis on the collected evidence, and tells them that the research partner sounds suspicious.

- *The Lab* scene where the spectator returns to the scene of the crime to search for some additional evidence. When the killer returns, the spectator must

hide or the film ends with their death. Upon hiding, the spectator finds the
evidence that fingers the killer conclusively.

- *The Office* scene where the spectator must organize the appropriate evidence
 in a folder in order to get a good ending.

Although this film contained many more scenes than the previous two pro-
totypes, the interactions themselves repeated across some of the scenes. All in-
terview scenes relied on the same interactions, using gyrometer and touch screen
sensors in order to search for and collect evidence. The interactions for these
scenes can be seen in Figures 4.10 and 4.11.

Figure 4.10: The Unseen 2 Touch Screen Interactions
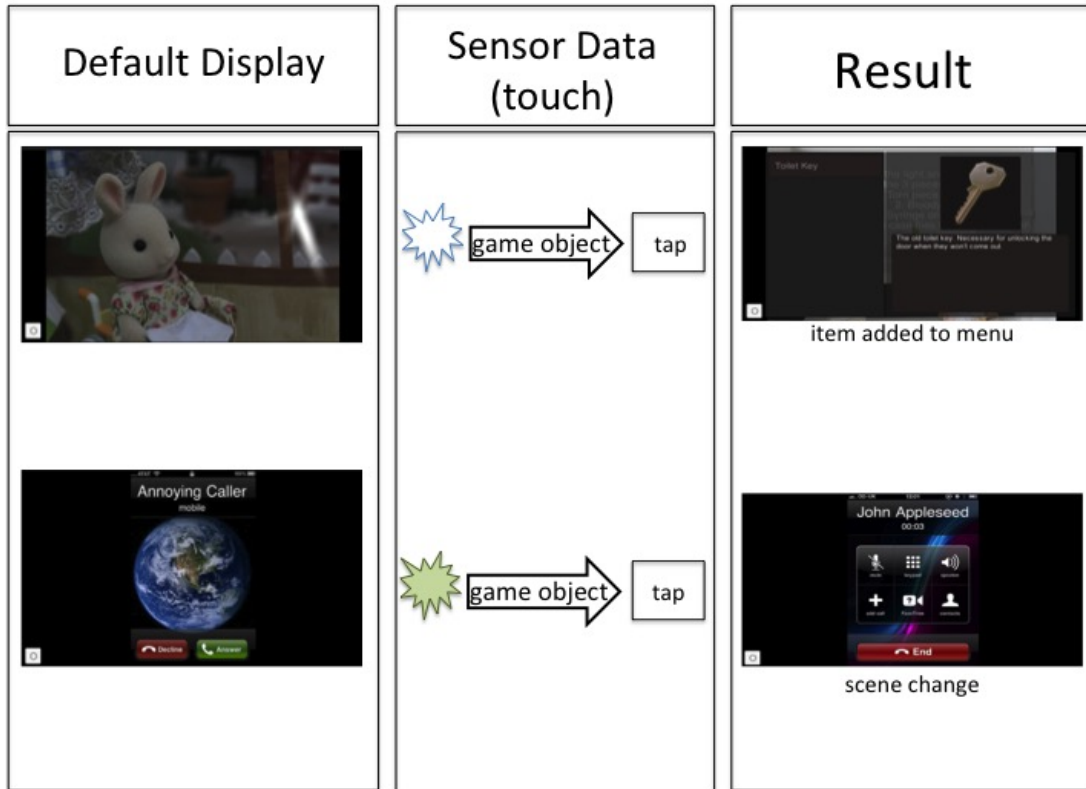
The phone call scenes also relied on the same configuration for interactions.
These scenes all used the touch screen to trigger the phone call to start playing.
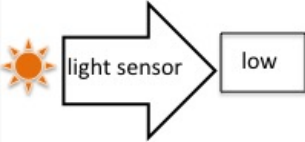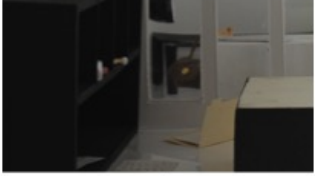Interactions for these scenes can be visualized in 4.10.

Figure 4.11: The Unseen 2 Gyrometer Interactions
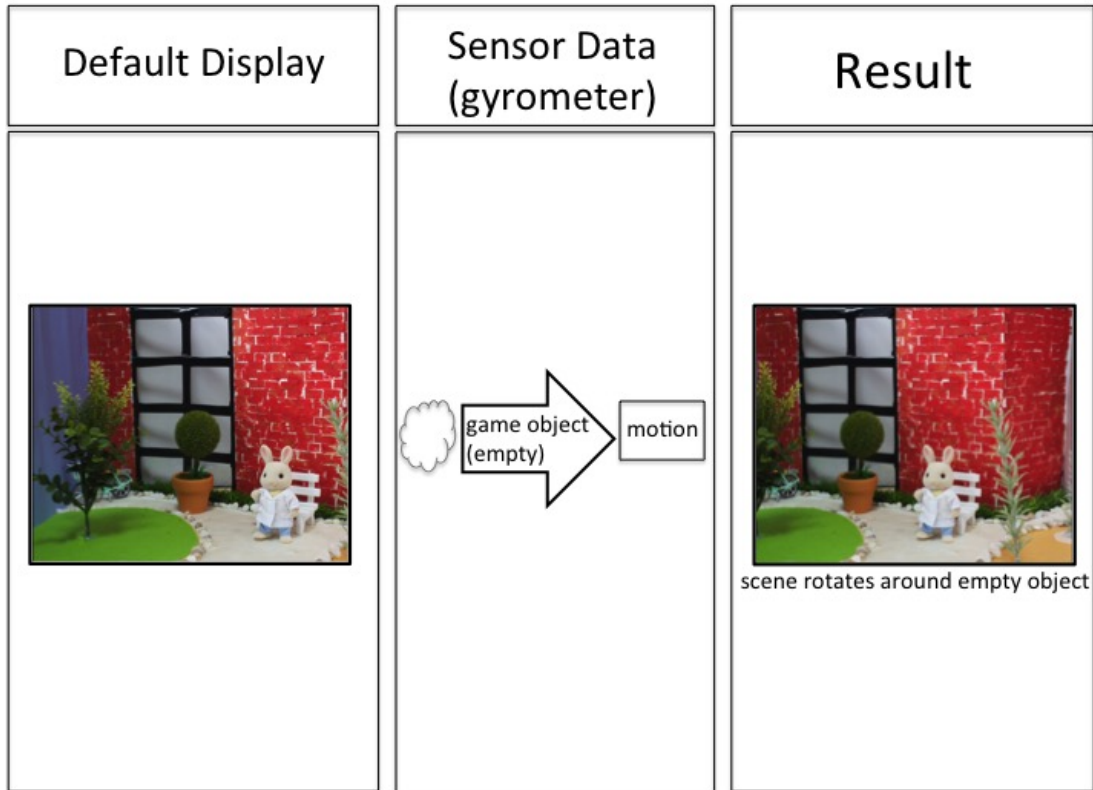
The third type of interaction used for this system was the ambient light sensor, which was used to determine if the spectator would get the GOOD or BAD ending (by hiding themselves in a dark space). This interaction can be visualized in Figure 4.12.

In order to create a meaningful relationship with real space without the use of real objects (except for the users own mobile phone) or physical screens, it was determined that this test would use the phones gyrometer sensor so that the spectator could physically move the phone in order to reveal a broader area of digital space, much like peering into a digital window. Unlike VR, which attempts to fully immerse the spectator in digital space, this system allows the spectator to exist in their own real space, without immersing themselves totally in digital space. The purpose of this is to withhold the lynch pin of surreal relationship between

Figure 4.12: The Unseen 2 Light Interactions

Default Display	Sensor Data (light)	Result
	light sensor → low	scene change

digital and real space with which S.I.M.E. relies upon. A 360 degree version of this function was briefly tested, but utilizing this system relied on recording the footage with six cameras placed on a special mount that was built for the purpose, then using multiple programs to stitch the footage together before importing it into the game engine to add interactive components. It was determined that due to time and resource constraints, the final test would not contain this function.

Another functionality that was added to this system was having a photograph of one of the user's friends appear in the film as a victim. Although this function could be implemented by using social media permissions granted by the spectator (namely, Facebook friends lists), it was determined that it would not be necessary to program this into the system in order to test the functionality. As all users were selected before testing, a type of paper prototype was constructed to test

the effectiveness of this aspect. Users' friends lists were accessed manually prior to testing, and the photos were inserted by hand into the system in order to meet time constraints.

While *The Unseen* featured the users' own photo in the text, it was determined that the third prototype would test the effectiveness of using a friend of the user as the victim of the crime that the user is trying to solve. The purpose of this was to address feedback from multiple users of the second prototype. Said users reported that their identification with the self (and thus the spectator position) would have been enhanced and more apparent if it became clear from the beginning that they themselves were a character in the text. They requested that it be expressed that they were accessing the digital space through their relationship with real space. Thus, the third prototype used a social connection that the user maintained in real life to define their relationship with the digital text. This also served to enhance the surreal perspective that S.I.M.E. relies on.

Overall, the system configuration for the final prototype can be visualized by Figure 4.13.

4.3.2 Evaluation

The test for the third prototype worked along the same vein as the first two to help clarify what was working and what wasn't. The third test helped provide some very interesting results, showing what spectators thought was important and what they found engaging, and also indicating what was distracting and unhelpful.

The final test was the smallest test of the three prototypes. It had very specific goals and points that it needed to test. The third and final test was conducted in order to determine if the S.I.M.E. system could be transferred from event-based dissemination to mobile phone in an effective way, while still maintaining the key elements and meaningful relationships with space that the first two prototypes held. It also attempted to determine if multiple storylines was a key element in maintaining spectator interest, or if a linear storyline could be used.

As it was decided that the final test would be the smallest of the three, it was determined that this test would also rely on qualitative feedback and evaluation. Data and feedback was conducted by collecting a short survey from spectators prior to their using the system, and another survey after experiencing S.I.M.E..

Figure 4.13: The Unseen 2 Configuration
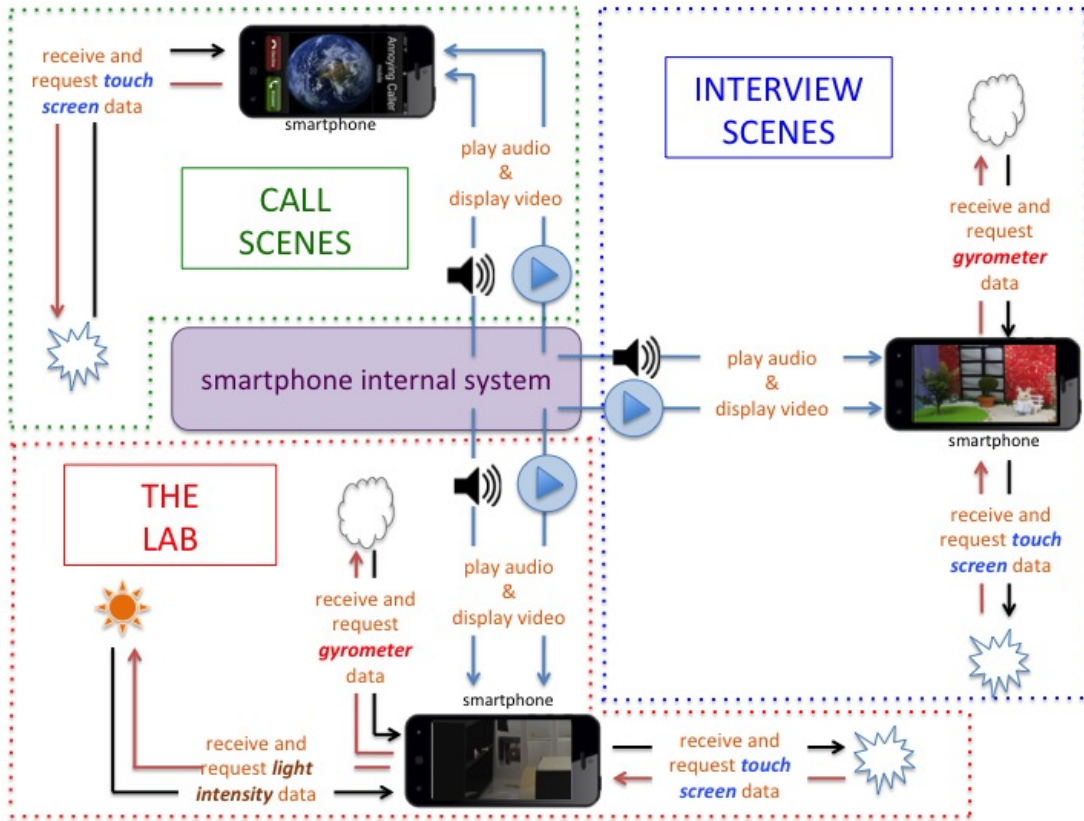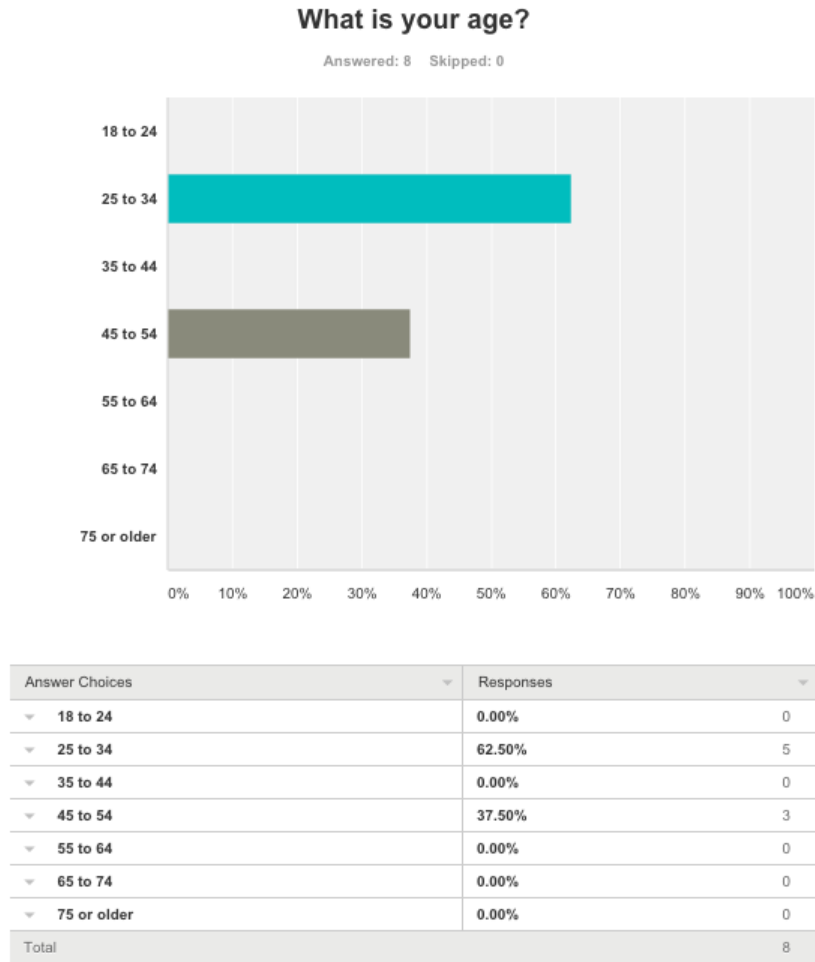
All spectators were observed during testing.

While the first two tests focused on collecting feedback from spectators in the greater Tokyo area, the final test was disseminated across the world, with some users living in the Tokyo area, and others living in the United States of America. This final test was conducted with 8 users between the ages of 25 and 54; see Figure 4.14 for a full breakdown of user age information.

The users had a range of media interests. While all users enjoyed watching movies, less than half enjoyed engaging with video games. An even smaller percentage enjoyed engaging with smartphone games. For a full breakdown of user interests, please see Figure 4.15.

Two of the users have experienced interactive cinema before testing the system, giving them relevant background. Overall, while the test size was small, the

4.14

Figure 4.14: User Age Breakdown

What is your age?

Answered: 8   Skipped: 0

| Answer Choices		Responses	
▼	18 to 24	0.00%	0
▼	25 to 34	62.50%	5
▼	35 to 44	0.00%	0
▼	45 to 54	37.50%	3
▼	55 to 64	0.00%	0
▼	65 to 74	0.00%	0
▼	75 or older	0.00%	0
Total			8

demographic was wide, with each user bringing a unique variety of backgrounds and areas of interest. The results of this test will be discussed in the following section.

4.3.3 Results

The final test proved to be very valuable in determining which functions of the prototype were effective and which were unnecessary. Overall, users seemed to enjoy the system, and the feedback seemed to confirm that S.I.M.E was headed in

Figure 4.15: User Media Engagement Breakdown
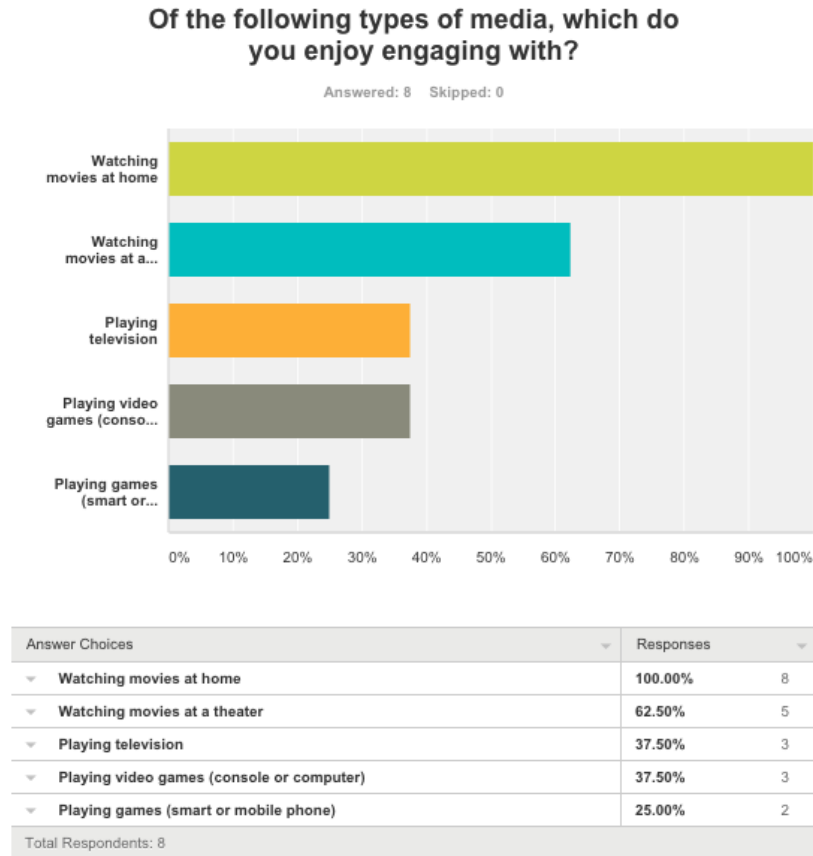
the right direction. For a full breakdown of user responses, please see Appendix B.1.

In terms of identification, spectators were more likely to identify with themselves at points when the environment included interactions that utilized the phone in a realistic way. Most spectators reported that they were able to identify that they themselves were a character early on in the story, and were able to remember that in spite of the narrative.

As for interaction, two interactions stood out as the most popular. Seven out of eight users reported that receiving phone calls from characters directly stood out to them as one of the most interesting interactions. Spectators reported that they tended to feel more engaged when they could interact with characters directly,

and it made the experience simultaneously more surreal and realistic because they could receive phone calls from characters in the story. Two users reported that this interaction made the film seem much more real to them; another reported that they liked it because it is a tool that they use as a personal item in daily life. They were not expecting to use it for an interactive film in the same way that they do in daily life, so they felt that the impact was stronger.

The second item that stood out to users was seeing a friend as a victim in the filmic text. Again, seven out of eight users reported that this stood out to them in particular. Spectators reported that they enjoyed seeing their friends as a character in the story, and it was an effective way to engage them with the narrative personally. One user reported that it made the film feel more unique and personal to them. Most users reported that they were surprised to see their friends, and it made them feel more connected personally. Although, most users reported feeling a little bit ill at ease. One user felt uncomfortable with the system having access to her personal network.

For the surreal aspect of S.I.M.E., spectators reported positive feelings about being mobile in physical space, with one spectator in particular reporting that it made the film more exciting to have to move to escape the killer, and one recommending a 360 degree view as a possible function to improve the system.

In spite of the positive feedback when asked directly about moving through space, and the suggestions to implement a 360 degree function, the gyrometer function was the least popular of all interactions. Only four users selected it as a function that stood out, and only one user reported that this function made them feel like a more active player in the film. Interestingly, this user had an extensive background in related fields of tech, and referred to interactions directly by the sensor name (gyrometer and ambient light), while other users with less of a related background were not able to do so.

All users reported positive feelings about being able to influence the outcome of the story directly. Some users felt that the genre of the story itself was a powerful tool in making them feel inclined to interact. However, some spectators were concerned about repeatability of the story, and voiced concerns that if they had to repeat the story in order to progress further, they might be less inclined to finish the film.

As in the previous prototype, spectators seemed to enjoy the original content of the story. One spectator - who reported enjoying engaging with both video games and movies - suggested more endings as a way to make the narrative more exciting. Another user with no particular background also expressed interest in more storylines. This element is something that existed in the previous prototypes, but was removed to test if users could engage with a system that functioned on a single-direction linear storyline. It seemed that overall users preferred interactive movies with multiple endings and storylines, rather than a linear approach.

The light sensor function proved to be the most confusing and least reliable of all functions. Some users had difficulties in recognizing that they needed to move physically and hide; they thought that they needed to do a type of direct interaction in order to trigger the next scene. This was probably due to the fact that the interactions up until that point had been limited to touch and motion. Most users needed to be told directly that they needed to move through space in order to trigger a change in the scene. Users reported some frustration with this scene in particular. With more careful planning and execution, this could be a more useful and reliable function.

Overall, the feedback received from users was very constructive and positive. Spectators seemed to enjoy the system overall, and most wanted to try an expanded system at a future point in time. The feedback proved that moving the S.I.M.E. system to mobile device could be possible, and that the Surreal Interactive Movie Environment as a whole continued to move along the right track. Observations of users during their individual tests revealed some frustrations, but on the whole, spectators seemed to enjoy engaging with the film.

Frustrations, again, mostly stemmed from system failures or bugs in the execution of the interactions. When the system wasn't running smoothly and users needed to start from the beginning, they were clearly frustrated and annoyed. Users wanted a longer story with more interactions, and more branches of the storyline. They reported that they were able to recognize that they were engaging with the digital text as themselves, but felt some disconnect because while the digital text was shot using non-human personas, the photos featured real people. This showed that the suspension of disbelief was limited in scope, and must be maintained carefully in order for the system to be more effective.

Particularly, spectators seemed to react the most outwardly to unexpectedly seeing someone they know on screen. After analyzing the feedback from all of the users, it became clear that spectators enjoyed engaging with a narrative that identified them as the main character in a clear way, and provided multiple paths that they could have a clear and direct influence over (For interview notes, see appendix.)

4.4. Analysis of Results and Evaluation

The three prototypes, *Alice in Wonderland, The Unseen*, and *The Unseen 2* all provided constructive and valuable feedback that helped shed light on what users and spectators are looking for in an interactive movie experience. The feedback from users has shown that S.I.M.E. is capable of bringing them what they want while also providing a critical point of identification with the self. The feedback from the three S.I.M.E. prototypes have shown that it is possible to bring the average spectator a ideologically critical point of self-identification without sacrificing a storys textual narrative and an overall enjoyable experience.

By first following the feedback provided in the fieldwork, then the development and feedback of the resulting prototypes, it becomes apparent that the creation of a meaningful relationship with physical space through interactive components, and removal of a hero character and subsequent replacement with the spectators real self, is an effective means of making the spectator feel as if they themselves exist as an active part of the text. Like a funnel, each subsequent S.I.M.E. prototype has come closer to identifying an ideal system, but there is still much work to be done in this area. While the environment still has much space for improvement, it is clear that the approach is effective, and S.I.M.E. has met its goal of providing a fun and interactive experience that encourages spectator identification with the self.

Feedback establishes that spectators overwhelmingly prefer to understand the consequence of their actions in a very clear way. Users will not tolerate ambiguous consequences. Accordingly, interactions should always be considered carefully to provide the most effective and easily understood outcome for spectators. Similarly, feedback from the first two prototypes suggests that the biggest complaint

of spectators is an unreliable system. If the system does not function the way spectators expect it to, they quickly lose their interest and become frustrated. Interactions should be designed with this in mind. A clean and simple system is always better than a buggy and ambiguous system. The third prototype, while relying mostly on simple and clear interactions and the subsequent effects, also struggled at times with the same issues. Rather than providing a sophisticated interaction with an unclear outcome, it is best to provide users with natural and simple interactions that they can understand with ease. Otherwise, the environment runs the risk of losing the interest and attention of the users and spectators. In order to be safe, if sophisticated interactions are going to be utilized, they should provide a quick and clear outcome, and then a second outcome that becomes apparent later (while still remaining clear to the user that they are the outcome of their interactions, and are not merely random).

Overall, the feedback provided by the three prototypes that make up S.I.M.E. have established that there is a gap in existing interactive cinema and games that needs to be filled. Spectators enjoy interacting with the environment, and are able to identify themselves as characters, rather than personas. Spectators have overall shown a great interest in further work. While users are excited about S.I.M.E. as it exists, there is still much room for further development and improvement.

Chapter 5

Conclusion

*Alice in Wonderland, The Unseen,*and *The Unseen 2* all proved to be successful in meeting the goals set forth by this thesis in terms of approach and design. Over the course of all three tests, spectators overall reported a feeling of satisfaction and engagement with the material and interactions provided by S.I.M.E.. Through the S.I.M.E. methodology, users and spectators found the experience to be enjoyable, and felt that they themselves become an active part of the narrative without sacrificing identification with themselves as they exist in daily life. Due to the experience of making story-altering decisions while confirming that they themselves are an active part of creating the storyline, spectators felt that they were able to relate to themselves without needing a third-party hero character or first-person full immersion perspective. These results have shown that the S.I.M.E. system is effective in achieving the goals laid out by this thesis. Although the goals have been met, there are still some points which could be improved upon in order to make the overall experience smoother and more enjoyable for viewers and users. This section attempts to touch upon these areas, and offer points of critique for theoretical improvement of the environment.

5.1. Discussion

The feedback for the first series of prototypes that existed with multiple screens in physical space was an interesting basis to help improve the system. While the *Alice in Wonderland* prototype provided a broad demographic of test users

by using quantitative testing, the results it provided could be seen as flawed because they were relatively shallow in their response. Many users left sections of the survey blank, and others provided short critiques rather than setting forth constructive comments regarding areas of the environment that they found to be lacking. It would be interesting to test this system using qualitative methods in order to further determine what was working and what was not working for this prototype. In contrast, *The Unseen* was tested with a small test set, and in-depth interviews were employed in order to determine more conclusively what users were excited about, and what was ambiguous or flawed. This feedback, while arguably more in-depth, used a test set of users that were all within a similar age range, with similar educational backgrounds. So in contrast to the first test, this set contained a significantly smaller background of users. In order to test the system more conclusively, it would be instructive to test it using a wider demographic of a variety of users with different backgrounds and age groups to determine if these factors played a role in the evaluation of the system. For both of the first two prototypes, tests were conducted in Japan, with users who all lived in the greater Tokyo area. While many of the users from both tests were born and raised in countries outside of Japan, all of them currently resided in Japan. For more varied results, it would be interesting to test the systems in countries outside of Japan, with users who had never left their home country in order to determine if having an international perspective, or if becoming acclimated to Japanese culture, played any role in the quality or type of feedback from these users.

For the final prototype, the test was conducted using a wider geographical and age demographic of users, but the test set was still extremely small. It would be helpful to test this system on a younger age demographic in order to determine if children who are more acclimated to smartphone use have any useful feedback that could be applied to future versions of the environment.

As for the system itself, there is still much work that could be undertaken to improve the system. The physical set of prototypes that use multiple screens still rely on a clunky and unnecessarily resource-heavy design in order to function. It would be best to rewrite the code in order to have the entire system function off of one computer and set of projectors, rather than have to use multiple computers and set-ups to function correctly. The sensors themselves could also be utilized

more effectively. There are many sensor functions on the Omron sensors that were never tested, and it would be interesting to see if this data could be used in a novel manner to improve the system. Similarly, the functions that have been utilized up until this point could be used more effectively. The second test, utilizing degrees of light exposure, could be improved upon in a manner which would allow them to function more reliably, and it would be exciting to see if the system could function entirely off of one sensor, rather than the two that the second test required.

The mobile system test is also fragmented and needs work. While a 360 degree system was written, it proved to be difficult to execute cleanly, and was left out of the final test. Particularly, filming in 360 degrees and later stitching the footage together proved to be extremely complex. It would have been interesting to explore how being able to control the camera more in-depth could have impacted the environment and the users' individuals interactions with the environment. Likwesie, as with the second prototype, the light sensing function proved to be buggy and unreliable. This function could be further developed, or even switched to use the location sensor in order to encourage spectators to more actively explore the surrounding physical space.

Further, there are many remaining sensors in smartphones that have not been tested by S.I.M.E.. It would be exciting to see how the system could be further developed by using a full variety of sensors offered by mobile phones today. It seems that the final prototype could be developed much further if there were more time and resources available, simply by using more of the sensors made available by default.

While it is outside of the scope of this research, there are many different types of smartphones that could have been tested, such as the Android vs the iPhone. It would have been interesting to determine which phone works the best for the system, and which other interactions could have been possible using different phones and the sensors built inside of them.

5.2. Contribution and Future Works

As set forth above, there is still much work to be done in this area of research and a variety of other areas to expand upon that it was not possible to cover

due to the natural limitations of this thesis. While S.I.M.E. as it exists up until this point relies on separation of prototypes that employ multiple screens and prototypes and use one smartphone screen, the two prototypes could potentially be combined to create any number of interesting combinations of interactions and narratives. Utilizing all of the sensors offered by both types provide a nearly limitless number of options to explore for future research. As the first three S.I.M.E. prototypes revealed, the public is very excited about the prospect of interactive cinema and are interested in seeing future works, so this is something that should certainly be explored in the future.

One further possibility for future work would be to use multiple physical screens in conjunction with the smartphone screen to engage with the narrative through augmented reality. The prototypes used in this research did not explore augmented reality, but the technology is readily available for exploration and development. It would be an excellent opportunity for future research to see if augmenting reality through the combination of these two types of screens could enhance the experience for spectators.

Another possibility for future research would be to see if collaboration between two users interacting with the same film could be possible. Up until this point, S.I.M.E. has relied on single-user tests, but it would be interesting to see if it could be developed to allow for multiple users in one space. Some users testing the system suggested this for future research and development, and it is arguably a very exciting idea.

In the end, while there are and will always be areas for improvement, users generally reported that they enjoyed the experience and that they were able to identify with themselves as a person, rather than a persona. The research thus far has shown that there is a target audience for this type of experience. Polishing and improving upon the environment further is an excellent way to ensure that the audience is able to be satisfied and impressed in ways that they are not currently reporting through their experiences with other existing technology. The audience is out there; perfecting the environment and disseminating it to them is the only remaining step.

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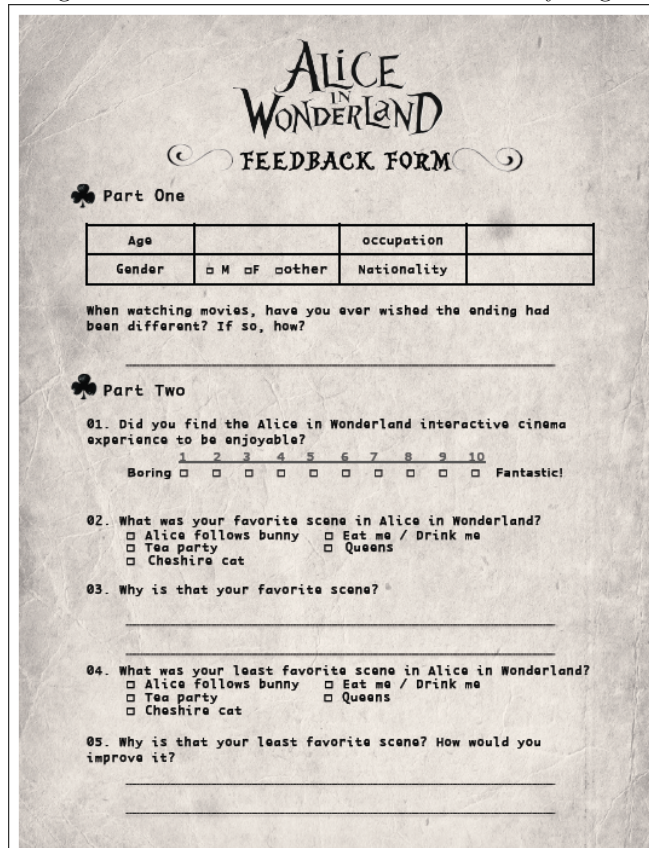
Appendix

Chapter 6

Appendix

A. Alice In Wonderland

Figure 6.1: Alice In Wonderland User Survey Page 1

Figure 6.2: Alice In Wonderland User Survey Page 2

♣ Part Three

06. What does being able to interact with the story
    bring to your experience? Why do you think so?

    _____

    _____

    _____

07. What kind of interaction would you like to experience?
    Please pick 3.
    ☐ Based on your actions
    ☐ Speaking to or being spoken to by a character
    ☐ Completely hidden, but still clear it was initiated by
      you
    ☐ Completely hidden, but unclear how you influenced it
    ☐ Based on physical reactions (e.g. heart rate)
    ☐ Prompted to make a choice from a list of options (e.g.
      like in visual novels)
    ☐ More subtle/indirect decision making
    ☐ Based on if you go alone or in a group
    ☐ others
      Please write: _____

08. What is interactive cinema ideally in your opinion?

    _____

    _____

09. What do you think about mixing film and reality?

    _____

    _____

    Any other related feedback you would like to give?

    _____

    _____

Table 6.1: Alice in Wonderland Feedback Summary

| Positive	Negative
Interactions were interesting	Predictable
It was great to be a part of the storytelling.	I can't understand the effect of the sequence.
It triggered learning and emotion.	I didn't get it.
I can clearly see the cause and effect.	The connection between scenes was confusing.
I felt active.	I wanted the characters to sing to me.
I felt like part of the story.	I didn't need it to understand the story.
The people were funny and nice to me.	It wasn't clear what was happening.
I think interactive cinema is ideally like this.	I wasn't surprised by anything.
The interactions between the screen and objects was close.	I didn't understand how my choices changed the story.
I was focused and interested the entire time.	I wanted more choices.
I enjoyed it a lot.	Needed more characters.
It was nice knowing I had a unique experience based on my decisions.	I didn't get to see all the endings.
It was a cool idea.	Interactions shouldn't sacrifice the story.
It was memorable and enjoyable.	Not intuitive enough.
Strange.	No hint for right/wrong choice.
I liked having a puzzle to solve.	No clues.
I was engaged.	No effect after blowing the candle.
I think interactive cinema engages people more.	Didn't understand what triggered things.
It was interesting.	Confusing.
I felt involved and like the focus was on me.	Should be able to eat/drink the props.
It was challenging and I felt involved.	Wanted more scenes.
I felt like I was co-creating the story.	Didn't understand my influence.
I felt like I became a character in the story.	
Good idea.	
Fun	
It was intelligent and used multimedia well.	
It was interesting and more emotionally engaging than a normal movie.	
A new kind of entertainment, not a replacement for movies.	
More fun/more engaging	
Feels like you can affect the result	
You are on the right track!	
Lots of smart dialogue	
Felt like part of the story.	
Everything is mixed with reality so it's time for movies to be as well.	
Multiple paths made me want to try again	
Choices made me curious.	
I felt like I was in the movie.	

Figure 6.3: Alice In Wonderland Floor Plan
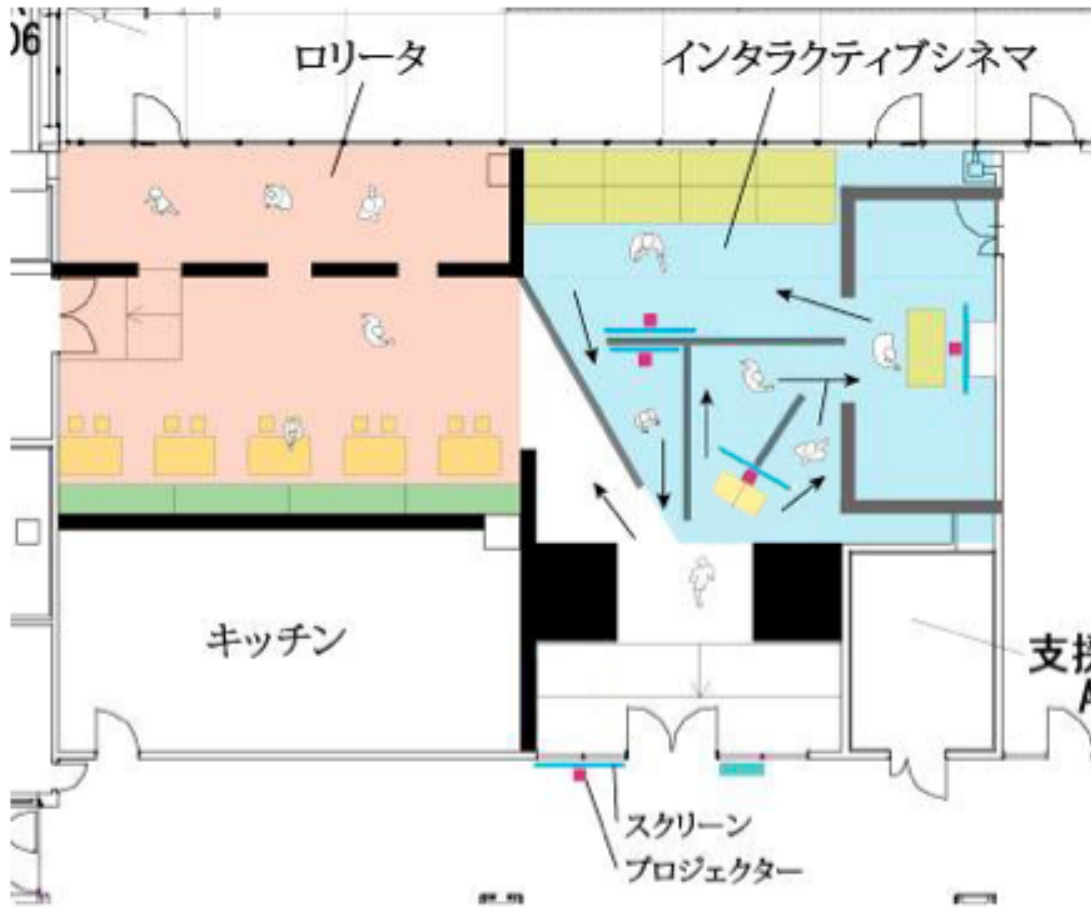
Figure 6.3 shows the original floorplan of the *Alice In Wonderland* Interactive Movie Experience. This figure includes the layout of another research project, which shared the event space on the day of the 2014 KMD Forum.
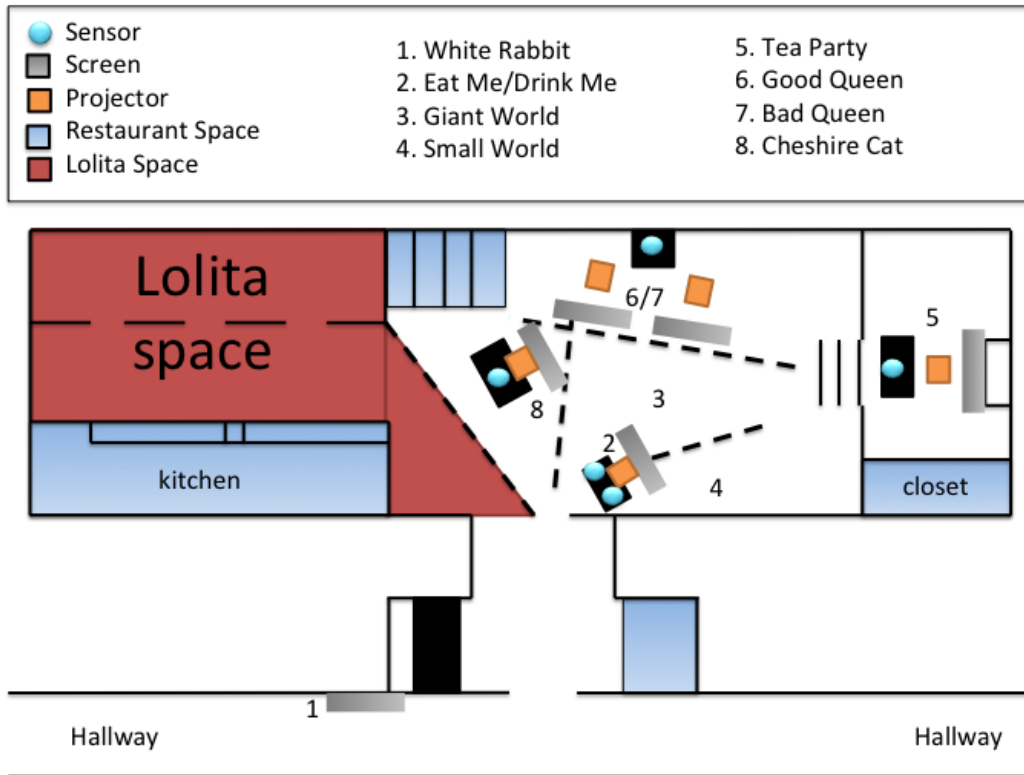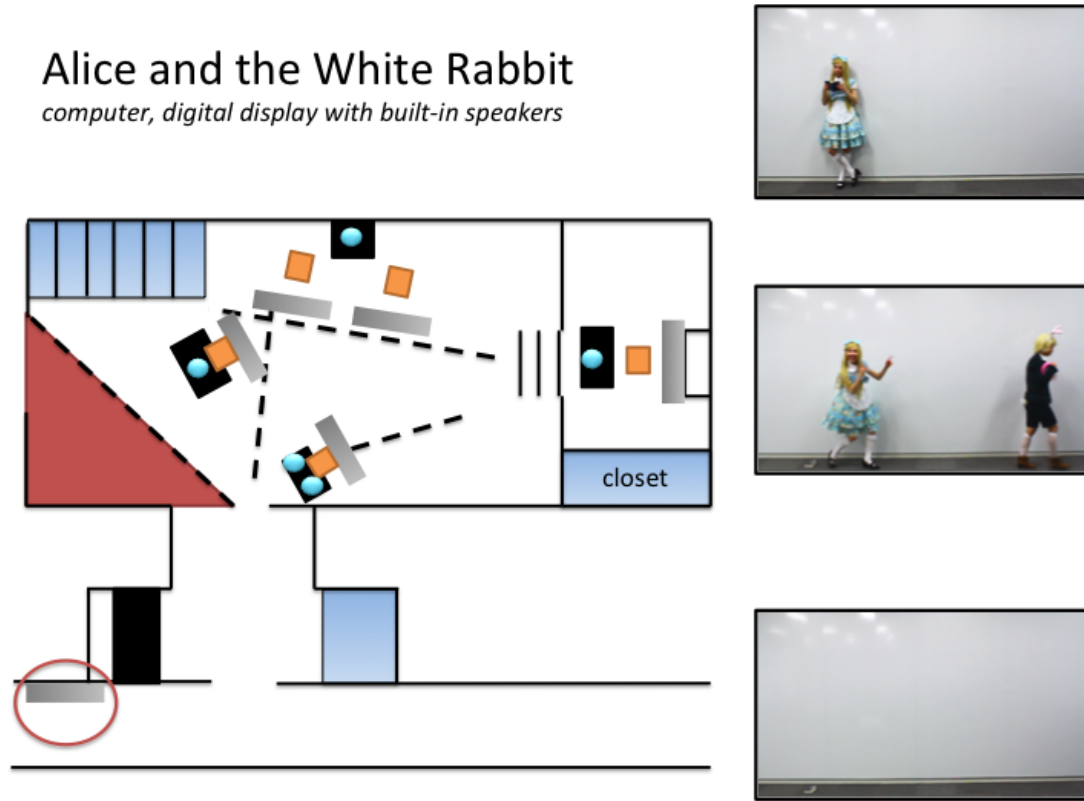
Figure 6.4 shows the final floorplan of the *Alice in Wonderland* Interactive Movie Experience, including essential system resources (screen, sensors, projectors, etc) and scene markers.

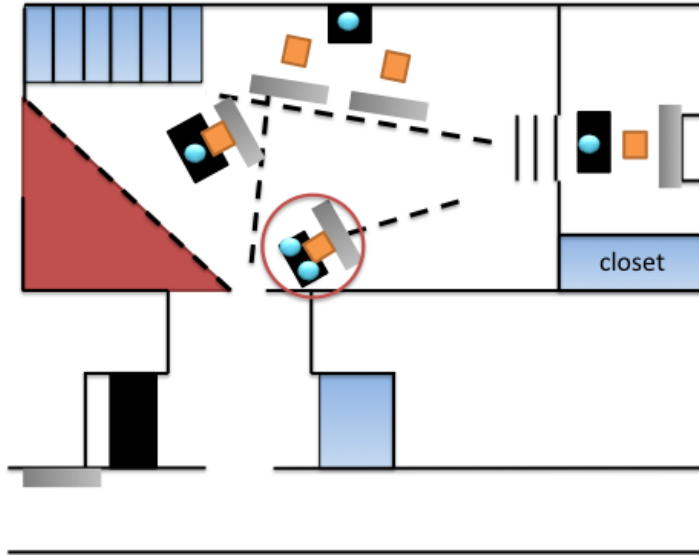Figure 6.5: Alice In Wonderland Rabbit Scene

This scene opens with Alice onscreen reading a book. the White Rabbit runs past, and Alice follows. Before leaving the screen, Alice beckons the spectator/user to follow her into the interactive cinema space. There are no interactions for this scene.

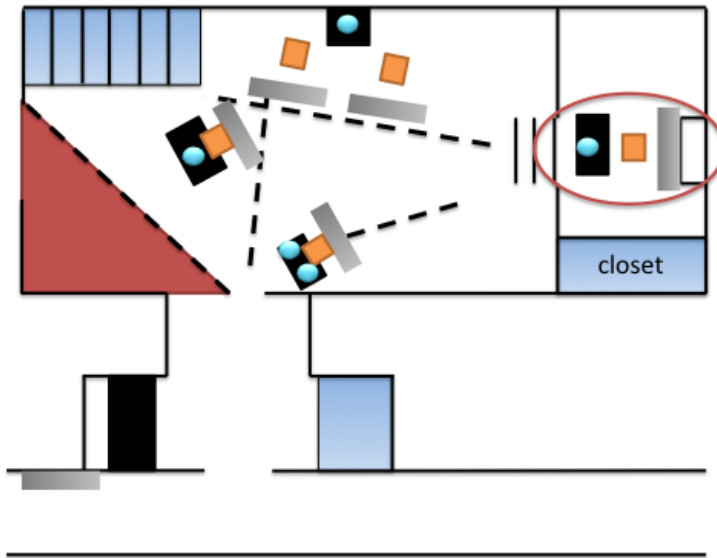Figure 6.6: Alice In Wonderland Eat Me/Drink Me Scene

In this scene, Alice stands facing the spectator, and tries to decide between two objects (offscreen). If the spectator does not select an object, the video of Alice trying to decide loops. If the spectator chooses one object, the sensor triggers a scene change, and Alice grows giant and walks off screen left. If the spectator chooses the other, the sensor triggers a scene change, and Alice shrinks to a tiny size and walks off screen right.

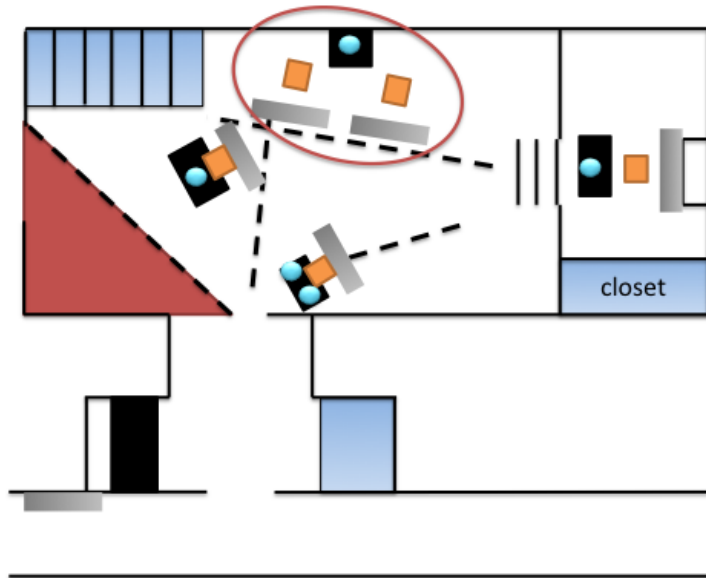Figure 6.7: Alice In Wonderland Tea Party Scene

This scene shows many people and animals gathered at a long table, which cuts off at the bottom of the screen. The characters all enjoy snacks and drinks at a tea party. The scene loops indefinitely, regardless of sensor triggers.

Figure 6.8: Alice In Wonderland Good Queen/Bad Queen Scene

This scene is set to play a default scene of an empty wooded area with a cement path. If the spectator triggers one sensor, the scene will not change, and will continue to play a scene of the Bad Queen character. In that scene, Alice enters and is subsequently chased off screen by the Bad Queen. If the user triggers two sensors, the default scene will switch to a park with bubbles floating on screen. Upon entering the area, the scene of the Good Queen playing with bubbles will play. Alice enters, plays with bubbles, and then is given directions by the Good Queen. Both characters then exit the screen.

Figure 6.9: Alice In Wonderland Cheshire Cat Scene

Cheshire Cat

computer, screen, close-range projector, external speakers, sensor, riddle props, live moderator
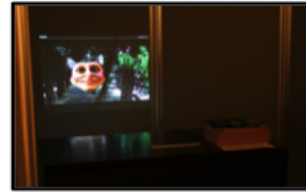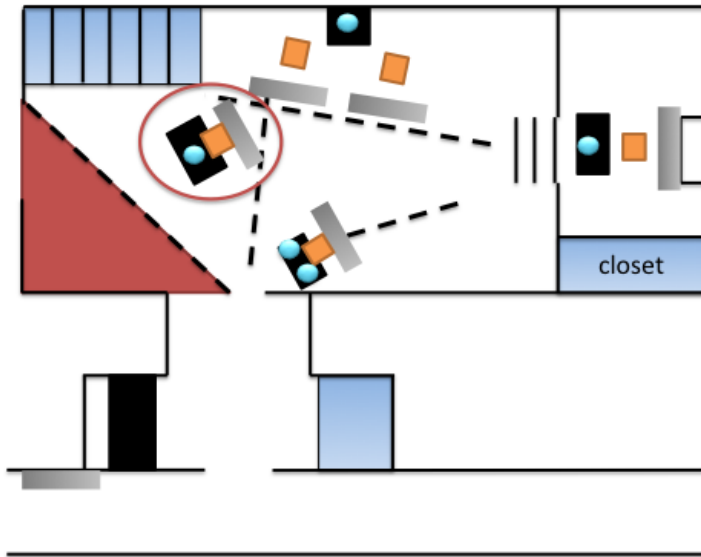
This scene loops a scene of the Cheshire Cat, who floats around screen and fades in and out. The cat provides a riddle, which the user must solve. When the user triggers the sensor, the scene then changes to the Cheshire Cat congratulating the user.
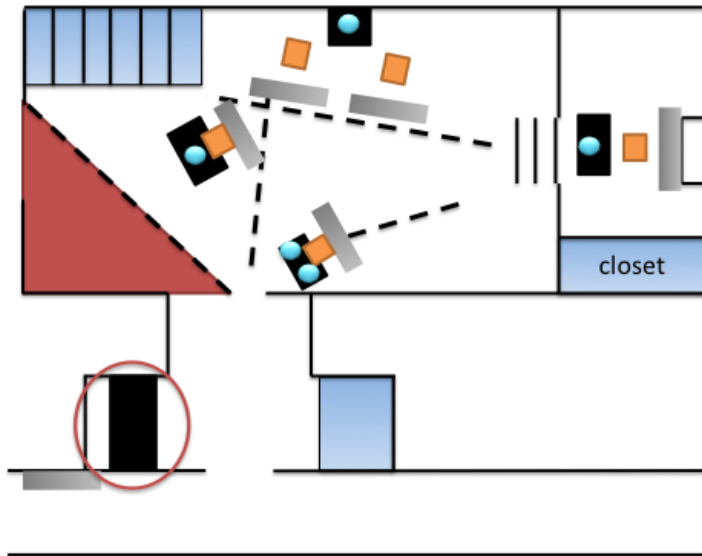
Figure 6.10: Alice In Wonderland Survey Distribution Space

Figure 6.11: Alice in Wonderland User Test Photos

B. The Unseen

Figure 6.12: The Unseen Floor Plan and System Layout

A.10. The Unseen Interview Questions
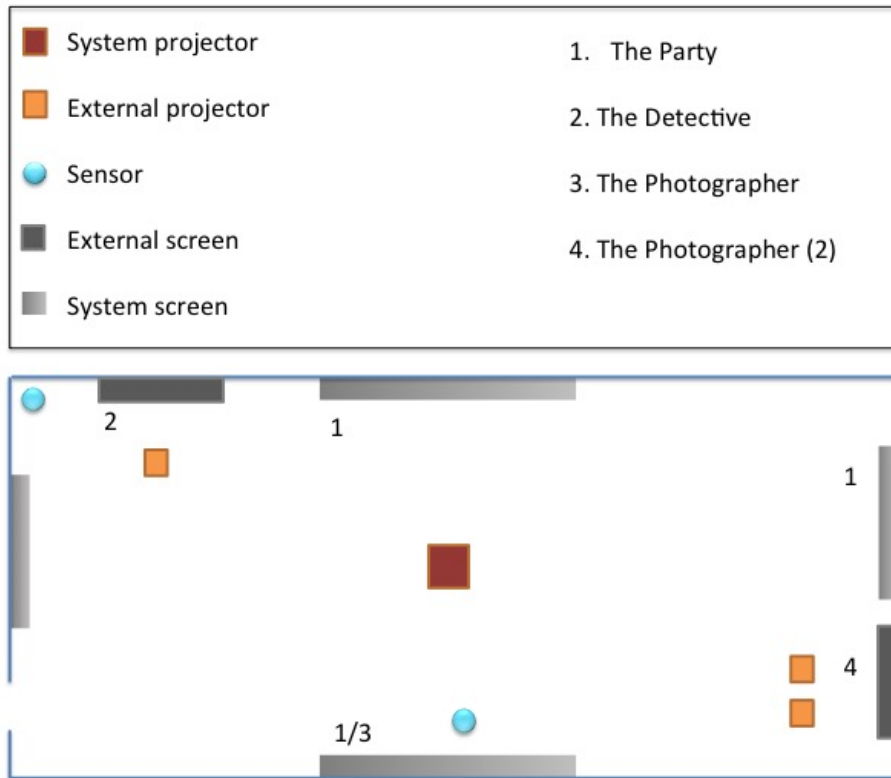
General Information

Name
Occupation
Gender ▫ M ▫ F ▫ other
Age
Nationality

Do you watch a lot of movies?
Do you play video games?

Feedback questions
01. What did you think about the whole murder mystery experience? How did it make you feel?

02. Did any specific scene make you feel a certain way? Or any particular element? Why?

▫ Initial Party
▫ Scream
▫ Detective
▫ Photographer

03. What did you think about the interactions?

04. How did it feel to influence a character's fate with your choice?

05. There are five different outcomes depending on your choice. How does knowing this make you feel?

06. What do you think about mixing film and reality?

07. What did you think about interacting with objects related to the story?

08. What did you think about seeing yourself within the photographer's pictures?

09. If the story continued, what kind of things would you like included in the experience?

10. Any other related feedback you would like to give?

Figure 6.13 shows the pared down floorplan and essential system resources required for the second prototype, *The Unseen.*

B.1 Unseen Feedback Response Summary

Do you watch a lot of movies?

1. Not really.

2. Yes.

3. Yes.

4. TV

5. Yes.

6. Yes.

7. No, but I used to.

Do you play video games?

1. Not really.

2. Not really.

3. Yes.

4. Not anymore, but I used to.

5. No.

6. Sometimes.

7. No.

01. What did you think about the whole murder mystery experience? How did it make you feel?

1. I liked Wayne walking from one screen to another; it tripped me out. It felt real.

2. It was mysterious and scary. I was scared and curious.

3. I was actually shocked. It was so much fun and I kept wondering what was going on. It would be better to have no tables in the room though, just relevant props.

4. I liked it. I liked the multiple screens, and leading to the next made me curious. I expected something to happen from behind me.

5. I was excited. I wanted to know what personal interaction made it different. Although I was unclear on what was part of the experience and what was a system failure.

6. I didn't know if the beginning was a part of it. I wanted to be included in the party more.

7. The light turning on and off was good. It felt scary, but it wasnt scary later because it wasn't coherent. A louder sound would be better. I wanted to find out where the sound came from. I wanted video to show up behind me.

02. Did any specific scene make you feel a certain way? Or any particular element? Why?

1. The photographer. It felt like he was really physically walking from one screen to another. Following him made me feel tripped out.

2. Detective. It made me curious. I wanted to find out who the murderer was.

3. Photographer. I liked being inserted into the action and feeling relevant.

4. Detective. I think the whole time I felt like something was going to happen to me. If it were darker in the room it would be more effective.

5. Photographer. I liked following the movement across screens.

6. Detective. I couldnt see the murder weapon clearly but I did have the lantern, so when she mentioned it I was surprised.

7. The initial party. I liked the light.

03. What did you think about the interactions?

1. A bit slow; they should be faster and more related.

2. Didnt know what to do with the object once I took it.

3. Candlestick was the most interesting. When props can communicate a strong effect with the video its better. Get rid of the tables and limit only to relevant props. It was a cool experience.

4. Hard to catch and understand.

5. It was confusing. It took a moment to realize what objects were for, and there was no direct correlation upon choosing one. I didn't feel like the first scene involved me, either. I wanted people on screen to say hi to me or talk to me so I could have an awareness of the setting. Otherwise it was unnatural.

6. I liked the flashlight/lantern/candle but best of all I liked seeing my own picture.

7. Its fine. It would be better without the flashlight.

04. How did it feel to influence a characters fate with your choice?

1. Too much responsibility over their life!

2. I kept wondering what was the outcome of each particular object.

3. I liked it. I wondered what would happen with a different choice.

4. It was hard to catch. I didnt get my influence.

5. I was the murderer, but I didn't know at first what was going on.

6. Its cool. The scream made me think I did the wrong choice.

7. Feels like it already happened and its not my fault.

05. There are five different outcomes depending on your choice. How does knowing this make you feel?

1. Cool, I wanna do this five times!

2. Interesting.

3. Makes me want to reset and try 5 times. It would be cool with more variables and more people, so you could accuse each other.

4. Curious.

5. Curious. There are 3 objects but how are there 5 outcomes?

6. I want to know why there are 5! Its mysterious.

7. Nothing. I want to know the effect beforehand.

06. What do you think about mixing film and reality?

1. Was kinda cool. I can see the connection. It would be better if more people were at the party so you could guess who is in on it, who is playing and who is a prop.

2. Interesting. I had power to change the outcome.

3. I always thought it would happen, and I wanted it to happen.

4. Not a big fan personally. I take issue with and dont trust 3D, deep books and movies. Its all problematic.

5. Im excited but scared about it. It also makes me confused. I want to be more aware of whats going on and of the cause and effect.

6. Its fun!

7. Its good. Entertainment already does a good job though. I cant tell the difference between this and a regular movie.

07. What did you think about interacting with objects related to the story?

1. Good if its an indication of an emergency. Liked physically touching the objects, but would just use a phone as a light in real life.

2. Interesting. Usually only on screen, but it was tangible here. It made it more real.

3. I liked that the objects were light based.

4. It made it interesting. It's a 2-3 times max thing though.

5. Its more fun if you could bring anything you want. The system would have to allow it to be a part of it.

6. Makes it feel like a theater or amusement park ride. Its nice to not be passive.

7. Good. It gives a way to engage in the movie and change it.

08. What did you think about seeing yourself within the photographers pictures?

1. It was trippy. Why was I suspected? It made me realize I was part of the party when I saw my own picture.

2. I felt like I was in the movie. I didnt think I would be in digital form myself.

3. I liked seeing myself. It made me feel like I was being watched. It was so cool to be a character.

4. I was surprised. I think you should be careful with the format though; maybe prepare a mask on photoshop. Maybe more involved if the photo was earlier in the film instead of the last thing.

5. Fun to be included so fast. It would be fun to be recorded to movie with myself appearing in motion as part of the movie.

6. Surprising. I thought I was going to be pointed out as the murderer.

7. I knew it was going to happen because I saw people taking pictures.

09. If the story continued, what kind of things would you like included in the experience?

1. More security footage. It would be cool to do the experience with a friend and have one of us be the killer.

2. More similar choices; actual pizza at the party.

3. I would like another layer with props, or if someone from the video became real, like they walked offscreen and became a part of reality.

4. I would love to see the scene switch go around the entire room once. I think simpler choices are better and clearer. Without clarity the impact gets lost.

5. I would be pointing the finger at who it was would be fun, and to try to find Roosa again. I would like to make more guesses at who it is according to the security footage.

6. More profiles of possible killers. Now its just one person. I want more story, too, with more consequences.

7. I would want to see real suspects in front of me and have to talk to them. I want to talk about the murder with them.

10. Any other related feedback you would like to give?

1. What does the candle do?

2. I would have to see the whole version. This one was too short. I would like to be able to interrogate or be interrogated.

3. I want to see a whole movie. It would redefine the movie experience. You could go in small groups to see it and it would fuse games and movies.

4. How long would a whole experience take? It would be cooler to see it in a different location.

5. Its a good idea, it should be tested with simpler interactions. Something light could be positive, etc.

6. The beginning was good. I wasnt sure if the blackout was a technical difficulty. The party was too short though.
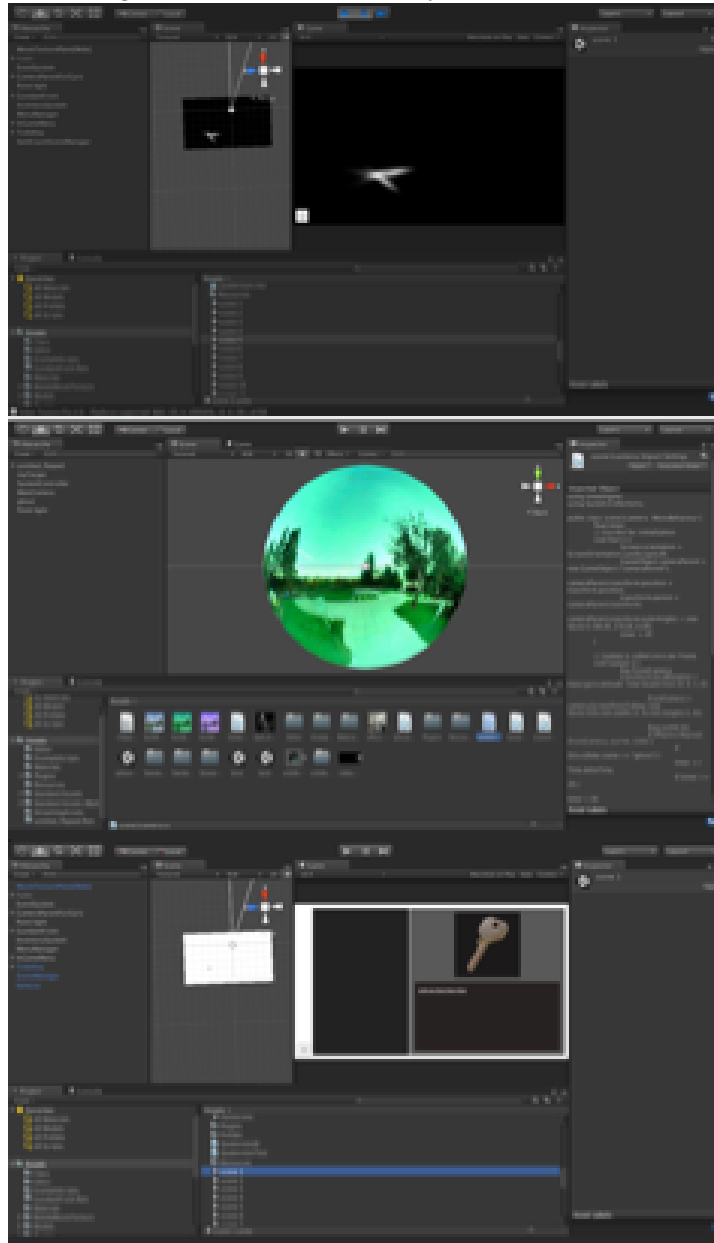
7. It was fun but needs lots of improvement.

Figure 6.14: The Unseen User Test Photos

C. The Unseen 2

Figure 6.15: The Unseen 2 System Screenshots

C.1 The Unseen 2 Feedback Summary

If any particular interaction stood out to you, please explain why.

1. Hiding from the killer, looking around.

2. The phone calls made it very real to me.

3. Having to go in a dark place made me more interested and emotional.

4. The telephone calls and the characters talking directly to me was cool.

5. I really like the phone element. It made it more real since its something I personally use constantly so to use it to interact with the movie is really innovative.

6. It is a little creepy and fitting to the story that you can get phone calls from characters, since your cell phone is usually a personal item and communication tool.

7. Hiding from the killer was particularly exciting because you literally have to move someplace.

8. The phone calls made it seem more realistic.

What did you think about seeing your friend as a victim on screen?

1. Shocking! I thought, oh my god how did they know that was my friend and get their picture?!

2. It really personalized things for me.

3. It made it more real.

4. It was surprising and made me more engaged.

5. It was kind of scary, but kind of cool. If anything it made me want to find the killer all the more.

6. It made me aware that the system has access to my digital network. It makes me feel more invested because of it.

7. It was totally creepy! It was actually a pretty cool way to hook me into the narrative.

8. It was unexpected.

How did it feel to influence the outcome of the story?

1. I felt very invested in the outcome.

2. It was fun and felt customizable.

3. It was very interesting and fun.

4. I liked it.

5. It was exciting and added a sense of connection to the movie.

6. It was interesting because you have to think a lot more about how to avoid consequences in the story.

7. It was good.

8. I felt like I had control over the game.

If there were another interactive film, what kinds of interactions would you want to see?

1. Alternate endings.

2. Conversations with characters or text messages would be great.

3. Voice commands.

4. More of my own personal experiences included.

5. Sound track and lighting options. Like I could make it more of a thriller or a horror story depending on my mood.

6. I think it would depend on the content of the story, but it would be cool to have a 360 view available on your phone so it would feel more immersive.

7. I like murder mysteries, so more of those. Especially games or movies of this genre with multiple endings.

8. More open ended changes to the story based on my choices.

Any other related feedback?

1. Really cool! I would love to do a full length game.

2. Great concept!

3. I would like to see more like it.

4. I enjoyed it very much.

5. I thought it was very innovated. As a lover of movies, I would love the chance to be part of the story process. I could easily see this becoming a past time and an event people of different ages could get into. it allows more than viewing. Now you are doing. And the future generations will start participating like they did in books rather than just viewing.

6. If you fail at a certain interaction in the story and get killed, the second time around might feel too repetitive to want to do the entire story again. It would be less frustrating if there were many alternate story lines or different start points that you are forced to revert to as the consequence.

7. Well done! I hope to see an expanded version of this narrative and these technologies in the future!

8. None.

Figure 6.16: The Unseen 2 User Test Photos