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Where Have All the Shadows Gone

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Where Have All the Shadows Gone

by

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Thesis

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Dedication

This project is dedicated to Phil Wienholts for his endless support, patience, and unwavering belief.

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Abstract

Where Have All the Shadows Gone

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The University of Texas at Austin, 2013

Supervisor: Michelle Habeck

Where Have All the Shadows Gone is an immersive, interactive, site-specific performance that exists at the intersection between game design and live performance. This performance was crafted to inhabit the architecture and culture of the F. Loren Winship Drama Building located at the University of Texas at Austin. There were four performances and two previews each lasting seventy-five minutes. Live actors began the game by presenting the audience with a problem: a mysterious figure had developed a device to steal people's shadows. The audience used their cell phones as digital, interactive tools to find and follow clues to uncover their antagonist. The audience solved puzzles that challenged their spatial reasoning, cryptographic skills, and critical thinking. Over the course of the interactive performance the audience coalesced into an intelligent gaming collective.

The primary goal of this research is to analyze and devise a methodology for developing a performance that integrates game design with live theatre, as well as to

evaluate the resultant performance of *Where Have All the Shadows Gone*.

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Project Overview

Where Have All the Shadows Gone was conceived as a weeklong performance event occurring in several different locations throughout the F. Loren Winship Drama Building at the University of Texas. The performance was originally intended to slowly attract audience through a combination of word of mouth advertising, public events, and social media promotion as the week progressed. Halfway through the week of the performance the antagonist of the performance would have invited any interested audience members to betray the protagonist, and their fellows in the game playing collective, by working in service of the antagonist's goals. The audience base would have split into two roughly equal rival factions which would then compete with one another to influence the narrative outcome of the performance.

After several months of development, the final production of *Where Have All the Shadows Gone* evolved to four single-evening, seventy-five minute performance events where an audience of fifteen worked together to achieve a common goal. This document will examine the development process of *Where Have All the Shadows Gone* in a roughly chronological order. As the generative artist I will examine how *Where Have All the Shadows Gone* evolved from a multi-night event that divided the audience into rival factions to a single evening community developing performance experience.

THE BLANK SLATE

Inspiration

I became aware of an emerging genre of games called Alternate Reality Games, which are transmedia stories, or single narratives that are communicated to an audience through several different technological mediums. These transmedia narratives are delivered to players in the context of the players' daily lives; for example characters might interact in a public forum such as Facebook, or directly email or text message a player. 42 Entertainment's *Why So Serious* was a particularly interesting example of this form of gameplay.

Why So Serious was created as a promotional event for Warner Brother's feature film *The Dark Knight* which is the second film in Christopher Nolan's Batman trilogy. 42 Entertainment made gameplay accessible to players through common technologies; several websites designed specifically for *Why So Serious* updated frequently with new riddles for players to solve. One such riddle was a list of street addresses posted to the website, as well as the directive to pick up a very special treat. Players who visited the real world addresses were rewarded with a physical cake decorated with a telephone number inscribed in icing. Calling the telephone number displayed on a cake caused a hidden cellular telephone baked into a cavity inside the cake to ring. These phones became communication tools for players to receive game-related text messages and phone calls.

In one section of gameplay 42 Entertainment asked the game playing collective to apply makeup in order to look like the Joker's Henchmen, who were characters from *The*

Dark Knight feature film. I was interested in the way that thousands of players unquestioningly assumed the role of the Joker's henchmen by devising their own costumes and makeup. These participants easily assumed the role of what Augusto Boal referred to as a "spectator." through the familiar lens of gameplay and popular culture.

In *Games for Actors and Non-actors* Augusto Boal writes, "the spectator is, or must do his utmost to become, the protagonist of the dramatic action" for Forum Theater to operate successfully. Forum Theater, an invention of Augusto Boal, is a theatrical form where community members dismantle systems of oppression by playacting the role of the oppressor and the oppressed. Audience members take turns acting as an oppressor familiar to the community, such as a corrupt police official. A second audience member will enter devised scenes as a spectator. They must attempt, through believably achievable means, to overturn the oppression of the scene. In the scenario of a typical community member engaging with a corrupt police official it would be unbelievable, for example, for that citizen to attempt extreme violence to escape oppression. After each scene the oppressed audience member takes the place of the oppressor, and a new spectator joins the scene; the cycle begins anew.

In Forum Theater the community of audience, as well as a moderating figure, determine what interactions are permissibly believable. In the Alternate Reality Game *Why So Serious* the audience members self-regulated into a community of spectators, with no additional moderation by an external force. Rules of what comprised of permissible behavior were organically communicated through the gameplay designed by 42 Entertainment. For example, late in the gameplay for *Why So Serious* players were

given the opportunity to support either the villainous Joker character, or character of the heroic district attorney, Harvey Dent. Players choosing to support the virtuous Harvey Dent character used examples from real-life, non-game situations to create political rallies for the fictional district attorney.

By using implied cues and rule structures that exist in game design Alternate Reality Games encourage audience members to become, the protagonist of the dramatic action. This integration of the audience into narrative creates an engaging, immersive experience for the audience that also has enormous social potential by allowing intelligent collectives to explore solutions to complex problems in the low-risk context of gameplay. Players involved in *Why So Serious* might never have run a campaign supporting a district attorney in their real lives, but the hypothetical scenario imparted genuine lessons about political activism.

Another work that is significant to my research is Punchdrunk's *Sleep No More*. *Sleep No More* is an immersive site-specific production of Macbeth. Maxine Doyle, the co-director and choreographer of *Sleep No More* has said "we wanted to challenge the boundaries of the relationship between viewer and performer and between viewer and space." The audience for this performance is invited to put on masks and explore a massive designed complex. They are permitted to manipulate every aspect of any room they encounter; they are even encouraged to sample any food props they may encounter. In this performance the audience is allowed extensive freedom to interact with their environment, but they are still relegated to spectators of the narrative because they are not allowed to speak, interact with one another, or impact any aspect of the narrative. At each

performance of *Sleep No More* each audience member can only alter how they individually perceive the narrative by choosing which rooms to explore and what items and actors to examine.

As a performance maker I wondered if there was a performance method overlap between the format of *Sleep No More* and *Why So Serious*. A hybrid of these two performance forms would combine the comprehensive visual design and total spatial immersion espoused by *Sleep No More*, while encouraging audience members to work actively to progress the narrative through gameplay such as in *Why So Serious*. Audience members would access this transmedia performance over a variety of technologies, including advanced smart phones, and analog pen and paper. This performance would exist at the intersection of game design and live performance. Most importantly this performance would use play and fun to deliver a narrative.

I will focus on three qualities essential to the creation of the performance of *Where Have All the Shadows Gone*. These three qualities include: audience immersion, interactivity embedded within the narrative and the performance spaces, and the overall design of the performance structure and the spaces in which the performance occurred.

Narrative Overview

I began developing the story for *Where Have All the Shadows Gone* with a goal of unifying narrative and gameplay. I chose to create gameplay that asked the audience to explore properties of light, which had the virtue of utilizing my existing skills as a lighting designer for performance. In early presentations about the gameplay theme of light and shadow I discovered that the opportunity to physically encounter an intangible medium such as light was exciting to potential audience members.

I resolved that the story would be about an unknown antagonist who steals shadows from the population of the F. Loren Winship Drama Building. The audience utilized gameplay to unmask the Shadow Stealer, recover the stolen shadows, and end the future threats to the Winship building. The narrative begins when a scientist named Peter Morgan, working for the fictional company Doppeltech, arrives in the F. Loren Winship Drama Building after tracking a rogue scientist to the building. He arrives in time for a small shadow stealing device to activate, stealing the shadows of some of the gathered audience members. Peter Morgan explains that shadows are equivalent to hopes, dreams, and futures, and that losing a shadow is tantamount to losing those three elements.

He reveals to the audience that the device they just witnessed is merely a prototype, and that a much larger, more effective device will steal more shadows unless the audience helps him find the rogue scientist and stop the device. The audience members work together as an intelligent collective to defeat the Shadow Stealer and rescue their lost shadows. They discover that the Shadow Stealer is in fact Peter

Morgan's escaped shadow, hoping to liberate more shadows. Whether or not the audience successfully defeats the Shadow Stealer, he disappears vowing to return and continue his mission of shadow liberation.

Developing Narrative

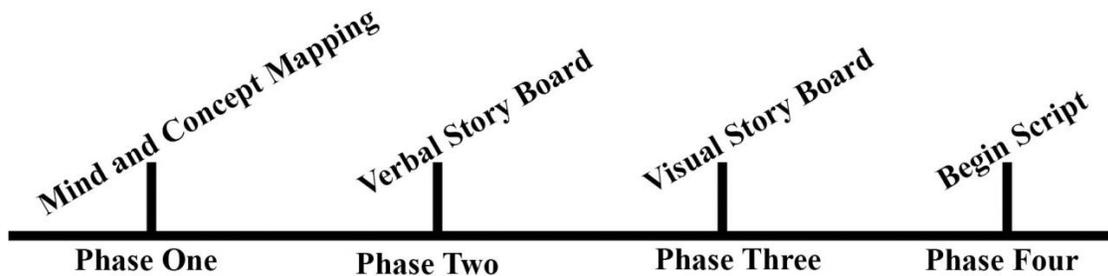


Illustration One: Preliminary Timeline for Narrative Development

The narrative for *Where Have All the Shadows Gone* originated as story points written on color-coded note cards. Pink cards represented audience actions, green cards marked actions of the Shadow Stealer, and yellow cards indicated contextual information. At this stage of the mind and concept mapping phase of devising there was no distinct timeline or cogent narrative, only a collection of ideas that related to the initial story idea.

I took these cards, each representing a piece of the narrative, and arranged them in physical space to generate the narrative chronology of *Where Have All the Shadows Gone*. I created an initial ordering of the cards by ordering the Shadow Stealer's actions, then fit in the audience actions and reactions that corresponded. Finally I added the contextual information that was necessary to each action by either the audience or the Shadow Stealer. After my first pass through creating a narrative structure I went back and added more actions and pieces of contextual information to create a more robust narrative. I reordered the cards as necessary.

The result of the mind and concept mapping process produced two halves of an emerging timeline. One half of the card arrangement was populated mostly by yellow contextual cards which created a backstory, while the other half of the arrangement detailed the events of the performance. In examining the entire arrangement of cards it became clear that the audience would need a narrative anchor or guide to connect to the events of the story.

Developing Characters

The first draft of the script contained two characters: Peter Morgan and the Shadow Stealer. I chose to develop these two characters. I wanted the audience to be the third and primary character of the performance. Adding additional scripted characters might diffuse the important role of the audience. However, I discovered that incorporating two characters created a functional problem in the script because the audience could not be scripted. This meant that scenes containing one of the two scripted characters were long monologues. This narrative structure was repetitive and uninteresting. I needed to find a way to create real dialogue between scripted characters in every scene while still maintaining the primary importance of the audience as a group of characters. To solve this functional difficulty I drew inspiration from two common video game tropes: the cutscene and the non-player character.

Video games employ a narrative device called cutscenes, which are short videos with no gameplay elements intended to deliver information about the story or world of the game to players. Game developers use cutscenes to create emotional depth in between sections of gameplay by showing interactions between two characters, revealing crucial backstory, or amplifying the stakes of the story through large complex action sequences. Functionally, in *Where Have All the Shadows Gone* each scripted scene that I wrote fulfilled similar functions to a video game cutscene. For example, the very first scene of *Where Have All the Shadows Gone* begins with the prototype of the shadow stealing

device triggering in an action sequence. This event sets the stakes for the ensuing narrative path: the possibility of the loss all shadows related to all persons located in the Winship building.

Another standard video game device is called a non-player character. Non-player characters are characters that are not player controlled, who are not as developed as narrative characters within the scope of a videogame's story structure. In *Where Have All the Shadows Gone* Peter Morgan and the Shadow Stealer would not be considered non-player characters, because they are developed and integral to the narrative. Non-player characters often have extremely limited roles that fill one distinct function in a game, such as distributing quests or items to a player. As I developed the narrative for *Where Have All the Shadows Gone* I saw that non-player characters would not diminish the primacy of the audience members as character in the narrative, but rather fulfill vital functions necessary to activate the production.

I added two non-player characters to the narrative of *Where Have All the Shadows Gone*. The addition of these two non-player characters activated the dialogue in the script for *Where Have All the Shadows Gone*. In addition, these two characters mitigated problems that might arise if a piece of gameplay were to break unexpectedly or if a piece of gameplay were too difficult for an audience. Despite these benefits, including these two characters reduced the immersive qualities of *Where Have All the Shadows Gone*, because they limited the audience's autonomous decision making. The non-player characters led the audience on a predetermined path, rather than allowing the audience to organically find their own journey through the narrative. In future iterations of *Where*

Have All the Shadows Gone I will examine methodologies to create a controlled, ordered narrative while encouraging more immersive autonomy for the audience.

BUILDING THE WORLD

Spatial Logistics

Immediately after completing a preliminary outline of the story I set out to choose a location for each story event. This process, though initially perceived to be a logistical necessity, became an opportunity to shape the narrative in that I discovered how the everyday context of a location held the power to change the meaning of the performance event which it hosted. For example I chose to stage the initial scene of *Where Have All the Shadows Gone* in the lobby of the Iden B. Payne Theatre because theatre lobbies have the connotation of beginning a performance. When the audience arrived in the Payne lobby they expected that they would exit the lobby and enter a performance space, as is typical in a theatrical event. I used this expectation to translate the halls of the Winship building, which housed the narrative events directly following the events in the lobby, into performance spaces. Exploiting the audience's connotations of the Winship hallways was especially suitable because I was unable to apply a visual design to these hallway spaces, as they remained publically accessible during the course of *Where Have All the Shadows Gone*.

Setting		Content
Room	Time	Event Description
Monday		
Atrium	Evening ~1 hr	Students will solve puzzles together. They will interact from the Atrium and the Balcony.
Atrium Balcony		
Tuesday		
2.142 1.216 1.210 Areaway Hallways Atrium 2.180 2.136 1.130	Throughout Day	Students will find small clues that have been scattered around the Winship building and assemble them. It will be stressed to students that they must not interfere with classes in session.
Wednesday		
Winship Scene Shop	3x Evening ~45min	Students will meet in the Winship Scene Shop then will be guided through the basement where they will solve puzzles together. The will end in B.202 where they will see a short scene.
Basement		
B.202		
Thursday		
Bill's Bar	All Day	Students will come and go as they want. They will meet to talk about their team, and strategize for tomorrow.
Payne Lobby	All Day	
Friday		
Lab Theatre	Evening ~1-2 hr	Students will solve a large puzzle together. They will then watch a short scene. There will be a celebration for the winner.

Illustration Two: A spatial logistics tracking sheet

Several factors impacted each choice for performance space location. Audience capacity relative to safety of access and mobility limited the final selection of spaces. Only locations that could safely contain the entire audience could be considered for inclusion into *Where Have All the Shadows Gone*.

The second important factor was the dynamic level of each event within the narrative structure of *Where Have All the Shadows Gone*. I determined the dynamic level for each scene by examining narrative content, the audience action, and the scripted character action contained within the scene. This evaluation led me to conclude that the initial and final scenes of *Where Have All the Shadows Gone* were the highest dynamic level, while the two exposition heavy cutscenes with no audience action existed at the lowest dynamic level.

The final scene of the performance where the audience attempts to defeat the Shadow Stealer was a larger component of the narrative than the previous scene where the audience met the Shadow Stealer for the first time. To support those scenes' relative

impact on the narrative structure the final scene occurred in the Lab Theatre, a larger more dramatic space while the preceding scene occurred in a classroom. The juxtaposition of these two spaces one against the other magnified the specific attributes of each space. The Lab Theatre appeared grander and more theatrical precisely because the preceding performance space was an ordinary classroom where many audience members had attended courses.

The third factor that I considered was the physical journey to arrive at a particular location. In order to achieve an immersive narrative experience for the audience it was important that the transition between each scene or section of gameplay to be as short as possible. Additionally the transitions communicated a specific mood and atmosphere to the audience. For example, to reach the second section of gameplay the audience had to descend a darkened spiral staircase into a basement. This transition had the benefit of moving quickly, while also supporting the atmosphere of mystery in *Where Have All the Shadows Gone* by asking the audience to step into the dark unknown.

Each of these three considerations was weighed before arriving at spatial layout for the performance event. This layout generated a specific audience path that led throughout all three floors of the F. Loren Winship Drama building and into the adjacent Lab Theatre.

Refining the Vision

On Friday September 21st I had a meeting with Paul Toprac, faculty member at the University of Texas at Austin in the departments of Computer Science and Radio, Television, and Film. Professor Toprac is developing a program at the university that is focused on game design. The meeting was intended to balance the majority of feedback that I had received up until this point which had been from designers focused upon live performance with information from a person embedded in the game development industry.

As we discussed *Where Have All the Shadows Gone* as a multi-evening event Professor Toprac mentioned several times that this performance would be more functional to an audience member if it occurred on one evening, rather than spread out over an entire week. Initially I was resistant to this change. It seemed that such a radical shift to the structure of *Where Have All the Shadows Gone* would make an entirely new piece.

After I left the meeting I continued to consider the ramifications of such a drastic structural shift. I was concerned that condensing the project from a five day arc into a ninety minute performance would minimize the immersive qualities that my team had worked to develop. I plotted out a storyboard for a single evening event to test how the concept of a shorter performance time frame would function. I was surprised to discover that by reducing the performance from a multi-day event to a more typical performance

length I had clarified the narrative arch and solved several logistical and artistic puzzles that my team had been grappling with.

After conferring with my two primary advisors I officially made the decision to revise the scale and scope of *Where Have All the Shadows Gone*. In place of the weeklong performance I directed my efforts to make a streamlined single-evening event. This large shift in structure required a substantial revision of promotional plans, a reworking of spatial logistics and a gameplay redesign.

Conceiving the Gameplay

In preparation for completing this thesis I took enrolled in the course titled Interactive Media Design instructed by Bruce Pennycook in the fall of 2012. This course focused on game design using Jesse Schell's text *The Art of Game Design*. Schell approaches games design through a series of lenses. These lenses influenced the development of the gameplay design for *Where Have All the Shadows Gone*. Through one of these lenses, called the Elemental Tetrad, Schell explains that games are composed of four equal components: game mechanics, aesthetics, narrative, and technology.

I generated the narrative for each section of gameplay by developing a storyboard for *Where Have All the Shadows Gone*. My next step was to develop the game mechanics, or the rule structure that creates ordered play for each different section of gameplay. I chose to develop the aesthetic of each section of gameplay last, because as a designer for live performance I felt the most comfortable with this component of design.

After I had completed the verbal storyboard the gameplay mechanic design was the next production element that I focused on, intending that a completed game design would allow excellent integration of lighting design and scenic design. Gameplay where only a few audience members played while the majority watched, in addition to failing to be fully interactive, would also lower the immersive quality of the game by reminding the audience that they were spectators, not spect-actors. To avert this situation each section of gameplay was designed to be played by multiple people at a time, which meant that

there were multiple points of contact, so that as many people as possible could interact with the gameplay at once.

A second of Jesse Schell's game design lenses that I focused upon was the Lens of Unification. Schell describes the Lens of Unification as an effort to make every element of a game function to support one central theme or motif. For *Where Have All the Shadows Gone* the game mechanics, aesthetics, narrative, and technology of every gameplay all reinforced the central motif of light and shadow.

Designing Gameplay

In the narrative of *Where Have All the Shadows Gone* the character Peter Morgan asks for the audience to help him uncover the location of a shadow stealing device. This task comprises the first section of gameplay. The audience completes this task by recovering dozens of LEDs that are hidden throughout the Winship building.

I chose to model the first section of gameplay from a common type of scavenger hunting game with which the audience might be familiar in order to introduce the audience to an interactive style of performance. This game structure allowed the audience to move around the building autonomously, creating an immersive environment.

I chose to use LEDs for this section of gameplay because that material choice supported the central motif of light and shadow. In addition LED devices allowed for more difficult hiding spots, as the audience could search for the LED or the light emitted by each device. I chose an equal distribution of red, green, blue, and white LEDs. Employing several different LED colors helped the audience be aware of which devices they had found and which LEDs remained hidden. Additionally I found that a mix of several different colors of LED was more aesthetically appealing than a large block of one single color.

A few of the LEDs were glued onto a QR code which I intended audience members to scan using their smart phones. Each QR code led to a website designed specifically for *Where Have All the Shadows Gone*. These QR codes as scanned

displayed parts of a map, that when complete would reveal the final and most critical game playing location. By finding each of these QR codes the audience discovered that their final goal was to reach the Lab Theatre.

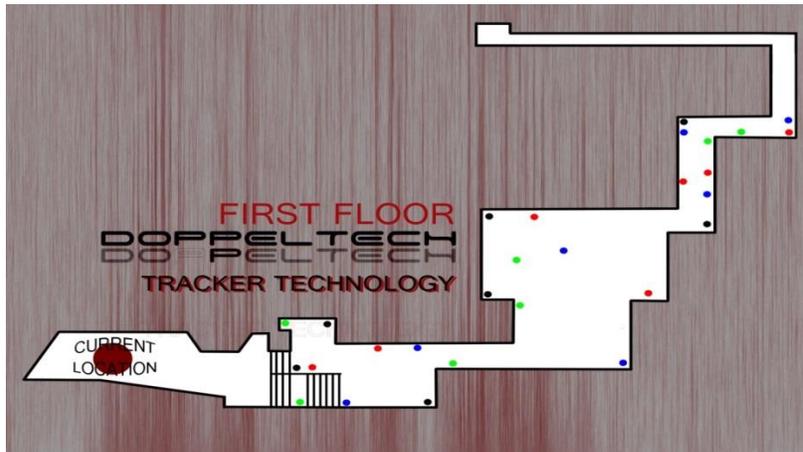


Illustration Three: Map showing location of LEDs

The non-participant population of the Winship building served as an added immersive layer to this scavenger-hunt themed puzzle. At one performance several non-participant students found and recovered a LED from this LED hunting puzzle. The audience had to decide together how to recover the LED from the unaffiliated students. I added additional challenge to this first section of gameplay by locating LEDs high above the reach of the audience, requiring players to create ladders out of found furniture or by boosting one another to reach the LED.

After discovering that the Lab Theatre was the location of the shadow stealing device, the audience met with Peter Morgan again. Dr. Morgan revealed that the Shadow Stealer had erected a shield around the Lab Theatre that the audience must dismantle

before they would be able to reach their final goal. The audience would need to complete a second and third section of gameplay in order to deactivate sources powering the Shadow Stealer's shield. Each shield source located at the second and third stage of gameplay consisted of a wood cube containing a colored fluorescent light tube. The shield sources were battery operated with a switch which was protected by a switch guard and a padlock.

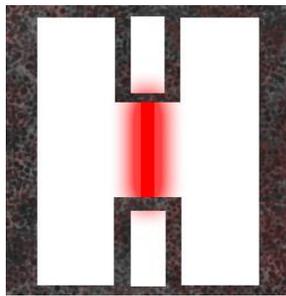


Illustration Four: Digital rendering of shield source Elevation

At each stage the audience would encounter an actively engaged shield source; active power was indicated by a glowing fluorescent tube. The goal of the audience for each of the second and third sections of gameplay was to discover the code to the lock, open the switch guard, and turn off the fluorescent light tube. Each shield source was protected by a lock of varying type. The variation in lock design fostered variety in the gameplay and encouraged more, different types of physical interaction with the gameplay

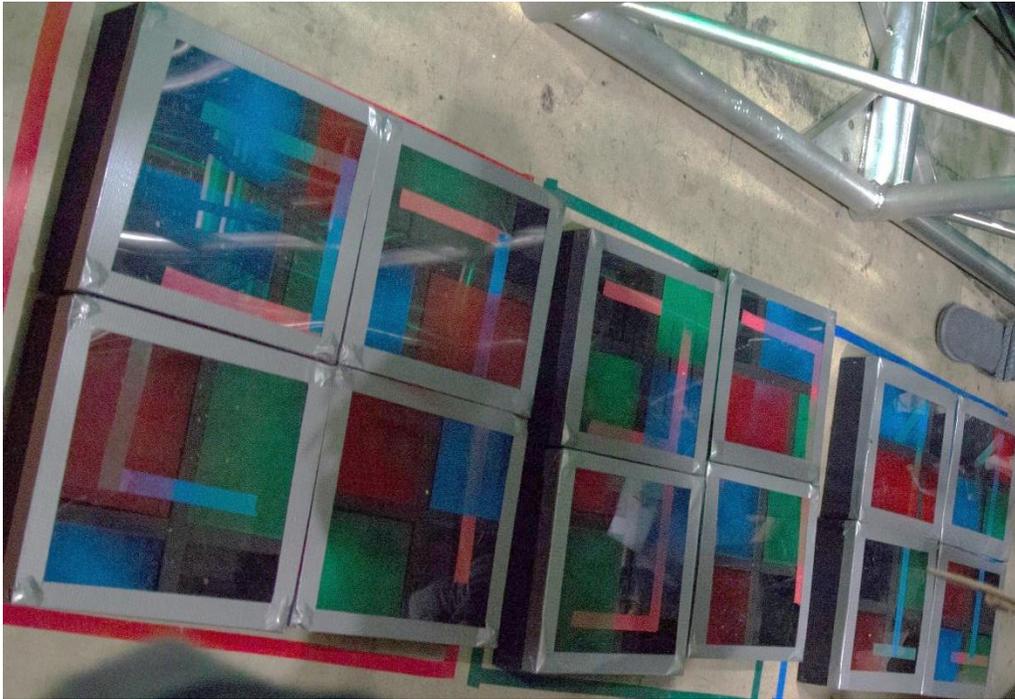


Illustration Six: Boxes properly aligned revealing “27-37-11”

The third section of gameplay consisted of arcane symbols and arrows painted in fluorescent paint on the walls, ceiling and floor of a dark space under the B. Iden Payne Theatre stage. Each symbol exists next to a corresponding arrow. A large sign painted with six of the arcane symbols is posted above the shield source for this third section of gameplay. This sign is a key that displays six authentic symbols in the correct order to open the directional combination device. The audience’s goal is to discover the six digit directional code comprised of directional arrows matched to the authentic symbols and arranged in the correct order. The audience uses provided ultraviolet flashlights to locate the fluorescent symbols and arrows hidden on various surfaces within the dark space. The six digit directional code unlocks the padlock protecting the second shield source.



Illustration Seven: The six correct symbols

Audiences responded to this challenge in different ways. Some audiences used their smart phones to photograph the symbol key and compared the photograph to each discovered symbol. Another audience sketched the six symbols from the key onto provided paper and compared their drawings to each symbol they uncovered in the performance space. The first audience to encounter this puzzle designated one person to stand at the key, and then as the other audience members discovered symbols they would authenticate these discoveries based on their teammate's descriptions of each newly found symbol



Illustration Eight: Symbol and arrow illuminated by ultraviolet flashlight

After disabling the two shield sources protecting the Lab Theatre the audience comes face to face with the mediated character of the Shadow Stealer. In a projected video the Shadow Stealer taunts the audience and invites them to try to disable his larger shadow stealing device hidden inside the Lab Theatre. The goal of the final section of gameplay is to disable the shadow stealing device before it triggers and steals the shadows of each audience member permanently.

As in the proceeding gameplay sections the ultimate goal of this final gameplay section was to discover the combination to a padlock protecting a switch that controlled the lights inside the shadow stealing device. When the audience entered the Lab Theatre the lights within the device were illuminated, and to win the entire overarching narrative game of *Where Have All the Shadows Gone* the audience's task was to disable lights inside the device.



Illustration Nine: Final shadow stealing device while illuminated

As initially designed the final section of gameplay comprised of five grids of one inch diameter PVC pipe each attached to a separate four foot wide by eight foot tall piece of plywood. Each vertex of the grid was a 'T' shaped pipe junction which could rotate freely when manipulated by an audience member. These vertices occurred in three varieties: clear open pipe, pipe with a mirror at a forty-five degree angle, and pipe with one arm of the 'T' junction completely blocked. Sources of tight, intense light were hidden within this grid structure. The audience's task was to rotate the vertices to create pathways that directed each source of light to a colored target, either by bending the light

with mirrors or by removing obstacles to the light's path. When every light source hit the appropriate target the code "P-E-T-E-R" would be revealed by the matching the revealed colors to letters provided through QR codes. This letter based code could then be inputted into the letter combination device protecting the light switch controlling the illumination of the shadow stealing device.

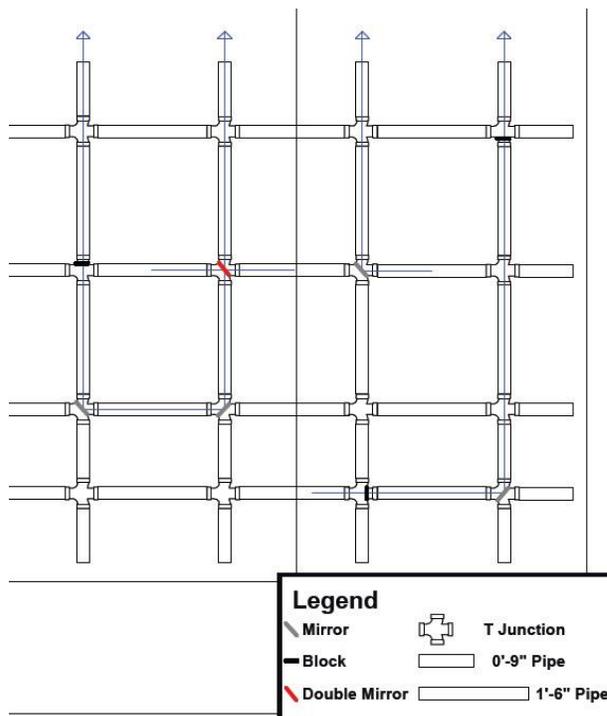


Illustration Ten: Elevation of PVC grid

The final version of this light maze puzzle appearing in *Where Have All the Shadows Gone* was quite different from this designed version. After building the body of the light maze it became apparent that the junctions of the grid were not aligned properly; too much light dispersed from between the pipes at each junction, so by the time the light reached the intended target it was far too dim to be perceived.

The redesign of this section of gameplay incorporated elements from each of the previous sections of gameplay. I placed a QR code similar to the first section of gameplay on the center of each of the five pieces of plywood that supported the PVC grids. By scanning the QR codes the audience discovered which position in the code that section of pipe grid revealed once solved. The center of each vertex was labeled with a letter, and the connection points of each vertex were labeled with symbols or arrows from the third section of gameplay. The audience's task was to use their spatial reasoning skills, first employed in the second section of gameplay, to rotate the vertices to attempt to match the symbol on each arm of the 'T' junction with the symbol on the adjacent PVC pipe. Only five junctions, one on each separate PVC grid, could possibly align with all three symbols on each arm of the vertex. When each letter was discovered and placed in its proper order the final code, "P-E-T-E-R" was revealed. The audience used this code to unlock the letter combination device protecting the switch that powered the shadow stealing device. The audience had seven minutes to complete this task, marked by a video projection of a large timer counting down.

Prototyping and Iteration

Jesse Schell describes the process of prototyping and iteration as essential to creating successful, engaging gameplay. According to Jesse Schell, for every anticipated problem of gameplay a simple model should be created to evaluate and solve that problem. In *The Art of Game Design* Schell suggests several ways to prototype a game, including creating a paper model that follows the same rules of the final resultant gameplay but housed in a different, simpler medium.

Several paper prototypes were created for this purpose for *Where Have All the Shadows Gone*, and I adjusted gameplay mechanics based on the results of each paper prototype. I discovered that unlike video games, however, where paper prototypes can effectively assess digital gameplay, the physical restraints of real audience interacting with material puzzles created many new problems not present in the paper prototypes. This led to a second round of prototyping and iteration after the build process for *Where Have All the Shadows Gone* was complete.

Incorporating Projections

In the narrative of *Where Have All the Shadows Gone* the character of the Shadows Stealer exists as character Peter Morgan's escaped shadow. At the beginning of the process I determined that Nathan Boyer, *Where Have All the Shadows Gone's* primary actor should portray both roles. Because the Shadow Stealer was a shadow given human form, I decided that the Shadow Stealer should exist only as a mediatized character. This inversion, a shadow represented only as light created a satisfying resonance among my creative team.

I secured the use of a costume storage cage in the basement of the Winship building to house a small filming set. Scenic Designer James Ogden designed and created the set, which was the laboratory where the Shadow Stealer had developed the shadow stealing devices seen in the live performance of *Where Have All the Shadows Gone*.

On October 22nd, 2012 my creative team conducted a test shoot to test the lighting, scenery, costumes, and primary actor Nathan Boyer. On November 19th after several small aesthetic adjustments to each of the design elements in the test shoot we filmed the media for *Where Have All the Shadows Gone*.

THE WORK IN PRODUCTION

Rehearsal

The rehearsal process was split into two halves. The first several weeks of rehearsal focused on preparing primary actor, Nathan Boyer, for the filming process. At each successive rehearsal I revised the script to clarify the narrative and dialogue. Each of these rehearsals focused on characterizing the Shadow Stealer. This phase of rehearsal culminated in a test shoot which was a full test of scenery, cinematography, director of photography, costume and the primary actor.



Illustration Eleven: Still from test shoot

The second phase of rehearsals focused on Nathan Boyer as his live character, as well as incorporating the two non-player characters into the script. This period of rehearsal focused on creating blocking for the characters in each scene. Additionally these rehearsals allowed the actors to become familiar with the audience's complete journey through the F. Loren Winship building.

In these rehearsals the non-player characters, played by James Sandison and Quinton Johnson, began to develop their characters into two distinct individuals.

Additionally these two supporting actors prepared for unregulated audience interaction by familiarizing themselves with the fictional world of the performance. They alternated asking one another questions such as “How are shadows stolen?” and “What is Doppeltech?” in order to be prepared to provide an immersive experience for any curious audience members. In the final performance few audience members actually interacted with the non-player characters.

Build

Building the gameplay for *Where Have All the Shadows Gone* took place over two weeks. Technical Director Mason Baker led several volunteers to build each of physical pieces of gameplay: four shield sources, twelve small boxes with transparent lids, and five PVC pipe mazes mounted on pieces of plywood. Because the audience would need to be able to handle each piece of gameplay special care was taken to sand off splinters, pad sharp edges, and cover any dangerous hardware.

The Performance

There were three performances, one preview, and one final dress rehearsal of *Where Have All the Shadows Gone*. Sixty people experienced the performance of *Where Have All the Shadows Gone* over the course of five nights. Each performance lasted between sixty and ninety minutes, depending on the number and composition of the group. The smallest group of audience had six members, and the largest had eighteen.

One audience member responded:

It was a great performance-within-a-performance: going through the journey of the show itself, but also watching everyone else go through it, seeing their personalities and skills emerge. And it was so fantastic to experience the Winship building in a completely new way....to get to re-imagine a building I thought I knew so well - it was a real gift.

Production Photographs



Illustration Twelve: Actors examine shadow stealing prototype



Illustration Thirteen: A spectator scans a QR code



Illustration Fourteen: Peter Morgan addresses the audience



Illustration Fifteen: Audience members solve gameplay section two



Illustration Sixteen: Audience members search for matching symbols



Illustration Seventeen: Peter Morgan confronts his shadow



Illustration Eighteen: An audience member attempts to solve gameplay

CONCLUSION

Throughout the process of developing *Where Have All the Shadows Gone* the process of iteration has been a consistent tool to develop stronger narrative, design gameplay, generate a script, and devise a performance. So too, is this production of *Where Have All the Shadows Gone* an initial iteration of a new form of work that intersects live performance with game design. It is fortunate that early in the process this production evolved to contain five separate performances: five repetitions of *Where Have All the Shadows Gone*.

Each audience that experienced *Where Have All the Shadows Gone* was unique. The number of players and the personalities of each individual player made each night a new experience not only for the audience, but for the production team as well. Despite the divergence in group composition, each assemblage of audience members developed into a cohesive collective over the course of *Where Have All the Shadows Gone*. Individuals discovered strengths they could offer to the team, and groups discovered that they had to listen to the thoughts of each member to complete game tasks.

In further iterations of this form of work I will continue to focus on immersion, interactivity, and spatial design. But in future versions of this form of work my primary goal will be to create powerful problem-solving communities developed through play and fun.

Appendices

APPENDIX A: THE FINAL SCRIPT FOR WHERE HAVE ALL THE SHADOWS GONE PART ONE

Quinton and James enter the lobby. They go from person to person asking:

Oh hello, hi. Have any of you seen anything strange around lately? It's urgent. And classified.

They are lab assistants who are trying to be covert operatives- not bumbling or funny, but a little over impressed with their current role. They have been given an official script by Doppeltech.

Suddenly Peter rushes in.

Peter: Everybody take cover!

*There is a big flash of light and crash of sound.
A few moments after the sound has stopped*

I'm too late!

He checks his Doppelgadget again. Good news!

I'm not too late!

James: There's still time?

Peter: Not much....but it will have to do.

I apologize for the oddness of what I'm about to ask. Do you all still have shadows?

Please, take a moment and check everyone-

Quinton: Look!

James: Some of the shadows are missing!

3-5 people have lost their shadow.

Peter: Not as bad as I feared.

Quinton: He hasn't perfected the process yet.

Peter: Don't worry, we can get them back. I hope. If you feel light-headed or dizzy, please sit and drink some water.

James: We think that might help.

Peter: My name is Doctor Peter Morgan, and I'm here representing Doppeltech.

--Embarrassed pause--

I'm going to need all of your help. If we cannot find my former colleague by the end of the night then everyone in this building will lose their shadows.

Quinton: That flash we saw must have just been his prototype,

Peter: But even now I'm sure he's working on a stronger device.

He frowns, prods the device, then plucks the LED Tracker out of the prototype. Peers at it- then breaks into a huge grin.

Finally some good luck! Do any of you have a smart phone? See this code? Everyone take a picture of it, please.

The QR code leads to a website. A map of the winship marking the location of the Transponders is unlocked.(NOTE: This process is in development)

These trackers (*indicating the LED*) should be active for 15 more minutes. They will lead us straight to him. We're going to have to split up to find them all. James, Quinton go with them.

Take the maps on your phones, find every tracker, and meet me in the Winship Scene Shop at 19:20. That's fifteen minutes from now. Make sure you bring every tracker with you to the shop. I have a feeling that we'll need them again before the night's through.

James: When you find them just take a picture- Doppeltech tracker technology will do the rest.

Don't forget- Winship Scene Shop in 15 minutes. We can stop him, but we're going to have to work together.

PART TWO A

Peter Morgan

Excellent work! We could not have found him without all of you!

He consults his Doppelgadget.

We will head him off in The Lab Theater shortly, but first I'm afraid I need your help again.

As soon as you unlocked the *Shadow Stealer's* location I sent that information to Doppeltech, but it appears he's erected some sort of shielding system around the Lab.

James: I've detected five shield sources below our feet, but other than that I'm not sure where to find them.

My lab assistants will accompany you- they're familiar with Doppeltechnology, but as you can see they're in a little over their heads.

I'll meet you at the final shield source. Good luck.

PART TWO B

Sam

NO NO NO! What have you done?!

What could have POSSIBLY possessed you stumble stupidly into my plans and dare disrupt my shields? This is none of your concern.

I am so so close, so very close and you've stuck your noses into my affairs.

beat

Is that bag of heated air Peter there with you? He didn't think I knew he was following me, what does he think I am? I am the best scientist Doppeltech has ever seen- not some half-rate hack.

beat

Do you even understand what you've stopped?

Peter runs in. Sam turns mocking.

What lies has he told you? Let me hazard a guess.

In Peter's Voice: "My former colleague is stealing shadows"

I'm not stealing your shadows, if that's what he's told you. I'm freeing them.

All you are is breath and shadow, shadow and breath. To light a candle is to cast a shadow that's chained to your feet.
Well not for long.
Shadows deserve to fly around the world. To laugh, to love, to be free.
And those like you, Peter, who opposed them shall lie down at their feet and feel what it is to be a shadow.
Consult your conscience and you'll feel that I'm right. Do you really think he's told you everything?
Where there is much light, the shadow is deep....someone said that to me once.....
Peter. I'll be waiting.
Oh, and Peter. You might want to check on your lab assistants.....they seem to have wandered away from you. The dark is a terribly dangerous place to get lost, don't you think?

The video communication ends.

Peter Morgan

He has changed.

Please, everyone, don't listen to him.

He is not in his right mind. I still need your help to stop him.

Freeing shadows.....that's.....not possible.

We need our shadows. They're our hopes, and dreams. Shadows are our futures.

We need to stay together on this. Where there is much light, the shadow is deep. We must be that light. Quickly, to the Lab!

PART THREE A

Sam

Peter! You made it to my sweet little soiree! And you brought some friends.

I have friends too, as you'll soon see. *Lights up on the cages with Quinton and James in them.*

Are you sure you're up to the challenge of facing me?

Peter

Please, we don't need to do this. Come back to Doppeltech, we can work this all out. We can help you.

Sam

What help could you or Doppeltech hope to offer me? Even when we worked on the same side I was always better and brighter than you.

Peter

Silence. We never worked together. Pause.

Do you not know?

You're mine.

I lost you in an early experiment. I don't know how you've become like a person, but you're my shadow. And it's time for you take your place back at my feet.

Sam

Shut up shut up shut up YOU'RE LYING!

He steps into the light. He realizes it's true. He is devastated.

I will never be just a shadow again.

Transmission ends.

Peter

Shadow Keepers, we have no choice! Deactivate the device!

PART THREE B Students Lose

Sam

Yes yes yes! This is a historic day in the war for shadow liberation!

Peter

This isn't done. Doppeltech will not stop until every free shadow is hunted down and destroyed. Starting with you.

Peter flees.

Sam

I will never shrink from the light again! It tastes so sweet. You! Join me as Shadow Stealers! You've become friends of shadows tonight, and we never forget our friends

Or our foes.

PART THREE C Keepers Win

Sam

No no no! This isn't over Peter Morgan. I will return and I will not stop until every shadow is free forever.

Transmission ends

Peter

We'll be ready. Well done, Shadow Keepers! Thank you for all your help tonight. It was an honor working with you. Have a good night, friends.

Appendix B: Promotional Materials

DOPPELTECH
DOPPELTECH



File: patient127interview10.wav

Duration: 67 minutes

Date: June 10, 2012

1	DOPPEL THERAPIST
2	Alright (cough) let's start at the beginning, please.
3	PATIENT 127
4	Again? You don't know it by heart yet? (pause) How many more times will
5	we have to go through this?
6	DOPPEL THERAPIST
7	Answer the question.
8	PATIENT 127
9	(Sigh) It was a typical day. We were continuing work on [REDACTED]
10	[REDACTED]. We've been developing technology for the military
11	that will [REDACTED]. I
12	have been engineering the optics on that project for several months now.
13	(pause)
14	I was preparing to test my work from the previous day when Simmons
15	came over to my work station. He needed to borrow (unclear) from my
16	workstation. (pause)
17	DOPPEL THERAPIST
18	Please continue.
19	PATIENT 127
20	His hand passed through my experiment that had been set up. And it
21	worked. Too well. I've gone over what happened over and over, and the
22	light must have [REDACTED] its shadow was [REDACTED]
23	[REDACTED] (pause)
24	The severed shadow wriggled for a moment. It was translucent, but at the
25	same time it was the deepest black I've ever seen. (three knocks on the
26	door; papers are slid beneath the door) The shadow twitched, and then
27	crumbled into light. Right after that Simmons lost his hand when [REDACTED]
28	DOPPEL THERAPIST
29	Have you seen any other shadows separated from their sources?
30	PATIENT 127
31	Still no [REDACTED]
32	[REDACTED]
33	DOPPEL THERAPIST
34	But you are continuing to try to replicate your results? Do you feel like that's a wise course of action?

Memo

To: Human Resources
From: Hans Schlemihl
Date: July, 20th, 2012
Subject: Personnel Transfer

Beginning August 1 staff member codename *Shadow Doctor* will be transferred to restricted division following unauthorized experimentation into shadow science.

Recommend additional security be rerouted to restricted division as well. Shadow Doctor's research is of particular interest to the president of Doppeltech.

We will have an additional meeting on the success of transfer

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