

LOST CAUSE: AN INTERACTIVE MOVIE PROJECT

by

Kirsten Johnson
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APPROVAL

Name: Kirsten Johnson
Degree: Master of Arts
Title of Thesis: *Lost Cause: an Interactive Movie Project*

Examining Committee:

Chair: **Thecla Schiphorst**
Associate Professor

Jim Bizzocchi
Senior Supervisor
Assistant Professor

Diane Gromala
Supervisor
Associate Professor

Patricia Gruben
External Examiner
Professor

Date Defended/Approved: _____

ABSTRACT

One of the challenges in designing an interactive cinematic experience is to offer interactive choices which do not distract from immersion into the story. The interactive movie project, *Lost Cause* focuses on the life of the main character explored through the inter-related perspectives of three other characters. *Lost Cause* supports an immersive interactive story experience through its correlated design of an interface, narrative content and narrative structure. The movie project is examined from several theoretical perspectives: cinematic roots, narrative construction, interface design, and interactive experience. This analysis reveals critical insights into database narrative structure, interface, agency and immersion. The design of *Lost Cause* was analyzed through a user study to observe how viewer interpretation and experience affected immersion into the story. The results from this study suggest the overall design is effective and provides various degrees of viewer immersion through the different techniques used.

Keywords: interactive narrative; interactive cinema; immersion; narrative database; split-screen

Subject Terms: interactive art; interactive video; narrative art

DEDICATION

To my mom and Uncle Bruce

“For their support throughout my life”

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1 INTRODUCTION

1.1 Interactive Cinema

Interactive cinema produces new and engaging story experiences for viewers by combining elements from traditional linear forms of storytelling and from interactive digital media. Voting systems in theatres and menu options in DVD systems are different interface designs made for interactive movies. These interactive movies are entertaining, but at times may not allow viewers to become immersed into story or sustain enough pleasure for repeated viewing. For example, the interactive movie *I'm Your Man* (Graham & Bejan, 1992) allows viewers to decide which direction the plot should move forward. The film has a choose-your-own-adventure structure, where a choice must be made from a list of options each time the story-tree reaches a branching point. While interacting with *I'm Your Man*, the movie halts and viewers must make a choice that will move the plot forward. In this type of cinematic system, when viewers interact, they may be taken out of the immersive experience. This example demonstrates how interactive film-making may not provide viewers with the same immersive experience a viewer feels when engaged with the narrative of a linear film.

In current motion pictures, filmmakers have expanded the experience of storytelling by making it more challenging for viewers to decipher the story. One common form of complication is in the presentation of the narrative as a complex plot. A second form is in the fragmentation of the frame into multiple split-screen

windows, and the channelling of story across these multiple windows. Both plot complexity and multi-window storytelling can be integrated with interactive cinematic systems to provide explicit choice for viewers as a central component of the design and the experience. The interactive movie, *Lost Cause* uses both of these aspects in its design.

The goal of designing an interactive movie is to create a successful experience for the viewer. A successful experience includes both the enjoyment of interacting and the ability to be captivated by the story. However, it is difficult to create an interface and a narrative structure, which provide active choice without distracting the viewer from the immersive experience. There are two main issues when creating a successful experience in an interactive narrative. The design should maintain narrative coherence, and the viewer should be immersed while interacting. If an interactive narrative is unable to maintain narrative coherence, it is also unlikely that a viewer will be immersed into the same experience. If both of these problems are solved, the design of an interactive narrative will most likely generate a successful experience.

A few different theories of viewer immersion in digital environments can point to solutions for these two issues. One such concept is viewer oscillation, which utilizes both the immersive nature of the story and the engaging moment of interaction. Another concept is challenge-based immersion or a state of flow, where viewers are focused on discovering the narrative content through their interactions. These theories may be put to practical use and some concepts can help to design an immersive yet engaging interactive story experience.

The interactive short film *Lost Cause* attempts different solutions in the correlation of its interface, interactivity and narrative structure. A user study evaluated how well an immersive interactive experience was achieved. Participant's actions were observed while interacting with *Lost Cause* and a questionnaire and a short interview were conducted to better understand the viewer's experience and their comprehension of the story. The results from the study evaluate the success of immersion with respect to story and the enjoyment of interactivity. The findings from *Lost Cause* suggest it has a successful design that accommodates different preferences for interaction style.

Although it has been often viewed on a stand alone computer, the interactive film *Lost Cause* can be classified as similar to "web cinema". It is multi-linear narrative video, which incorporates embedded interactivity in its design and is not considered to be a game. The interactive film *Lost Cause* incorporates multi-linear plots, which are common in dramatic narrative films, including feature-length Hollywood films. However, web cinema differs from standard theatrical cinema in a number of different ways as defined by Barry (2003). Web cinema is usually watched on a computer at a desk by a solitary viewer and the stories are quite short. Web cinema is usually created by a single person who writes, directs, and edits the piece. Because it requires some type of internet connection, therefore the "visual aesthetics of web cinema reflect the vagaries of the network, and the resulting image size" (Barry, 2003, pg. 545). Lastly, "because the internet is digital and interactive, it doesn't confine web filmmakers to a single narrative structure" (Barry, 2003, pg. 545).

1.2 Research Question

There are two main challenges in creating interactive cinema. The first challenge is to maintain narrative coherence and understanding in the design of an interactive narrative structure. The second challenge is to design an interface for a narrative structure that can maintain viewer immersion while allowing the viewer to actively make choices. In an attempt to solve these problems with interactive cinema this thesis addresses the following question:

How can the combination of narrative structure and interface design maintain narrative coherence and viewer immersion in an interactive movie?

1.3 Hypothesis

The hypothesis is that it is possible to design an interactive movie that supports an immersive experience. In order to test this hypothesis, specific factors such as immersive problems and solutions in interactive narrative structures were investigated. These factors influence an interactive narrative design, which includes story material within a three-part narrative structure, and an interface that allows the viewer to easily traverse the three narrative streams. The interactive movie *Lost Cause* supports choice, narrative pleasure, oscillation and challenge through the design of three factors: overall narrative structure, specific narrative content, and appropriate user interface. The combination of these factors in *Lost Cause* supported an immersive experience.

2 METHODOLOGY

The area of research in this thesis focuses on interactive narrative for cinema and solutions for the two main problems of immersion and narrative coherence. The hypothesis and claim is investigated through the theoretical background research which outline the problems in designing for immersion, the interactive movie projects, and the results from user tests on this project.

The theoretical background research includes a review of relevant theoretical literature which specifically investigates theories in narrative, film and new media. These theories attempt to explain the problems and current solutions dealing with viewer immersion and narrative coherence in interactive cinema. The literature reviews alternate forms of narrative which include: alternative plot structures, micro-narratives, database narratives and interactive narrative structures. Interactivity which is specific to interactive narrative is evaluated through defined interactive structures, examples of interactive films and its relation with immersion. The background research also includes observations and analysis of recent films plot structure and new media projects. All the findings present different theoretical solutions to the problems listed in the research question.

Based on the findings described in the theoretical background I have designed and produced two interactive cinema projects as case studies which facilitate the exploration of my research question and test the theoretical

solutions. *Interactive Short Cuts*, (Section 4.1) is a case study in designing an interactive narrative and is an informal proof of concept based on the theoretical background. It was designed to determine if alternative narrative structures used in current linear media were functional in developing an interactive format. The main purpose of the project was to convert the linear movie *Short Cuts* into an interactive narrative movie. The linear narrative structure of the movie was broken down into a database and then a functional interface was designed for this database. *Lost Cause* (Section 4.2) was also a case study which builds on *Interactive Short Cuts* and reviews the theoretical research. This project was then evaluated through a user study. The two case studies put the theory into practice and the user study provided empirical evidence of various solutions described in the theory.

The design of *Lost Cause* consists of three parts: the narrative structure, specific narrative content and the appropriate user interface. The design of the narrative structure is influenced by alternative plot structures defined by Berg (2006) and the interactive architectures evaluated by Ryan (2001) and Crawford (2005). The specific narrative content and narrative structure were designed together. As one of these changed the other was affected. Its interface was then designed to reflect its structure and was influenced by split-screen effects and the theoretical literature. The process of designing this project was iterative and cyclical. The narrative structure was developed during the same time as the narrative content was developed and then the interface was adapted accordingly.

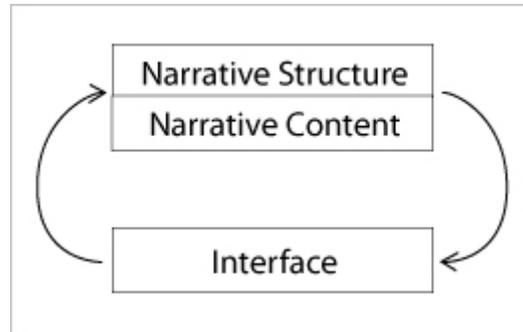


Figure 1: process design of *Lost Cause*

Once the design of *Lost Cause* was created it was unclear how the viewers would respond and what their experience would be. Thus, a user study was conducted to evaluate the design of *Lost Cause* and the solutions used for supporting immersion and narrative coherence in an interactive movie. The user study consisted of questionnaires, user observations and a short interview. Twenty participants who had no previous knowledge of the system participated in the study. The participants were of both genders and ranged from ages twenty-two to sixty-five years old. Approximately half of the participants were graduate and undergraduate students and the other half were not students, but were a mix of different ages.

The user study was constructed into two parts. The first part allowed participants to interact with the film while observations of their interactions were recorded in notes. The second part consisted of a questionnaire and a brief interview on their experience. Before the participants interacted with the film, a brief animation explained how they were to interact with the piece. All participants were encouraged to interact. A demonstration was shown to participants who did not know how to interact. During the viewing of the film the participant's

interactions were observed and the observations were recorded in notes. The notes listed specific parts of the plot that were selected by the viewer and displayed on the large screen. The notes also included which of the three endings they watched and whether or not the viewers interacted a lot or not at all. If a participant took their hand off the mouse or hardly moved the mouse, this was noted as not interacting with the piece. There was no time limit, as the length of the movie plays straight through for fifteen minutes and then stops. The participants were allowed to interact and experience the interactive movie only once and were then required to complete the questionnaire and interview. Those who wanted to watch the movie again, could do so once the questionnaire and interview was completed. The questionnaire contained questions with yes or no answers regarding their interactions and ability to focus on the story. Another section of the questionnaire had the viewers rate possible reasons that motivated their interactions in the split-screen interface. The participants were then briefly interviewed on their interpretations of the story, character and what they enjoyed or did not enjoy about their overall experience while interacting with the film. The interview encouraged open-ended responses by asking the participants to describe or summarize. After the interview, the viewer observations were compared with their answers on the questionnaire.

The results from the questionnaire and interview provided data which could be evaluated to discover if the design of *Lost Cause* supported an immersive experience for the viewers. The results address the design of the interface and whether or not it encourages interactivity and whether or not

interactions distracted from the story. The results also address how the narrative structure and content affected viewer's interpretation of story and if narrative coherence was maintained in the design. The results also address how the overall experience was pleasant or successful. The data from the user study and my own design intentions were evaluated and organized into findings. These findings were compared and analyzed in the context of relevant New Media theory, defined by theorists; Crawford, Csikszentmihalyi, Manovich, Murray, and Ryan, in order to determine how successful the design supported an immersive and enjoyable experience for the viewers. The analysis of the data is used to explicate how *Lost Cause* was able to maintain narrative coherence and viewer immersion through its design. This conclusion maintains that the interactive movie *Lost Cause* is an example of an interactive movie that supports an immersive experience for interactive movies.

3 THEORETICAL BACKGROUND

3.1 Narrative

In traditional storytelling and Hollywood filmmaking narrative is defined by Bordwell and Thompson (2008) as a “chain of events in a cause-effect relationship occurring in time and space” (p. 75). This definition of narrative can be broken down into plot and story. Plot is defined as “everything visibly and audibly present” in the sequence of events that is presented to a viewer (Bordwell & Thompson, 2008, p. 76). Story is the interpretation by the viewers of the cause and effect relationships between the sequences of events (Bordwell & Thompson, 2008). In a film, a sequence of shots is considered the plot. What the viewer imagines and interprets between this sequence of shots, is the story.

Plot in Hollywood filmmaking is usually arranged into a narrative arc structure, which consists of “the setup, the complicating action, the development, and the climax” (Thompson, 1999, p. 28). Thompson (1999) describes the setup as an established initial situation, which includes the main character’s goals. The complicating action is an event which “takes the action in a new direction” making the main character’s goals more difficult to achieve. The development is where the protagonist “struggles toward his or her goals”. This section is the largest part of the plot. The development phase generally ends and the action shift towards a climax when the main character’s goals have been accomplished. The final stage is a conclusion, where all the loose ends are resolved. The narrative arc brings

all the pieces together making it easy for viewers to understand and make sense of the story.

3.1.1 Narrative Framework

J. Hillis Miller defines a framework for narrative consisting of three parts (Salen & Zimmerman, 2004). Firstly, a narrative should have events in the plot, which change over time and present the audience with causality. Secondly, there should be a representation of character in some form. Thirdly, narrative should be presented in some type of form. The “representation is constituted by patterning and repetition” and is considered the “material form of the story or its conceptual themes” (Salen & Zimmerman, 2004, p. 380).

Ryan (2006) has organized narrative into four narrativity categories: spatial, temporal, mental, and formal and pragmatic. The spatial dimension suggests a “world populated by individuated existents” (Ryan, 2008, p. 8). The temporal dimension suggests a world, which has “significant transformations... caused by nonhabitual physical events” (Ryan, 2008, p. 8). These two categories provide a space and time for cause and effect to occur. The mental dimension suggests a motivation for cause and effect to occur through character’s actions and reaction by emotion or thought. The characters must be “intelligent agents who have a mental life and react emotionally to the states of the world. Some of the events must be purposeful actions by these agents, motivated by identifiable goals and plans” (Ryan, 2008, p. 8). The formal and pragmatic dimension is based on a “sequence of events” which constructs a “unified causal chain and lead to closure”. It is in this dimension where the “story must communicate

something meaningful to the recipient” (Ryan, 2008, p. 8) generating theme to the story.

3.1.2 Narrative and Film Techniques

Thompson (1999) claims that “the most basic principle of the Hollywood cinema is that a narrative should consist of a chain of causes and effects that is easy for the spectator to follow” (p. 10). The chain of events in a cause-effect relationship can be categorized into a temporal and spatial relationship placed in sequence during film editing. Narrative coherence and comprehension is maintained by managing the way viewers perceive causality or create meaning in a narrative. “Comprehending a narrative requires assigning it some coherence... the viewer must grasp character relations, lines of dialogue, relations between shots, and so on” (Bordwell, 1985, p. 34). Because films have the ability to jump around in time and space, maintaining narrative coherence may be more challenging. Thompson (1999) suggests that “spectators are most likely to lose track of time, space or the causal chain during the progression from one scene to another” (p. 19). A cut between scenes suggests causality and if this cut is unclear, it can confuse the viewers. To maintain continuity between scenes, Bordwell (1985) suggests that “the string of events should reveal chronological order and linear causality” (p. 34) since events placed out of order can reduce understanding.

Time within an edited film can be broken down into the following components; running time, sequence, scene and shot (Bordwell & Thompson, 2008). The full length of the film is the total running time of the movie. The

running time of the film contains multiple sequences. Each sequence is composed of multiple scenes. Each scene is composed of multiple shots. A shot is one or more exposed frames in a series. Editing connects each shot with another to create a relationship between them in time and space.

Continuity editing is a system, which allows “space, time, and action to continue in a smooth flow over a series of shots” to construct events in real time and space in the plot of a movie (Bordwell & Thompson, 2008, p. 231). Zettl (1990) describes a continuity edit as a “means of selecting and putting together shots that create continuity of (1) vector fields (graphic, index and motion), (2) object positions in the on- and off-screen space, (3) action, and (4) subject” (p. 300). Most films use continuity to construct narrative coherence between the clips.

Similar to constructing an event with continuity editing, montage can construct spatial relations by combining “two points in space and thus imply some kind of relationship between them” (Bordwell & Thompson, 2008, p. 227). Montage editing occurs when two or more shots are juxtaposed and the combination creates meaning or theme (Zettl, 1990, p. 319). Zettl (1990) describes idea-associative montage as juxtaposing “two seemingly disassociated images in order to create a third principal idea or concept” (p. 324). Eisenstein (1949) states that meaning in montage is created through the “copulation of two hieroglyphs (shots) of the simplest series is to be regarded not as their sum, but as their product” resulting in meaning (p. 29-30). He describes intellectual

montage as a series of images, which are juxtaposed to generate an abstract idea not present in one image alone (Bordwell & Thompson, 2008).

Two techniques manipulate space during an edit. The Kuleshov effect is a sequence that connects shots revealing only portions of a space with the absence of an establishing shot, but the spectator imagines the space as a whole (Bordwell & Thompson, 2008). In the Kuleshov effect, Kuleshov juxtaposed the same film footage of an expressionless man's face with footage of the following: a young girl playing, a bowl of soup, and a dead body in a coffin. The man's expression was the same in each clip. However, the audience understood the two shots to exist in the same space and believed that each time the man's expression was different depending on what he was looking at. The viewers connected the two shots and brought their own emotional reaction to the different combinations based on the content.

Crosscutting is another technique, which manipulates space between two shots. Instead of placing the two shots in the same space as the Kuleshov effect does, the crosscutting technique cuts back and forth between two shots occurring at the same time but in separate spaces. The film *Birth of a Nation* (Griffith, 1915) was the most influential early example to use this crosscutting technique to cut back and forth between different perspectives that occur at the same time. The technique of cutting back and forth between multiple events occurring at the same time presents the audience with an omniscient experience.

3.1.3 Alternative Plot Structures

Authors have designed alternative plot structures in films to make it interesting and more challenging for viewers to decode a story. Many films have used non-traditional narrative structures and have been successful with maintaining narrative coherence. Berg (2006) has categorized these recent film plots, which complicate the standard Hollywood narrative paradigm into a taxonomy of alternative plot types. Each of these plot structures has a different effect on the audience and is influenced by new media decreasing the boundary between linear narrative and interactive narrative.

3.1.3.1 Ensemble Plot Structure

Berg (2006) characterizes the polyphonic “ensemble plot” formation as a plot which joins multiple protagonists or perspectives into a single location at the same time. Each character has their own goals and is as equally important as the other characters in the story. Generally, multiple views or perspectives in one story are used to emphasize an overall theme. The motion picture *Crash* (Haggis, 2004) is an example of an ensemble plot construction. The feature film has about nineteen different characters of different races in Los Angeles and emphasizes an overall theme on racism. The motion picture *Short Cuts* (Brokaw & Altman, 1993) is also classified as an ensemble film. It has twenty-two main characters and nine constantly interweaving storylines, which all take place in the City of Los Angeles. The characters have multiple relationships with one another and at times overlap in time and space. Figure 2 shows the complexity between the characters in the movie *Short Cuts*. Each character is represented by their

occupation. The red lines show the connections between characters and state the type of relationship or incident connecting the two characters. The blue lines represent characters that are connected to other characters through public performances or media. The coloured regions symbolize the different locations in which the characters reside. The film's main theme that connects the multiple characters is, "what if?". This film also has many smaller themes, which are apparent when the characters' individual stories are juxtaposed. Each of these smaller narratives within the ensemble plots function as micro-narratives. The combination of these smaller stories or micro-narratives generates themes.

Short Cuts

17

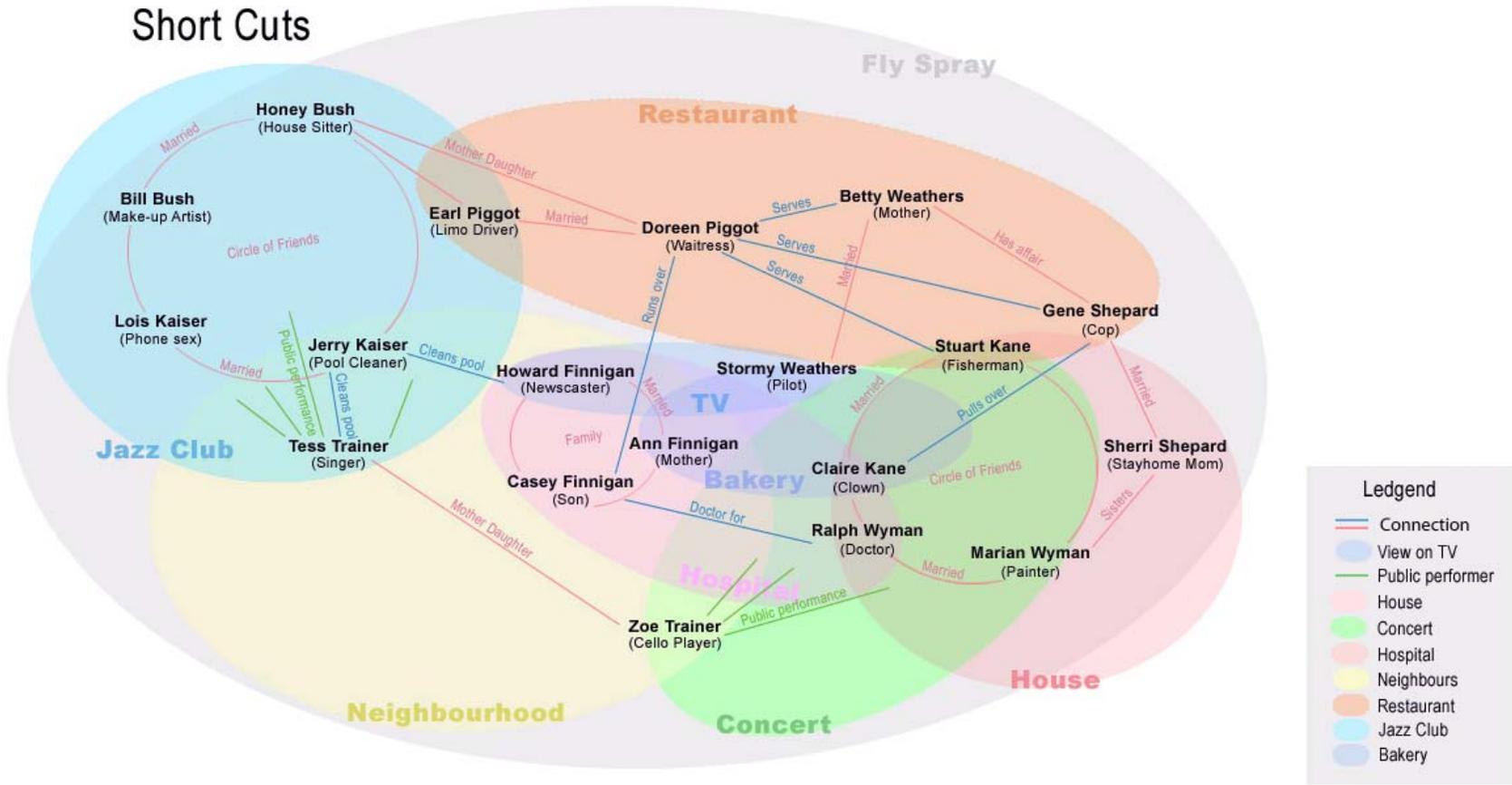


Figure 2: Character relationships and space in Short Cut

3.1.3.2 Repeated Plot Structure

Berg (2006) classifies a “repeated event” plot formation as a plot where one action is seen from multiple characters’ perspectives. Repeated event plot structures generally have key plot points, which are emphasized and repeated in each perspective to allow viewers to compare and interpret facts about the story. Besides emphasizing key points of the action, some plots present discrete parts of an event in the various perspectives. Berg classifies the film *Jackie Brown* (Bender & Tarantino, 1997) as a repeated event plot. The key plot point in this film shared by all three perspectives is the exchange of money between the three characters. Berg (2006) states that “only by seeing all three (perspectives) do viewers get complete knowledge of the complicated transaction” (p. 35).

The motion picture *Rashomon* (Jingo & Kurosawa, 1950) shows the event of a rape and murder, which is repeated through the four characters’ perspectives. However, unlike *Jackie Brown* (Bender & Tarantino, 1997), each perspective in *Rashomon* (Jingo & Kurosawa, 1950) contradicts the other. The actual event, the rape and murder is the same in each version of the story. The thief rapes the wife and the husband is murdered. However, it is through the discrete parts of the story that the four characters’ perspectives differ. Each character has his or her own interpretation of how the events occurred. In the thief’s version, he claims to be the murderer of the victim after a heroic battle with him. In the wife’s version, her guilt had caused her to kill her husband. In the dead husband’s version, through a medium, he claims to have committed suicide. In the woodchopper’s version, he watches from a distance, a sloppy

fight between the husband and the thief ending in the husband's death. Berg (2006, p. 34) states that the film *Rashomon* (Jingo & Kurosawa, 1950) "establishes the Repeated Event Plot, using it to argue that since events are interpreted subjectively, truth is elusive" (Berg, 2006, p. 34). A viewer will then have to decipher what she believes is truth.

3.1.3.3 Other Plot Structures

Hub and spoke plot structures have multiple characters' story lines converging decisively at one place and time. Berg (2006) suggests that hub and spoke plots "emphasize chance, coincidence, and the freakish nature of fate" (p. 40). In the film *Amores Perros* (Iñárritu, 2000) the three characters' storylines collide and are altered through a single car accident.

The jumbled plot structure has events presented in a nonlinear order. *21 Grams* (Iñárritu, 2003) is an example of a jumbled plot structure as well as a hub and spoke plot structure. Similar to *Amores Perros* (Iñárritu, 2000), three characters are connected from a single incident. However, the movie sets itself apart by the way it utilizes a unique pattern in the sequencing of scenes. The entire film is presented as a series of short sequences, which are told out of chronological order. As the movie progresses the viewers slowly piece together the order of the narrative puzzle and the mystery between the characters becomes resolved. The non-linear editing structure can be deconstructed to analyze the film's effect and to examine the relationship between particular scenes. Figure 3 demonstrates the scenes played out of order, and colour codes each segment according to each of the three different character's perspectives.

The sequences are dispersed at various times in the story but slowly converge into a more narrow chronological order by the end of the film. This is consistent with viewers' understanding of the sequences. As they continue to view the film, it becomes easier to solve the order of events. Causality between the different events from each character's perspective in *21 Grams* (Iñárritu, 2003) makes sense once the order of events is understood. This multi-linear storyline produces a particular effect on the audience and builds mystery and suspense that may not have been possible in a strictly linear version of the movie.

The non-linear sequence of events reveals plot segments at different points in the movie for an effective and entertaining way of gradually revealing the truth of the story. In an interview, Alejandro Iñárritu states the reason he structures the narrative in a non-linear fashion. He says "...when we speak in real life we don't go from A to B to C to D. For example, if I want to tell you about how I met my wife I would begin with yesterday then go back to three years ago and then to when my first child was born" (Arriaga, 2003, p. xiv).

A few patterns are revealed in Figure 3 which outlines the sequence of plot in the film. The first few sequences and the last few sequences are shown in the chronological order of the story. The movie starts out by introducing the three main characters at the beginning of the film and story time. Also, there are two major events in *21 Grams* (Iñárritu, 2003) connecting the three characters. These two major events occur during the complicating action and the climax in the narrative arc.

The complicating action is a car accident, where Jack runs over and kills

Cristina's family and as a result, Paul receives Cristina's husband's heart in a transplant. This event connects Jack, Cristina and Paul together. The complicating action is revealed when a few scenes are juxtaposed together, clarifying how the three characters are connected. The movie explicitly shows Cristina learning that her family has been in a fatal accident, Jack telling his wife that he ran over a family, and Paul asking whose heart he has received in the transplant. According to Figure 3 the sequences which follow the complicating action occur in a more chronological order. However, the sequences maintain the constant non-linear flow by mixing in sequences from future events. This non-linear flow sustains the audience's curiosity by introducing events in a mysterious manner. The second event which connects the three characters occurs during the climax of the film. This scene takes place in a motel room, and directly connects all three characters by having them in the same location at the same time. Cristina beats Jack for revenge and Paul shoots himself to direct her attention away from Jack. This sequence is shown at various times throughout the movie, but is not explained until the end of the film when the whole sequence is revealed. Foreshadowing these events suggests that the three characters will have a connection with each other even if it is not clear how.

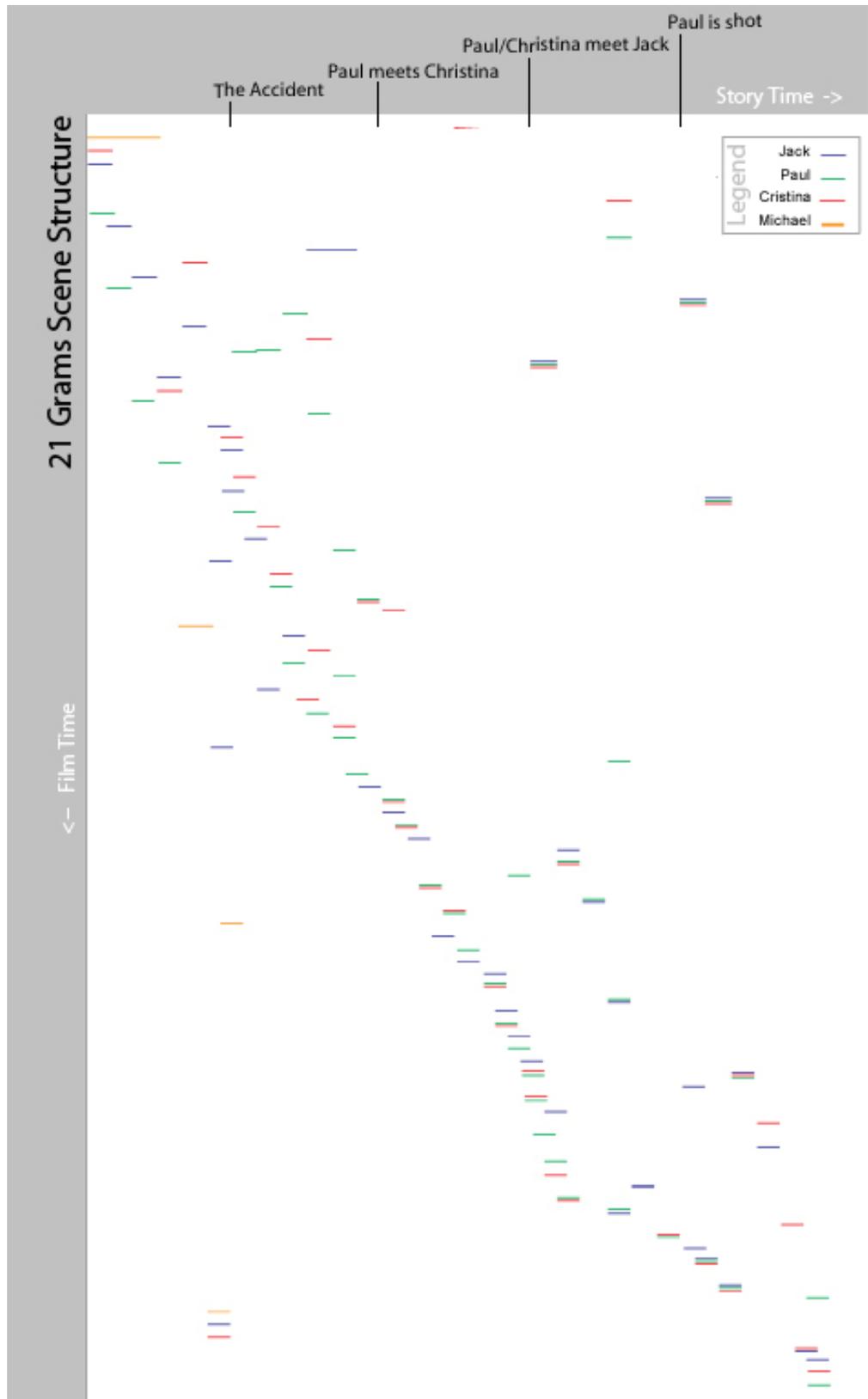


Figure 3: 21 Grams movie editing analysis

Each character's storyline affects the other and allows the viewers to make connections between each of the events or relate them in terms of theme. For example, Cristina has to make a choice about whether or not to donate her husband's organs. Once she does decide and says yes, we see Paul receiving a page and then rushing to the hospital for the transplant. Cristina's family is contrasted with Jack's family when two similar scenes are juxtaposed. We see Jack having dinner with his family and being abusive in a fight with his children. The scene is contrasted by Cristina happily baking with her two daughters.

There are visual clues in the film that help the audience determine when in the story time a scene takes place. For example, the appearance of each character changes depending on when in time the scene occurs. Before his transplant, Paul is extremely weak and is usually attached to medical equipment. However after the transplant he has a much healthier appearance. Before the accident Cristina appears happy with her hair tied back and wears neatly pressed clothes. After she loses her family, she has disheveled hair and dark makeup. Jack also changes his appearance after he has returned from jail. Before Jack goes to jail he has long hair and casual attire. When he returns from jail he has shorter hair and wears a dirty construction uniform. These visual clues help the audience determine approximately when in the story the scenes takes place.

Another visual pattern present in the film derives from the director's attempt to balance the scenes. In an interview he states that, "... in the screenplay the first thirty-five pages have light, the scenes are mostly during the

day; then it becomes night for the next thirty five pages, then it becomes day” (Arriaga, 2003, p. xiv). According to the director, patterns of light fashioned in this manner were intended to create emotional states. This balance of light and dark matches parts of the plot which rise and fall with emotion.

The theme of the film is the inevitability of life; no matter what happens life will still go on. At the end of *21 Grams* (Iñárritu, 2003) as Paul is dying and reflects on life he states, “How many lives do we live? How many times do we get to die? We all lose 21 grams when we die. How much fits into 21 grams? How much is lost?” With Paul’s voiceover, we see a reflection of the past. We see Michael with Cristina’s two daughters leaving the restaurant and we see Jack getting into his truck at the same time, both unaware of the fate that lies ahead of them. Then as the viewers hear Paul say, “When do we lose 21 grams?” we see Cristina leaving her sister at the pool. This is the moment when we realize the significance of this scene. At that exact moment in her life, her family is lying on the street dying. Even though both Paul dies and Cristina’s family is killed, life must go on. However, Paul’s life will continue through Cristina’s baby.

Many narratives present the linear time of the story out of order as a way of linking various characters stories together. The novel *One Hundred Years of Solitude* (Marquez, 1970) has multiple main characters and a plot that jumps backwards and forwards in time. The overall story is told out of order, but the plot makes sense to the readers because of the flow between each narrative episode (see Figure 4). Each narrative episode is told from one character’s point of view. The narrative episodes are associated with other episodes and sometimes

overlap in time. Each narrative episode is linked to other episodes through association in feelings, memories, locations, objects or similar incidents. These links are “designed to replace causality and chronological time with mythic recurrence. The novel proceeds indirectly through interruptions and flashbacks, tracing a history of a place and a time through the rise and fall of successive generations of the Buendia family” (Marquez, 1970).

A narrative episode, which is revisited numerous times throughout the novel, is the time of Amaranta’s death. It is foreshadowed when describing Meme’s relationship with her mother. “Only after the death of Amaranta, when the family shut itself up again in a period of mourning, was Meme able to lock the clavichord and forget the key in some dresser drawer without Fernanda’s being annoyed on finding out when and through whose fault it had been lost” (Marquez, 1970). Her death is foreshadowed again in an ironic description as being “an unexpected event” (Marquez, 1970), which changes the Buendia household. Amaranta’s death is then viewed from multiple perspectives before and after it happens. Before Amaranta dies, Fernanda is scandalized at her sinful preference “to an impious death” over “the shame of a confession” (Marquez, 1970). Amaranta’s death is again revisited from Meme’s perspective when she was told the news during her clavichord concert and again from Aureliano Segundo’s perspective during the funeral.

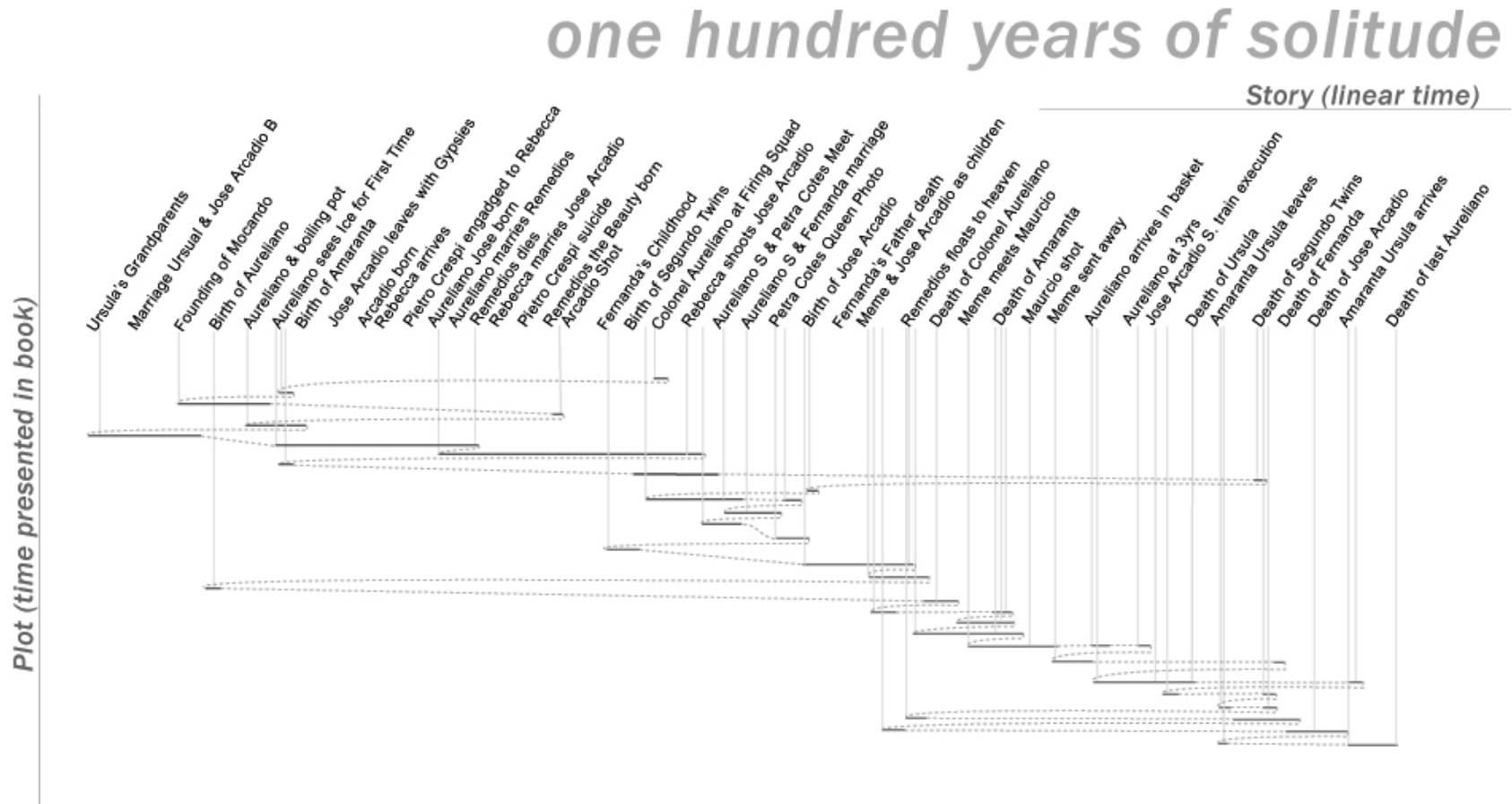


Figure 4: Story time vs. plot time in One Hundred years of Solitude

3.1.4 Micronarratives

Jenkins (2004) defines a micro-narrative as a short yet coherent narrative unit or event that contains a miniature narrative arc or part of a narrative arc. Jenkins suggests that the Odessa Steps sequence in Sergei Eisenstein's montage film *The Battleship Potemkin* (Bliokh & Eisenstein, 1925) is constructed of many micro-narratives. The film shows a battle scene between the civilians and soldiers, and is composed of multiple scenes. Although there are overall shots, revealing many characters in the battle, there are also shorter scenes revealing smaller events with individual characters. The combination of these subsidiary plots generates understanding and emotion of the overall narrative. One scene shows a mother carrying her dead child. Another reveals a mother being shot to death and her baby in a carriage rolling down the stairs. Jenkins (2004) states "Eisenstein intensifies our emotional engagement with this large-scale conflict through a series of short narrative units. Each of these units builds upon stock characters or situations drawn from the repertoire of melodrama" (p. 125). The compilation of smaller narratives creates an overall theme for the large narrative, suggesting the innocence and unnecessary death of the victims.

The film *Short Cuts* (Brokaw & Altman, 1993) is an exemplar of micro-narrative construction. The plot structure of *Short Cuts* is based on a series of short stories written by Raymond Carver. The film contains twenty-two main characters and nine constantly interweaving storylines, making the film full of micro-narrative events. In *Short Cuts* (Brokaw & Altman, 1993), Balcom suggests the association between the micro-narratives of each character creates richness

in the narrative through the linking of themes. In *Short Cuts* many different themes may be observed by comparing or contrasting the different micro-narratives existing in the movie. In one sequence, Betty comes out of the shower to find the television left on. As she turns off the television and turns around she is startled to find her son left behind by his father. A similar event occurs with Ann, when she returns home to find the television is on and after turning it off, is surprised to find her son lying on the couch, after being hit by a car. Balcom (2006) states, "this sequence establishes a thematic relationship between the two little boys whose situations are different, but resonate all the same. Here a major theme of *Short Cuts* is revealed: The 'What if...?' decisions that are made every day, the decisions that have put the characters in *Short Cuts* together".

Other smaller themes, such as violence against women, also exist in *Short Cuts*. One scene reveals Bill Bush, a makeup artist who paints bruises and cuts on his wife. Another scene shows a group of fishermen who find a dead woman's body in the water. Both of these characters take pictures of these events, and at a later encounter their developed photos get exchanged. It is only by combining these events that the point is stressed and the common theme between them is effectively brought into focus.

In Michael Joyce's hypertext¹ narrative, *Afternoon* (Joyce, 1999), the smaller narrative components can be regarded as micro-narratives. The combination of these smaller narratives generates the plot or theme of the overall story. Balcom also suggests that the viewer's experience with *Short Cuts* is

¹ Hypertext is a set of documents of any kind (images, text, charts, tables, video clips) connected to one another by links (Murray, 1997, p. 55)

similar when interacting in *Afternoon*. The text the viewer had visited was exactly the same, but the context that surrounded them had changed (Balcom, 2006). This experience functions similarly to Pudovkin's experiment with the Kuleshov effect. The individual pieces of text each represent an event in the overall plot and depending on the interactions or the different combinations a different story will be created or understood.

3.2 Interactivity and Narrative

3.2.1 Interactivity

Interactivity has both procedural and participatory properties (Murray, 1997). The procedural property is computer programmable. The participatory property presents a set of rules for the user to follow, is responsive to user input, and requires action from the user to proceed. Interactivity can also be described as “a cyclic process between two or more active agents in which each agent alternately listens, thinks, and speaks” (Crawford, 2005, p. 29).

Zimmerman (2004) divides interactivity into four levels: interpretive, utilitarian, explicit and cultural. He describes his first level as interpretive interactivity, in which a reader will cognitively participate with a text. This type of interactivity can occur when a viewer constructs meaning between the shots in the film. In a film with multiple windows, a viewer can also cognitively interact and select which screen to look at one time. The second level is utilitarian interactivity, in which a reader interacts with the text through its functional properties. This type of interactivity can occur in a linear film with the control of a

DVD remove to select chapter stops in the menu and view the film in a different order. The third level is designed choice, where a reader can explicitly participate with a text. This type of interactivity is commonly understood as the definition of interactive. Interactive movies use this third level of interactivity where choices are designed in the plot and viewers are presented with a choice of paths to follow. The fourth level is described as macro-interactivity or cultural participation with a text.

3.2.2 Database Narrative

Although Manovich claims that narratives and databases are opposites, he recognizes that some films can be seen as both a database and a narrative. A database of film's content, consisting of sequences of shots, can be understood as being organized into "a structured collection of data" arranged into a "list of items" during the editing process (Manovich, 2001, p. 225). Manovich suggests *Man with a Movie Camera* (Vertov, 1929) as an example of a database film. "The process of relating shots to each other, ordering and reordering them to discover the hidden order of the world constitutes the film's method" (Manovich, 2001, p. 240). The editors of the film take the collection of footage of various aspects of city life and make decisions about how to piece them together to construct different themes. The film uses montage techniques and "traverses its database in a particular order to construct an argument" (Manovich, 2001, p. 240). Just as *Short Cuts* (Brokaw & Altman, 1993) is constructed full of micro-narratives, the sequences of footage in *Man with a Movie Camera* can be seen as micro-narratives. It is in the combinations of these micro-narratives that construct

theme and meaning.

Films categorized as alternative plot structures, according to Berg taxonomy, can be regarded as having a database-like structure. These types of films are on the border of becoming interactive experiences. Bizzocchi (2005) suggests that *Run Lola Run* (Arndt & Tykwer, 1999) is such a database narrative film. Lola's three separate runs across the City of Berlin string together narrative events that are rigorously parallel. Viewers are therefore motivated to compare parallel events across the three threads of the plot. This is a sophisticated example of Eric Zimmerman's first level of interactivity; cognitive interaction with text. Bizzocchi (2005) argues that modern technologies such as VHS, DVD, or computer file versions of the film support this cognitive interaction with interface functionality. During repeated viewing, the viewer can rewind, fast-forward, or jump across plot threads in order to fully understand the film's parallel plot threads. This is an example of Zimmerman's (2004) level two interactivity: functional interaction with a media artifact. Bizzocchi further argues that the combination of complex plots and sophisticated technologies not only supports robust first and second level interactions, but can be a partial step towards the design of an interactive cinema that instantiates Zimmerman's third level of interactivity, explicitly designed choice.

3.2.3 Interactive Narrative

Manovich (2001) describes the following dynamic for interactive narrative: “the (interactor) of a narrative is traversing a database, following links between its records as established by the database’s creator” (p. 226). The “plot” of an

interactive narrative can be seen as a collection of potential plot events in the database. It is the viewer's choice that actualizes these potential plot events and gives them life and sequence. This process in turn generates "story" in the minds of the viewer. In Crawford's terms (Crawford, 2005), each individual plot event would be seen as a substory, "a single dramatic step ... an event or a change" (p. 58). In Manovich's framework, these substories or plot events are "seemingly unordered" database items are joined into a "cause and effect trajectory" to create a narrative (Manovich, 2001, p. 225).

The structure of the database and the design of the interface are important components of an interactive narrative. Manovich (2001) sees new media as "the construction of an interface to a database" (p. 225) and maintains "it is not ashamed to present much more information on the screen at once" (p. 232) allowing for many different possible ways to access the database.

Manovich also notes that in new media the material relationship between the plot and story is reversed. He states that in linear media, "the database of choices from which narrative is constructed (the paradigm) is implicit; while the actual narrative (the syntagm) is explicit" (Manovich, 2001, p. 231). In the case of cinema, one can imagine a number of possible variations of a film sequence, which implies the paradigm is not material but idea. However, only one version is finally materialized and released (the syntagm). For new media the relationship is reversed. Manovich (2001) points out that in new media the "database (the paradigm) is given material existence, while narrative (the syntagm) is dematerialized" (p. 231).

The type of media, the details of the content and authorial intention will affect the choice of interface to access the database. It is up to the author or designer to organize the interface appropriately for the organization of the content. The goal is to allow the user to navigate through the database structure, link the plot elements in the database in a meaningful order and develop a comprehensible “trajectory leading from one element to another” (Manovich, 2001, p. 231). Manovich stresses how clear “cause and effect” relationships are important for narrative to make sense when navigating through the database in an interactive narrative. Manovich states,

“Thus a number of database records linked together so that more than one trajectory is possible is assumed to constitute an interactive narrative. But merely to create these trajectories is of course not sufficient; the author also has to control the semantics of the elements and the logic of their connection so that the resulting object will meet the criteria of narrative” (Manovich, 2001, p. 228).

Interactive cinema organizes content into a database. The database items are connected to one another through video editing. The editor of an interactive movie compiles a database of accessible footage for the viewers, and organizes different possible ways for the viewer to experience these database items. As a viewer traverses this database, interacts and selects database items, they become a second editor. The viewer then edits together the sequence of footage, which then represents the narrative for the film. Weinbren describes the

relationship between interactive cinema and the viewer as the following:

“the basis of the interactive cinema is that the viewer has some control over what is on-screen. He or she knows that what is there will change if she or he acts, that it would have been different if he or she had acted differently earlier. Thus, the viewer is aware of a fundamental indeterminacy...the viewer must be kept always aware that it is his, or her action on a particular image that has produced these new sounds or picture, and techniques to foster this awareness must be developed” (Ryan, 2004, p. 380).

Ryan (2001) has defined a few different reasons why viewers would want to interact in a narrative as “varieties of interactivity”. A common reason is “to determine the plot” (p. 210). This is commonly known as a “choose-your-own-adventure” structure where users select from a list of options how they want the story to progress. An interactive narrative can also be created in order “to shift perspective on the textual world” (Ryan, 2001, p. 211) so viewers can focus on a different character or follow another plotline. Other reasons can be “to explore the field of the possible” (Ryan, 2001, p. 211) in order to see all the possible paths, or to explore the space. For example, when a user explores a space like a maze, “the user wanders across this topography, trying to reach certain locations that correspond to the liberation from the labyrinth, while avoiding other endpoints that represent failure” (Ryan, 2001, p. 105). Another possible reason to use interactivity in a narrative is “to play games and solve problems” (Ryan,

2001, p. 211). This usually gives the user a motivation in having a goal. A way to have a goal without strictly being a game is to have mystery in the narrative and motivate the viewers to solve the mystery. An emergent but hidden story is made up of a “spatial path of reader’s investigation” and a “temporal sequence of events to be elucidated” (Ryan, 2001, p. 255). The narrative is written by the actions and movements performed to reconstruct the story. This type of structure is similar to a “choose-your-own-adventure”, however the story emerges from the actions instead of selecting from a static choice of options.

3.2.4 Interactive Narrative Structures

There are different ways to organize and present a story for interactivity. I suggest there are two different forms of interactive stories as defined by Murray. The first is the Multiform Plot, which is “a written or dramatic narrative that presents a single situation or plotline in multiple versions, versions that would be mutually exclusive in our ordinary experience” (Murray, 1997, p. 30). This type of structure is also known as the familiar “choose-your-own-adventure” where a viewer is provided plot options at different moments and can choose which direction the plot should go. The multiform plot is also found in linear forms of stories like in the repeated action story *Run Lola Run* (Arndt & Tykwer, 1999) where three alternative events are present. The second type of story structure is the Kaleidoscopic Plot, which is defined by Murray (1997) as a plot where “simultaneous actions are presented consecutively” (p. 157). This type of story structure presents multiple perspectives occurring at the same time, and all perspectives are available to the viewer. Murray (1997) suggests that the

“kaleidoscopic structure has many possibilities for narrative, but one of the most compelling is the ability to present simultaneous actions in multiple ways” (p. 157).

Zimmerman (2000) suggests that there are two general modes of interactive structures. One is a content-based, also known as an embedded structure. The embedded structure is described by Zimmerman (2000) as a structure where “the content is already embedded in the system before any interaction begins”. An example of this would be a choose-your-own-adventure type structure, which has the story tree completely intact. In this example the viewer navigates through the structure and chooses paths to follow. The other is a system-based or emergent structure. Zimmerman (2000) describes an emergent structure as one, which has a “set of rules and procedures that result in unexpected experiences and content“. These type of systems are usually found in games. Zimmerman suggests that all structures are not completely emergent or completely embedded but have some qualities of both. Most of the interactive structures described below fall under the embedded structure description. However, some of these structures may also have some emergent qualities. Zimmerman promotes emergent structures as the best type of structure for developing an interactive narrative for digital media. He states that system-based interactive narratives are “open-ended, emergent texts that constitute the great unexplored terrain of computer interactivity” (Zimmerman, 2000). He also mentions that embedded structures have not been as successful in developing interesting experiences, as the rigid structure would rob the user’s interactions of

any meaning. He suggests that in this type of structure “each click reinforces the rigid authority of the author, any sense of play reduced to acquiescence” (Zimmerman, 2000). However, one problem occurs in designing emergent structures. It becomes more challenging to maintain narrative coherence in an unpredictable structure.

Ryan (2006) categorizes different types of structures for interactive narratives into a list of interactive architectures. She divides these structures into two branches, discourse and story. The interactive architectures which affect discourse show different ways to “navigate through a fixed, predetermined story” (p. 102). The interactive architectures which affect story, “represent patterns of choices that result in different stories” (p. 102). Most of the interactive structures are fixed embedded stories, although some have levels of emergence, and others are completely emergent. Each structure is evaluated according to how viewers experience coherence and immersion into the narrative.

I classify these structures into the following types of structures: web, storytree, structures with limited interactivity, track switching and emergent. These structures are different ways to organize hypertexts. Each hypertext includes a set of lexia or nodes. Lexia or nodes are “screen-based pages and cards, which occupy a virtual space in which they can be preceded by, followed by, and placed next to an infinite number of other lexia” (Murray, 1997, p. 55). Each lexia or node is joined together with a hyperlink, “a representation which alerts the viewer that a lexia leads someplace else” (Murray, 1997, p. 55). A

storyline is a complete story, and is usually created by connecting a series of nodes or lexia together.

3.2.4.1 Web Structures

In a web structure, lexia are randomly connected to other lexia depending on the structures organization. The Complete Graph is a structure where “every node is linked to every other node” and “the reader has total freedom of navigation” (Ryan, 2001, p. 246). This type of structure makes it impossible to guarantee narrative coherence as every lexia is linked to every other lexia, the paths become bi-directional and the causality between these may not make narrative sense. This type of structure provides no closure as the system has no boundaries.

Similar in design to the Complete Graph, the Network structure doesn't support narrative coherence. It “allows loops” and “some of its nodes are accessible through different routes” (Ryan, 2006, p. 103). By having many loops a reader may revisit the same sequence over and over resulting in a structure that may not be “coherent in the generation of plot”. The paths can be bi-directional and the reader's navigation is “neither completely free nor limited to a single course” (Ryan, 2001, p. 247). Some hypertexts are examples of Network structures. Although narrative coherence is difficult to maintain in these network type structures, authors can use the incoherent structure as part of the narrative building process.

The hypertext fiction *Afternoon* (Joyce, 1999) works as a piece which generates a different story each time not because of the hypertext medium, but

because of how the author uses the hypertext medium creatively. Michael Joyce purposely created contradictory events, to be reorganized to generate a different interpretation of the plot. “Every reading session leads to different lexia, creates different semantic connections between and consequently constructs a different story around the theme of the accident” (Ryan, 2004, p. 340). Ryan (2004) describes the different experiences with reading the hypertext *Afternoon*:

“The common theme of all these variations is the narrator’s witnessing of a car accident. In one version the accident is fatal and the narrator’s ex-wife and son are the victims. In another version the victims are strangers. In a third the accident is not serious. In a fourth the narrator himself causes the accident. Or everything could have been dreamed or hallucinated” (p. 340).

In this example it is how the medium is used to create an effective interactive narrative piece. It is not just a matter of placing pieces together through interactivity, but how the author can write a narrative piece based on how interactivity can affect the narrative and create a new experience for the readers. However many of the lexia might be repeated over and over creating an incoherent narrative.

In the Maze structure a user wanders the space “trying to reach certain locations that correspond to the liberation from the labyrinth, while avoiding other endpoints that represent failure” (Ryan, 2006, p. 105). This type of structure allows users to explore a space, but provides a goal where the end point must be discovered. This type of structure is what Crawford (2005) calls “hand-wired

storytrees”, where every node is designed and hand-made. The problem with such structures is not only that narrative coherence is difficult to maintain, but also that their design is limited to the “amount of time the designer can put into them” (p. 81).

3.2.4.2 Storytree Structures

The tree-diagram or storytree structure organizes its plot in the form of a tree, where each node leads to two or more nodes and expands exponentially. The hyperlinks between the nodes in a storytree structure are referred to as a branch. The branches always advance the story in a linear direction and do not allow loops. This type of structure is commonly known as a “choose-your-own-adventure” where the reader makes “decisions for the characters at every branching point” (Ryan, 2006, p. 105). This type of structure maintains narrative coherence by “controlling the reader’s itinerary from root node to leaf nodes and make it easy to guarantee that choices will always result in a well-formed story” (Ryan, 2001, p. 248). Crawford (2005) suggests that a bushier storytree makes for a better experience in providing “lots of options for choice, and generating something that is dense is a challenge. It may be very time consuming to create a large enough storytree if each branch point is to advance to at least two nodes and grow exponentially” (p. 79).

Ryan (2006) describes the Flow Chart as a structure which offers “a more efficient management of choice, because the strands of plot are allowed to merge, thereby limiting the proliferation of branches” (p. 105). This type of structure can be thought of as a way to manage the expansive nature of the

storytree or the web structure. Ryan (2006) suggests that “this model represents the best way to reconcile a reasonably dramatic narrative with some degree of interactivity” as “running in circles and hitting a dead end are eliminated” (p. 105). Crawford (2005) describes this type of structure as a Foldback structure where the storyline of a storytree is allowed to “fold back on itself” to solve the expansive nature of the storytree thus “robbing the interactivity of any meaning” (p. 79).

I'm your Man (Graham & Bejan, 1992) is an interactive movie with a “choose-your-own-adventure” Flow Chart structure. The movie was shown in a theatre equipped with a voting system installed in the theatre’s chairs. The movie can now be experienced on an interactive DVD. At each branch point in the storytree, viewers were provided with a list of options that they could choose from. The questions asked at each branch point directed what the viewers selected in the plot and offered a different perspective in the story. This interactive movie has narrative coherence. However, the film is brought to a halt every time a decision needs to be made and viewers are brought out from the immersion of story.

3.2.4.3 Structures with Limited Interactivity

The structures described in this section support narrative coherence between the lexia by sacrificing the amount of interactivity. A Vector with Side-branches structure allows viewers to branch off the main story to gain more narrative details. This type of structure maintains narrative coherence by telling the story “in chronological order, but the structure enables the reader to take

short side trips to roadside attractions” (Ryan, 2001, p. 249). In this type of structure the readers do not need to interact to receive the story, they can view it the same way a linear story would be viewed, but only interact if they want to investigate more. This type of structure could allow users to lose their focus on the main story while they are navigating to side plot events. By being linear in structure it could promote immersion, but it does not provide much opportunity for interactivity.

Obstructionist Story are linear in structure but present obstructions or small puzzles that must be solved by the user in order to advance the story (Crawford, 2005, p. 80). A problem with the design is “there is no interaction with the story itself” (Crawford, 2005, p. 81). The linear style of this structure can maintain narrative coherence, however the pauses from the obstacles constantly break the immersive experience and distract from the focus of the main story. The interactive CD-Rom narrative, *Ceremony of Innocence* (Bantock, 1997) is an example of this type of structure. The user reads an exchange of post cards between two people and at each interaction point must solve a mini puzzle to advance to the next post card.

The Action Space, Epic Wandering and Story-World is a structure, which visually represents the space of the “virtual world” on a diagram, and a user can navigate to nodes through spatial links (Ryan, 2001). If a hypertext were in a video format it would be shaped into this type of structure. However, unlike a traditional hypertext where the reader is active in reading and clicking on links, the user has a more passive role when watching video. Ryan (2001) describes

the user as “free to take any road, but when she reaches a site, the system takes control of her fate and sends her into a self contained adventure” (p. 255).

3.2.4.4 Track switching Structures

The track switching or braided plot is a structure defined by Ryan as having every storyline linked to every other storyline at certain decision points. These types of structures can have a linear temporal flow, where the viewers never go back in time. Backtracking can be enabled to allow viewers to “relive the same events from a different point of view” (Ryan, 2001, p. 255). In this type of structure, maintaining narrative coherence may be a problem. It would take repeated viewings for the viewer to understand the whole story. Readers might experience “excessive fragmentation” and not be able to follow the story as easily.

Hot Norman is an interactive movie demo which was developed by Murray and Baird in 1998 at MIT. The narrative structure of *Hot Norman* is derived from *The Norman Conquests* (Herbert & Ayckbourn, 1978) is a trilogy of plays depicting three versions of the same story. Each story takes place at the same time and is located in three adjacent rooms of a house. *Hot Norman* takes the footage of the three plays and demonstrates hyper-linking allowing the viewers to make connections between this footage. The demo uses:

“HotVideo’s Maker” application to allow a user to overlay animated, translucent geometric shapes onto a video clip, highlighting a character, object, or any part of a scene. ...these clickable shapes serve as links to any other piece of media. If the user decides to

click on a link, a new video clip will load, either in an adjacent frame, or in the same frame, depending on the type of link” (Baird & Murray, 1998).

The hyper-video *Hyper-café* (1996), allows a user to “wander through a crowded café, choose a table and listen to the conversations of its occupants. Once a conversation has been selected the video unfolds with little or no possibility of user intervention” (Balcom, Sawhney & Smith, 1996). This type of structure has narrative coherence, but it “is maintained at the cost of interactivity” (Ryan, 2001, p. 256). Each of the different characters conversations can be considered a micro-narrative. The combinations of these micro-narratives may generate a theme based on the combinations of the subplots. A positive function of the design is there is a linear progression in time through the database. The story will continue even if the viewer does not make a selection. This technique allows the story to continue uninterrupted, without the need to wait for a selection, allowing the viewer’s immersion of the narrative to remain unbroken.

3.2.4.5 Emergent Structures

In what Ryan (2001) describes as other structure, the story is emergent generating from the system the designer has created. These structures are what Zimmerman describes as emergent structures, where “the designer populates a world with agents capable of diverse behaviors, and the user creates stories by

activating these behaviors, which affect other agents, alter the total state of the system, and through a feedback loop, open new possibilities of action and reaction” (Ryan, 2001, p. 107). These types of systems are very difficult to create and there is no guarantee that there will be narrative coherence produced from the system. Using a system to remember the decisions of the user can help manage narrative coherence in certain plot events.

Ryan (2001) states:

“one way to restore significance to the decisions of the user is to turn the text from a fully context-free transition system to a context sensitive system capable of narrative memory. In such a system the decisions made by the user in the past affect his choices in the future and narrative causality extends to nonadjacent episodes” (p. 252-253).

In interactive cinema a viewer’s interactions can combine two sequences of video together and generate a montage edit. A narrative may emerge from a viewer’s interpretation during this montage technique. Different meanings may be produced depending on the different juxtaposition of shots. Murray (1997) suggests that interactive narrative “can make use of the Kuleshov effect to create juxtapositions that are intentionally open to multiple meaningful interpretations” (p.160). She continues by suggesting that in “a kaleidoscopic story with multiple points of view, any shared event can take on different meanings, depending on whether the same moment is approached in the context of one character’s life or

another's" (p.160). Combinations of montage in an interactive narrative experience can also occur when combining micro-narratives together.

Sonata (Weinbren, 1991-1993) is an interactive narrative media installation. The montage effects used in this piece can possibly construct meaning and narrative. *Sonata* has a single screen which displays one of the two perspectives at the same time using montage as a way to communicate the central idea. The viewer would slide between each perspective as far as he or she would like, which according to Ryan (2004) would create "a kind of simultaneity that the classic montage between the two scenes would not allow for" (p. 380). In Ryan's book, Weinbren describes using the effect of montage in *Sonata*:

"In my judgment, the most immediately available techniques can be found in the language of montage. A deliberate use of film editing strategies can keep reconvincing the viewer of the non-arbitrariness of connection between old and new elements, between the elements already there and those produced by viewer action"
(Ryan, 2004, p. 380).

Mercedes-Benz: 7 Years Later is an online interactive film, which constructs its narrative by combining nodes of short video sequences together through montage juxtaposition from a storytree of nodes. Each node functions as a single event, episode or micro-narrative. When each node is combined with another node, the connections construct the overall plot in the storyline. At each branch point there is a question with two answers. Each answer leads to another

branch in the storytree. In terms of Eisenstein's (1949) montage, the sum of the interactive elements juxtaposed with the sequence of shots in the node provides the viewer with particular knowledge of the event or theme in the sequence. Therefore, the answer chosen by the viewer provides particular meaning to the sequence the same way montage between two hieroglyphics constructs a particular meaning. The nodes in the storytree at times are reused at different points in the tree creating a different order of combinations down different branches, shown in Figure 5. As well, a different order of nodes can create different combinations and therefore different stories as interpreted by the viewers.

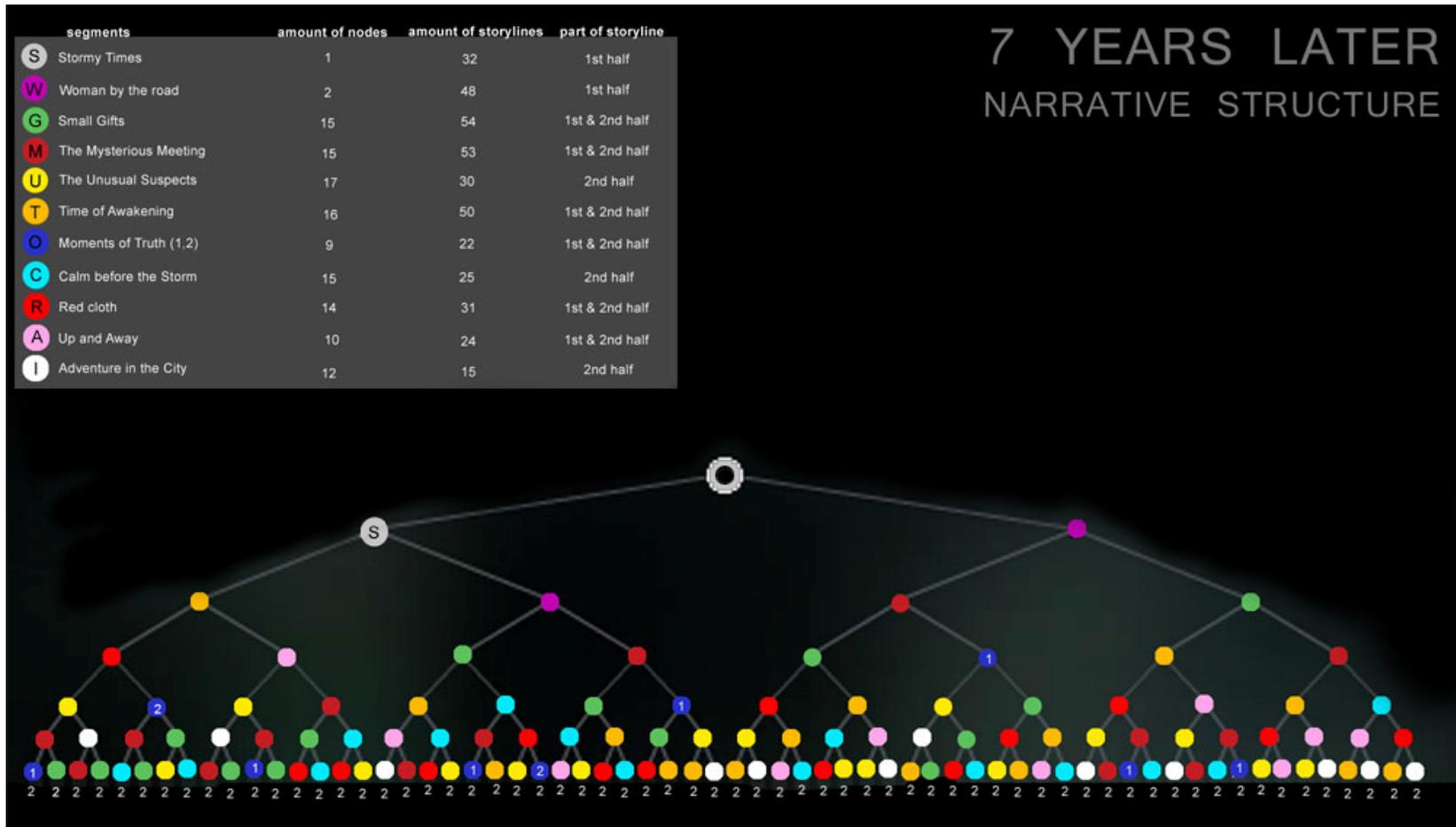


Figure 5: Mercedes-Benz: 7 Years Later storytree structure

3.3 Immersion, Narrative Coherence and Interactivity

3.3.1 Immersion

The basic concept of immersion can be understood as a metaphor of being completely submerged into water. Immersion can describe the act of transporting a person into a different reality through a sensory experience, such as the experience of reading a book. Immersion can also describe the feeling of active engagement while working. Ermi and Mäyrä (2005) divide these experiences into three different types of immersion: sensory immersion, imaginative immersion and challenge-based immersion. This section describes the first two: sensory immersion and imaginative immersion. The third category challenge-based immersion is described in section 3.3.6.

Sensory immersion affects all senses and makes a viewer feel completely surrounded by a different reality (Murray, 1997). It is “the sensation of being surrounded by a completely other reality as different as water is from air, that takes over all our attention, our whole perceptual apparatus” (Murray, 1997, p. 98). This type of experience commonly occurs in virtual reality, where all the senses of the participant can be affected. This experience usually covers the entire perceptual apparatus, creating an illusion and transporting the mind to a different space. In ‘cinema of attractions’, a viewer can become visually immersed into a landscape or different environment presented on a giant screen. In game play, a player can become immersed into the game world and different

realm through its “audiovisual” component (Ermi & Mäyrä, 2005). Many types of media have different sensory outputs that can immerse and surround the viewer.

Imaginative immersion occurs when a text or story transports a reader’s mind into another place or time, and can identify with a character. The text of a book acts as a window which “exists outside language and extends in time and space beyond the window frame” (Ryan, 2001, p. 91). Therefore, the reader is immersed into the content interpreted in the imagination rather than the sensory output of the media. Coleridge describes this experience in theatre as “the willing suspension of disbelief”, suggesting that viewers forget everything except what is happening on the stage by surrendering their mind to the imaginative world (Murray, 1997). In order to sustain this illusion of the story world the fourth wall where the audience resides should never be broken. The world should exist on its own undisturbed by the audience.

In cinema, viewers can feel immersed and become lost within the viewing experience through sensory immersion and imaginative immersion into the story. The theatre is dark, the screen is the only thing illuminated and the room is surrounded by the sound of the movie. These aspects of the environment maintain the illusion and engulf the audience with audiovisual. As well film techniques can help maintain the illusion of the fourth wall. An actor will never look directly at the camera and thus at the audience, instead an actor will gaze a little to the side of the camera when looking in the direction of another actor. “This over-the-shoulder position of the camera is a standard film technique that keeps us identified with the characters while also distanced enough so that we

are reminded of the presence of the other actor in the frame and of our own exclusion from it” (Murray, 1997, p. 120). Other film techniques also maintain clear causality and narrative coherence through continuity editing.

3.3.2 Immersion and Interactivity

The characteristics of interactivity can seem opposite in nature to those of immersion. When users interact with an interface they are usually drawn out of the immersive experience. They become aware of the medium and their ability to make choices. Bolter and Grusin describe this state of being aware of the interface as a “hypermediated” experience (Bolter and Grusin, 1999).

Hypermediation is also used to describe the visual “fragmentation” of the interface to provide users with multiple windows and random access to different parts of the media. In an interactive experience the screen which is immersive in time and space has its fourth wall removed and requires attention from the user. The system requires the user to be actively engaging instead of passively observing.

The combination of an interactive experience and an immersive experience pose a challenging design problem for interactive narrative. Narrative can be understood as an immersive experience, transporting the readers mind to another time and space. Interactivity is actively engaging requiring actions for the immediate moment. By understanding these two processes and how they can be combined, a successful configuration for interactive narrative may be created. A problem with many interactive structures is that the interaction that occurs breaks up immersion during the experience of the story. Incorporating interactivity into a

narrative affects the experience of the interface and the active progression of story. A narrative can be broken down into “the story being told and the conditions of its telling” (Don, 1990). The interface is part of the narrative telling which allows viewers to navigate the content organized into an interactive structure. The interface is where the balance between the narrative and interactivity come together. It provides choice in an interactive structure and maintains immersion into the story.

During immersion, viewers are usually passive in their engagement with an interface not actively interacting with or even aware of the medium. This experience is described by Bolter and Grusin (1999) as immediacy, where an interface becomes transparent and “erases itself, so that the user is no longer aware of confronting a medium, but instead stands in an immediate relationship to the contents of that medium” (p. 24). Therefore, the system should have a transparent interface to maintain the immersive effect of the story world but provide opportunities to interact through a hypermediated environment. An invisible interface should be natural not arbitrary, become part of the medium’s content and have “no recognizable electronic tools-no buttons, windows, scroll bars or even icons” (Bolter and Grusin, 1999, p. 23). A successful experience may be possible for the viewer when all the pieces: the interface design, the interactive structure and the content, function well together. However the integration of all these pieces requires a design that supports immersion and interactivity together in one piece. There should be “a framework that allows the structure and content of the knowledgebase to evolve together while

accommodating a variety of contexts defined by the user's needs and interests" (Don, 1990, p. 384). When all the pieces of the interface design and database structure work together an immersive yet interactive experience may be possible for the viewer.

3.3.3 Narrative Coherence and Interactivity

The design should maintain narrative coherence in order to keep viewers immersed within the narrative. According to Ryan (2006) an interactive narrative should have the same "building blocks" as traditional narrative. It should include time, space, characters and events. However "these elements will acquire new features and display new behaviors in interactive environments" (p. 100). The elements will have to be modified according to how viewers experience and manipulate the structure. The design should also have clear causality and continuity of the events in the narrative database. Continuity in film editing can be maintained between sequences of shots by managing temporal order between shots and preventing the progression of events from appearing out of order. In keeping with traditional narrative, the story should have some type of closure to satisfy the viewers by the end of the experience. However, the experience of closure in an interactive narrative can occur on different levels. Murray (1997) states "electronic closure occurs when a work's structure, though not its plot, is understood" (p.174). For example, viewers could have a basic understanding of the story, but may not be satisfied until they see all parts of the plot and understand how each of the characters are connected to one another in the narrative structure.

Linear narratives such as movies or books can lead viewers to suspend their disbelief supporting immersion into the story. If an interactive structure borrows aspects from a linear narrative structure it may be easier to maintain narrative immersion. Ryan (2001) states the “developers of interactive texts...know that the popular success of an interactive work...depends on its ability to create an immersive experience, and classic narrative structures are the most time-tested recipe for keeping the user spellbound” (p. 243-244). Murray uses this strategy in her interactive prototype *Hot Norman* (Baird & Murray, 1998).

Immersion and narrative coherence can be enhanced through the cohesive relationship between narrative structure and interactive structure. Ryan (2001) states that “a rewarding interactive experience requires the integration of the bottom-up, partially unpredictable input of the user into the top-down design of the storyteller” (p. 244). Manovich (2001) states that interactive narrative authors should “arrive at new kinds of narrative by focusing our attention on how narrative and database can work together” (p 237). There should be a “seamless convergence” between the design of the story and the design of interactivity. In the relationship between the database and the narrative there should also be a defined set of conventions in the way viewers experience and navigate through the database to manage narrative coherence. This set of conventions is relevant to how viewers experience the narrative. For example, Murray (1997) suggests that “the range of allowable behaviors should seem dramatically appropriate to the fictional world” (p.106). Ryan (2001) states that these conventions can be set

“by controlling the general path of the reader, maintaining a steady forward progression, limiting decision points, or neutralizing the strategic consequences of decisions that interactive texts can guarantee narrative coherence” (p. 257). The design should also find ways to manage “proper limitations of users’ fields of options, proper selection of plot structure, and proper choice of themes- to coax narrative meaning out of an interactive database” (p. 332). The narrative database and the narrative interface should have a set of conventions to signal viewers when to interact. These conventions should allow a viewer to navigate but must not overwhelm or make the viewer lose focus of the narrative. Murray (1997) suggests that digital authors “need a coherent set of conventions for signaling Interactors when they can move from one simultaneous action to another and for helping them keep track of where and when the various actions are taking place” (p.157). She also suggests that readers should be made aware of what is allowed, to help ensure there are no unmet expectations.

3.3.4 Immersive Interactive Digital Properties

Murray (1997) claims that there are four essential properties in a digital environment that can produce an interactive yet immersive experience. The four properties are: procedural, participatory, spatial, and encyclopedic. She states that both procedural and participatory are the properties of “interactive”.

Encyclopedic and spatial are immersive properties that “make digital creations seem as explorable and extensive as the actual world, making up much of what we mean when we say that a cyberspace is immersive” (Murray, 1997, p. 71).

These properties can make a user feel absorbed into navigating through a spatial

environment and immersed into sorting through an encyclopedic amount of information.

The concept of a spatial environment can be portrayed in the imaginary story world. However, according to Murray a digital environment can actually present navigational space. She states that “linear media such as books and films can portray space; either by verbal description or image, but only digital environments can present space that we can move through” (Murray, 1997, p. 79). In digital environments the encyclopedic property suggests a wealth of detailed information which can be stored, organized and easily accessed by the user. To Murray (1997) the encyclopedic nature of digital environments “offers writers the opportunity to tell stories from multiple vantage points and to offer intersecting stories that form a dense and wide-spreading web” (p. 84). Many hypertext stories successfully use this property to provide readers with interesting plots and options to explore a web of narrative information. However, having a lot of information can sometimes be too overwhelming for the reader, break narrative coherence and make readers feel they are lost within it. The amount of information presented to the reader should be limited to keep a reader within the frame of the story.

3.3.5 Viewer Oscillation

A well-designed interactive experience should allow viewers to oscillate between a state of immediacy (immersion) and a state of hypermediacy (interaction). This experience allows a subject “to oscillate between the roles of viewer and user, shifting between perceiving and acting, between following the

story and actively participating in it” (Manovich, 1997, p. 207). Oscillation can occur in virtual reality systems or games where the interaction becomes a part of a first person activity. The players focus on their actions, while paying attention to the world presented in front of them. They are in control and their actions affect the overall experience. They “become characters in a cinematic narrative. They have some control over both the narrative itself and the stylistic realization of it ...they can ... decide where to look ... so that in interactive film, the player is often both actor and director” (Bolter & Grusin, 1999, p. 47).

An experience of oscillation can be smooth when a viewer’s interaction becomes an integrated part of the content. Murray (1997) suggests that “the screen itself is a reassuring fourth wall, and the controller is the threshold object that takes you in and leads you out of the experience” (p. 108). The body is integrated into this virtual realm as the controller and its effects become an extension of the body. Their actions become integrated with the story world and control is “very closely tied to an object in the fictional world, such as a screen cursor that turns into a hand...” (Murray, 1997, p. 108). To support oscillation a designer can constrain how much participation a viewer has with an interactive medium. Murray (1997) declares that, “participation in an immersive environment has to be carefully structured and constrained” in order to sustain the illusion (p. 106). By restricting the degree of participation and keeping a traditional narrative structure there may be more chances that a reader will not be distracted by the interactions and be able to follow the story.

3.3.5.1 Oscillation and Split-screen effects

Oscillation can also occur during split-screen effects in movies. The viewer becomes aware that the screen is fragmented and their attention is hypermediated between the multiple windows. However there is no explicit interactivity involved in the process. The viewer's interaction is cognitive, and a viewer can make choices over which screen they prefer to observe. By focusing on one screen, or moving between screens the viewer can switch their focus across the multiple events or stories presented on the screens. Viewers can become absorbed into the overall story when multiple screens are united through connecting content or context. The movie *Time Code* (Stewart & Figgis, 2000) and the TV series *24* (Gordon, 2001) use split-screen effects as an important visual structure to emphasize the connections between time, space and characters. Screens in these examples unite when multiple characters are connected through physical or emotional situations.

Split-screen effects can connect two screens and unite multiple characters in physical or emotional situations. In the TV series *24* split-screen effects reveal different connections by placing two screens together from different spaces connected by a telephone call. The split-screen effects in *24* also connect different characters to suggest a parallel in the characters relationship. For example Allen states:

“*24* employs the Doctrine of Sympathy on many occasions throughout the use of split-screen, the different panels placing in juxtaposition the characters who have a particularly powerful

relationship, and thereby suggesting that they are intuiting one another's physical or emotional situation, or at least thinking of one another" (Allen, 2007, p. 45).

Split-screen effects can show the connection between two different spaces or characters to create suspense in the narrative. In the film *Suspense* (1913) the split-screen effect creates a suspenseful mood for its narrative. There are three screens, each shows one character. A woman calls her husband because of an intruder. "The tension is heightened by the viewer's ability to simultaneously see all three characters; to witness that which is invisible to the couple talking on the phone" (Allen, 2007, p. 45).

Split-screen effects allow a viewer's attention to be hypermediated when he or she must choose to watch a single screen between multiple screens. Current movies and TV shows which use split-screen effects utilize Zimmerman's (2004) level one interactivity, allowing the viewer to cognitively decide which screen to observe at one time. It has been suggested that viewers have become an editor of the film when they choose which screen to watch. In *24* the split-screen effects become a form of viewer editing:

"In *24* the split-screen ... invites the viewer to embrace the act of editing for themselves, mobilizing them to actively engage with the screen and its drama by demanding they move between planes of action simultaneously. Rather than leading to a shortened attention span, the subsequent sense of continually running the risk of 'missing' something in this process arguably demands a heightened

attention span from the audience” (Jermyn, 2004, p. 51).

In interactive cinema, split-screen effects can be designed into the interface and encourage interactivity. The author can use different techniques to attract a viewer’s attention to particular screens over others during a split-screen sequence. The use of the multiple screens can be configured so that screen size, composition or movement within the screen and the connection of sound to a screen can attract a viewer’s attention. The bigger the screen the more attention a viewer will direct towards it. A large screen size reveals more detail and can create more emotional impact in the film. Composition within the screen, such as lighting, motion, or intensity of action, can attract viewer attention to one split-screen window over others. A viewer generally looks at a screen which displays a lot of movement over a screen that is slow moving. Sound is another element which attracts a viewer’s attention to a particular screen. In the motion picture *Time Code* (2000), Figgis uses sound to focus a viewer’s attention to the screen which has the soundtrack.

3.3.6 Challenge-based Immersion

Immersion can also occur when users feel engrossed or focused on their interactions. Challenge-based immersion is fundamentally based on interactions and occurs when there is a “satisfying balance of challenges and abilities” (Ermi & Mäyrä, 2005). Therefore a user can feel immersed into an action and can feel the success of accomplishing a task because of his or her capabilities.

Csikszentmihalyi suggests a similar concept in his theory of Flow. Flow is a state where a user has neither anxiety nor boredom. It is a state of “constant inputs of

attention” creating an equilibrium between skills and challenges (Csikszentmihalyi, 1990).

According to Csikszentmihalyi, there are eight major components of flow. The first component suggests there should be a challenging activity that requires skills. Secondly, there should be merging of action and awareness. The third component is to have concentration on the task at hand. When a user has all attention focused on the task at hand, they will “become immersed in the activity” (Csikszentmihalyi, 1990). Fourthly, flow requires clear goals that provide motivation for user’s choices. A user should be able to know exactly what it is that he or she is trying to accomplish, otherwise the task becomes meaningless. This experience becomes enjoyable when a user feels in control of the immediate state, and feels a sense of progressively achieving their goal. Fifth, these goals should provide immediate feedback, which is a component of agency. Agency is the “satisfying power to take meaningful action and see the results of choices” (Murray, 1997, p. 126). The sixth condition is to allow users to feel in control and have no worry about failure. This condition also coincides with agency. Agency allows users to make choices, feel the importance of their actions, see the results of their choices and make them feel they are in control. This strong sense of control while interacting with a medium enables a viewer to feel more immersed into the experience. The seventh condition is the loss of self-consciousness, where a users concern for self disappears. The eighth condition is the transformation of time. For users focused or in a state of flow, hours can pass by in minutes.

3.3.7 Choice, Narrative Pleasure and Interactivity

Crawford states that in order to design good quality interactivity “every interactive application must give its user a reasonable amount of choice” (Ryan, 2006, p. 99). The interactive narrative must give users the feeling they have enough options and choices. Crawford (2005, p. 82) suggests that storytrees which are “rich and bushy” are better in offering more choice and more interactivity. He suggests that the more choices, the more pathways through a storytree, the better the experience is for the viewer. However Ryan (2001, p. 260) states that “in terms of complexity, hypertext compared with print texts is like satellite-dish TV with its five hundred channels versus cable TV with its mere fifty. Do viewers really take advantage of this complexity?” Providing too much choice doesn’t benefit the readers or make the experience better. However, Crawford also suggests that the number of choices included should be relevant to the range of possible outcomes in order to generate perceived completeness of the experience (Crawford, 2005). He states that the “number of choices” should be “in relation to the number of possibilities the user can imagine” (Crawford, 2005, p. 40).

It is the quality of choices and how these choices affect the experience for the viewers that will make a good design for an interactive narrative. In the design of an interactive narrative there should be a certain way to manage the choices provided for a viewer and how these choices affect the viewer’s story experience. The design should allow users to feel ‘in control’ and feel the results of their choices by providing a sense of agency. However, the sense of agency

should be modulated by the design of the system. Murray (1997) suggests that as designers, “we need to define new narrative conventions for entering the immersive world and for exercising agency within it, so too do we need a new set of formal conventions for handling mutability” (p.155).

To increase immersion in the experience of an interactive narrative, the choices offered should motivate users to interact and provide the users with a sense of control. Each choice should have a goal or some type of functional significance for the overall narrative and interactive experience. According to Ryan (2001), readers do not like to explore links as they experience them as a distraction. She states, “According to Kirsten Ridsen, ‘Two out of three participants read [The Lurker Files] as a traditional story by choosing not to explore links’ ” (Ryan, 2001, p. 257). Therefore, having a goal in an interactive narrative will motivate viewers’ interactions. Ryan (2004) also states, “The restriction of users’ options will pay off only if digital narrative is able to channel these options toward a goal that gives meaning to user’s actions or to capitalize on the other properties of the medium” (p. 332). Mystery can be used as a narrative desire to motivate viewers to interact. Ryan (2001) states that the mystery story works well for an interactive structure as “the reader’s action discover, rather than create, the object of this desire and because the story to be investigated is itself unilinear, determinate, and external to the interactive machinery” (p. 259).

Incorporating micro-narratives into the design of an interactive narrative can offer immediate pleasure and narrative desire in the viewer’s interactions.

Micro-narratives should build upon the overall narrative and add to the experience by stimulating immediate curiosity. Interactivity, according to the multimedia design author Bob Hughes should be to “trigger microevents that provide blasts of pleasure and instant satisfaction” (Ryan, 2001, p. 257). As a viewer interacts they should be rewarded with an event, action or object that adds to the overall narrative.

4 PROJECTS

4.1 *Interactive Short Cuts* Prototype

The *Interactive Short Cuts* project is a case study, which tests a linear narrative structure as a possible interactive structure. Before this prototype was constructed, alternative plot structures and interactive structures were observed and analyzed to understand how the story was organized according to time and space. The prototype then adapted elements from these alternative plot structures found in current movies and converted them into an interactive structure. The prototype took footage from the motion picture *Short Cuts* (Brokaw & Altman, 1993) and created an interactive version of this linear movie. The project sorted the existing narrative structure into a database with a representational interface to navigate the database. The motion picture *Short Cuts* has an ensemble plot structure, which reveals the stories of twenty-two different characters that live in the city of Los Angeles. Altman's intention with *Short Cuts* is to push viewers to draw connections between characters towards common themes between the multiple storylines. This prototype allows the viewers to find and make connections between the short narrative sequences as they navigate.

4.1.1 Design of *Interactive Short Cuts*

The narrative of *Short Cuts* is broken down into multiple storylines consisting of different characters. Figure 6 demonstrates how the linear movie is

arranged according to each character in the film. The linear film cuts back and forth between each character's storyline as time proceeds forward. Each block represents a sequence of film from the movie *Short Cuts*. Letters A, B and C represent the characters and numbers 1, 2, and 3 represent time. Time in the movie organizes the blocks into sequential order.

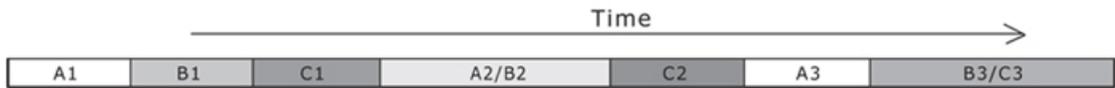


Figure 6: Linear film structure of Short Cuts

Each character's storyline was extracted from the film's linear structure and isolated to represent one character's viewpoint. Each individual character's storyline was then organized into the database according to time in the film, as shown in Figure 7. This structure maintains the linear flow of time from left to right. Some storylines have overlapping segments which have multiple characters viewpoints at the same location at the same time creating multiple versions of the same sequence.

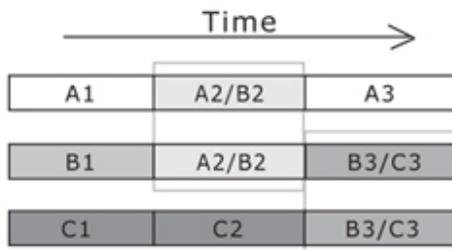


Figure 7: Linear film Short Cuts converted into a database

This database structure can be weaved together to create an interactive structure demonstrating the connections in time and space between the characters as shown in Figure 8. Each storyline is represented by a line, which feeds from one video block into another. The sequences where multiple characters are in the same location at the same time are combined into one segment and multiple storylines feed in and out of this sequence. The structure can be used as a representational interface used to navigate the database.

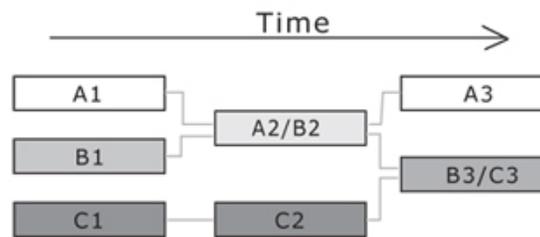


Figure 8: Interface of Short Cuts Interactive

Interactive Short Cuts uses a fifteen to twenty minute sample from the movie. This sample contains storylines of five characters from the movie *Short Cuts*. This sample is a small portion of the footage presented in the movie. Figure 9 shows the interface of this prototype. The footage is broken down into blocks organized according to space and time. Each block represents a sequence of video and functions as a clickable button, which allows viewers to navigate the network of characters in time and space. The video selected is then displayed on the screen above the buttons. The coloured lines, which lead from one block to another represent the storylines of individual characters. Some of the blocks hold multiple character's storylines as they overlap in time and space. This hyper-video diagram functions as a visual navigational map and demonstrates

complexity in the connections between the characters' relationships in space and time. Viewers also have a visual representation of where they have travelled in the narrative. Once a sequence of footage is selected that particular block will change from a grey colour to a blue colour to represent sequences that show the viewers which sequences they have seen. Once a clip plays all the way through, it will play the following clip or bring the viewer to an intersection point between two characters. At an intersection point, the viewer will be able to choose between one of the two characters and decide which narrative pathway to follow.

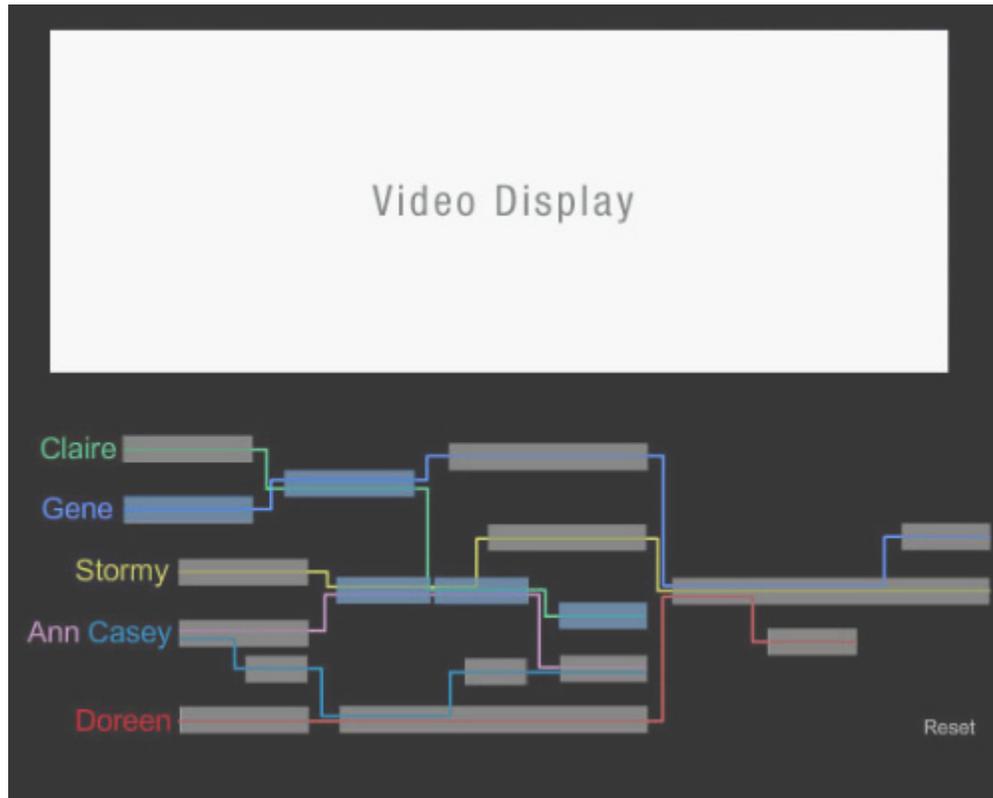


Figure 9: Interface of *Interactive Short Cuts* prototype

4.1.2 Experience of *Interactive Short Cuts*

The *Interactive Short Cuts* prototype demonstrated that alternative plot structures could be adapted into a narrative database good for constructing interactive narratives. The prototype had a useful structure which could connect together video segments to construct theme or story. However, the structure could be improved to create more chances at bringing immersion into the experience.

Because the movie *Short Cuts* is very dense with narrative information, the narrative database consists of many micro-narratives in each storyline and in the individual events. As a viewer navigates, their interactions piece together various segments. The combination of these segments allowing them to discover narrative themes and connections between the characters storylines. As viewers navigate more and see more video segments, they will slowly have a better understanding of the overall story by connecting each of the smaller pieces.

The map provides various ways to deconstruct the narrative. The viewer can construct her own understanding by choosing from a database of plot points, depending on the particular paths and the order of the sequences that are chosen. Viewers can follow an individual character or watch the film in a non-linear fashion by selecting and mixing different sequences from the map. Navigating between these video micro-narratives allows viewers to make causal connections between characters and compare or contrast events according to theme. The viewer can also understand the connections in time and space from the visual representation on the interactive map. The viewer can become an

editor through her interactions. She is in control of how many segments are viewed, the order in which they are viewed, and how many times they are viewed. A viewer may also revisit segments and rediscover connections between characters. The viewer can experience a hermeneutic process, as information in the narrative is reprocessed and re-evaluated each time the viewer revisits segments and discovers specific connections between each of the nodes. The more the viewer selects and watches, the deeper the understanding of the overall narrative.

From the user's experience from the *Interactive Short Cuts* prototype, I considered the elements that worked well for immersion and the elements, which created a successful viewer experience. The structure allowed viewers to collectively piece together segments of video to construct their own video and possibly their own interpretation of the story. The interface also allowed viewers to interact at any time they wished, and continue to watch the movie in any order they choose. However, I found that the user's ability to jump back and forth between sequences disrupted linear time and broke the narrative coherence in the prototype. As well, the story would stop when it came to an intersection point, so the video would stop and break the flow until the viewer made a selection. In the prototype *Lost Cause*, I work to find solutions for these issues.

4.2 *Lost Cause* Interactive Movie

4.2.1 Project Overview

Lost Cause is the second case study project. *Lost Cause* is an online interactive movie which explores navigation between the perspectives of three main characters at anytime throughout the duration of the story. The film lasts fifteen minutes and contains three parallel storylines which play simultaneously in real time. One large screen displays the main video while three thumbnail screens function as buttons and display the point of view of each of the three characters. Each character's perspective is different from the perspective of the other characters creating ambiguity throughout the duration of the film. As viewers interact they piece together narrative fragments of these three characters and build their own interpretation of the story. Different choices will present varied sequences creating new interpretations of the story. As well viewers' interactions throughout the entire film determine which of the three separate conclusions will be selected by the end of the film. The time spent on each storyline will be tallied, and the one which has the highest number will have its ending played.

4.2.2 Interface of *Lost Cause*

Lost Cause starts with an information screen which explains how to interact with the video. Once viewers click on the start screen, they are brought to an introduction screen which displays three variations of the lead female character as shown in Figure 10. Each variation of Chloe represents the

perception of her that is held by each of the three main characters. The viewer must select one of the thumbnail screens (one character's perspective) to begin the movie.

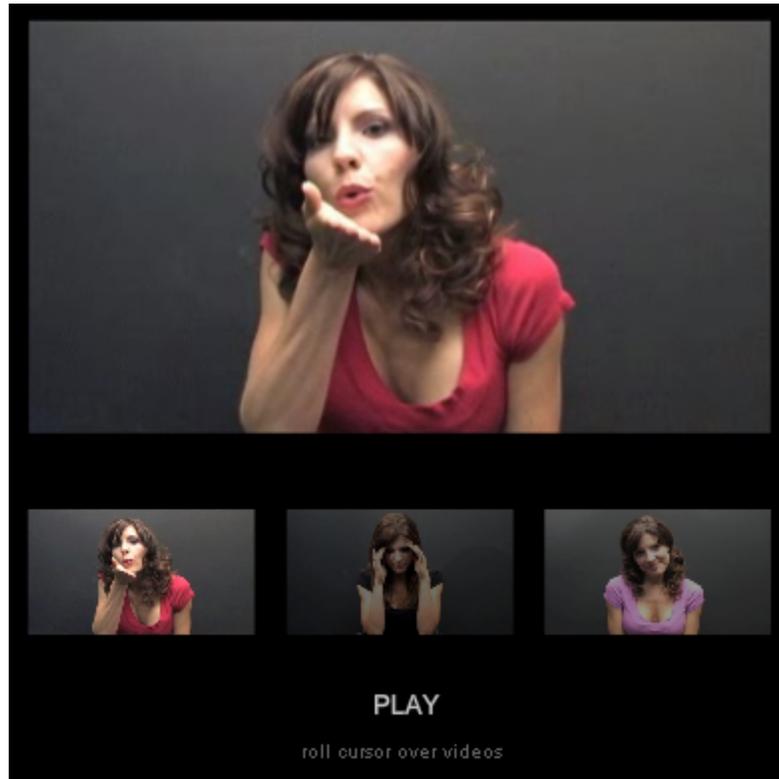


Figure 10: *Lost Cause* introduction screen

The interface of *Lost Cause* has one master screen in the center and three thumbnail screens below (see Figure 11). The master screen displays the main video and sound of the selected video. The three thumbnail screens display videos of each character's storylines and function as buttons. These three screens play simultaneously and a viewer can navigate between any one of the storylines at any time. Navigation is controlled through the movement of the computer mouse. When the mouse cursor is over a thumbnail screen, the video from the same screen will be mirrored onto the master screen with its

corresponding audio. The function is similar to a picture-in-picture mode of channel surfing on a television. It enables viewers to see multiple channels at the same time and flip back and forth between these channels at any time. The thumbnail screen will become slightly darker when selected, to notify the viewer of its selection.

Each storyline and thumbnail screen has its own soundscape. The melody is consistent across the three channels. However there is a difference in the variation of tone and a different instrument to represent each character. A cross-fade occurs as viewers navigate between storylines. Therefore the tail end of the sound from one storyline can be heard when navigating and listening to a second storyline. The film can be paused or played by clicking the pause-play button. The split-screen interface sustains a viewer's attention and manages fluid navigation while viewers interact.



Figure 11: Interface of *Lost Cause*

4.2.3 Narrative Content of *Lost Cause*

The overall story in *Lost Cause* is about three main characters who live in the same apartment complex and each have a different relationship with Chloe, a young woman. Colin, Chloe's husband is a young man with a broken arm who tries to resolve the couple's rocky relationship. The two of them live on the second floor. Arie, Chloe's lover is a young man who works as a maintenance man at the apartment complex and is convinced that Chloe should leave her husband for him. Tina, Chloe's elderly mother lives on the third floor and she investigates why her daughter has grown distant.

Each of the three characters has their own independent story. The overall story contains all three of these stories combined. The structure of the stories coincides with the overall narrative structure. Events in the narrative are carefully outlined and placed according to time and space, as defined in the story and shown in Figure 12.

	Colin	Arie	Tina
Time	Colin's Apartment: - Colin shaves and cuts himself as Chloe bumps him - misses phone call - Colin catches Chloe cutting her wrist; they struggle	Colin's Apartment balcony: - hears phone ring - Arie fixes a vent, falls into apartment - discovers Colin beating Chloe	Tina's Apartment: - Tina Calls Colin, no answer Apartment complex: - Tina walks down hall - Tina slips letter under Colin's door - takes elevator, walks to laundry room and checks her laundry - Finds Chloe and Arie arguing in the lobby - takes elevator Tina's Apartment: - finds Chloe with black eye - goes to washroom
	Colin's Apartment & Hallway: - Colin is attacked by Arie - Arie and Colin fight, Colin trips and Colin chases after him		- Arie is attacked by Colin - Arie runs down the hall &
	Colin's Apartment: - Colin can not find Chloe - pulls out gun and leaves Apartment Complex: - searches for Chloe Stairway: - argues with Chloe, and can not find her	Stairway: - argues with Chloe, she tells him to leave her alone Tina's Apartment: - fixes sink, finds necklace	
		Tina's Apartment: - Arie looks at photo - Tina Screams - Tina sprays Arie with oven spray & leaves the apartment	
		Apartment Complex: -Arie storms down hall	- Chloe returns with laundry & leaves - Tina looks at pill bottles
	Tina's apartment: - Colin talks to Tina about Chloe - Tina whines & accuses Colin of beating Chloe; he spills coffee	- Arie has a cigarette break - Arie hides from Colin & a paint can knocks Colin out - Arie sees Colin's gun and kicks it away - Arie runs away and finds Chloe, he drags her to Colin's body but it has disappeared - Arie tries to convince Chloe to leave with him, she refuses	
	Apartment Complex: - Colin sees Arie, and follows him to storage room - pulls out gun & he is knocked out, he awakes with the room empty and the gun gone - he leaves the room & returns		Tina's apartment: -Tina talks to Colin, & is worried about Chloe, tells him about Arie & asks Colin to help; he spills coffee
			Tina's Apartment: - Tina folds laundry & is missing a sock Apartment Complex: - Follows Arie and Chloe into storage room & finds a gun - see Arie strangle Chloe
	Storage room: - Tina, Colin & Arie together in the same space & Chloe is shot - Chaos		
	Colin's Ending: - Colin homeless, sees Chloe & Arie in convertible drive away	Arie's Ending: - Arie pulls a necklace of stars from the sky & gives it to Chloe	Tina's Ending: - Tina visits Chloe's grave, Chloe appears & whispers

Figure 12: Narrative events organized by time and character perspective

4.2.4 Interactive Narrative Structure of *Lost Cause*

Lost Cause is an example of explicit design choice according to Zimmerman's 4 levels of interactivity. *Lost Cause* has elements of both Zimmerman's embedded and emergent modes of interactivity. Although the overall structure is an embedded design, it has some elements of emergence. The embedded structure consists of all the components structured into a consistent narrative database. The experience becomes emergent because the viewer's interactions are not determined, and the interpretations of the story are different for each viewer. As well there are three predefined endings for each character, but it is unclear to the viewer which ending will be chosen. The ending is chosen based on the storyline that the viewer has selected the most. Each thread includes a counter which adds up the time when a viewer selects it. The thread that has the highest number will have its ending played.

In new media or non-linear media the meaning of the term plot is slightly different from plot in linear media. Plot in linear media is defined as all events visibly and audibly present. However in new media or an interactive narrative, plot is all the possible events present that are seen or unseen by the viewer. The structure of the film borrows aspects from various alternative plot structures, as defined by Berg (2006). Similar to the movie *Short Cuts* (Brokaw & Altman, 1993) the narrative of *Lost Cause* has an ensemble plot structure. There are multiple separate storylines, each relating to one of the three main characters, which are combined to create the overall narrative. The plot can also be seen as a repeated event plot structure as it represents the same plot multiple times from the

perspectives of three different characters. The Interactive structure of *Lost Cause* could be classified as Ryan’s track switching structure. The temporal flow of the story is constantly moving forward, and every strand is linked to every other strand. However unlike the track switching structure *Lost Cause* does not have set decision points to navigate to another strand, instead the viewer can decide to switch between strands at anytime.

Lost Cause has its plot organized into a database of three parallel storylines, each representing one of the four main characters’ perspectives. The database is divided according to each character’s spatial relationship in time. The film is 15 minutes long and all events occur in real time. Figure 13 demonstrates the organization of the database into three separate characters in space throughout the time of the movie. Each strip represents a storyline for one of the three characters in the movie: Colin, Arie or Tina. At times, two or more of the storylines may overlap and exist in the same space at the same time. The dark grey areas in Figure 13 represent the time that two characters intersect in the same location at the same time. After the movie has played out, there exists a different ending for each character.

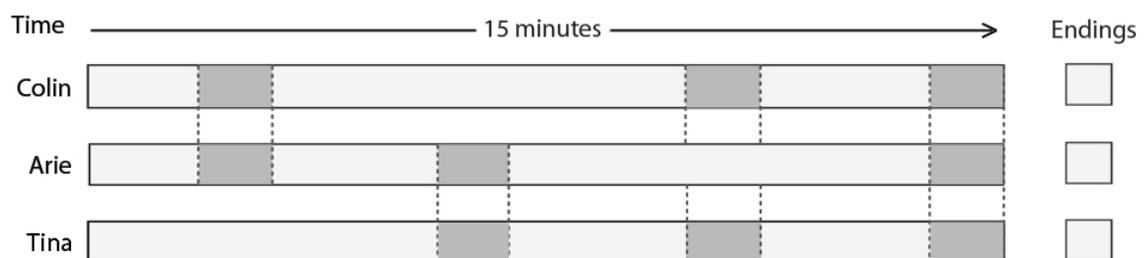


Figure 13: *Lost Cause* database organized by characters in space and time

Although there are three individual storylines, the connections between them create an overall story. The characters are connected by their relationships with one another and with their relationship with the lead female character, Chloe. Figure 14 demonstrates one path a viewer might take while navigating between the three characters' storylines in the database. While navigating the narrative database, time is linear and all events occur in real time. There is no jumping ahead or moving backwards in plot time. A viewer will navigate through the three storylines generating her own path and her own understanding of the story. Figure 14 also represents how an ending is chosen based on the total time a storyline has been selected by the viewer by the end of the movie.

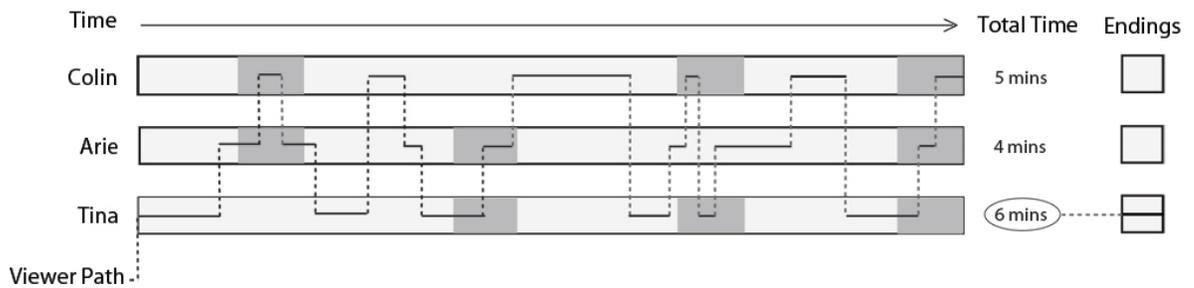


Figure 14: One viewer's path through the database

In *Lost Cause* the plot can be described in two different ways as it is organized into the database. Plot can be used to describe all possible events available and organized into the database by the author. According to Figure 14, the plot is all the events and content stored in the three storylines. The second version of plot is a single storyline through all possible events as enacted by the viewer. In Figure 14, the second plot is represented by the viewer's path. The

construction of the plot by the author and the plot enacted by the viewer correspond with the viewer as a second editor of the film.

The experience in *Lost Cause* functions similar to *21 Grams* jumbled plot structure. As viewers navigate through the database of *Lost Cause* they may not understand the connections between the characters right away. However, after navigating between the three characters storylines, connections between the characters and common themes may be discovered. At times when the characters exist in the same place at the same time, viewers will be able to directly see the characters' connections and relationships to one another.

4.2.4.1 Narrative Arc of *Lost Cause*

The database has an overall narrative arc which is parallel across all three of the storylines. As well, each storyline has its own independent narrative arc. The narrative arc as experienced in the story is dependant on which events the viewer sees and how the viewer understands the connection between these events. As viewers navigate between the three storylines, they will experience the narrative arc according to the narrative segments they viewed. Because the database is experienced in order, the structure of the narrative arc is fairly consistent across each experience.

The setup of the narrative arc occurs at the beginning of the movie. This phase of the movie introduces the three characters and the environment. Although some viewers may not discover the connection, there is an event that occurs during the setup phase that connects the three characters on the three screens in time and space. Tina in one storyline makes a call to Colin who is in

another storyline. Colin answers the phone but misses her call. The sound of the phone ringing occurs in all three screens and connects the three storylines in time and space.

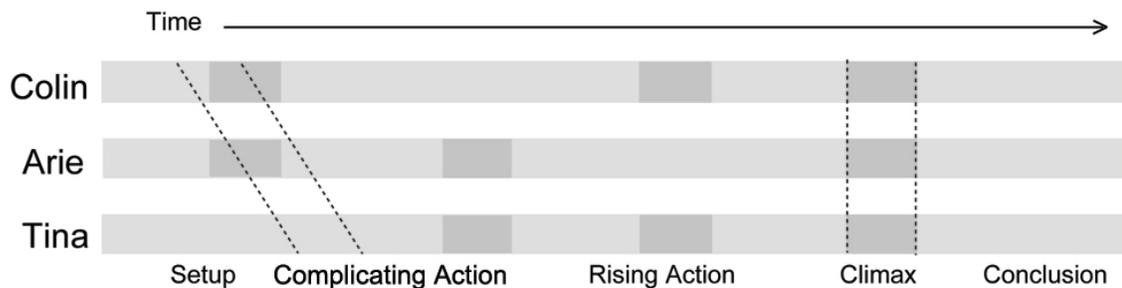


Figure 15: Narrative arc in *Lost Cause*

There is a single complicating action across the three storylines for the overall narrative of *Lost Cause*. However, the complicating action is slightly different for each storyline according to the characters perspective. In Figure 15 the complicating action in each storyline exists at slightly different times. The complicating action in the overall story is when Chloe tries to cut her wrist. This action causes a chain of reactions contained in a series of events between the other three characters. In Colin's storyline, the complicating action is the moment he discovers Chloe cutting her wrist. This event causes Colin to struggle with her results in her getting a black eye. This action is then followed by Arie attacking him and Chloe leaving. For the rest of Colin's storyline, his goal becomes a quest to find Chloe and to unravel who Arie is. In Arie's storyline, the complicating action is when he discovers Colin beating Chloe, after she cuts her wrist. After seeing this he enters the apartment and wrestles with Colin. Arie then tries to convince Chloe to leave her husband. In Tina's storyline, the complicating action

occurs later as a chain reaction to the initial event in Colin's storyline. For Tina, the complicating action is when she witnesses Arie and Chloe arguing in the lobby, and later finds Chloe with a black eye. After finding Chloe arguing with a strange man and with a black eye, Tina's main goal becomes an investigation of Chloe's activities. The complicating actions across the three threads are related in causality to each event. Each viewer will experience the complicating action from a different character's perspective, affecting the viewer's comprehension of the event, and the series of events to follow.

The rising action is an accumulation of the events that the viewer sees. Each viewer will witness different events depending on what she has selected from the database. The climax of the movie occurs near the end when all three storylines come together at the same location at the same moment in time. The climax for the three storylines converges at a single point, which is represented in Figure 15 as three parallel grey boxes. Because the climax occurs at the same place and time in all three of the storylines this allows the viewer to tie up loose ends no matter which storyline was currently being watched. Narrative closure occurs at the end of the experience as viewers see one of the three resolutions.

4.2.4.2 Narrative Framework & Categories

Lost Cause is consistent with the characteristics of Ryan's four narrativity categories. *Lost Cause* has two methods of representing Ryan's spatial dimension characteristic. One method is physical space where events occur for each character in the overall setting of the story. The physical space is defined in the database between the three characters' storylines representing their shared

environment. The second method of representing space is the layout of the database in the interface. The three parallel storylines in the database are presented as three screens. Viewers can conceptualize the space of the environmental map and its relation to each character's location in the interface. The relationship of space is closely associated with the evolution of time in the movie. As one character moves through the physical space he or she may encounter another character in the same space at a certain time. Time in *Lost Cause* advances linearly, remains constant and cannot be rewound or fast forwarded. The three storylines take place on a parallel temporal dimension and cause and effect from one storyline affects another. The experience of *Lost Cause* is dependant on the flow of time. The more time evolves, the more a viewer will understand the story.

The mental dimension is represented in the goals of each character which motivate and drive the actions of the plot. The characters' actions initiate a chain reaction from the other characters. Each sequence of events that occur in each of the storylines affects the other storylines. The formal and pragmatic dimension relates closely to the characters, their effects to the overall story and the viewer's interpretation. As a whole all three of the storylines are correlated creating a unified causal chain of events. All three of the stories come to the same space and time at the climax of the narrative arc and lead to a closure. The audience creates an understanding of the narrative based on the chain of events that is viewed.

5 ANALYSIS AND RESULTS

5.1 User Study

Different theoretical elements, which promote an immersive but interactive experience, were attempted in the design of *Lost Cause*. These elements and the overall experience of the design were evaluated through a user study. The goal of the study was to understand if the design could support viewer immersion into its interface, narrative structure, and narrative content. However, because it is not easy to measure a viewer's immersion into the experience, the study evaluates different factors in the design that could lead to an immersive experience. The study focuses on the viewer's ability to navigate the interface, their interpretation of story and character and their reactions to interactivity. The feedback evaluates the success of the interface and method of navigation in generating viewer oscillation. It will also evaluate if viewers had difficulty understanding the narrative or if they were focused into a challenge-based immersion. The study also discovers if each viewer had a different interpretation of the story. The user study provided data that could be evaluated to determine how successful the design of the interactive system was towards the viewers' overall experience.

Twenty participants who had no previous knowledge of the system participated in the study. The participants were meant to represent the general public. The participants were of both genders and ranged from ages twenty-two

to sixty-five years old. Just over half of the participants were graduate or undergraduate students and the rest were not students. The participants were recruited from within the university and outside of the university and ranged in a variety of experience with interactive cinema. The study lasted about 40 minutes for each participant.

The user study was constructed into two parts. The first part allowed participants to interact with the film while observations of their interactions were recorded in notes. The film was installed on a computer allowing the participants to interact with a mouse and watch the film on a computer screen. The second part of the study consisted of a questionnaire and a brief interview of the experience. Before the participants interacted with the film, a brief animation demonstrated how they were to interact with the piece. All participants were encouraged to interact. The participants were not interrupted, but could ask questions at any time.

During the viewing of the film the participants' interactions were observed and recorded in notes. The notes listed specific parts of the plot that were selected by the viewer and displayed on the large screen. The notes also included which of the three endings they watched and whether or not the viewers interacted a lot or not at all. If a participant took their hand off the mouse or hardly moved the mouse, this was noted as not interacting with the piece. There was no time limit, as the length of the film is played straight through for fifteen minutes and then stopped. The participants were allowed to interact and experience the interactive movie only once and were then required to complete

the questionnaire and interview. Those who wanted to watch the movie again, could do so once the questionnaire and interview was completed. The questionnaire contained questions with yes or no answers regarding their interactions and ability to focus on the story. Another section of the questionnaire had the viewers rate different reasons that could have motivated their interactions in the split-screen interface. The participants were then briefly interviewed on their interpretations of the story, their understanding of characters and what they enjoyed or didn't enjoy about their overall experience while interacting with the film. The interview encouraged open ended responses by asking the participants to describe or summarize. The user study results combine the questionnaire and interview answers with the viewer observations to provide data which could be analyzed.

5.1.1 User Study Results

A few questions try to discover if the interactive structure affected the viewer's experience of the story. For example, the structure of the film may cause some viewers to miss narrative information. Just over half of the twenty viewers claimed they had missed important narrative events, which may have impeded their understanding of the story (see Table 1). Of those twelve viewers, who claimed to have missed important events, only one of them said they were dissatisfied because of this experience. Of the same twelve viewers, all except one of them wanted to view the film again in order to gain a full understanding of the story. Although many viewers claimed to have missed narrative information, all viewers were able to recite a summary of the plot during the interview. During

the short interview questions, many viewers mentioned they especially enjoyed the interactivity and the structure of the three parallel stories. This demonstrates that regardless of their understanding of the story they still enjoyed the interactive experience because of the design. This also reveals that many viewers prefer watching the film more than once and that therefore the design supports repeated viewings.

Table 1: Viewers understanding in *Lost Cause*

Question	Yes	No	Not Sure
Missed important events leading to not understanding the story	12	5	3
Dissatisfied because of not understanding the story	1	8	3
Wanted to view film again to understand full story	11	1	0

The questions try to uncover whether or not a viewer's ability to interact may cause him or her to not understand the story. The twenty participants were asked if their interactions distracted them from the story and about half claimed that they were distracted (see Table 2). However, when asked if they were focused in discovering the story, most of the participants claimed to be focused. Of the viewers who were distracted, these viewers said they either enjoyed being able to interact or they enjoyed seeing different perspectives at the same time. It seems that viewers were not used to interacting when watching a film and felt it was distracting. However, the organization of the narrative made the interactions helpful in navigating and discovering the story built into the structure. Even though viewers considered interactions to be distracting they still enjoyed the

interactive experience. These results can be interpreted to understand viewer oscillation. Those participants who did not find the interactions to be distracting and were able to focus on discovering the story could oscillate between the content and the interface. Those participants who were focused in discovering the story, but found the interactions to be distracting wanted to oscillate but could not.

During the observations of the participants' engagement with the film, there was a varied reaction in how frequently each participant interacted. Some participants were very active in navigating and seemed focused following all three storylines at the same time. Other participants were moderately active in interacting and at times may have had a hard time following all three storylines. However a small number of viewers did not interact at all and instead watched one storyline all the way through. The variance may be due to differences in each participant's ability to focus while navigating between the screens at their own personal preference.

Table 2: Viewers focus vs. distraction

Question	Yes	No	Not sure
Interactions were distracting from the story	9	7	4
Focused in discovering the story	16	1	3

The questions also focus on the participants' responses to the interface by determining which part of the screen they focused on and how the split-screens

motivated their interactions. The questionnaire asked the participants which screen they focused on the most. The responses had a range of answers. Five participants focused mostly on the larger screen, eight focused mostly on the smaller screens and seven focused on both equally. When comparing these responses with observations of viewer interactions, the range in answers seemed to correspond with the viewer's ability to follow the multiple storylines and how frequently they interacted. The participants who were able to monitor all three storylines watched the smaller screens the most or both large and smaller screens equally. These participants were more likely to interact and claimed to be focused while discovering the story. Those who had a harder time following all three storylines at the same time were more likely to watch the larger screen the most and just follow one of the storylines. These viewers were unable to balance their understanding between the three storylines and preferred watching a linear movie.

The questionnaire listed possible reasons to navigate between screens and a rating scale (1-5) to rate how much these reasons influenced their interactions. Participants were then asked if there was any other reason that motivated them to interact that was not mentioned. From the responses, most participants claimed that action and movement on a screen attracted them to navigate the most (see Table 3). Secondly, viewers were strongly motivated to navigate to particular screens to hear conversation or sound related to that screen. To support this, participants mentioned they were more likely to follow screens where there was more than one person in the scene because of higher

chances of witnessing important action or dialogue. Participants also provided other reasons which motivated them to navigate between screens. Some of the responses mentioned were: to gather more narrative information, to compare differences between character’s perspectives, or to switch to a more interesting event when the action in one screen became boring. One participant mentioned that their ability to navigate between the three screens produced a fourth storyline, which resulted in their own edit of the film. From the responses it appeared that viewers were motivated to learn more about the narrative through their selections.

Table 3: Rating scale for interactions

Motivation for interaction	Rating
Desire to see or follow action or movement	4.5
Desire to hear conversations	4.3
Desire to see detail	3.2
Desire to read text	3

The interactivity and the structure of the narrative may have altered the viewer’s understanding of the story. The interview questions determine how viewers understand and follow the story and if there were any differences between each viewer’s interpretation based on their different experience with the movie. Participants were asked in a few short answer interview questions to determine the traits which best describe each of the three main characters in the film. Participants, who considered Arie to be a dreamer, had viewed the dream

sequence or fantasy sequence in Arie’s storyline. However viewers, who had seen Arie strangling Chloe or Arie fighting Colin, considered him to be an aggressive character. Most participants considered Colin to be an aggressive character because of the higher chances of seeing him act in an antagonistic manner. Viewers who stated that Colin was aggressive either saw the fight between him and Arie, or saw him pull out and carry a gun, or saw the scenes where he appeared to be beating Chloe. Other viewers who saw different combinations of sequences considered Colin to be protective of Chloe, rather than being aggressive. Participants would consider either Colin or Arie to be aggressive depending on which combination of sequences they viewed. One participant mentioned that at first it appeared that Colin was the antagonist in the story because he beat Chloe, but later in the film it was revealed that Arie was the bad character because he was trying to choke Chloe as Colin tried to save her.

Table 4: Viewers’ interpretation of Chloe’s black eye

How did Chloe get a black eye?	# of responses
Chloe fell	3
Colin accidentally hit her while struggling	5
Colin beat her	9
Not sure	2
Arie hit her	1

The participants were also asked to state a brief summary of the story, and recite two main plot events. The observations of the participants' interactions also provided some insights to their different interpretations of the story. All viewers understood the overall storyline, however the details of specific events were different for each viewer because of the different sequences viewed. The participants were asked for their interpretation of how Chloe got a black eye. There were different types of answers which seemed to correspond with the different scenes viewed by each participant. The sequence where Chloe gets her black eye occurs in both Arie's and Colin's perspectives. Viewers who saw Arie's point of view thought Chloe's black eye was a result of Colin beating her. However the viewers who saw Colin's point of view realized he had accidentally hit her eye as he was struggling with her. Other viewers, who did not see how Chloe got a black eye, thought she had fallen, or assumed either Colin or Arie had hit her. The viewers who assumed she had fallen may have picked up on clues in the dialogue. In one scene Chloe explains to Tina that she had fallen, and in another Colin tells Tina, that Chloe may have fallen. Another participant suggested that Arie was the one who had hit Chloe. This same participant considered Arie to be aggressive, based on the combinations of sequences he had watched.

During the climax of the movie the three storylines come together and it may be a little difficult for the viewers to understand exactly what had happened. Thus, the participants were asked how Chloe had died at the end of the film, to determine the different interpretations of this event (see Table 5). The viewers

interpretation of the climax of the film depended on which sequences they watched. Participants who watched Tina’s perspective understood that Tina tried to shoot Arie but accidentally shot Chloe. Participants, who saw Arie’s point of view, thought that Colin tried to shoot Arie and accidentally shot Chloe. The participants who watched Colin’s point of view thought that Arie had shot Chloe. One person thought that both Arie and Chloe were shot and had died. This was because that participant had viewed Arie’s ending and could interpret this scene as the afterlife for both Arie and Chloe. Other participants were not sure exactly what happened and did not want to speculate. These different formulations of character traits and plot events confirm that viewer interpretations are indeed based on the combination of different sequences the viewer selects.

Table 5: Viewers’ interpretation of *Lost Cause* ending

What happened to Chloe at the end?	# of responses
Tina tried to shoot Arie, accidentally shot Chloe	6
Colin tried to shoot Arie, accidentally shot Chloe	5
Arie shot her	2
Two guns, both Arie and Chloe were shot	1
Not sure	6

During the interview, participants were asked what was most enjoyable and most un-enjoyable from their experience. Most participants stated they really enjoyed being able to “interact” and experience a film with three concurring storylines. They enjoyed having an overview of everything happening in the story

at the same time. When asked what was least enjoyable about their experience viewers mentioned that they didn't want to miss any events that were happening. Viewers were also asked what they wanted to change about the interactive movie. The most common answer was developing a rewind feature. The participants' suggestion to include a rewind feature indicates that viewers did not want to miss important events in the story, but wanted to find an alternative to go back in the film.

5.2 Findings

The findings of the project are derived from the user study results and my own observations by evaluating the results with the ideas presented in the theoretical background. This analysis suggests that an immersive yet interactive experience is supported in the overall relationship between the interface (split-screens) and narrative database (content and structure). The immersive experience is supported by incorporating different strategies in the design of *Lost Cause*. As well, the viewers became editors in the experience and created unique and subjective stories that were different for each viewer. The findings also suggest that the design of *Lost Cause* promoted a successful experience, which was flexible for the viewers.

5.2.1 Immersion in *Lost Cause*

Immersion is enhanced in *Lost Cause* because of two strategies. The first strategy is to maintain consistency between the different elements in the overall design. The second strategy was to create a set of conventions in the design to

modulate agency in the user's interactions. The narrative structure consists of three parallel threads containing interlocking characters over the same time span. The interface parallels this and includes a three-screen layout and rollover interactions which reveals the narrative content. The linear and parallel structure of the storylines makes it easier for viewers to keep track of the story between the three threads. The set of conventions in the design, that modulate agency, occur in the method of navigation through the database. Viewers can only navigate between the three storylines, and cannot jump forward or backward in time. Time is the organizing structural component that modulates agency and minimizes random choice. The design motivates random access between the three storylines through the reliance on linear time. Similar to watching a traditional film, time in *Lost Cause* remains constant and progresses forward. Restricting navigation in time also generates motivation for viewers to make wiser choices in selecting the narrative sequences they watch. These conventions maintain narrative coherence and promote an immersive experience.

Imaginative immersion occurs in the display of the movie's narrative across multiple screens. In a multiple screen environment, the viewer's attention can be focused onto the story content on one screen at a time. However, viewers can also be absorbed into the narrative across all three threads or all three screens. The parallel narrative structure allows viewers to easily make connections between the storylines. When the content displayed on the screens unites by being in one location at the same time, the separate storylines entwine

and it becomes possible for viewers to connect the multiple screens and focus on the overall story. Connections across the screens can also occur when the content or dialogue relates to the other characters, displayed in other screens. This can generate an immersive experience as viewers discover narrative information and narrative relationships connecting the three thumbnail screens and thus the whole narrative.

5.2.1.1 Viewer Oscillation in *Lost Cause*

Oscillation between navigation and story is possible through the combination of a split-screen interface, and the design of a parallel narrative structure, which both supports fluid navigation and switching. The interface supports immersion in the content on the big screen and offers choice in the thumbnail screens. Viewers will oscillate between focusing on the content displayed on the master screen, watching options on the thumbnail screens and then navigating to one of the screens they choose. The buttons are the screens themselves and have a representational characteristic, which creates a simple and transparent interface design. These screens provide viewers with easy access across the database narrative as the film plays. The multiple windows hypermediate the viewer's attention and provide an overview of the three parallel storylines. The mirroring of the thumbnail screen onto the master screen easily allows a viewer to situate themselves in the three storylines as they navigate between screens. The ease of selection and fluid navigation of the mouse allows the viewer to seamlessly switch between threads to experience the unfolding story. The smooth rollover method minimizes the cost of interaction. If the

interaction had been more noticeable, such as a click instead of a rollover it would be more challenging to navigate between the multiple storylines. Using simple devices for interactivity prevents distracting the viewers further from the story and makes it easier for a viewer to oscillate between the narrative content and the interface.

According to the results from the user study, interactions can distract from narrative pleasure; however, the design of *Lost Cause* mitigated that problem for half of the participants. The user study results suggest that viewers wanted to oscillate between focusing on the narrative and making choices. While all participants wanted to enjoy and focus on discovering the narrative, half of the participants mentioned that the interactions were distracting. However, the other half did not find the interactions to be distracting and were therefore able to oscillate. Therefore, half of the participants were able to oscillate and the other half wanted to oscillate but was not able to.

The spatial and encyclopedic properties of the narrative and interface also support the immersive quality of *Lost Cause*. Space on the screen interface reflects the narrative spaces traversed by the three characters. This spatial relationship between the screens easily allows viewers to navigate from one space to another. Complexity is designed into the narrative to be interesting and to support various interpretations, but it is not so complex as to be overwhelming. The interface allows viewers to navigate this moderately complex and moderately encyclopedic narrative space. Exploration becomes pleasurable as viewers discover character connections and begin to piece together relationships,

histories, and chains of causality. The amount of complexity, which is in the database narrative, can affect how much a viewer is hypermediated by the interactions and immersed into the content. Having three screens in *Lost Cause* seems appropriate for allowing the viewers to manage this particular content. Any fewer screens might not be challenging enough and any more would risk being too overwhelming. As well, the complexity of narrative content presented in the three screens was manageable for most viewers to follow the plot events. There were enough layers of information to be dynamic and to maintain interest for all viewers. As well, complexity in content design supports a replayable narrative, allowing the viewers to discover new information each time the film is played. By having an appropriate amount of complexity in both screen layout and content, the viewers will feel some sense of challenge in their experience, which could lead to an immersive experience.

5.2.1.2 Challenged-based immersion in *Lost Cause*

The combination of narrative coherence and viewer oscillation support a challenge-based immersive experience. The fluid method of navigation plus the immediate progression of story between the multiple screens in *Lost Cause* increases the chances that a viewer will experience challenge-based immersion or flow while engaging in navigation to discover the story. Challenged-based immersion is maintained through the modulation of agency, by limiting navigation through time. The viewer's goal is to figure out the causality between the three storylines. Viewers are allowed to access only what is displayed on each of the three screens as time progresses. The challenge for the viewer is to keep up with

the story through their navigation. As the events unfold, a viewer must pay attention and navigate when necessary to understand the relationships between the three screens and discover the overall narrative. The viewer's skill is his or her ability to focus and understand the connections between the multiple stories through the interactions. This temporal limitation maintains the traditional format of linear movies and attempts to keep viewers focused on the progression of events. Restricting time so that it remains constant creates more intensity in the moment of interaction as the plot develops. This intensity would be lost if the viewer were able to navigate back and forth in time or investigate back-story. The temporal limitation creates a challenge towards the viewer's goal in understanding story and supporting the experience of flow. It also restricts the kind and the number of decisions the viewer can make, leaving them freer to enjoy the experience of the story as it unfolds. The temporal constraint generates motivation for viewers to make wiser choices in selecting narrative sequences. Since rewinding is not possible, choice is irrevocable. However if nothing is selected there will always be a default path which can lead to imaginative immersion. Viewers of *Lost Cause* were disappointed they could not rewind, however not having a rewind function made them more attentive and required them to consider their choices more wisely.

A viewer's interactions can be motivated through narrative desire.

Narrative desire can include a goal to solve a puzzle by sorting through clues to understand what the story is about and to decipher the causality between events. Each interaction would allow the viewer to get closer to the goal of solving the

mystery of the story. The immersive experience was more enhanced as viewers discovered narrative information and narrative connections in the characters' relationships. The visual and narrative content displayed on the screens can encourage interactivity. Visual content on the screens can be used as an incentive to interact. A screen with a lot of action, with detail in the composition, or with a conversation between two people motivated viewers to navigate from one screen over another in *Lost Cause*. According to the user study data, most viewers were more strongly motivated to move to other screens because they wanted to see the action that was taking place or to hear the conversation.

When combinations of these contents are displayed at the same time on multiple screens, viewers are forced to decide which screen they prefer to watch. These combinations can make it more challenging for viewers to make choices between multiple screens, but can be a useful design strategy for motivating interactions. For example, a viewer may have trouble choosing between a screen that displays a lot of action and a screen that reveals an important conversation. At one point in *Lost Cause*, there is text being written on one screen and on the other screen, there is a lot of dramatic action. The viewer is left to decide if they prefer to read text or watch action. Each viewer would have their own preference of which content to view, customizing their experience. More than half of the viewers were attracted to the struggle between Colin, Chloe and then Arie, rather than being attracted to the note written by Tina (see Figure 16). However once those participants who were reading the note realized that a lot of action was occurring in another window, they quickly switched perspectives.

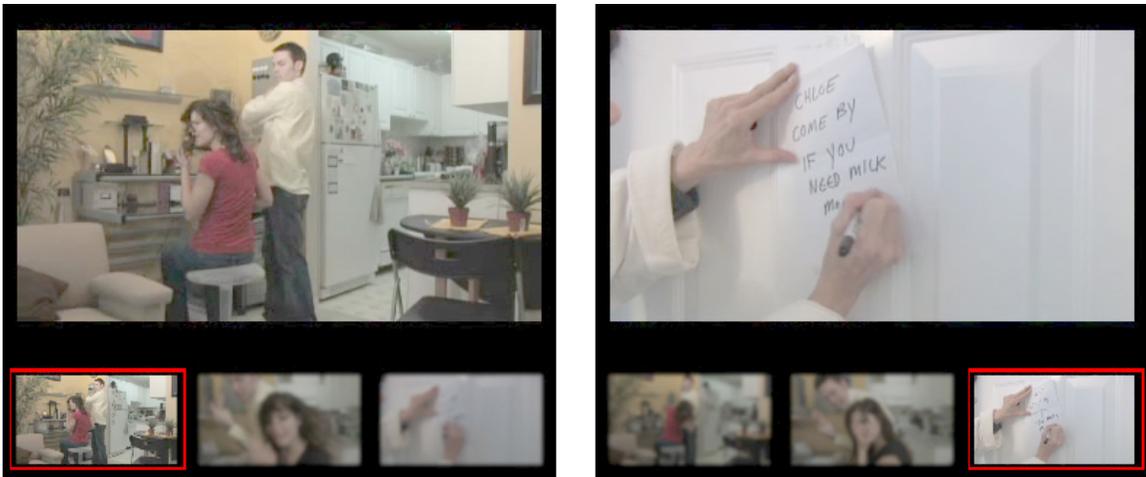


Figure 16: Action vs. detail in the split-screens

5.2.2 Interactive Editing in *Lost Cause*

The immediate method of interactivity and the organization of the narrative into a formulaic structure allows viewers to become editors in the experience. The original editor of the film organizes particular sequences available in the database. The viewer becomes a second editor of the film by navigating between the thumbnail screens to create her own edit of the film on the master screen. The split-screen effects allow viewers to oversee at once all three possible sequences available to choose from. Different choices will present different sequences and create varied interpretations of the story. The viewer chooses particular narrative events from the database and determines her own path to experience the plot. The story is then defined by the reader and is dependant on which narrative segments are selected and viewed. Each viewer will then have a different understanding of the story depending on which parts they have seen. By the end of the movie one of the three endings is selected based on the viewer's

previous actions.

From the user test results the experience was unique for each viewer. The combinations of different sequences create different interpretations of the story in *Lost Cause*. The interview and observations revealed that viewer's perceptions of the story was different for each person. Depending on which segments were observed, each viewer had a slightly different interpretation of the characters' traits, and a different understanding of the story. As well, all viewers had a different understanding as to what occurred during the climax of the film. The main reason for this was because there was so much action occurring between the three screens that only some could be regarded and interpreted.



Figure 17: Colin's perspective for crosscutting sequence



Figure 18: Arie's perspective for crosscutting sequence

As the viewer navigates and becomes an editor, particular cinematic techniques can occur and add to the experience. The viewer can create a continuity edit or montage edit between two related panels. A montage edit may also occur and create an unanticipated meaning between two unrelated windows. Both continuity and montage editing techniques can create cohesive connections between the screens. A viewer can create a crosscutting technique and actively cut back and forth between two parallel stories in real time. This effect can reveal spatial relationships between the two smaller screens and build suspense in the narrative content. There was one common event where many viewers used the crosscutting technique to rapidly navigate back and forth between two perspectives. During this scene, Colin chases Arie into the storage room, and viewers navigated back and forth between the two characters' parallel perspectives to avoid missing any action. This interactive method of crosscutting builds suspense as the viewers did not know what would happen in the

impending scenes.

Further, as viewers navigated between the sequences, at some times unanticipated montage effects occurred when two sequences were juxtaposed on the larger screen creating new narrative meaning. For example, at the beginning of *Lost Cause* there is a sequence in Colin's thread where he pulls out a gun. If this sequence is juxtaposed with a shot of Arie, shown in Figure 19, the subjective meaning can suggest Colin's urge to kill Arie. If however, the same sequence of Colin and the gun is juxtaposed with a sequence of Tina, as in Figure 20, it foreshadows the film's ultimate conclusion. These montage effects are dependant on the viewer's selections and can create subjective interpretations. Although it wasn't clear in the user study results whether or not the combination of these sequences made a difference for the meaning. However, according to the user study results, there were significant variations between each viewer's interpretations that could have been a direct result of this type of montage effect.



Figure 19: Montage effect with Colin's gun and Arie



Figure 20: Montage effect with Colin's gun and Tina

5.2.2.1 Micro-narratives in the Database of *Lost Cause*

The overall plot of the movie can be inferred through a montage construction of different micro-narratives and plot events during viewer editing. Micro-narratives occur in the database of the narrative as a sequence of video representing a narrative event. Some consist of actions in each character's main thread, and others can be seen as events of characters passing in the background. Combinations of different micro-narratives can create smaller themes as well as a single overall theme in the narrative. The generation of meaning by combining different micro-narratives in *Lost Cause* functions in a way similar to how Balcom (2006) describes narrative themes in *Short Cuts*. He suggests that themes are built through the combination of events between the different characters.

Micro-narratives can arise as single events which take place in each of the three storylines. They can also exist as smaller incidents, which occur to secondary characters in the background. In *Lost Cause* as Colin wanders around the apartment complex in search of Chloe, the viewer can find a few different examples of micro-narratives. There are ancillary characters who present micro-

narratives in the background of his path. Colin enters the lobby and hears a man say in Spanish, "She never calls me. I think I lost her. What can I do?" A few seconds later Colin walks in the courtyard and overhears a man on the phone asking for directions. Afterwards, he sees another man getting angry from losing his change to the vending machine. These sequences in combination support a shared narrative theme of loss.

Similar micro-narratives drawn from other combinations can support a variety of themes. Arie encounters a Spanish couple in the elevator. The man says, "You must know, you're a woman. I always ask and you always tell me, I don't know". This chance fragment is reflected in Arie's own thread when he argues with Chloe in the staircase. When he asks what has happened between Chloe and her husband, she replies "Nothing. We can't see each other anymore." This suggests that she also does not know or at least does not want to tell him. Like the Spanish couple, Chloe finds emptiness in her own relationships.

Micro-narratives can also be contained as an independent event for each of the character's actions. Exploration becomes pleasurable as viewers combine these different events to discover character connections and begin to piece together relationships, histories, and chains of causality. Because of the nature of the narrative structure and the multiple storylines, the database contains a dense weave that the viewer can try to solve. Most importantly, Chloe's plot can be constructed by piecing together the scenes in which she is present. In Arie's perspective, Chloe can be seen entering the elevator on the third floor. Minutes later in Colin perspective, a viewer can observe their argument in the staircase

as she carries a laundry basket. Seconds later, Chloe is seen in Tina's perspective as she drops off a laundry basket. The conclusion is that Chloe took the elevator to the laundry room, and then the stairs to drop the laundry basket to her mother's apartment and during the process was intercepted by these three characters.

As viewers navigate they will see only portions of the database and miss some narrative information while the film continues to play forward. *Lost Cause* functions in a similar way as the hypertext fiction, *Afternoon* (Joyce, 1999). The different perspectives in *Lost Cause* contradict one another or have some ambiguity between them. Viewing different combinations of the different segments can create a different understanding of the story. For example, a fight between Colin and Arie is shown from the perspectives of both Arie and Colin. This sequence has similarities and differences across the two perspectives.



Figure 21: Colin's Perspective of fight



Figure 22: Arie's Perspective of fight

In Colin's perspective, shown in Figure 21, Colin is surprised to find Chloe cutting her wrist with a knife and struggles with her to drop the knife. He is suddenly attacked from behind by Arie. In Arie's perspective, shown in Figure 22, Arie falls into the room from the balcony and discovers Colin hitting Chloe. Once Colin discovers Arie in the room, he then attacks him. The two perspectives of the fight start off differently but become parallel in both perspectives once Colin elbows Arie in the stomach. Whichever perspective the viewer privileges will sway the perception of the events and judgment about the two other characters. Perception of the narrative events and character traits is therefore subjective. The construction of narrative is determined by the combination of the different elements drawn from the three perspectives.

As the plot continues forward, and viewers navigate between sequences they will slowly form an understanding of the story. Viewers gradually form an

understanding between the plot events in *Lost Cause*, which is similar to how viewers slowly understand the story in the movie *21 Grams* (Iñárritu, 2003). In *21 Grams* sequences are randomly pieced together out of order and as a viewer watches this movie they slowly form an understanding of the events and its narrative. Viewers connect the scenes they have seen and form an understanding of the connections between the characters and the overall narrative.

5.2.3 Successful Experience of *Lost Cause*

According to the user study, almost all the viewers enjoyed the experience of the interactive movie *Lost Cause*. Although the narrative structure of *Lost Cause* is designed in such a way that some narrative information will be lost while viewing the movie, most viewers still enjoyed the experience. Of the viewers who did miss narrative events, only one participant mentioned they were dissatisfied because of not understanding the story. Many of the participants mentioned they really enjoyed both the interactive process and the narrative structure of the piece. Although missing some narrative events clearly frustrated some viewers, the challenge of solving the narrative within the restrictions of time motivated viewers to interact, building a successful interactive experience.

The interactive design yielded narrative pleasure for both those users that were able oscillate frequently between storylines and other users that tended to follow a single path. The structure and the interface were flexible and allowed viewers to interact as little or as much as they wanted. There were viewers who preferred not to interact and wanted to watch the large screen. The viewers who

watched only the larger screen were less likely to interact. These viewers tended to follow an individual path of the story and were more immersed into the content they watched. This individual path was sufficiently satisfying for the viewer to receive enough narrative pleasure from their viewing experience. Other viewers who were able to focus between the multiple screens were more likely to follow the entire story, oscillate and interact.

5.2.3.1 Replayability of *Lost Cause*

The restriction in the interactions and the complexity of the layered narrative content and structure gives the work a “replayable” quality. Viewers wanted to watch the film again in order to gain a better understanding of the characters’ motivations and the plot events. By viewing all possible storylines through repeated viewings, viewers can go through a hermeneutic process to develop a deeper understanding of the overall story. The database narrative structure of *Lost Cause* is similar to the repeated event plot structure in Jackie Brown (Bender & Tarantino, 1997). Initial viewing will tease out a sense of character and an understanding of action. However, multiple screenings can reveal even deeper pleasures. Although the parallel threads have many similarities, the viewer will detect subtle differences in actions or conversations. The multiple perspectives define character traits and relationships. Repeated viewing of the work supports a Rashomon-like effect of cumulative discovery of each character's unique perspective, their relation to each other, and to the whole narrative. Similar to Rashomon (Jingo & Kurosawa, 1950) there are different individual perspectives, which taken together tend to privilege one

interpretation. As Murray (1997) suggests, “even those multiform stories that offer multiple retellings of the same event often resolve into a single true version” (p.136). The viewer can interpret the similarities between the storylines as events that actually happened. The viewer can interpret differences between the storylines as different character perceptions of these events or of the other characters. The combination yields a deeper understanding of the entire narrative constellation.

Viewers were able to feel satisfaction when they had a sense of closure during the experience. Viewers who watched the movie once were able to get a sense of closure once they understood the structure and the story’s conclusion. Other viewers gained closure once they had a deeper understanding of the structure or the story through repeated viewings. Therefore, *Lost Cause* is pleasurable for single or multiple viewing. This type of structure is efficient because it adapts to all types of viewers. The overall design provides a successful experience for viewers by accommodating various viewing styles and offering different levels of immersion and exploration within the story.

5.2.4 Possible Changes to *Lost Cause*

Based on the user study it is clear that there are some aspects that could be changed to improve immersion for the viewers in *Lost Cause*. The combination of three threads plus the irreversible time left some viewers feeling that they had missed important narrative events making it challenging for them to understand the narrative. However, after understanding the narrative structure and the relationship between the multiple screens, viewers found it easier to

oscillate and follow the multiple stories. As well when the content on two or all three of the screens unites through common space, action or time, it was easier for the viewers to connect the three storylines. To help viewers understand and make connections earlier in the experience, the narrative structure should include something in the design, which makes it clear to the viewer the nature of time in *Lost Cause*. For example, containing a scene at the beginning of the film which had all three characters in the same location at the same time and then having the three characters split ways into their own separate narrative threads, would make the point clear.

Many viewers mentioned they would have preferred a rewind feature so they could backtrack if they wanted to see sections they had missed. However, this would eliminate the challenge for the viewers to balance story with choice, as viewers would be able to become lazy with their selections. A rewind feature would not promote the immediacy of selection and the linearity of story telling.

6 CONCLUSION

The conclusions in this thesis which are derived from the theoretical background, the analysis and findings of the *Lost Cause* case study and the user study. The results from the user study suggest that interactivity can distract viewers from being immersed into the narrative. However, the study also suggests that it is possible to create an immersive experience in an interactive movie by including the following attributes in the design of the system:

- a coherent relationship between narrative structure, narrative content and interface
- appropriate conventions for navigating the system
- viewer oscillation
- challenge
- narrative desire and motivations to interact

Another conclusion based on the analysis and findings, is that *Lost Cause* had a successful design and included:

- a system which accommodated different viewing styles
- a dense narrative database, which supports repeatability
- narrative closure

6.1.1 Coherent relationship between elements in the design

It is possible to support immersion during an interactive narrative experience when the elements in the design have a coherent relationship between narrative structure, narrative content and interface. In *Lost Cause*, the parallel structure between the narrative structure, narrative content and interface allow viewers to follow the narrative content across the three threads and maintain narrative coherence between the narrative events as viewers interact. Each of the three screens relate directly to each of the three threads in the narrative structure, which allow viewers to easily oscillate between the interface and the content.

6.1.2 Appropriate conventions for navigation

An immersive experience can also be supported if there are appropriate conventions or limitations for navigating the system to support narrative coherence between each of the plot events. Ryan (2001) states that narrative coherence can be guaranteed and structured “by controlling the general path of the reader, maintaining a steady forward progression, limiting decision points, or neutralizing the strategic consequences of decisions” (p. 257). Constraining agency by limiting navigation through time is one convention which can maintain narrative coherence. *Lost Cause* did not allow viewers to navigate back and forth in time and the linearity of plot maintained narrative coherence between each of the narrative events. By maintaining narrative coherence in the design it is more likely that viewers will become immersed during the experience.

6.1.3 Viewer oscillation

An immersive experience is encouraged if the design of the system maintains viewer oscillation between narrative and interactivity at all times. If a viewer is able to oscillate constantly, it is less likely that the viewer will be distracted from interactions while observing a narrative. The relationship between the narrative structure and the interface made it easy for the viewer to navigate the system and follow story supporting an immersive experience. To support viewer oscillation the interface should be transparent and include a seamless method of navigation. If the method of interaction is fluid, it is more likely that a user will not be distracted by the interactions and will be more focused on the content making it easier to oscillate. Oscillation was possible in *Lost Cause* through the combination of the split-screen interface and the parallel narrative structure, which supported a fluid method of navigation.

6.1.4 Challenge

An immersive experience is also possible when the design includes some level of challenge in the interactivity leading to a challenged-based immersive experience. If a viewer is able to easily oscillate and has some element of challenge in the design, then there are more chances that the viewer will experience a challenge-based immersive experience leading to Csikszentmihalyi's state of flow. This challenged-based immersive experience can be possible if it includes Csikszentmihalyi's eight components: challenge that requires skill, action and awareness, concentration, a clear goal, agency, control, loss of self, and loss of time. The challenge in *Lost Cause* was for the viewers to

figure out the narrative based on the specific restrictions in the design. The viewers could only navigate between these three screens as the steady flow of the narrative was maintained by a linear progression of time. The combination of limitation in the design and a goal in the overall experience generated a simple challenge for the viewer.

6.1.5 Narrative desire and motivations to interact

Providing viewers with a motivation to interact is very important if designing for a challenged-based immersive experience. Motivation to interact can be encouraged in the system if there is an overall narrative goal. Goals can be encouraged by having the narrative contain some sense of mystery, or challenge. In *Lost Cause* the overall narrative and the connections between the four characters were not clear providing an element of mystery which motivated viewers to interact in order to discover and understand the narrative. Motivation to interact can also occur by placing narrative desire in the interface. *Lost Cause* contained motivations for viewers to interact by using split-screen techniques to attract viewers to particular screens over others. The content displayed across the split-screen effects provided narrative information for the viewers.

6.1.6 Elements of a successful design

A successful design is one which is versatile and offers viewers pleasure by allowing them to interact as frequently as they wish and without making a commitment to their choices. A successful narrative structure can contain many layers of narrative content and offer complexity to generate different experiences

for each viewer. Complexity in a successful structure can make repeated viewings pleasurable. It can create a hermeneutic experience and provide more insight when repeating the story. Finally, the experience should conclude a sense of closure that provides viewers with a feeling of satisfaction. In *Lost Cause* this satisfaction may occur when the viewer completely understands the connections between the three characters or when all the story elements have been resolved at the end of the movie.

The positive feedback from the user study confirmed that *Lost Cause* has a successful design. Almost all the participants enjoyed being able to interact with the system and enjoyed experiencing the overall narrative structure. Each viewer was able to interact as much or as little as he or she wanted. The design's ability to accommodate each viewing style may have contributed to the overall pleasure of the interactive experience. The design of the system accommodated each viewer to interact according to his or her ability.

These conclusions and the specific findings, which arose from the case study, suggest that *Lost Cause* can be used as a template for designing a successful interactive movie.

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APPENDICES

APPENDIX 1: USER STUDY DATA

Questionnaire Data

Did you feel that there were important events that you missed that made you not understand the story?

Yes – 12 participants

No – 5 participants

Not Sure – 3 participants

If yes, did you feel that you wanted to view the film again to understand the full story?

Yes – 11 participants

No – 1 participants

Not Sure – 0 participants

If yes, were you dissatisfied because of not understanding the story?

Yes – 1 participant

No – 8 participants

Not Sure – 3 participants

Did your ability to interact distract you from the story?

Yes – 9 participants

No – 7 participants

Not Sure – 4 participants

Did you find you were focused in discovering the story?

Yes – 16 participants

No – 1 participant

Not Sure – 3 participants

Which screen were you focused on the most?

Larger – 5 participants

Smaller – 7 participants

Both Equally – 6 participants

**From the following reasons, which motivated you to interact?
(1 being the least – 5 being the most)**

Desire to see/follow action or movement had a 4.5 rating

Desire to hear conversations had a 4.3 rating

Desire to see detail had a 3.2 rating

Desire to read text had a 3 rating

Other reasons that motivated viewers to interact:

- To hear sounds and sound effects not just dialogue
- Tried to follow the main character Chloe, when ever she was in the scene would follow her to better understand
- To check out the same scene from a different angle
- To check out the pretty woman (a typical male reaction)
- Tried to understand the story more, when characters were doing something that looked important for the narrative I would follow that path
- To compare the difference in characters' point of view
- Because there were instructions to tell me to do so.
- I was curious what is happening in other small screens. When I am focusing on the larger screen, the smaller made me like that
- When one screen was boring, I would follow another screen which seemed more interesting
- Always felt immersed into the film, except when I missed a few events while interacting between the three storylines
- I didn't want to miss anything
- I didn't really want to interact, as it confused me
- I had a desire to create the 4th frame which was "my frame" and my own understanding
- I was always thinking the other screens may give more information

Determine the character traits which best describe the characters:

Table 6: Traits selected for Arie

Traits	# of participants	Reasons
aggressive	7	strangling Chloe at end fighting with Colin
interfering	3	doesn't leave Chloe alone when she tells him to leave
protective	3	tries to stop Colin from hitting her, tells her to leave her husband
dreamer	8	stars ending dream sequence

Table 7: Traits selected for Colin

Traits	# of participants	Reasons
aggressive	11	he hit Chloe / was in a fight / chases after Arie and tries to fight with him all the time / takes out and owns a gun
interfering	2	no response
protective	4	tries to save Chloe at end
tired	1	walks around apartment all day

Table 8: Traits selected for Tina

Traits	# of participants	Reasons
vulnerable	5	acts weak when Arie is in her house / takes a lot of pills / is old
interfering	4	no response
protective	4	tries to shoot Arie at end
mentally unstable	1	not really doing anything but wandering around the house and takes pills
nothing	2	didn't watch her scene as much, wasn't as interesting, thought she was some neighbor

Notes:

- The participants' interpretation of the characters' traits depended heavily on which scenes they viewed.
- Participants who saw the fight scene, or the scene where Arie was strangling Chloe perceived him as an aggressive character, others who saw either of this dream sequences perceived him as a dreamer character.
- Most participants considered Colin to be an aggressive character based on the scenes that were viewed. Some of the reasons include; he was always chasing after Arie and trying to fight with him, he hits Chloe, and he takes out a gun.
- Other characters

Observations

Observation Notes:

- While viewers were interacting they seemed focused on discovering content and would always navigate to sections which had action on the screen
- The range between which screens were watched seemed to depend on the type of viewer
- Those who were able to balance their understanding between the three storylines watched the smaller screens the most or both large and smaller screens equally
- These people were more likely to interact the most and seemed to be focused on discovering the story and these people did not lose understanding of the story
- Those who had a harder time following all three narratives at the same time were more likely to watch the larger screen the most. Although these viewers may have felt they didn't understand the narrative, they had their own interpretation of the story
- Some didn't feel complete satisfaction because they didn't see everything and missed information from the story
- while others really enjoyed a different way to experience the story

Variation of Endings:

- 11 participants had Arie's ending
- 10 participants had Colin's ending
- 3 participants had Tina's ending

Interview Data

Participant 1

Determine the character traits which best describe the characters:

- Arie (dreamer, protective), Colin (aggressive - saw the gun), Tina (vulnerable and lazy)

Give a brief summary of your understanding of the story

- Chloe and Colin are husband and wife, Arie came to the house and starting fighting with Colin, Colin went to get his gun and started looking for him. The mother was doing laundry (Colin Aggressive)

How did Chloe get the black eye?

- She said she fell, although it could be the husband as he was upset

What happened to Chloe at the end of the film?

- Mom accidentally tried to shoot Arie and shot Chloe

Notes on observation:

- Watching all three, but mostly interested in Aries because he seems to have most interaction with other people
- Got Arie's ending
- Really enjoy watching movies quite frequently

Participant 2

Determine the character traits which best describe the characters:

- Arie (dreamer – Arie's ending), Colin (aggressive), Tina (interfering)

Give a brief summary of your understanding of the story

- There is a girl, who is with a man who abuses her emotionally and physically
- Arie and Chloe also have had a relationship and Arie really likes Chloe and wants to protect her against Colin
- Tina (Chloe's mom) is a busybody, who is protective of Chloe but interferes
- Arie and Colin get into a confrontation and as a result Chloe ends up dying

How did Chloe get the black eye?

- Colin wrestled a knife from her and hit her

What happened to Chloe at the end of the film?

- She died (she argued with Arie, Colin entered the room and tried to shoot Arie and ended up shooting Chloe)

Notes on observation:

- Aries ending, tried to watch all three

- *Interactions were not distracting but it was hard to focus on other windows if something different was going on in another*

Participant 3

Determine the character traits which best describe the characters:

- Arie (Protective), Colin (aggressive), Tina (interfering) – didn't watch her part as much

Give a brief summary of your understanding of the story

- Colin and Chloe are married and I'm not sure but I think he hit her
- Arie and Chloe are having an affair or could be hiding something else
- Tina is a neighbor living in the apartment (I'm not sure I didn't see her part as much)

How did Chloe get the black eye?

- Colin hit her

What happened to Chloe at the end of the film?

- Arie or Colin shot her (But Arie had the gun)

Notes on observation:

- Arie's ending
- Watch the film in sections, now and then navigate to a new part of the film

Participant 4

Determine the character traits which best describe the characters:

- Arie (dreamer), Colin (aggressive), Tina (protective)

Give a brief summary of your understanding of the story

- Arie is constantly following Chloe and makes contact with her, she is married to Coin
- Colin is aggressive and attacks Arie but he escapes

How did Chloe get the black eye?

- Didn't see

What happened to Chloe at the end of the film?

- She was killed, but I'm not sure who killed her
- Aries dream ending makes it seem that the events are untrue or not exact

Notes on observation:

- hardly interacted, only watched Arie's point of view
- watched mostly the large screen

Participant 5

Determine the character traits which best describe the characters:

- Arie (aggressive), Colin (interfering), Tina (vulnerable)

Give a brief summary of your understanding of the story

- Although I missed the intro I didn't understand what Colin and Chloe's relationship was. Colin was beating Chloe, and Arie tried to protect her
- The mother saw Chloe as a young and vulnerable girl

How did Chloe get the black eye?

- I believe Colin was beating her, as I saw Arie ask her in the staircase, so I knew it wasn't him and I saw Tina ask her how she got the black eye so I know it wasn't her either

What happened to Chloe at the end of the film?

- Was shot, but I'm not sure by who

Notes on observation:

- Arie's ending

Participant 6

Determine the character traits which best describe the characters:

- Arie (dreamer, aggressive) Colin (aggressive, protective) Tina (Lazy – wears a robe all day)

Give a brief summary of your understanding of the story

- Colin wasn't good to Chloe and Chloe was with Arie.
- I'm not sure who Tina is

How did Chloe get the black eye?

- Chloe fell, as I saw both male perspectives and I didn't see anything there that gave me the clue

What happened to Chloe at the end of the film?

- Not sure

Notes on observation:

- Tried to watch all screens, but it was difficult to follow all 3. maybe easier to follow 2
- Arie's ending

Participant 7

Determine the character traits which best describe the characters:

- Arie (Dreamer) Colin (Aggressive – he hit Chloe and was always causing a fight), Tina (interfering and protective)

Give a brief summary of your understanding of the story

- There is a couple and they have problems, the other guy tries to help Chloe but she asks him not to see her
- The mother was trying to help Chloe but instead she accidentally shot her

How did Chloe get the black eye?

- There was an argument between Chloe and Colin
- Colin hit her and Arie stopped him

What happened to Chloe at the end of the film?

- The mom shot Chloe

Notes on observation:

- Arie's ending

Participant 8

Determine the character traits which best describe the characters:

- Arie (dreamer – he was a stalker), Colin (aggressive), Tina (vulnerable, needy)

Give a brief summary of your understanding of the story

- Chloe is having an affair with her husband and he's a jerk. She had ended a relationship but Arie wanted it back. Colin didn't know and he ending up killing Arie

How did Chloe get the black eye?

- Not sure, I didn't see it. The husband could have hit her

What happened to Chloe at the end of the film?

- Chloe died as Colin tried to shoot Arie

Notes on observation:

- Arie's ending
- Watched the smaller and listened to the bigger screen
- Felt very focused on interacting

Participant 9

Determine the character traits which best describe the characters:

- Arie (conservative), Colin (aggressive), Tina (I didn't really watch her)

Give a brief summary of your understanding of the story

- Chloe and Colin had a relationship problem so Chloe has another relationship
- Chloe ends up dying

How did Chloe get the black eye?

- Argument with Colin while he was shaving

What happened to Chloe at the end of the film?

- Husband was dreaming that he saw Arie and Chloe together

Notes on observation:

- none

Participant 10

Determine the character traits which best describe the characters:

- Arie (aggressive), Colin (Aggressive), Tina (protective)

Give a brief summary of your understanding of the story

- There was a fight between two people, and one ended up breaking his arm
 - Chloe and Arie had a relationship but was more involved with Colin
- How did Chloe get the black eye?*
- Not sure how she got the black eye probably from the fight
- What happened to Chloe at the end of the film?*
- As Colin entered the mom was trying to protect the daughter and shot her
- Notes on observation:*
- took a while to first understand the story
 - once got the hang of it, it made sense

Participant 11

Determine the character traits which best describe the characters:

- Arie (aggressive, vulnerable), Colin (Aggressive, controlling – fights all the time), Tina (vulnerable – she is old)

Give a brief summary of your understanding of the story

- Arie wants Chloe but she doesn't want to go with him because she is married plus because of her mother. Chloe and Colin are not happy, Colin is controlling and she can't leave him and she can't stay with her mother because she will get into trouble from him

How did Chloe get the black eye?

- Colin hit her accidentally

What happened to Chloe at the end of the film?

- Colin shot Chloe accidentally

Notes on observation:

- Colin's ending

Participant 12

Determine the character traits which best describe the characters:

- Aire (dreamer, interfering), Colin (tired – didn't see beating and he just walked around all day), Tina (mentally unstable or has Alzheimer's)

Give a brief summary of your understanding of the story

- Chloe is depressed and has a husband and an affair

How did Chloe get the black eye?

- Colin hit her

What happened to Chloe at the end of the film?

- Colin shot Chloe, and the mother was hiding and saw the whole thing

Notes on observation:

- Colin's ending

Participant 13

Determine the character traits which best describe the characters:

- Arie (dreamer), Colin (not sure) Tina (protective)

Give a brief summary of your understanding of the story

- Arie and Chloe have a relationship. However I am not sure of the relationship between Chloe and Colin (he could be her brother or husband)

How did Chloe get the black eye?

- Colin was struggling with Chloe and gave her the black eye

What happened to Chloe at the end of the film?

- Tina shot Chloe accidentally

Notes on observation:

- none

Participant 14

Determine the character traits which best describe the characters:

- Arie (dreamer), Colin (cold and aggressive) Tina (vulnerable and passive)

Give a brief summary of your understanding of the story

- There was an old lady who took lots of pills, and a couple who was messed up because the guy was psycho

How did Chloe get the black eye?

- Assumed that the guy had beaten her

What happened to Chloe at the end of the film?

- Mother shot her

Notes on observation:

- didn't want to interact as it was too confusing
- only watched Tina's POV

Participant 15

Determine the character traits which best describe the characters:

- Arie (aggressive strangling Chloe), Colin (interfering), Tina (lazy)

Give a brief summary of your understanding of the story

- Tina is a lower income and mentally ill

How did Chloe get the black eye?

- One character was beating Chloe. First thought that Colin was bad, because he was beating Chloe, but then I realize that Arie was bad, because he was strangling her at the end

What happened to Chloe at the end of the film?

- No idea

Notes on observation:

- Colin's ending

- Interacted, but was very influenced by things seen
- Had a hard time understanding the story

Participant 16

Determine the character traits which best describe the characters:

- Arie (aggressive), Colin (protective), Tina (interfering)

Give a brief summary of your understanding of the story

- There was a girl with a knife who was trying to do drugs or commit suicide
- Colin was trying to stop her and Arie was more aggressive

How did Chloe get the black eye?

- Arie hit her

What happened to Chloe at the end of the film?

- There were several guns, and both Arie and Chloe was shot at the end

Notes on observation:

- Colin's ending

Participant 17

Determine the character traits which best describe the characters:

- none

Give a brief summary of your understanding of the story

- She is confused between 2 lovers. Not open to discussion. Wants to keep everything suppressed. Not very communicative. Dark personality. Just wants everything to fall in place just by itself.

Notes on observation:

- tried to follow Chloe

Participant 18

Give a brief summary of your understanding of the story

- I assume Chloe is the younger woman (because I don't actually know their names) Actually I did remember the mother call out Chloe. It's a non work day, and Chloe is visiting all the people in her life, but argues with most of them.
- The relationship between Chloe, her mother, and long term partner guy was clear. They exist like this for a long time and annoy each other. The affair guy relationship wasn't clear in terms of if it is a good or bad relationship.

Notes on observation:

- Mainly interacted for the audio, and for reading subtitles that I thought were important but they weren't?

Overview of Interview Notes:

How did Chloe get a black eye?

- Chloe fell 3
- Colin accidentally, while struggling 5
- Colin beat her 6
- Not sure 2
- Arie hit her 1

What happened to Chloe at end?

- Tina tried to shoot Arie, accidentally shot Chloe 6
- Colin tried to shoot Arie, accidentally shot Chloe 5
- Arie shot her 2
- Not sure 5
- Two guns, Both Chloe and Arie were shot 1

All Participants responses in regards to their experience:

What was most enjoyable about your experience?

- Switching back and forth from one perspective to another was different and fun.
- The smoothness of the interaction, the sound layered
- Creativity in music and sound, different medium to explore, and the creativity of story
- Viewing the same place at the same time and see connections
- Music tied all three together
- The fact that I could interact, and how the music tied all three things together
- The music had a different pitch for each of the three stories
- The most interesting part was that the smaller screens made me more focused on the whole story to understand and made me more curious
- The conversations in the background, the movement between the screens, the interaction between the main character and the sub characters
- To watch everything at the same time and interact
- I like the rollover (there is no commitment to one story), I could weave my own interpretation. I was like a detective of a multiple cinema, I was my own director, and I could cue by alignment and my own understanding
- There were several cameras on the same scene, interesting to see Chloe had different shirts on

- See different perspectives, be able to jump into the perspective (voyeuristic)
- Interacting and seeing multiple views of the same scene, seeing everything and predicting what will happen between them
- To find out what each character is doing at the same time, more immersive to connect the characters better, as users could cut back and forth in time and space
- Liked being able to interact and watch something more exciting when I choose
- The ending
- See the different perspectives, control when you see the perspectives
- It is the first interactive piece I've seen and it was interesting
- Trying to figure out the story, like a mystery
- Was curious to find out what each character was experiencing
- The fact that I could choose what to watch as I don't have to watch boring scenes

What was most un-enjoyable about your experience?

- Wondering if I missed anything important, or wondering if there was anything important at all
- Not being able to focus on one story, some things were implied so didn't feel I had a sure understanding of it, and it took away from the understanding
- Not hearing all the screens, as I only remember what I heard
- I didn't want to miss anything, the possibility of losing immersive experience of the narrative
- I was curious about the subtitles, but they weren't important to the story and distracted me from it
- The screen was very busy to see everything
- The mothers storyline
- Too much action, its easy to lose focus
- That I had to pick only one
- It was challenging to understand at moments, when all 3 characters were separate stories were hard to connect.
- Missed something important during the story
- The character Tina, the differences between the tracks seemed a little strange to me
- The music (it wasn't related, ambient), I would prefer no music
- Missing parts of the story
- The confusion
- Some parts of the story there was nothing going on
- Lost information by switching

- Story was confusing to follow between three screen, it would have been easier with only 2 stories
- Missing parts of the story
- Wanted to know each story in detail, but at times didn't know which story to follow
- Missed events wanted to see it all

What would you like to have done through your interactions of the film that you could not do? Is there anything you would like to see changed?

- Keep Consistency between stories
- Adding information about characters under the screens, this could fade away over time. Having more hit area for navigating so my mouse cursor wasn't occluding the video. Giant paused button didn't do it for me.
- If there was one screen it would make more sense (like a regular film)
- Start at the same place to understand the story and being following the story
- A story map that allows me to go back to the parts that I missed
- I would like to see the other two endings
- Rewind
- How would 2 frames work? There could be different ways to define units
- Rewind
- Possibly a rewind
- Different angles like game views
- Move the 3 screens to the top so viewers would have to look more at them, probably following 2 screens would be easier
- Pause and rewind features
- Pause and watch individually
- The ability to hide the 3 screens as an option, and have no interactivity, also a rewind or fast forward option would be good
- Navigation between the three screens to be easier, it is long to switch between them, a triangle shape

APPENDIX 2: LOST CAUSE SCRIPT

STORY 1 - COLIN

INT. COLIN/CHLOE'S APARTMENT. DAY

The apartment is simple with modern furniture and neutral colours. Colin and Chloe are in the bathroom. Colin is a tall clean cut muscular man in his 30's. He has a broken arm and attempts to shave with his left hand. Chloe is in her late 20's. She puts towels on the rack. She bumps him and he cuts himself. Colin flinches.

COLIN

Can't you do anything right?

She almost cries and leaves the bathroom. The phone rings.

COLIN

Chloe, can you get that?

The phone continues to ring, while he attempts to shave. Annoyed, he gets up and walks to answer the phone. Someone on the other end hangs up. He walks into the kitchen and finds Chloe with a knife against her wrist and a little slice of blood.

COLIN

Wh..the.. hell you doing?!

Colin rushes to her. They struggle. Colin tries to force Chloe to let go of the knife with his one free arm. Colin hits her in the face with his elbow. He manages to remove the knife. Arie, a stranger in his 20's falls into the living room from the balcony. He is dressed in a grey maintenance shirt. He is smaller than Colin. Colin is surprised at Arie's presence and releases Chloe.

COLIN

Hey, how'd you get in?!

Colin grabs Arie with his one free arm. Arie manages to struggle out of Colin's one-armed grasp. He yells at Colin

to back away. Arie pushes over furniture. Arie pushes over a chair to obstruct Colin from reaching him. Colin trips and falls to the floor. Arie escapes out the front door.

INT. HALLWAY. DAY

Colin runs out the front door. He just misses the elevator. He hits the elevator door and then grabs his broken arm in pain. He returns to the apartment.

INT. COLIN/CHLOE'S APARTMENT. DAY

COLIN

I... just can't... Chloe...Chloe?

He looks in the bedroom, bathroom and closets. He doesn't find her.

COLIN (cont)

Where are you?

He enters the living room. He lifts a chair to its upright position. He picks up a photo of Chloe and him off the ground. He sits down and puts his hands through his hair. He notices a locket necklace on the floor. He picks it up; there is a photo of Chloe inside. He walks to the front door and finds a note on the floor with Chloe's name on it.

It reads:
Chloe,

Could you get me some milk?

Mom

He stands in the living room motionless. After a few moments he rushes to the bedroom, grabs a gun from one of the bedroom drawers and places it in a holster around his waist. He leaves the apartment.

INT. APARTMENT COMPLEX

He enters the elevator, takes it down to the lobby. He checks the laundry room. He walks past the elevators; Chloe

exits the elevator and heads towards the laundry room. He doesn't notice her. He exits the building. He sees a girl putting up a lost cat poster. He walks a little and enters the building. A man with boxes waits at the elevator. Colin takes the stairs. In the stairwell Colin hears Chloe cough.

COLIN

Chloe? Chloe!

Chloe is carrying a basket of laundry about three flights up. Colin talks to her through the handrails.

COLIN

Chloe!

CHLOE

What do you want?

COLIN

Come here, talk to me!

CHLOE

I have nothing to say to you...

COLIN (cont)

What is... You should... Let's just...

Colin hears her walk up a few more steps and the door closes behind her.

COLIN

(To himself)

Damnit

Colin jogs up the stairs. A couple is crawling on the floor looking for something. Colin tip toes around them.

MAN1

Let's just forget it...

WOMAN1

No, I need it ...

He enters the 2nd floor and opens his apartment door. He calls for Chloe. She isn't there. He leaves the apartment, enters the stairs and walks up another flight of stairs. He enters the 3rd floor.

INT. TINA'S APARTMENT.

Colin knocks on the door. Tina yells from inside.

TINA

Who's there?

COLIN

It's me.

Tina is in her late 50's. She has a similar appearance to Chloe and is dressed in a colorful house coat. She opens the door a crack. She lets him in. Colin follows her into the kitchen.

TINA

Oh good, you're here...

Colin sees a laundry basket is on the table. He looks around the room.

COLIN

Where's Chloe?

TINA

She... She's not here... She never stays long and hardly comes to visit...

COLIN

I have to talk to her...

Tina continues to rant about Chloe. Colin looks away and helps himself to coffee.

TINA (Cont)

...how'd she get the black eye?

COLIN

She could have fallen...

Colin takes a sip of coffee.

TINA

Don't think so... (pause) I saw a guy harassing her...

COLIN

What? Who was it!?

Colin notices Tina fidgeting her hands.

TINA

It was... (pauses) Oh, that guy, the one who works for maintenance...

COLIN

That bastard... I bet he hit her...

TINA

Please do something...

Colin spills coffee on his shirt as he is about to take a sip.

COLIN

Shit.

He places his glass in the kitchen sink. He notices the toolbox on the counter and looks back at Tina.

COLIN

Don't worry, I'll find her...

Colin lets himself out. Tina locks the door behind him.

INT. APARTMENT HALLWAY/STAIRCASE.

Colin walks down the hall and down the staircase. He walks down a few flights of stairs. As he approaches the main floor the door below him opens. Arie quickly hides and the door shuts. Colin follows him. He peers around the corner and sees Arie enter the storage room a few meters away.

INT. STORAGE ROOM.

Colin enters the storage room cautiously. It is cluttered and filled with supplies and metal shelves. He walks around the room and starts to pull the gun out of his holster when he is suddenly hit over the head. He falls and everything goes black. Colin wakes up disorientated. He rubs the back of his head and struggles to get up. He notices his gun is missing and no one else is in the room. He wanders out of

the room and down the hall. He enters the parkade. He finds a man digging through the garbage.

COLIN

You see a man come through here?

The man shakes his head no. He heads back towards the Storage room. He hears muffled conversation coming from the room. The voice is Chloe. She is pleading. He pushes the door open. It hits something. At the same time he hears a gunshot. He enters the room. He finds Chloe lying in the center of the room bleeding and Arie holding her. He runs towards Arie grabs him and twists his arms behind his back. He holds Arie's two hands with his one. Tina enters. She wails. Colin rushes to Chloe, releasing Arie and pushing Tina aside. He takes off his jacket and wraps it around Chloe's shoulder. The jacket soaks up in blood. He tries to talk to her. The scene turns silent.

STORY 2 - ARIE

EXT. COLIN/CHLOE'S APARTMENT. BALCONY. DAY

Arie is in his 20's; he wears a grey worker's shirt. He stands on a balcony looking into the window. He stands up on a chair and screws out a light bulb. He sees Chloe enter the room inside and sit with her back against the window. He pulls the door open slightly and starts to enter. Suddenly the phone rings.

COLIN

Chloe! the phone!

Arie quickly backs out. He turns to leave, but stops and peeks through the glass door. He watches Chloe inside put her hand through her hair with frustration. Chloe's hand turns into Arie's hand. Arie begins stroking her hair and he looks at her with admiration. Chloe's face is reflected in a glass candle on the table. A tear falls from her eye. Arie watches from the balcony. Arie picks up a light bulb and stands on the step ladder to screw it in. Suddenly Colin is in the room and is beating Chloe. Arie almost falls. He pushes the door open and falls inside the room.

INT. COLIN/CHLOE'S APARTMENT. LIVINGROOM. DAY

Arie stumbles to get up.

COLIN

Who the hell are you?!

Arie flails his arms trying to defend himself against Colin. Arie pushes over furniture obstructing Colin from reaching him. Arie struggles out of Colin's grasp and somehow trips Colin. Arie pants out of breath. He dashes out the front door.

INT. APARTMENT HALLWAY

He runs into the staircase and down a flight of stairs. At the bottom he finds Chloe.

ARIE

(out of breath)

You ok?

Chloe doesn't respond. Arie looks up the stairs. Chloe's eye appears puffy and blue. They walk down the stairs together.

ARIE
Oh, your eye. (pauses) that bastard...

CHLOE
Why did you do it?

ARIE
What?

CHLOE
I told you to stay away.

ARIE
What do you expect me to do, watch as he hits you?

CHLOE
He wasn't beating me!

ARIE
Then what?

CHLOE
Nothing... We can't see each other anymore...

Chloe pushes open the door at the bottom of the stairs and exits. Arie follows her.

ARIE
Chloe, please...

Arie puts his arm around Chloe to hug her. She pushes him away.

CHLOE
No! Just please leave me alone!

She leaves him and walks towards the elevator. Arie turns and walks down a hallway.

EXT. APARTMENT COMPLEX

He exits the building and lights a cigarette. He walks down some stairs and into a storage room. He picks up a clipboard with notes. It reads: Apartment 2683 - clogged drain. He leaves the storage room through a second door. He enters the elevator carrying a small box of tools and a clip board. It stops at the lobby level and two Asian women enter the elevator. One rummages through her purse. They speak in another language.

WOMAN 3
(subtitled)

What's wrong?

WOMAN 4
(subtitled)

I can't find my keys... we have to go back...

The elevator stops on 2 and lets the 2 women out. The elevator continues to the 3rd level. Arie exits the elevator looking down at his clip board and doesn't notice Chloe enter the elevator. He turns around and sees her as the elevator is closing.

ARIE
Chloe...

The elevator closes. Arie sighs. He walks up to a door and knocks. There is no answer. He pulls out a huge ring of keys and fiddles through the keys. He tries the door and it opens.

INT. TINA'S APARTMENT.

He enters the kitchen and places his toolbox on the counter. He looks at the clipboard again: Clogged sink. He rummages in the sink and pulls out some food clogged in the drain. Within it he pulls out a locket necklace. He washes it off and opens it. Inside is a photo of Chloe. He curiously gazes around the apartment. The kitchen is cluttered with brightly colored items. He looks at some photos on the fridge and notices Chloe.

ARIE
Chloe?

He wanders into the bedroom and picks up a photo of Chloe off the dresser. Suddenly there is a scream from behind

him. Tina screams and runs out of the room. Arie drops the photo and runs out of the room. Tina meets him in the hallway with oven spray and spray's Arie repeatedly. She drops the can and starts to beat him with a phone book.

TINA

(screams)

You thief! steal... from an old lady?

ARIE

Shh, Calm down... Listen Lady, please. I'm just...

Arie covers his face and heads towards the door, with Tina following and still beating and screaming at him. Arie escapes out of the apartment and Tina quickly locks the door behind.

INT. APARTMENT HALLWAY. DAY

ARIE

Come on lady I need my...

Arie stands by the door. After a while he walks away. He takes the elevator down to the lobby. He exits the building and stops at the side of the building. He has a cigarette. He notices a cut on his wrist. After a while he walks around the building and enters the storage room.

INT. STORAGE ROOM.

He searches around the room and picks up a wrench and leaves the room.

ARIE

(To himself)

Stupid lady's gonna get me fired.

He heads down the hall. He opens the door and spots Colin in the stairwell. Arie quickly shuts the door and runs to the Storage room. He hides behind a shelving unit. Arie sees Colin enter the room. Arie wedges himself behind one of the shelving units and he starts pushing the shelf slightly. A large bottle starts to rock and falls from the top of the shelf on Colin's head. Colin falls. A gun falls on the floor with him. Colin's jacket opens and reveals a police badge with a gun belt. Arie panics. He runs to the door then back to Colin. He kicks the gun across the room.

Arie leaves the room, runs up the stairs and around the buildings exterior.

EXT. APARTMENT COMPLEX. DAY.

Arie paces back and forth, shaking and mumbling to himself. He walks towards the building and sees Chloe in the lobby. Through the window he motions for her to come. She is reluctant. He calls her again. She comes to the door, and he pulls her outside.

ARIE
Chloe. help me!

CHLOE
I told you, leave me alone.

ARIE
I... I killed him.

CHLOE
Who?!

ARIE
Is your husband a cop?!

Before she can respond, he takes her by the arm and pulls her across the yard towards the building. She unwillingly follows him.

INT. STORAGE ROOM. LATER

They enter a Storage room and he leads her to the spot where Colin fell. He is no longer there. They look around the room but don't see Colin.

CHLOE
ok?

ARIE
He was here. He fell here.

Arie points to the spot on the floor.

CHLOE
Arie, stop ... I'm through with this.

ARIE

But, what the hell...where did he go?

Chloe turns to leave. Arie grabs her by the arm.

ARIE

Wait. Please, let's leave tonight. We can take a bus to...

Chloe listens to Arie and appears to want to go with him. Suddenly she changes her mind.

CHLOE

Arie, No!

ARIE

Wait please... here...

Arie pulls out the locket necklace from his pocket and places it in Chloe's hand. Chloe stares at Arie in shock.

CHLOE

This was my grandmothers!

ARIE

Yeah, I... I was cle...

CHLOE

Just stop! Stop what you're doing...

Chloe tries to leave and Arie grabs her by both arms and pulls her towards him.

ARIE

Chloe, please...

CHLOE

(Screaming)

No, Let go of me! Stop it. Stop!

Arie tries to calm her down while Chloe struggles. Suddenly a loud shot is heard. Chloe falls and Arie struggles to hold her and soften her fall. She falls to the floor and blood flows out from beneath her. Arie is confused. He tries to look around Chloe's body to find the source of the blood. He hangs onto her and strokes her hair. Suddenly Colin enters the room. He grabs Arie and wrestles him to

the ground in a handcuff position. He is dazed. He watches the commotion around him. He struggles to get up. He shouts Chloe's name. It is silent.

STORY 3 - TINA

INT. TINA'S APARTMENT.

Tina is a small lady in her 50's wearing a house coat. Her apartment is brightly coloured with flamboyant and tacky ornaments. Tina sits down at the table with a serious look on her face and the phone still against her ear.

TINA

Ok (pauses) yes... ok. Thank you.

Tina presses the hang up button on the phone and stares at a number of pill bottles grouped on the table for a moment. She puts down the bottle. She makes a call, waits, but no one answers. She leaves the apartment.

INT. APARTMENT HALLWAY/ELEVATOR. DAY

Tina rides the elevator to the second floor, and walks down the hall. She approaches a closed door and knocks on the door. There is no answer. She pulls out a paper from her purse and writes a note. It reads:

Chloe,

Come by if you need milk.

Mom

She slips the paper under the door. She enters the elevator. Someone tries to stop the elevator but misses it. She takes the elevator down to the lobby. Tina walks to the mailboxes. A woman on her cell phone is in the lobby.

Woman on phone

You can't find the place? Well where are you right now?

Tina ignores her and flips through some mail. She returns to the hallway door. As she opens the door she sees Chloe

push Arie across from the elevators. Tina walks down the hall into the laundry room and checks the dryer. She takes the elevator back to her apartment.

INT. TINA'S APARTMENT. LATER

Tina arrives home and hears a sobbing sound. She enters the living room and is surprised to find Chloe sitting on the sofa covering part of her face by resting her head on her hand.

TINA

You ok?

Tina walks over to Chloe and sits on the coffee table in front of Chloe. Chloe doesn't move.

TINA

I'm glad you finally came to visit

Chloe looks up at Tina, revealing a bruise on the side of her face.

TINA

What happened?

CHLOE

Nothing. I fell. I'm fine.

Tina rushes to the fridge and grabs a bag of peas. She returns and places it on Chloe's eye. Chloe avoids eye contact, while Tina studies her face.

TINA

Sure you're ok?

CHLOE

(defensively)

I told you, I'm fine.

TINA

Stay here with me, it's no trouble.

CHLOE

Mom! Don't be ridiculous.

Chloe gets up and walks to the door.

TINA

Where you going? Could you get my laundry?

Chloe glances back at Tina and turns to walk out the door. Tina enters the bathroom and sits on the toilet. She unrolls the toilet paper and it runs out. She reaches over for some more paper. She unravels some toilet paper and then flushes. She washes her hands. She notices her eye has turned black. Puzzled she tries to cover it with make up. She leaves the bathroom and enters the bedroom. Suddenly Tina sees Arie in the bedroom and screams. She runs out of the room to the kitchen and grabs oven cleaner. She meets him in the hallway and starts spraying him repeatedly.

TINA

(screams)

Ahhhh, help! steal from a dying....

ARIE

Shut up Lady! Stop. I'm just doing my job...

Arie grabs the can from her and throws it. She grabs a phone book and hits him with it until he leaves. She locks the door behind her and peeks out the eye hole at Arie. Tina runs to grab the cordless phone and stands behind the door holding, shaking. She starts to dial 91... when suddenly she is hit by the door. Chloe enters carrying a basket of laundry.

CHLOE

What are you doing?

TINA

Ni... I... Nothing

Chloe puts the basket on the table.

TINA

I... I was robbed!

CHLOE

What? Tell management what your missing...

Chloe starts to leave the apartment.

TINA

Chloe, please don't leave me...

CHLOE

I don't feel well.

Chloe leaves. Tina watches her leave down the hall. She quickly locks the door. She paces back and forth, shaking. She sits at the table and opens some pill bottles, while trying to read the labels. Suddenly there is a knock at the door. Tina jumps spilling miscellaneous pills on the table. She scrambles to organize them. She throws a pill in her mouth and runs to the door.

TINA

Who is it?

COLIN

It's me.

She opens the door a crack with the chain on and peeks out at him. She lets him in. She hangs onto his shirt.

TINA

Oh you're here, Chloe tell you I was robbed...

COLIN

(Interrupts)

She here?

TINA

She left me, can you believe?

COLIN

(to himself)

I have to find her...

TINA

I hardly get to talk to her anymore and she only came to visit once this week. I don't even know what has happened to her...

Tina continues to talk. Colin looks away and helps himself to coffee.

TINA (Cont)

...she had a black eye...

COLIN

She alright?

Colin takes a sip of coffee

TINA

I don't know. There was a guy bothering her...

COLIN

Who?

TINA

It was, Oh... (pauses) that thief, who broke into here...

COLIN

Bastard

Tina stares at Colin with a very concerned look.

TINA

Talk to the police for me...

Colin spills coffee on his shirt as he is about to take a sip.

COLIN

Shit.

He puts the cup in the sink.

COLIN

(a little angry)

I'll take care of this myself.

Colin lets himself out. Tina locks the door behind him. Tina paces the room. She sits and strokes the locket necklace she is wearing. She takes the laundry basket into the living room and starts folding the clothes. After a few minutes, she notices a sock is missing.

EXT. APARTMENT COURTYARD/HALLWAY. DAY

Tina leaves the apartment holding a sock and takes the elevator to the lobby. There she sees Chloe and Arie talking outside. Arie drags Chloe by the arm. Tina follows

them through the courtyard. She follows them down the stairs. She places her ear against the door they entered.

INT. STORAGE ROOM.

Tina enters slowly and carefully shuts the door behind her. She creeps to the other side of a shelf and watches their shadows on the floor. Their conversation isn't clear. She tries to be quiet but stumbles over a gun. She pauses for a moment. She hears Chloe's voice get more intense. Tina picks up the gun. She can see their shadows. Arie is choking Chloe.

Chloe
(*Shouting*)

Help! Get away from me! Stop it. Stop!

Tina turns around the corner awkwardly holding the gun. Suddenly she is hit by an opening door and gets thrown to the floor. The gun goes off. Tina falls to the floor. Tina slowly gets up. She painfully dusts herself off and looks up. She sees Chloe bleeding on the floor and Colin holding down Arie. Tina runs over to Chloe and wails trying to pick her up. Colin pushes Tina away. She kneels beside them, crying and screaming. The scene becomes silent.