READING AGAIN FOR THE FIRST TIME: REREADING FOR CLOSURE IN INTERACTIVE STORIES

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Summary

There are very particular reasons why people want to go back to reexperience stories, reasons which are not necessarily applicable to stories that change as the result of reader choice. This raises the question: what is known about *re*-reading – especially rereading in the context of interactive stories?

Although there have been some discussions of rereading in non-interactive stories, and some implementations of interactive stories which are intended to be reexperienced, there has been very little work which directly addresses the nature of rereading in the context of interactive stories. Work on rereading in interactive stories tends to argue that people reread either to experience variation or to look for closure. Implementation efforts generally follow the former perspective.

Previous work has not, however, investigated *how rereading actually changes in the context of interactive stories*. To address this issue, implementations of prototype hypertext stories were created, empirical studies were carried out on these stories, and critical analyses of existing theories and creative works were conducted.

Based on an analysis of existing stories, a classification of motivations for rereading and a categorization of techniques for encouraging and rewarding rereading in interactive stories were developed. This was followed by two empirical studies of rereading of procedural hypertext fiction. The first study showed that, when rereading, readers are looking for some form of closure. The second study showed that readers have difficulty deciding whether or not what they are doing as they go back over an interactive story can be called "rereading".

From the insights gained in these studies, a new model of rereading in interactive stories is proposed. The model focuses on *what the reader is doing* when rereading. In this model, readers who are rereading to find closure are rereading to complete a "first" reading. It is only when readers achieve this closure that they can potentially shift to either rereading to reexperience the story, or rereading reflectively or analytically. This involves a change from doing the same thing each time the story is read, to doing something different. This shift highlights the paradoxical nature of rereading. Rereading, rather than involving reading something *again*, actually involves reading *anew*. This paradox is foregrounded in interactive stories, where what is being "reread" may literally be different on each rereading.

This thesis contributes to the literature on interactive storytelling by a) expanding the research field to include study of the phenomenon of rereading, b) providing a model by which to both analyze and design interactive stories which are intended to be reread, and c) suggesting new ways to approach interactive stories in general. In addition, this thesis contributes to the literature on rereading by a) extending the concept of rereading to interactive stories, and b) suggesting new ways of thinking about rereading in all forms of stories, whether static or interactive. Finally, the thesis contributes to methodology, by introducing an approach to studying interactive stories using a modified Piagetian "clinical interview" combined with the creation of stories specifically designed to investigate reader behaviour.

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Chapter 1

Introduction

> One cannot read a book: one can only reread it. A good reader, a major reader, an active and creative reader is a rereader.
>
> (Vladimir Nabokov, "Lectures on Literature")

Whether or not one agrees with Nabokov's [97] observation, it contains an often overlooked tension about rereading as one of the metrics of a story's quality. On the one hand, a measure of quality is that we wish to experience the *same thing* again. On the other hand, another measure of quality is that we reread the same thing to get *new perspectives or insights*. There is an inherent tension here between reading the "same thing" again and getting something "new" out of the experience: if the experience is new, how can it be the same?

In a non-interactive story, the *text* remains the same between readings. This provides one possible invariant on which to focus, so that instinctively we can continue to call going back to a story again "rereading", even when that rereading involves looking for something "new". If, however, the text itself is also literally different, as is the case in a story which changes based on reader choice, what is it that we can point to as being "the same"? This suggests that it is not clear how rereading as a measure of quality applies to stories which change as the result of reader choice. In fact, even the concept of what it means to reread a story is potentially undermined by interactivity.

This thesis addresses this question: how does rereading change in the context of interactive stories?

In this chapter, we begin by clearly explaining what we mean by "interactive story", and why we use the terms "reading" and "rereading" for the reexperience of an interactive story, as opposed to other terms, such as rewatching or replaying. Having defined these terms, we propose a set of categories of interactive stories, and set the scope of the thesis by specifying which subset of these categories we are addressing. The chapter ends with a summary of the contribution of the thesis, and an overview of the structure of the thesis document.

1.1 What Is An "Interactive Story"?

To begin to investigate rereading in interactive stories, first we need to be able to identify what exactly we mean by "interactive story". We will do this by first

defining the terms "story" and "interactivity", and then combining these definitions. This will help us to decide which artifacts and experiences to examine to understand how rereading changes in the context of interactive stories.

1.1.1   Story

The first term which requires discussion is "story". While people usually have little problem pointing out examples of what is and what isn't a story, actually clearly defining what this means has proven to be more problematic [3, 8, 27, 43, 117].

A common structuralist/formalist approach is to break "narrative" into two components: *story*, "the content or chain of events (actions, happenings), plus what may be called the existents (characters, items of setting)" [27, p. 19]; and *discourse*, "the expression, the means by which the content is communicated" [27, p. 19].[1] This structure is very useful when discussing interactive stories, as it allows for a distinction between choices which a reader can make at the level of the underlying story versus choices at the level of the expression of the story (the discourse).

However, as Ryan [120] comments, the definition of story as a chain of events, which is rather abstract, makes it difficult to clearly pin down what, concretely, is meant by "story". Ryan extends the definition as follows: discourse is the representation of a narrative "encoded in material signs", whereas story is "a mental image, a cognitive construct that concerns certain types of entities and relations between those entities" [120, p. 7]. This means that narrative *discourse* is a particular type of text which evokes *stories* in the reader's mind.

Dimension	Condition
A. Spatial	1. A storyworld populated by *existents*.
B. Temporal	2. This storyworld is situated in time, and undergoes change.
	3. This change is caused by non-habitual *events*.
C. Mental	4. Some existents are intelligent agents, which have a mental life and react emotionally to events.
	5. Some events must be purposeful actions by these agents, motivated by identifiable goals and plans.
D. Formal and Pragmatic	6. The sequence of events forms a causal chain leading to closure.
	7. At least some of these events must be asserted as fact in the story world.
	8. The story must communicate something meaningful to the recipient.

Table 1.1: Conditions determining "narrativeness" (after Ryan [120]).

Ryan sees the set of all narratives as a continuum defined by a set of 8 conditions which she organizes into 4 dimensions (see table 1.1). We will use conditions 1 through 7 as a way to determine how much a given interactive

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[1]Note that theorists have used a variety of terms for these components. In this thesis we will follow Chatman's [27] terminology.

experience can be considered to be a story. We exclude 8 since, as Ryan states, this condition is intended to exclude "bad" stories, and "is not an intrinsic property of the text, but rather a dimension relative to the context and to the interests of the participants" [120, p. 9].

1.1.2   Interactivity

Having clarified what we mean by "story", we now need to clearly define what we mean by "interactivity". Interactivity has proven to be equally, if not more, problematic to define than story [30, 53, 61, 64, 79, 112, 121, 132, 133, 145]. We will use Rafaeli's [111] definition of interactivity as

> an expression of the extent that in a given series of communication exchanges, any third (or later) transmission (or message) is related to the degree to which previous exchanges referred to even earlier transmissions. [111, p. 111]

Rafaeli elaborates this definition to a continuum consisting of

> three pertinent levels: two-way (non-interactive) communication, re-active (or quasi-interactive) communication, and fully interactive communication. Two-way communication is present as soon as messages flow bilaterally. Reactive settings require, in addition, that later messages refer to (or cohere with) earlier ones. Full interactivity (*responsiveness*) differs from reaction in the incorporation of reference to the content, nature, form, or just the presence of earlier references. [111, p. 119]

What is important here is the distinction between *reactive* and *interactive*. If a system's response is based directly on the previous exchange, then the system is reactive. Only when responses are based on the history of exchanges is the system interactive.

Rafaeli provides a means of examining an interactive experience and considering where it lies in the continuum between two-way communication and interactive communication. He does not, however, clearly describe what is happening during interaction. Crawford [30, 31] sees interaction as "a cyclic process in which two actors alternately listen, think, and speak" [30, p. 5], where the actors can be either two humans, a human and a computer, or (possibly) two computers. Listen, think and speak can be seen as analogous to input, process, and output. Applying Rafaeli's definition to Crawford's description of interactivity, the response which one agent hears from another, as determined by the other agent's "thinking" process, will be *interactive* if that response is part of a chain of references to previous responses.

Note that inherent in both Rafaeli's and Crawford's discussions of interactivity is the assumption that the agents are able to formulate their responses in some way. That is, the agent is making a *choice* as to how to respond, in a way which has been structured by the designer of the interactive system. In a designed interactive system (as opposed to, for example, a conversation), it is a combination of the range of responses and types of choices available to the user (one agent), and how the system (the other agent) formulates its responses, which determine how interactive the experience will be.

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By combining Rafaeli's definition of interactivity with Crawford's description of the process of interaction, we have a way of examining a given experience and discussing to what degree that experience is interactive.

1.1.3   Interactive Stories

It is now possible to bring together the terms "interactivity" and "story", and determine what we mean by "interactive stories".

From Crawford, we have seen that, for a story to be interactive, there must be a cyclic process of input, processing, and output between two agents as part of the experience of the story. In addition, from Rafaeli, we have seen that each subsequent message between the two agents must refer back to the ways in which previous messages refer to earlier messages.

For this interaction to be considered a "story" from the perspective of at least one of the agents (which we will label as the "reader"), the sequence of messages between the two agents must be considered a narrative discourse, in the sense that it evokes a story in the mind of the reader, as determined by Ryan's conditions.

This suggests that we should consider an interactive story to be any experience in which the system responds not just to the reader's current choice, but also to how the reader's choice relates to previous exchanges (i.e. it is interactive), resulting in a series of messages which evoke a story in the mind of the reader (i.e. it is a story). We will return to this definition after we examine the term "reading" in the context of interactive stories.

1.2   Reading in Interactive Stories

Having proposed a definition for "interactive story", we now need to determine whether "reading" is the appropriate term to use for what people are doing as they experience an interactive story, rather than, for example, "playing". In this section, we will discuss what we mean by reading, and argue that this is indeed the appropriate term to use in this thesis.

1.2.1   Reading

By *reading* in a non-interactive story, we mean the process of perceiving a text, and from that text constructing an understanding of a story, what Iser describes as the "process of comprehension whereby the reader tries to assemble the world of the text" [52, p. 49]. This is essentially the process of creating the cognitive construct of the story in the reader's mind, as described in section 1.1.1 above.

There are two issues which need to be addressed when extending this definition to interactive stories. The first is whether we need to consider the medium through which the story is conveyed, given that interactive stories are not always literally told through *text*. The second is whether the person experiencing an interactive story, an experience which by definition involves *choice*, can be considered a *reader*, as opposed to, for example, a "player" or an "interactor". We now consider each of these questions in turn.

1.2.2   The Medium of the Story

An important issue to consider is whether reading, and rereading, are different depending on whether the text is a written text, a static visual text (in the case of comics or other sequential art), or a time-based visual text (film). Following Ryan [120], we take the position that "narrative differences [between media] may concern three different semiotic domains: semantics, syntax, and pragmatics" [120, p. 25]. Here, semantics refers to the types of stories that a medium affords, syntax refers to the type of discourse structures best supported by a medium, and pragmatics refers to the "different modes of user involvement" [120, p. 25] offered by the medium.

We are interested in pragmatics – how the shift from what Ryan refers to as the *receptive* to the *participatory* mode impacts the repeat experience of a story. Given this focus, we will not be considering directly the impact of semantic or syntactic differences between narrative media. Although these differences are important, what we are focusing on is the act of participation in the story. For simplicity we will use the term "text" to describe the object of our study, whether the text is written, oral, or visual, and whether or not the text is static, dynamic, or procedural.

This discussion leads us to the second issue to be addressed: whether "reading" is the appropriate term to use for what people are doing as they experience an interactive story.

1.2.3   The Role of the Reader

To more clearly understand what the reader is doing when reexperiencing an interactive story, we first need to understand what the reader is doing when reading a non-interactive story. Theorists such as Iser [52] and Eco [41] have investigated the role of the reader in traditional narratives, seeing the reader as moving through a text and attempting to make sense of the unfamiliar and build an understanding of the meaning of the works by filling in the blanks left by the author. This process of interpretation can be seen as the reader's *contribution* to the experience.

However, reading an interactive story isn't quite the same as reading a non-interactive story. As in a non-interactive story, the reader is making sense of the story and responding affectively. In addition, the reader is making choices about what to see or what happens next, making sense of the way those choices work by learning the core mechanic/system of interaction, and potentially responding affectively not just to the story but also to the choices and how these choices relate to the story. These three steps are what make reading an interactive story different from reading a non-interactive story. The reader's contribution consists of what it is that the reader is *actively doing to create her own experience* of the work. Aarseth [2] describes this contribution as *intervention* rather than interpretation. He argues that

> The tensions at work in a cybertext, while not incompatible with those of narrative desire, are also something more: a struggle not merely for interpretative insight but also for narrative control: "I want this text to tell *my* story; the story that *could not be* without me." [2, p. 4]

The key point here is the emphasis on *narrative control*. This suggests that what a reader of an interactive story is doing is different than, for example, the way that someone watching a movie is making inferences to fill in the gaps in what is not shown, with the goal of making sense of the narrative [15]. It is also different from the type of contribution that is typically described as taking place when a reader of a narrative text or a spectator viewing an artwork interprets or "completes" the work, in which, according to Duchamp, the spectator "adds his contribution to the creative act" [40, p. 819]. Instead, the reader of an interactive story is actively *making narrative choices* which contribute to the resulting experience.

If the choices which the reader is making are inextricably connected with creation of the story in the reader's mind, then these choices can be seen as contributing to the process of reading. This is different from, for example the type of choices which a player makes in a game, which are not directly connected to a narrative experience but instead are connected to the gameplay experience.[2] The term *reading* serves to place an emphasis of the experience of *story*, which is what we are focusing on in this thesis. This is the main reason why we choose to use this term, as opposed to, for example, "playing" or "interacting".

Therefore, in this thesis we will use the term *reading* to refer to the process of making choices and perceiving the responses to those choices from an interactive story, regardless of the medium through which the story is conveyed, and from those choices and responses constructing an understanding of the story.

This discussion also suggests a refinement to our definition of "interactive story", given that we want the process of making choices (reading) to be directly connected to the reader's experience of the story. Taking into consideration this requirement, we propose the following revised definition:

> An interactive story is any experience in which the system responds not just to the reader's current choice, but also to how the reader's choice relates to previous exchanges, and in which the resulting series of messages, combined with the process of making the choices, evoke a story in the mind of the reader.

1.3   Categories of Interactive Stories

Although we have defined what we mean by an interactive story, and what we mean by reading in the context of interactive stories, there is still a very broad range of possible stories which satisfy our definition. To narrow the scope of our research, we need a set of categories of interactive stories which addresses both aspects of our definition of interactive stories: the way in which the reader makes choices by interacting with the text, and the reader's contribution to her experience of the narrative. Although there are existing categories of interactive stories, such as those proposed by Aarseth [2] and Ryan [119], these existing taxonomies do not capture both factors.

Aarseth [2] refers to the ways in which the reader interacts with the text as the *user function*, which he breaks into four categories. In addition to the interpretative function, Aarseth adds: *explorative*, in which the user decides which path to take; *configurative*, in which the user can choose or create elements

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[2]See Mitchell and McGee [87] for a more detailed discussion of this distinction.

of the discourse; and *textonic*, in which the user can make permanent changes to the story system [2, p. 64]. Aarseth's categories focus largely on the way in which the user interacts with the *text*, which is in keeping with his notion of cybertext as a textual *machine*. What is missing here, for our purposes, is a direct connection between the reader's actions and the reader's contribution to her experience of the *narrative*.

Ryan [119] proposes the terms *exploratory* interactivity, which she sees as equivalent to Aarseth's explorative user function, and *ontological* interactivity, which encompasses both Aarseth's configurative and textonic user functions. A key difference between Aarseth and Ryan is that Ryan's categories *do* make a connection between the reader's actions and the reader's experience of the interactive story. However, unlike Aarseth's categories, Ryan's categories do *not* describe how the reader interacts with the *text*, which limits the usefulness of these categories for our research.

Instead, we propose a set of categories which captures both the reader's interaction with the text and the reader's contribution to the narrative (see Table 1.2). We now describe these categories.

Categories	Aarseth			Ryan	
	Explorative	Configurative	Textonic	Exploratory	Ontological
1. Solve puzzles or perform actions		X			
2. Explore story fragments	X			X	X
3. Change parameters		X		X	X
4. Create or change connections			X	X	X
5. Create or change story fragments			X	X	X

Table 1.2: Categories of interactive stories.

1. Solve Puzzles or Perform Actions

One way in which the reader contributes to the narrative is by configuring or manipulating some elements of the interactive storyworld or the interactive story's interface in specific ways, to allow the story to progress. This may take the form of puzzle-solving, or the reader may have to carry out a specific set of arrangements of the elements of the system, such as acting out a scene in the story by controlling a character, or performing a predetermined sequence of movements with a game controller. The configurations available to the reader do not change the story (with the possible exception of termination due to failure), nor do they change, in any meaningful way, the order in which the reader experiences the discourse statements.

Examples of puzzle-solving can be seen in text adventures such as *Zork* (Anderson, Blank, Daniels and Lebling, 1979), and in graphical adventure games such as *Myst* (Cyan, 1993). Examples of performing predetermined actions include the "quicktime events" portions of *Indigo Prophesy* (Quantic Dream,

2005) and the "microwave tunnel" sequence in *Metal Gear Solid 4: Guns of the Patriots* (Kojima Productions, 2008) as described in [134].

2. Explore Story Fragments

A somewhat different way in which the reader can contribute is by exploring story fragments. This involves the reader making a choice between one or more connections which join one fragment to the next. This choice may be at the story level, in terms of what will happen next, or may be at the discourse level, in terms of what will be seen next.

Examples of this type of interactive story include *Choose Your Own Adventure* books such as *The Cave of Time* (Packard, 1979), and some "literary" hypertexts such as *Victory Garden* (Moulthrop, 1992) and *The Patchwork Girl* (Jackson, 1995).

3. Change Parameters

Rather than exploring predetermined story fragments, the reader may contribute by changing some parameters which relate to some aspect of the story, such as the relationship between the characters, the location of the story, or the existence of objects which are important to the story. The new values of the parameters are incorporated into the story, based on rules determined by the author, with the system changing or creating new story fragments and connections between the fragments.

Examples of this approach include improv games where the actors are required to incorporate new suggestions from the audience into an ongoing sketch, a child giving feedback to an adult telling a bedtime story such as in the film *The Princess Bride* (Reiner, 1987), and interactive storytelling research systems such as Cavazza's sitcom simulations [25]. The "system" which is generating the story can be a computer program (in the case of Cavazza's sitcom simulations), or may actually be one or more human storytellers/actors.

4. Create or Change Connections

Category 2, *explore story fragments*, involves following connections put in place, either implicitly or explicitly, *by the author*. A different form of contribution can be seen when the story system consists of a set of story fragments without any existing connections, and the reader's contribution is to rearrange the story fragments by creating or changing the connections between the fragments, thereby determining the order of the story fragments in the story. In this category, the *reader* can be seen as contributing the connections, rather than the author. Examples of this approach include *Composition No. 1* (Saporta, 1963) [124] and *The Unfortunates* (Johnson, 1969). [54].

5: Create or Change Story Fragments

In this approach, the system provides a means for the reader to create new story fragments which can be added to the ongoing story. The system may provide some amount of structure which constrains the new fragments, such as requiring that the new fragments be consistent with the previous story fragments, or by providing a template within which the reader "fills in the blanks". Multiple

readers may take turns contributing story fragments, and the other readers may be represented either by humans or by the storytelling system.

Examples of this approach include *Dungeons and Dragons* (Tactical Studies Rules, Inc., 1974) *Sleep is Death* (Rohrer, 2010), and storytelling games such as *Once Upon a Time* (Atlas Games, 1993), *Dark Cults* (Dark House, 1993), and *The Extraordinary Adventures of Baron Munchausen* (Hogshead Publishing Ltd, 1998).

1.3.1 About the Categories

Our proposed categories allow us to make distinctions based on both what the reader is doing to the text, and how this action contributes to the narrative experience. In contrast, Ryan's categories only allow us to distinguish between category 1, which Ryan would label as "peripheral interactivity" [121], and our remaining categories, which can be either exploratory or ontological. Using Aarseth's categories, we are unable to distinguish between our categories 1 and 3, where the key difference is whether or not the reader's actions impact the reader's narrative experience.

Note that these categories are not mutually exclusive, and some works may fall within more than one category. For example, the literary hypertext *afternoon, a story* (Joyce, 1990) consists largely of exploration of story fragments (category 2), but some links in the hypertext are only available to the reader after certain nodes have been visited, suggesting that the reader's actions are also changing parameters (category 3) in the story. Similarly, the interactive drama *Façade* (Mateas and Stern, 2005) involves the reader's discourse acts indirectly changing parameters in terms of character relationships and dramatic tension (category 3), which can trigger different story fragments (category 2).

1.4 Scope of the Thesis

In the previous sections, we have explained what we mean by interactive stories and our use of the term "reading", and we have proposed a set of categories of interactive stories. We now set out the scope of the thesis, in terms of what types of interactive stories we are looking at, and what we mean by rereading.

We will be focusing on interactive stories where the reader's contribution consists of making choices in terms of exploring story fragments (category 2), or changing parameters which the system then incorporates into the story (category 3). We will not be considering interactive stories in which the reader's contribution involves contributing relationships (category 4) or content (category 5)[3] to the story. We also will not be looking at interactive stories where the reader's contribution is restricted to unlocking the next part of a linear story (category 1). In addition, we will be restricting ourselves to interactive stories where the reader is interacting with a computer-based interactive story, rather than with other people, either face-to-face or through a computer.

When we refer to *rereading*, we mean the process of going back and reexperiencing an interactive story. The "re-" in rereading captures the notion of repeating, or doing again. Although rereading can occur any time after an initial reading – immediately, later the same day, the next day, several days later, or

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[3]See Mitchell and McGee [90] for discussion of rereading involving category 5 contributions.

years later – for this thesis we are focusing specifically on repeated experiences of an interactive story which take place *immediately* after the previous experience has been completed. In addition, we are limiting our focus to rereading which involves the reader completing a reading session and then going back to read the work again in a *new* reading session, as opposed to reencountering a section of the work during the same session through looping or repetition.

1.5   Contribution

This thesis addresses the question: how does rereading change in the context of interactive stories? In this section, we summarize the contribution of the thesis.

The main contribution of the thesis is a new model of rereading in interactive stories focusing on what the reader is doing when rereading. In this model, readers initially reread for closure, and do not consider this to be rereading. This is analogous to Calinescu's [20] notion of partial rereading. After achieving closure, what readers are doing changes, and readers do consider this to be rereading. At this point, readers focus on their understanding of the story as invariant, and are engaged in an activity equivalent to Calinescu's simple or reflective rereading.

It is important to note that by *closure* in an interactive story, we are referring to a feeling of resolution or completion, such as reaching an understanding the story, reaching the "best ending", or finding the "most interesting" version of the story. This is similar to Carroll's definition of narrative closure in non-interactive stories as "the phenomenological feeling of finality that is generated when all the questions saliently posed by the narrative are answered" [24, p. 1]. In the context of an interactive story, this feeling of finality is best regarded as a cluster of related experiences resulting from the process of pursuing specific goals while reading the interactive story, which is felt in relation to the reader's experience of the *narrative*.

This model of rereading suggests new ways of looking at rereading in general, by focusing on what the reader is *doing* when rereading. It also suggests new ways of designing to support rereading in interactive stories, in terms of supporting readers' goals across readings, and adapting to readers' changing goals to support different types of rereading.

This thesis also makes a contribution to methodology. To study how readers reread in interactive stories, we made use of a modified Piagetian *clinical interview* [47, 105], combined with stories which were design specifically to investigate reader behaviour.

1.6   Structure of This Document

The rest of this document is structured as follows.

- In Chapter 2 we begin by addressing the question of what is known about rereading, both in non-interactive and interactive stories.

- This is followed by Chapter 3, in which we critique the related work and state our research problem.

- In Chapter 4 we describe the method which we used to tackle this question.

- We follow this in Chapter 5 with a discussion of the motivations for rereading and a description of the techniques by which stories can encourage and reward rereading in interactive stories.

- This is followed by a description, in Chapter 6, of our study of readers rereading two hypertext fictions, in which we found that people are rereading to *arrive at something.*

- In Chapter 7 we discuss the ways in which this suggests limits on how much an author can vary a story which attempts to support rereading by means of a reframing.

- This discussion is followed in Chapter 8 by a description of our study of what it is that readers say they are doing as they reread hypertext fiction.

- Based on our observations, in Chapter 9 we present a new model of rereading in interactive stories.

- In Chapter 10 we use this model to explain readers' responses to existing interactive stories, focusing in particular on the interactive drama *Façade* (Mateas and Stern, 2005).

- We conclude with Chapter 11, in which we discuss the implications of our model, and sketch out possible future work.

Chapter 2

Related work

In this chapter, we survey the work that has been done to explore rereading in both non-interactive and interactive stories. We describe work which discusses the definition of and motivations for rereading in non-interactive stories, present the various positions which have been taken on rereading in interactive stories, and describe the empirical studies and implementations which have investigated rereading in interactive stories.

2.1 Rereading in Non-interactive Stories

There has been some discussion of rereading of non-interactive stories, which has attempted to both determine what is meant by "rereading", and to classify and understand the different motivations for rereading. This work provides insight into how, and why, people reread non-interactive stories.

2.1.1 Defining rereading

The first problem facing those who discuss rereading is how to define it, particularly with respect to reading. As Galef [42] discusses, it is not clear how to apply models of reading to rereading, as none are quite satisfactory. This is because, "as reader-response critics have noted, reading is an experience, not merely an act of retrieval, and repetition does more than deepen experience" [42, p. 23]. Galef suggests that rereading is not purely an additive process, and that in addition to gaining something in each new reading, we also lose something, a process which he calls the "gain-loss phenomenon" [42, p. 18]. He observes that "even with immediate rereading comes change, at the very least a loss of spontaneity" [42, p. 19].

Regardless of whether rereading is additive or subtractive, the initial reading will have an impact on subsequent readings. Virginia Woolf, in her discussion of the novel [143], puts forward the idea that as we are going through a first reading we are accumulating impressions and understanding, with moments of clarity, but it is only at the end that it all falls into place. She contrasts this with a second reading, during which "we are able to use our observations from the start, and they are much more precise; but they are still controlled by these moments of understanding" [143, p. 125].

Similarly, according to Iser, "during the process of reading, there is an active interweaving of anticipation and retrospection, which on a second reading may turn into a kind of advance retrospection" [52, p. 282]. This potentially changes the way in which the reader approaches the text. As Barthes describes, "[a] second reading...places behind the transparency of suspense (placed on the text by the first avid and ignorant reader) the anticipated knowledge of what is to come in the story" [9, p. 165], after which point "rereading is no longer consumption, but play" [9, p. 16].

Calinescu [20] also distinguishes between first-time reading and rereading, but stresses the lack of a clear distinction. This suggests that it is difficult to define what, exactly, is meant by rereading. In fact, Leitch [67], while claiming that it is important for literary critics to take into consideration how the audience's experience changes on rereading, feels that a general theory of rereading is impossible, as

> Rereading is never simply rereading: it is always reading for something, reading from a new point of view, with new presuppositions, motives, and requirements, and thus cannot be studied apart from the various situations within which it operates. The very term *rereading* is contradictory, since it implies the repetition of a process that by definition cannot be repeated without change. [67, p. 507]

2.1.2   Motivations for rereading

Despite this theoretical difficulty, there have been attempts to understand and categorize motivations for rereading. Calinescu [20] has categorized rereading into *partial*, *simple*, and *reflective* rereading. Similarly, Bacon [7] distinguishes between two categories of motivation to reread: the desire for *sameness* and the desire for *novelty*. He sees these two types of motivation as working together "in a complementary fashion in aesthetic reexperience" [7, p. 1].

We will make use of Calinescu's categories in this thesis. These categories provide insight both into readers' motivations for rereading, and into what readers are doing as they reread.

Partial Rereading

Partial rereading, or backtracking, takes place in an effort

> to recall more precisely certain significant textual details, or take full cognizance of essential narrative information to which one has not paid, for whatever reason, sufficient attention the first time round. [20, p. 277]

This implies an incomplete first reading. However, it may be that there were certain details which did not appear important in the first reading which, once the entire text has been read, now appear to be of greater importance. For example, a revelation at the end of the story might have cast certain events in a new light, encouraging the reader to go back and re-examine those specific parts of the text. As Galef observes, "rereading would seem to pertain to texts of a sufficient density or ambiguity to require complex assimilation" [42, p. 28]. Similarly, Racz [110] alludes to the problem of rereading (or in fact ever

completing a first reading of) texts such as *Hopscotch* (Cortazar, 1963) and *Pale Fire* (Nabokov, 1962). This suggest that there is not necessarily a clear distinction between partial and reflective rereading.

Simple Rereading

Simple, or unreflective, rereading is "the repeating of a game of make-believe for the sheer pleasure of repeating it - the most important addition, the second time around, being a sense of psychological reassurance" [20, p. 277]. Odden [100] suggests that, for popular literature, where there may not be a motivation to look for deeper meanings, complex structures, or intertextuality, the reader often rereads as a means of reexperiencing a well-known story or rediscovering a comfortable fantasy world. Commenting on this type of rereading, Nell [98] suggests that "rereading old favourites renders the formulaic even safer and that readers who do a great deal of rereading have especially high needs for this kind of security" [98, p. 250].

Simple rereading can, however, prove to be problematic, particularly for texts which seem to rely on readers not knowing the outcome. Galef observes that "suspense disappears after the initial reading, replaced by an increase in anticipation – a trade-off rather than an equivalency" [42, p. 19]. However, many theorists and empirical researchers have observed that some readers continue to experience some form of suspense in the absense of uncertainity, a phenomenon which Gerrig [45] has called "anomalous suspense".

There have been many attempts to explain this paradox [18, 17, 44, 46, 50, 66, 109, 130, 131, 137]. For example, Carroll [23] proposes an extended theory of suspense, in which suspense is an emotional response to narrative fiction which requires not just uncertainty but also moral concern for the outcome, an emotion which he suggests readers continue to feel even in the absence of uncertainty. Yanal [144], in contrast, argues that there is no paradox. He claims that rereaders who seem to be experiencing suspense fall into one of two categories: either they have forgotten some aspects of the story (in which case they are not really rereaders), or what they are experiencing is some combination of other emotions, such as anticipation, which do not require uncertainty.

Reflective Rereading

Finally, reflective rereading is "a meditative or critically inquisitive revisiting of a text one has already read" [20, p. 277]. This is different from simple rereading, as the reader is not trying to recapture the experience of the first reading, but instead is stepping back and looking at the text in a more analytical manner. Calinescu sees reflective rereading as involving several different motivations, including looking for secret or hidden meanings, trying to understand the process of reading and rereading, and attempting to "study it and penetrate some of the secrets of its making" [20, p. 277].

Similarly, Leitch [67] suggests that for some readers, rereading is motivated by a desire to study our response, and how the text creates this response. "The first time we read a story, we are paying attention to the story; on subsequent rereadings, we are studying ourselves." [67, p. 494]. However, Leitch feels that it is wrong to assume that all rereadings are for a deeper or truer insight into the work.

2.2   Rereading in Interactive Stories

There has been some theoretical discussion of rereading in interactive stories. Although rereading is often seen as an essential element of interactive stories, theorists have presented differing opinions as to why people would want to reread: either to experience variation, or to reach some form of closure. The term "rereading" is also used in different ways by different critics, with some using the term to refer to repetition and the rereading of fragments of a story within the same reading session, whereas others refer to the repeat experience of an entire story. In addition to theoretical discussions, there have also been some empirical studies of rereading of specific interactive stories, and some discussion of the issue of rereading in the context of implementations of interactive stories.

We now provide a summary of this related work. This provides insight into how people have begun to tackle the issue of rereading in the context of interactive stories.

2.2.1   Rereading as Essential

Rereading is often seen as an essential element of interactive stories. In stories where readers are making choices at the discourse level, critics suggest that it is only through rereading that these choices become clear. Even more so, in stories where readers are making choices which change the events in the story, it is only through rereading that readers can see the impact of these choices.

In hypertext fiction, rereadability has been seen as a key feature of the form [10, 11, 37, 56]. In fact, Bernstein suggests that "hypertextuality is perceived through rereading and reflection" [11, p. 2], and "hypertext structure is perceived through *recurrence*. . . Recurrence is the essence of hypertext" [11, p. 4]. It is only through repeated readings of a hypertext story that the reader can see the consequences of choices, in the variations that are a result of these choices. This notion of repetition, and the resulting juxtaposition of variations of the plot, is celebrated as a strength of hypertext. As Bernstein says, "A film must usually choose one plot or the other, but a hypertext can contrive to tell both" [11, p. 5].

A strong connection is often drawn between rereading and agency, which Murray [96] defines as "the satisfying power to take meaningful action and see the results of our decisions and choices" [96, p. 126]. Mateas [74] argues that for an interactive story to support agency, readers must be able to reexperience a story multiple times, encountering a dramatically meaningful but *different* plot in every variation. The feeling that each reading of an interactive story will provide variations is what Murray refers to as "transformation as variety" [96]. Similarly, Ryan [120] suggests that replayability is a key feature of the experience of interactive stories, and that "[i]t is only by replaying the program several times, by seeing different story-variants develop, and by receiving responses to her input that the user will be convinced that she exercises true agency" [120, p. 179-180].

2.2.2   Rereading for Variation

This view of rereading and the experience of variation as essential for the experience of agency underlies much of the discussion of rereading in interactive

stories. For example, Murray [94, 95, 96] feels that there is a pleasure to be found in the repeated experience of a story from different perspectives, which can provide a deeper appreciation of the situation. She characterizes people as having a love of variation and forking paths, observing that, in games, "when things go wrong or when we just want a different version of the same experience, [we] go back for a replay" [96, p. 155]. She says that although we understand this type of repeated experience in games, the conventions to support repetition and variation have not yet been developed for stories. Murray feels that "these conventions will arise as we get a clearer understanding of what kinds of pleasure we will seek from a literature of transformation" [96, p. 155]. She suggests that one form this could take is the "kaleidoscopic narrative". She connects this to McLuhan's notion of twentieth-century narrative as a mosaic rather than linear. Media such as newspapers and film bombard us with discontinuous images, but we are able to handle this. In fact, "we savor the juxtapositions that these mosaic forms make possible" [96, p. 156].

Many hypertext theorists take a similar position: that readers will reread hypertext to experience variation, and that this experience of variation will be satisfying. Some critics, such as Moulthrop [92], celebrate the ability of hypertext fictions to "allow readers to choose among multiple paths" [92, p. 261] such that "the narrative may differ markedly from one reading to the next" [92, p. 261]. Johnson-Eilola sees this as a way in which readers could experience a different story on each reading, as "different texts coexist in the overall network of the story, to be realized during each individual reading" [55, p. 12].

Writers such as Coover [29] see this as offering a new type of narrative, in which "[t]here is still movement, but in hyperspace's dimensionless infinity, it is more like endless expansion..." [29, p. 6]. Acknowledging that this may be in conflict with the reader's desire for closure, at the same time he suggests that "[i]f the author is free to take a story anywhere at any time and in as many directions as she or he wishes, does that not become the obligation to do so?" [29, p. 6]

Some critics argue that this endless variation will encourage and reward rereading. For example, Selig [125] feels that *Victory Garden* (Moulthrop, 1992) compels the reader to reread, and rewards rereading by providing different perspectives through changes to the order and combination of nodes encountered, and "requires of us many rereadings simply because it comes up in pieces of varying orders, combinations, and lengths" [125, p. 642]. Selig claims that the search for new perspectives and new meaning in each reading is rewarding. Despite eventually feeling that he was no longer seeing new perspectives or getting satisfaction from rereading, at which point he stopped rereading, Selig expressed the desire to have continued to reread, perhaps indefinitely.

Similarly, Peacock [103] argues that the nature of hypertext fiction provides for endless variation and repetition. He feels that the repetitions and varying sequences give the reader the impression that "not all associations have been explored" [103, p. 245], which will encourage rereading. This type of variation can be seen in Douglas's [37] description of how she reencountered certain passages in *afternoon, a story* (Joyce, 1990) over the course of four readings, and how, on each reading, the passage took on different meanings as the result of information which she had uncovered since the previous encounter.

2.2.3   Rereading for Closure

Although some theorists take the position that interactive stories encourage rereading for variation, others feel that readers are still looking for closure when rereading.

For example, Harpold [49] observes that in each reading of Michael Joyce's hypertext novel *afternoon, a story* (1990), you may feel as far from closure as you did in the first reading. He relates this inability of the reader to develop a fixed understanding of the text to the way links in the story appear to change between readings, meaning you may read something completely different each time. Harpold suggests that this can encourage rereading, as the reader may want to try different strategies on each reading, but still only reach a "contingent conclusion" [49, p. 24]. He sees this as a promise of an ending, which may not be satisfied. Despite this frustration, Harpold feels that people have a desire for closure, even in hypertext.

Douglas [34, 36, 35, 37] also feels that the desire for closure is an important motivation for rereading in interactive stories. Based on close readings of Joyce's *afternoon: a story* and *WOE – or the memory of what will be* (Joyce, 1991), she argues that

> Even in interactive narratives, where we as readers never encounter anything quite so definitive as the words *The End*, or the last page of the story or novel, our experience of the text is not only guided but enabled by our sense of the "ending" awaiting us. [37, p. 121]

Murray suggests that lack of closure may be a virtue, and that it can be "emotionally riveting" [96, p. 173] to engage in an ongoing effort to uncover the secrets of the story. In fact, Murray suggests that there may be a different form of closure available to readers of this type of work. She posits that "electronic closure occurs when a work's structure, though not its plot, is understood" [96, p. 174]. Closure takes the form of an understanding of the story's structure, rather than of the story itself. This type of satisfaction may not be something which we are used to encountering in stories, but Murray feels that "we will learn to appreciate the different kinds of closure a kaleidoscopic medium can offer" [96, p. 180]. She sees this new type of satisfaction as consisting of repeatedly experiencing the story and looking back over the multiple experiences to find the underlying connections between the variations. Murray claims that this is how we see the world and our lives now, so this is something we can appreciate.

Murray does admit, however, that stories which provide multiple variations, such as Raymond Queneau's *A Story as You Like It* (Queneau, 1967), are not something people would read for pleasure. She says that these types of approaches show that combinatorial stories can end up as unsatisfying. Murray suggests that there is the need for a certain level of *consistency* within an interactive storytelling system. This type of consistency requires that the system generate "multiple stories that look very different on the surface but that derive from the same underlying moral physics" which determines the consequences of actions in terms of "who is rewarded, who is punished, [and] how fair the world is" [96, p. 207]. This would "offer an encyclopedic fictional world whose possibilities would only be exhausted at the point of the interactor's saturation with the core conflict" [96, p. 207]. This may allow for a form of second-order closure,

not focused on the individual stories, but rather on the reader's understanding of the underlying story system.

2.2.4   Micro-rereadings

The above discussions have been referring to the "rereading" of an interactive story. However, some of this work focuses, not on the rereading of an entire work, but on repetition and loops within a single reading. We will refer to this type of rereading as "micro-rereading."

For example, Bernstein [11] refers to "recurrence" as a form of rereading, seeing cycles within a hypertext which lead the reader to revisit nodes in different contexts as a way of allowing readers to see the consequence of their choices. Similarly, Joyce suggests that, at times, rereading "becomes dissected (along dotted lines) into varieties of 'backtracking' " [56, p. 161], where nodes are revisited within a single reading session.

Several other theorists have also addressed the issue of micro-rereading. Kendall [59] feels that backtracking and rereading portions of a hypertext fiction to be an important part of sense-making. Walker, in her detailed close reading of *afternoon, a story* [141], also discusses the role of repetition and the rereading of nodes within a reading session. She feels that, although this can be frustrating, "[o]ften, re-reading a node invests it with new meaning" [141, p. 115].

2.2.5   Rereading as Problematic

Some critics have seen rereading as problematic in the context of interactive stories. Contrasting rereading in non-hypertext fiction and hypertext fiction, Joyce [56] observes that in non-hypertext fiction, you can always reread and see what you saw previously. However, this is not always literally possible in hypertext, where "[y]ou can neither always go back above, or in fact count upon the existence of the same 'above' from reading to reading" [56, p. 157]. Kendall [58] raises a further issue, which occurs in hypertexts where the contents of the nodes may potentially have been procedurally varied: if node content is procedurally generated, it may literally be impossible to revisit the same text when rereading.

2.2.6   Empirical Studies

Although there has been much theoretical discussion of the issue of rereading in interactive stories, some of which is grounded in close readings, there have only been a few empirical studies which directly address the question of rereading. These studies have all focused on Mateas and Stern's interactive drama *Façade* (Mateas and Stern, 2005). Knickmeyer and Mateas [62] studied players' responses to repeated experiences of *Façade* through the use of retrospective protocol analysis. Dow et al. [39] studied engagement and presence in several variations of *Façade* using a combination of player observation and interviews. Milam et al. [84] conducted a series of detailed interviews of participants' experiences of *Façade*, with some discussion of the participants' feelings about the possibility of replaying *Façade*.

2.2.7   Implementing Rereadable Interactive Stories

Most of the research into implementing interactive stories has focused on *single* experiences of an interactive story. These interactive story systems [25, 116, 128, 127, 136] attempt to provide a sense of agency and variation by adapting the story to each reader's choices, with the emphasis on making sure that each reader has an experience which matches her choices, as distinct from the choices made by other readers.

There have also been some systems explicitly designed to address repeated readings by the same reader [71, 78, 114]. For these systems, the emphasis tends to be on providing variation to encourage and reward rereading by making sure that a reader has an experience which matches her choices in a given reading, as distinct from the choices made by the same reader in previous readings.

Alternative approaches have also been suggested for implementing systems which support rereading. These include the need for rereading to involve a similar but unique experience within a persistent storyworld [68, 104], and for repeat sessions to adapt to either the reader's ability level [138] or to reader's choices [60] in previous sessions. There have also been approaches which use multiple points-of-view to encourage rereading [69, 107].

We will now provide an overview of these approaches. This work provides insight into how various implementations of interactive stories have approached the problem of rereading.

Supporting Rereading Through Variation

There have been several implementations of interactive stories which explicitly mention repeat experiences supported by variation as a design goal.

In his discussion of *Terminal Time* (Mateas, 2000), Mateas [73] describes how the system "generates endless variations" of a PBS-style documentary. *Terminal Time* is "a machine that produces and reproduces" the cookie-cutter documentary "until the model itself is revealed for the tool of ideological replication that it has become" [73, p. 2]. This is a clear statement that repeated experience of the work is part of the artist's intention, and that this repeated experience is a means for conveying meaning focused on the underlying processes at work in the system. Similarly, *Façade* (Mateas and Stern, 2005) is a example where the authors intentionally designed the system to support repeat play through the use of variation. Describing their design goals, Mateas and Stern explain that

> The plot should be generative enough that it supports replayability. Only after playing the experience 6 or 7 times should the player begin to feel they have "exhausted" the interactive story. In fact, full appreciation of the experience requires the story be played multiple times. [75, p. 1-2]

Façade is not only designed to support rereading. In fact, its authors are suggesting that it *requires* rereading.

Magerko et al. [70, 71, 72], in their discussion of their *Haunt 2* system, also see variability as a key requirement, and feel that "[t]he player should be able to replay the experience several times with noticeable differences in the narrative each time due to different plot instantiations, character behavior

choices, and player behavior" [72, p. 7]. Similarly, Riedl et al. [114, 115] argue that variability is an important aspect of interactive stories. They see a clear connection between the ability of the system to adapt to the user's actions, and the player's desire to reexperience the story.

Rereading and Variation in a Persistent World

A slightly different approach to supporting rereading through variation is to do so within a persistent world. This can be seen in the *FearNot!* project [5, 6, 68], which is designed to help the reader understand the consequences of their actions. To support this, rather than allowing the reader to repeat the same story, possibly with different choices, the designers feel that it is important for readers to experience variations which are similar, but unique, thereby giving the feeling that the fictional characters are temporally coherent, and have some degree of control over their lives.

Similarly, Peinado et al. [104], in their discussion of their emergent story-puzzle generation system, put forward the goal of creating stories which are slightly different in subsequent sessions, but that maintain coherence within a persistent world. In this case, the aim is not to support specific pedagogical goals, but rather to allow the reader to make use of accumulated knowledge about the world to solve crimes.

Adapting To Readers Across Sessions

Van Lent et al. [138], focusing on narrative-based training simulations, suggest that "predictability" detracts from replayability. They feel that it is important that the player experience difference between sessions. They feel that this variability, combined with adaptation to player skill levels, will create a desire for replay while simultaneously challenging players to make use of the appropriate cognitive skills rather than learning how to manipulate the AI system to their advantage.

Khrypko et al. [60] examine the issue of maintaining suspense in an interactive story, both in a first reading and on rereading. They suggest changing the reader's options based on choices which the reader has made in earlier readings, to maintain uncertainty as a way to provide a satisfying, suspenseful experience when rereading.

Supporting Rereading By Varying Point-of-View

There have been several projects which make use of changing point of view as a means to encourage repeated experiences of an interactive story.

MacIntyre et al. [69] suggest that, rather than attempting to give the reader a sense of agency through the ability to change the underlying story, an alternative approach is to allow for repeated experiences of the same story, from different points of view. Cheong et al. [28] build on this idea, exploring means of changing the focalization of a story. Their position is that stories which are narrated from different perspectives will provide varied experiences.

Charles et al. [26, 107] explore the use of point-of-view in a planning-based storytelling system. They claim that varying point of view allows the story to remain consistent, while allowing the user to explore the story world through several repetitions in an attempt to explore the entire narrative space.

2.3   Summary

In this chapter, we have presented an overview of the related work in terms of research into rereading in both non-interactive and interactive stories. In the next chapter, we present our research problem, and motivate this research problem based on a critique of the related work.

Chapter 3

Research Problem

In this chapter, we argue that there has not been any research which systematically explores how rereading changes in the context of interactive stories. In this thesis, we address this question, and propose a new model of rereading in interactive stories which explains what readers are doing when rereading interactive stories.

This chapter is structured as follows. We present a critique of the related work, and argue that our research question has not yet been adequately addressed. We then describe our contribution – a new model of rereading in interactive stories – and argue that this contribution will provide valuable insight into the study of rereading, both in interactive and non-interactive stories.

3.1 Critique of Related Work

We will now explain, based on the related work presented in the previous chapter, how our research question has not been addressed by existing research. We begin by looking at theoretical discussions and empirical work which has explored rereading in non-interactive stories. We will argue that it is not clear how this work can be applied to interactive stories. We will then look at the various perspectives presented in discussions of rereading in interactive stories. There are conflicting views of rereading in interactive stories: that people reread for variation, or that they reread for closure. These views are largely based on theoretical discussions and close readings. There have been few empirical studies of rereading in interactive stories, and what studies there have been have all focused on one work, Mateas and Stern's *Façade* (2005). Most implementations of and research into ways to support interactive stories have assumed that people reread for variation. We will argue that this suggests that little is known about how rereading actually changes in the context of interactive stories.

We now examine each of these areas in detail.

3.1.1 Rereading in Non-interactive Stories

Although there has been work exploring what it means to reread and why people are motivated to reread non-interactive stories, traditional theories of rereading may not apply to interactive stories, as the underlying assumption is that the

text is fixed, and that the reader's role is to interpret the text. In an interactive story the reader is not just interpreting the text, but is also *making choices* which potentially *change* the text, and consequently the discourse and/or the story. Existing categories and models of rereading do not take into consideration the possibility either of the text changing, or of the reader making active choices which can change the text. Similarly, empirical studies of rereading and suspense do not account for the possibility of the text changing. It is not immediately clear how this impacts these theories. This suggests the need to study how these models and theories change in the context of interactive stories.

Models of Rereading

Although there is no definitive model of rereading, several theorists have mentioned ways in which rereading can be seen to operate. For example, theorist such as Iser [52] and Barthes [9] describe how knowledge from earlier readings changes the experience of subsequent readings. These descriptions do not necessarily apply to a text which changes between readings. Any insight a reader has gained into a text on an earlier reading of an interactive story may or may not apply to subsequent readings, depending on how the system varies across readings.

Motivations For Rereading

Calinescu has proposed that rereading can be categorized as partial, simple, and reflective rereading [20]. We will now examine how these categories hold up in the case of interactive storytelling.

It is not clear whether a reader will have actually seen the entire text when rereading an interactive story. This complicates the notion of partial rereading, as the reader may be going back and encountering *new* text. It is also possible that the reader will not be able to revisit previously encountered text, either due to the design of the navigational system for the interactive story, or due to procedural changes to the structure or content of the system. This category also does not take into consideration the fact that readers are making choices as they encounter the story. It may be that readers are motivated to backtrack or engage in a partial rereading, not so much to revisit the text or narrative, but to revisit the choices, and possibly make different choices. These observations suggest that this category, while possibly relevant to interactive stories, needs to be reconsidered.

In an interactive story, simple rereading becomes questionable, as it is not clear whether a repeat reading of an interactive story will, indeed, result in the same experience. In addition, as with partial rereading, there is the added complication of what the reader is doing: making choices in addition to encountering the text. It is not clear how the reader will reexperience the choices involved when rereading an interactive story.

This highlights the problem of applying existing research on anomalous suspense to interactive stories. It is not clear whether rereaders of interactive stories expect the story to be the same. Nor is it clear whether or not it *will* be the same. In fact, it is not clear what, if anything, will be the same when a reader reencounters an interactive story. This suggests that the basic issue underlying

the study of anomalous suspense, that of surprise in the absence of uncertainty, may no longer apply.

Reflective rereading also requires reconsideration in the context of an interactive story. It is difficult to see how a reader could be stepping back and analysing the text if the text encountered is not the same as in previous readings. It may be that some of these motivations are still applicable, albeit at a different level than that of the surface text. Instead, the reader may be examining the choices that she is making, and the associated rule system, as a way to reflect on the experience. This suggests that it is worth studying how rereading changes in the context of interactive stories.

3.1.2   Rereading in Interactive Stories

There has been some discussion of rereading in interactive stories. Although rereading is often seen as an essential element of interactive stories, theorists have conflicting opinions as to why people would want to reread: either to experience variation, or for some form of closure. This suggests that there is not yet a clear understanding of what it means to reread an interactive story. In addition, there have been few empirical studies of rereading in interactive stories. The studies which have been conducted all focus on Mateas and Stern's *Façade* (2005). Implementations, and discussions of implementation requirements, rarely directly address repeated experiences, but instead seem to be based on the assumption that variability is essential to support agency and the experience of interactive stories. Those which do deal with the issue of rereading follow the view that people want to reexperience interactive stories for variation. This suggests that examining the underlying assumptions is warranted.

Rereading For Variation Versus Rereading For Closure

Critics such as Bernstein [10, 11, 12] stress the importance of rereading in hypertext fiction, which he sees as opening up the possibility for multiple meanings to emerge as fragments of text are encountered in different contexts on subsequent readings. Similarly, theorists such as Selig [125] and Peacock [103] suggest that the multiple meanings and the challenges that readers face when trying to make sense of hypertext fiction will encourage rereading. Many theorists compare this need to reread with the ways in which readers experience modernist and postmodernist fiction. Although these discussions suggest that readers will find it rewarding to engage in repeated rereadings in search of new perspectives and meaning, this position is based entirely on theoretical discussion and close readings, without any observations of actual readers.

In contrast, researchers such as Harpold [49] and Douglas [37] argue that readers return to hypertext fiction, not to experience variation for its own sake, but rather to seek closure. Harpold does suggest that the opening of new possibilities draws readers back, but he still feels that it is the promise of eventually finding a conclusion which provides the motivation for rereading. Douglas feels that readers are looking for some indication as to when they have reached the "end" of a text, and that there is some possibility of reaching closure in a hypertext fiction. These close readings suggest a somewhat different model of rereading than the model implied by the theorists who emphasize variation. Again, however, these discussions are based on individual close readings. This

suggests that it would be worth conducting empirical studies of rereading hypertext fiction, to develop a more comprehensive model of rereading in interactive stories.

Researchers and theorists of interactive storytelling have tended to focus on the need for variability and agency for interactive stories to be satisfying, and argue that this requires rereading for readers to be able to see the impact of their choices. For example, Murray [96] has suggested that readers will want to repeatedly experience interactive stories to see different perspectives, and eventually achieve a form of second-order closure when they are able to perceive the larger system underlying the variations. The examples Murray provides are compelling, but as with the discussions of rereading of hypertext fiction, there has not been any empirical work to validate these theoretical positions.

Implementations of Interactive Stories

Discussions of the implementation of interactive stories either follow Murray's [96] suggestion that agency, variability and immersion are crucial for successful interactive stories, or don't address repeated experiences at all. As mentioned above, however, Murray has suggested that variability on its own may not be sufficient for satisfying rereading, and in addition readers will be looking for some form of closure, although this closure may be more at the structural, rather than individual story, level. This has rarely been addressed in implementations, other than perhaps Mateas's *Terminal Time* (2000) [73].

Most implementations of interactive stories focus solely on variation as a means of providing different experiences for each reader, and do not mention repeat experiences by the same reader. Implementations of interactive stories which do address repeat experiences, such as Mateas and Stern's *Façade* (2005), tend to encourage one or two rereadings, but readers quickly either lose interest, or start trying to "break the system" rather than engage with the interactive story. This suggests that more work needs to be done to understand how people experience variation when repeatedly reading stories which change, and what forms of motivation and satisfaction are at work in this context. It also suggests that work needs to be done to explore possible forms of "second-order" closure.

The lack of detailed examination of the assumptions about repeated experiences, and reactions of readers to those works which do address rereading directly, suggests that the current theories are not adequate. We will address this directly in our research.

3.2   Contribution

For stories where the text is fixed, the natural assumption is that readers are rereading the same text. If the experience of reading the text again is different from previous readings, "[w]hat changes is the reader, not the invariant text" [42, p. 21]. For an interactive story, this is no longer the case. Choices a reader makes during the course of a reading may lead to very different text being encountered on each reading. For some dynamic, interactive systems, such as computer games, players find it non-problematic to say that they *replay* a game. However, it is not so clear what it means to "reread" a story where what is being "reread" is no longer the same.

Although there has been some discussion of rereading in non-interactive stories, and there has been some theoretical and empirical work exploring rereading in interactive stories, there has been very little work which directly addresses the nature of rereading in the context of interactive stories. Theoreticians writing about rereading in interactive stories have presented differing views on what it means to reread an interactive story: that readers are rereading to experience variation, or are looking for closure. There has been little empirical work to investigate these views, and implementations have largely focused on providing variation to encourage and reward rereading.

This raises the question: *how does rereading actually change in the context of interactive stories?*

To address this question, this thesis will propose a new model of rereading in interactive stories. This model will explain what readers are doing when rereading interactive stories. A theory of rereading in interactive stories will provide theoretical insight into rereading in interactive stories, and insight into how to better design interactive stories to support rereading. It will also provide insight into rereading in general, in both interactive and non-interactive stories.

3.3   Summary

In this chapter, we have examined the existing work on rereading, both in non-interactive and interactive stories. As we have seen, theories of rereading in non-interactive stories may not apply to interactive stories. Theoretical discussions of rereading in interactive stories have been inconclusive, with theorists and critics holding conflicting views. While there has been some work to empirically study repeat experiences of interactive stories, this has focused almost exclusively on one work, *Façade*. Finally, implementations of interactive stories have tended to assume that variation will encourage rereading. All of this suggests that it is worthwhile investigating how rereading changes in the context of interactive stories. In the next chapter, we will describe how we intend to address this question.

Chapter 4

Method

In this chapter we describe how we address our research problem, discussing our choice of methodologies and providing some details as to how we carried out our investigations. We began with a close reading of a specific interactive story to develop a classification of motivations for rereading and an analysis of existing works to develop a classification of techniques to encourage and reward rereading, which was followed by two empirical studies of rereading to explore what readers are doing as they reread, and how they describe this activity, from which we derived a model of rereading in interactive stories.

4.1 Close Reading of an Interactive Story

To begin to develop an understanding of the ways in which rereading changes in interactive stories, we performed an analysis of an existing creative work, the text-based interactive fiction *Alabaster*, from the perspective of rereading (see Chapter 5). The intention of this close reading was to develop a detailed classification of the motivations for rereading in the context of a specific interactive story. We now describe how we approached this analysis.

There has been some discussion of how the "close reading" methodology from literature can be applied to new media artifacts. Vuillemin [140] (cited in [139]) describes the need to "read slowly" as one approaches a close reading of a new media work, looking into details as one proceeds through the text. Aarseth [1] raises the issue of the difficulty of reading/playing *analytically* as opposed to as a reader/player. Similarly, Bizzocchi et al. [13] raise the issue of the "naive interactor" versus the experienced critic, and how it is difficult for a critic undertaking a close reading to actually capture the experience of a "typical" reader or player interacting with an interactive story or game. They also point to a number of complicating factors which arise when attempting a close reading of an interactive story. For example, the nature of many interactive stories is such that it is not possible to encounter all of the content in a single reading, requiring multiple repeated readings of the work to "see everything". In addition, it is difficult to return to earlier sections of the work, as they may no longer be accessible, or may not actually be the same on a repeated viewing, due to the procedural nature of the work. Interestingly, these are all issues which are directly related to our investigation of rereading.

Bizzocchi suggests that there is a need to use specific "analytical lenses" to make sense of the masses of data and notes that result from close reading of an interactive work. For our close reading, we adopted a position that focuses on *rereading*, which allows us to target our observations of the work, and our observations of our experiences interacting with the work, specifically at those aspects which relate to rereading.

To perform our analysis of *Alabaster*, we repeatedly played through the work, taking notes both on the content and on our reasons for making choices. We also saved transcripts of our interaction on each play-through. We then worked back through our notes and transcripts, looking for features of the work, and of the experience, which related to motivations for rereading. This enabled us to develop a classification of motivations for rereading in interactive stories.

4.2   Analysis of Existing Works

Having developed a classification of motivations for rereading in interactive stories, we next analyzed a collection of existing stories which are known to be rereadable to identify techniques used to both encourage and reward rereading (see Chapter 5). To do this, we first compiled a list of stories which people tend to return to. This list was compiled by searching online for lists of rewatchable films, rereadable stories, and replayable story-based games. We also looked to our own experiences of rereading and rewatching stories.

Once we had an initial list, we began to look for similarities across the stories, in an attempt to determine which techniques were used to encourage and reward rereading. This process is similar to the process which Alexander [4] describes for identifying *patterns* in architecture. We then combined these insights with our observations in our close reading of *Alabaster*, and constructed a categorization of techniques for encouraging and rewarding rereading.

4.3   Empirical Studies of Rereading

Having developed both a classification of motivations for rereading and a classification of techniques for encouraging and rewarding rereading, we next carried out two studies of readers actually rereading prototype hypertext stories. The first study (see Chapter 6) examined what readers are looking for as they reread. Specifically, we wanted to understand what it is that motivates readers to repeat the experience of an interactive story. The second study (see Chapter 8) focused more specifically on how readers perceived the act of going back over an interactive story multiple times. In this study, our objective was to understand what, if anything, it is that reader think they are *reading again* on repeated readings of the story.

There has been much discussion of the difficulty of applying empirical methods to the study of literature [63, 81, 82]. In the context of interactive stories, there is the additional problem that the "text" which participants are interacting with will, by definition, change as the result of the participants' actions, making it difficult to make comparisons between different participants' experiences of the interactive story. Similar issues arise in the study of adaptive user interfaces [93, 101]. This is an issue which has often been handled by reducing

or removing the variability of the system [33, 83, 126]. However, when the focus of study is exactly that variability, as is the case in our research, this becomes problematic.

For our studies, we made use of an adapted version of the Piagetian *clinical interview* [47, 105]. The clinical interview is a flexible interview in which the researcher has subjects perform tasks, and then attempts to look for contradictions in the ways that the subjects explain their actions. Starting from some standard tasks, the researcher is free to modify the tasks in response to, and to more clearly understand, the subject's reactions. The changes to the tasks that a subject is given are often carefully chosen to create cognitive dissonance, revealing the ways in which the subject is thinking. The constant factor, which the researcher is trying to uncover, is *how the subject is solving problems.*

Our claim is that, to study rereading in the context of a dynamic, procedurally varying text, we need to understand what it is that readers *think they are doing* when they reread a story - what are their expectations, and how would these expectations possibly be violated by procedural variation. Rather than focusing on the text as invariant, what we focus on is *what the readers are doing* as they interact with the text. In each of the studies, we began by having the participants carry out a standard task: reading the hypertext stories. We then made changes to the system, either procedurally as part of the story design, or though explicit interventions by the researcher. By probing the readers' reactions to these changes, we were able to gain insight into the thoughts and motivations underlying the readers' explanations for their actions.

4.4   Summary

In this chapter, we have described the methods that we have used to investigate how rereading changes in the context of interactive stories: a combination of a close reading of an interactive story, analysis of existing stories, and two empirical studies of readers interacting with prototype procedural hypertext stories. In the following chapters, we detail each of these investigations.

Chapter 5

Motivations and Techniques for Rereading

In this chapter, we explore whether there are any motivations for or techniques to encourage and reward rereading which are unique to interactive stories. We present a classification of motivations for rereading, and a taxonomy of techniques for encouraging and rewarding rereading, which show that while there are some motivations and techniques which are common to interactive and non-interactive stories, there are also others which are unique to interactive stories: the desire to find out more, experiment with different choices, and figure out how the system works.

This chapter is structured as follows.[1] We begin with an overview of the work being analyzed, followed by a detailed description of the motivations for rereading. We then present our categories of techniques for encouraging and rewarding rereading. We end the chapter with a discussion of how these motivations and techniques are similar to, and also different from, approaches found in non-interactive stories.

5.1   Overview of *Alabaster*

Created by John Cater, Rob Dubbin, Eric Eve, Elizabeth Heller, Jayzee, Kazuki Mishima, Sarah Morayati, Mark Musante, Emily Short, Adam Thornton, and Ziv Wities using Inform 7, *Alabaster* is a retelling of the traditional fairy tale "Snow White". *Alabaster* is an "interactive fiction", a type of interactive story where the reader interacts with a simulated storyworld by typing commands, in the form of verbs dictating what actions their "character" within the storyworld will perform. In response, the system prints, in text on the screen, the results of the reader's commands (see Figure 5.1). By iteratively typing commands and reading responses, the reader moves through a gradually unfolding story.

As with many works of interactive fiction, *Alabaster* is divided into three parts: the prologue, the middle game, and the endgame [99]. The prologue serves as a form of exposition, introducing the scenario and providing some motivation for the reader. The middle game forms the bulk of the work, during

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[1]Portions of this chapter originally appeared as [85].
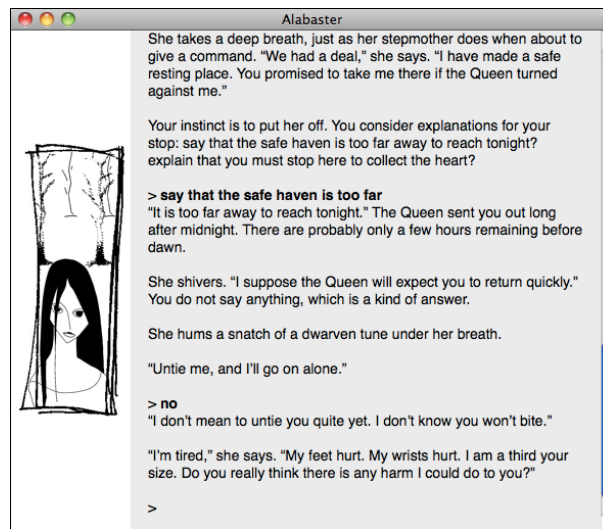
Figure 5.1: Interacting with *Alabaster*.

which the reader can engage in conversation with Snow White and examine various aspects of the setting in an attempt to understand the story. Once the reader feels that she has enough information, she can make a decision and take action. The point at which this decision is made is largely up to the reader. This action will lead to the endgame, bringing the story to one of several possible conclusions. This structure, in particular the exploratory nature of the middle game and the transition from middle game to endgame, is closely connected to the ways in which the work encourages rereading.

5.2 Motivations For Rereading

As a result of the close reading of *Alabaster*, a set of seven possible motivations for rereading were identified (see Table 5.1). An initial motivation for rereading, as with a non-interactive work, can be to *make sense of things*. The exploratory nature of the middle game, which makes it possible for the reader to complete a traversal of the work without encountering all of the text, can motivate the reader to reread to actively *find out more*. Given the ability of the reader to make choices that can change the direction of the story, the reader may also be rereading to *experiment with different choices*. In addition, the reader may be rereading to *compare different perspectives* as the result of information discovered during an earlier reading. As with a traditional narrative, the reader may be further motivated to reread both to *look for deeper meanings* and to *reflect on the techniques used*. Finally, the reader may be rereading in an attempt to *figure out how the system works* in terms of the underlying computational model of the interactive fiction.

These motivations for rereading will now be discussed in detail.

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Motivation	Non-interactive	Interactive
Make sense of things	X	X
Find out more		X
Experiment with different choices		X
Compare different perspectives	X	X
Look for deeper meanings	X	X
Reflect on the techniques used	X	X
Figure out how the system works		X

Table 5.1: Motivations for rereading in *Alabaster*.

5.2.1 Make Sense of Things

As with a traditional work of (non-interactive) fiction, the reader may be motivated to revisit *Alabaster* in an attempt to make sense of things. In the process of moving through the story, the reader encounters numerous fragments of text, either in the form of dialogue with Snow White, or as descriptions of the setting, objects and characters in the storyworld. These fragments need to be reconciled into an overall understanding of the story.

This can be compared with the process of reading a traditional text. In any story, the reader works to see the causal links between discourse statements, and to build up a coherent and consistent mental model of the storyworld and the events within the storyworld [16]. As each new piece of information is encountered, the reader must fit that information into her existing mental model, and possibly revise the mental model to accommodate the new information. Particularly if the discourse structure is complex, a second (or third) reading may be necessary to clarify causal relationships between events.

This type of rereading can be seen in a film such as Christopher Nolan's film *Memento* (2000), where the non-chronological presentation of events hinders understanding in the first viewing. Similarly, the story in *Alabaster* is gradually revealed through fragments of text, fragments that the reader may have difficulty connecting in the initial reading. This provides an initial motivation for rereading: once the reader has completed the story, she may be motivated to go back and read the story again as an aid to placing all this information into her overall mental model of the story.

5.2.2 Find Out More

Rereading to make sense of the work is similar to rereading in a non-interactive work. In addition, a reader of an interactive story may reread to find out more. As there are numerous fragments of information contained within the story, many of which require that the reader's character ask specific questions of Snow White, it is possible for the reader to finish the story without encountering every text fragment. In addition, there are frequent indications that there is more to the story than can be seen on the surface, suggesting that there is the possibility to unlock additional information if the reader can discover the correct questions to ask or actions to take. For example, the story contains a number of interwoven subplots: the King's disappearance, the Queen's madness, Snow White's possible demonic possession and/or vampirism, the disappearance of the

huntsman's dogs, and so on. All of these subplots provide reasons for the reader to go back and try to dig deeper to uncover previously hidden information.

5.2.3   Experiment with Different Choices

In addition to taking action to find out more information during a rereading, the reader may want to experiment with different choices. Unlike a traditional story, an interactive story presents the reader with choices that can lead to different outcomes. There are certain points in *Alabaster* where the reader is given very specific choices. For example, when deciding to return to the palace, the reader is asked whether she will do so with or without Snow White. There is a very clear connection between this decision and the way the endgame plays out. There are, however, more subtle decisions that the reader has to make throughout the course of the story that may or may not impact the outcome. For example, the type of questions that the reader asks Snow White and the information that the reader mentions to her will subtly change Snow White's disposition. The reader may be motivated to experiment with different combinations of actions to see whether there is a change in the direction and outcome of the story.

5.2.4   Compare Different Perspectives

The active search for additional information and different paths through the narrative described above leads to a further motivation for rereading: the desire to compare different perspectives. The events and information revealed in an initial reading may suggest a reframing: a radical revision of the reader's model of the storyworld, the characters' personalities and motivation, and the causal connections within the narrative. Reading through the story a second time can lead to the meaning of events shifting based on new information that was not available to the reader in the first reading. An excellent example is M. Night Shyamalan's *The Sixth Sense* (1999), in which the final revelation completely changes the viewer's interpretation of the events in the film. This process of rereading from a different perspective is similar to the process of making sense of things discussed above. However, rather than trying to reaffirm a stable mental model, in the case of rereading from a new perspective there is a complete reworking of the reader's understanding of the story. The reader is comparing the new perspective with the previous perspective, and possibly trying to integrate the two perspectives or gain a deeper understanding from the ways in which they differ.

In the context of an interactive story such as *Alabaster*, this change of perspective can also have an impact on the choices that the reader makes in the story. For example, throughout the story there are suggestions that Snow White is a vampire. From this perspective, the reader may feel justified in carrying out the Queen's command to kill her. However, when the reader discovers in one of the endings that the main character is actually the King, and that Snow White is his daughter, what earlier seemed like a simple decision becomes more complex. In subsequent rereadings, the reader will have a very different perception of the events leading up to this final action, and may be inclined to make different choices. The reader will be motivated to reread both to experience how this new perspective alters her experience of the story, and to see whether it is possible to make different choices based on this new perspective.

5.2.5   Look for Deeper Meanings

Beyond attempts to see things from a different perspective, the reader may also be motivated to reread the story to look for deeper meanings in the story, attempting "to structure the meaning potential arising out of the multifarious connections between the semantic levels of the text" [52]. Posner [108] (quoted in [52, p. 92]) sees the search for a "secondary" code beneath the primary code or schemata of a text as the source of aesthetic pleasure for a reader. The further pursuit of this secondary code, the process of looking for an interpretation of the text, can provide motivation for rereading. This interpretation is based on the information gained through earlier play sessions, plus the results of comparing different perspectives and experimenting with different choices. All of this information is brought together in an attempt to draw out some deeper meaning from the story.

The potential for deeper meaning and symbolism, coupled with the use of intertextual references, can be seen in the vampirism/demonic possession subplot in *Alabaster*, which makes reference to Biblical tales and to Christian and Jewish mythology [102]. Symbols that are drawn from both the Biblical story of the Garden of Eden and the original fairytale "Snow White", such as the apple, provide additional layers of meaning. These suggestions of deeper meanings and intertextuality motivate the reader to explore these connections through rereadings of the work.

5.2.6   Reflect on the Techniques Used

The reader may also be motivated to reflect on the techniques used in the text. This involves stepping back from the text and appreciating or critiquing the ways in which the text achieves its effects. The reader may be motivated by an admiration of the ways in which the text is able to create, for example, a change in perspective. The reader may also, however, be motivated to look for loopholes and flaws in the technique. This process of reflection is something that can often only be done during rereading, as "only successive readings will allow us to focus on the development of events and characters, significant patterns of imagery and ideology, modulations of tone, and whatever else makes the story act on us as it does" [67, p. 494].

The reader may start to notice, for example, the way that the system encourages the reader to pursue certain topics by making suggestions as to follow-up actions. The reader will quickly come to realize that these suggestions can lead to a sequence of discoveries, opening up new pathways through the story. The reader may also notice that the system subtly resists changes of subject, attempting to direct the reader down specific paths planned by the author. Once these patterns become visible to the reader, she may be motivated to go back and play again to reflect on how these patterns affected her choices, and to look for other patterns and techniques.

5.2.7   Figure Out How the System Works

Reflection on the techniques used in the work may, in addition, encourage the reader to reread a work in an attempt to figure out how the system works, in terms of the underlying rule system that governs the way the system responds to

the reader's actions. This motivation is, by its nature, very specific to interactive stories. Readers tend to bring a set of initial expectations to an interactive work, expectations that may or may not be satisfied as they encounter the work [142]. As the reader observes the system's responses, the degree to which these expectations are met shapes her understanding of the underlying computational model. Through rereading, the reader is "incrementally building a model of the system's internal processes based on experimentation" [142, p. 5].

For example, the "hints" system in *Alabaster* provides a glimpse of the underlying conversation mechanism. As the reader becomes more familiar with the conversational mechanism, she comes to understand the ways in which certain actions can trigger desired responses. Through repeated rereadings the reader can, with some confidence, manipulate the direction of the story. This provides a strong motivation to reread.

5.3 Techniques to Encourage and Reward Rereading

In the previous section we have identified a number of motivations for rereading, based on our close reading of *Alabaster*. To further explore the ways in which rereading changes in interactive stories, we developed a set of categories of techniques for encouraging and rewarding rereading, based on both our close reading and a survey of a number of non-interactive stories (films, novels, short stories and comics) and interactive stories which are known to be rereadable. In this section we describe our categories.

5.3.1 Reframing

One approach to encouraging and rewarding rereading is to make use of a *reframing*: the hiding and eventual revelation of information that, once known, changes the reader's understanding of some aspect of the story. This often involves a difference between what the reader knows and what the characters know – it may be that the characters initially know something that the reader doesn't, or that the reader comes to know something that the characters don't know. The revelation of the information changes the reader's understanding of, and relationship with, the narrator, main characters, events, or setting in a meaningful way.

This approach is often seen in "twist movies" [65, 113]. For example, in the movie *The Sixth Sense* (Shyamalan, 1999), the viewer initially believes that the main character, Malcolm, having survived an attack by a former patient, is now trying to help Cole, a young boy with similar symptoms to the former patient, i.e. the ability to see ghosts. At the end of the movie, it is revealed that Malcolm is a ghost, having actually died from the attack, and that Cole has been helping him come to terms with his death. This revelation changes the viewer's understanding of the entire story, and changes her relationship with and feelings towards the main character.

In an interactive story, there are additional ways in which the story can be reframed. The information revealed may change the reader's understanding not just of the story but also of her ability to take action, either by explicitly revealing new choices, or by changing the way in which the reader understands

the story and her role in relation to the characters and events. Reframing motives the reader to reread to look back over the story in ways specifically related to the new information. An initial motivation may be to *reflect on the techniques used*, as the reader wants to see how the author managed to construct the story in such a way that she was not able to see the reframing in the first reading. An additional motivation may be to *compare different perspectives*, as the information revealed in the reframing has altered the reader's understanding of the story. In the context of an interactive story, this second motivation may also lead the reader to go back and *experiment with different choices* based on the newly acquired information.

One example of this approach is the revelation at the end of one reading of *Alabaster* that Snow White is a vampire. The reader may not have previously considered that it would make sense to kill Snow White, given that the main character, the huntsman, had apparently made a deal with Snow White to free her once they reached the forest. The knowledge that she is a vampire may encourage the reader to go back through the story again and try taking action based on this new knowledge. In this case, the reader is encouraged to go back and try different actions, actions which had not seemed appropriate in the previous reading.

5.3.2   Narrative Complexity

Another way in which texts encourage and reward rereading is through the use of *narrative complexity*:[2] the degree to which the structure of the narrative deviates in some way from convention, making use of "unfamiliar forms of narration and narrative" [129, p. 111] which require effort on the part of the reader. These types of text are complex in the sense that they "eschew the Aristotelian precepts of unity" [80, p. 108]. It may or may not be possible for the reader to successfully comprehend the story on the first reading. The effort required must seem "worth it" – the "payoff" for the comprehension changes the reader's understanding of the story in a meaningful way. This complexity could conceivably exist at either the story level – ambiguous relationships between characters, interlocking casual relationships, and indistinct settings – or the discourse level – overlapping use of flashbacks/flash-forwards, multiple nested framing stories, unreliable narrators, and rapid and unmarked shifts of narrator.

For example, the film *Memento* (Nolan, 2000) is presented as an interwoven series of events, one thread presented chronologically, and the other in reverse chronological order. Within these fragments are several embedded flashbacks. The information revealed in both the chronological and reverse threads raises questions about the backstory, the identity and reliability of the main character, and the motivations of both the main and secondary characters. In addition, the first-time viewer needs to identify and make sense of the film's discourse structure. All of this places a lot of demands on the viewer, resulting in the probability that the viewer will not have a clear understanding of the movie by the time the first viewing is completed. However, the viewer has been shown that there is a possibility of unravelling the mysteries of the film (both structurally and narratively), which encourages the viewer to re-watch the film. Subsequent

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[2]Critics have used various terms for this approach, such as "modular narrative" [22], "puzzle films" [19], and "forking-path narrative" [14]. We use the term "narrative complexity" as it is more comprehensive.

viewings reward the viewer by gradually allowing her to make sense of the narrative.

Interactive stories can make use of additional techniques to create narrative complexity through the use of procedural change and reader choice. In an interactive story, this complexity may include the presence of multiple paths through the story, and the possibility that there are some parts of the story which remain unseen and possibly unreachable. The reader is encouraged to reread to attempt to unravel the complexities and to make sense of the story, and will be rewarded with the feeling that she is, indeed, managing to (at least somewhat) understand the story. The motivations involved here include the desire to *make sense of things* and *find out more*. The reader may also, depending on the nature of the choices given, be motivated to *experiment with different choices* or *compare different perspectives*. As with the use of reframing, the reader may be motivated to *reflect on the techniques used*.

A good example of this approach can be seen in the hypertext novel *afternoon, a story* (Joyce, 1990), which consists of 539 nodes connected by a multitude of links. Readers can navigate through the story by clicking on words in the text, or by pressing the "Return" key to follow the "default" link. The reader who follows the defaults, as Walker [141] describes, will gain a basic understanding of the story, and yet will be aware that there are potentially many other insights which she has not seen, as the default path only covers 40 of the 539 possible nodes [123, p. 179]. In fact, some of these paths are locked on the first reading, and are only made available after certain nodes have been visited. This vast amount of unseen content can potentially encourage the reader to go back and revisit the text to find out more or to make sense of the story.

5.3.3   Deeper/Hidden Meanings

Another way in which stories can encourage and reward rereading is through the use of deeper or hidden meanings. This involves the use of symbolism, intertextuality or other devices to suggest meanings hidden in, or external to but suggested by, the text, requiring effort on the part of the reader to uncover the meaning of these symbols and intertextual references. As with narrative complexity, the effort must result in an appropriate reward for the rereading to be satisfying.

While it is possible to use intertextuality and symbolism to encourage and reward rereading in interactive stories, it is also possible to make use of the rule-based nature of interactive stories to create new forms of deeper meaning. This technique makes use of a consistent set of narrative rules which determine how a reader's choices will impact the story. This is similar to Murray's notion of "moral physics" [96]. When the interactive story is played the first time, the reader will realize that there is a complex yet understandable set of rules for how the system work. This is not a question of *technically* how it works, as may be the case for emergent systems in games. Rather, it is a question of understanding the *meaning* of the rule-system at the narrative level. In an interactive story which makes use of deeper or hidden meanings to encourage and reward rereading, the reader is motivated to reread both to *look for hidden meanings*, and to *figure out how the system works*.

This technique can be seen in, for example, Gonzalo Frasca's "newsgame", *September 12th* (2003), which uses a combination of limited options provided

to the player and specific consequences for these actions to convey a political message. Although the visuals help to frame the context of the experience, it is what the player has to do in the game which most strongly conveys the message. In the case of *September 12th*, even the act of refusing to continue to play the game is meaningful.

5.4   Discussion

In our close reading of *Alabaster*, we identified a number of possible motivations for rereading interactive stories. Certain motivations – make sense of things, compare different perspectives, look for deeper meanings, and reflect on the techniques used – are common to both interactive and non-interactive stories. The remaining motivations - find out more, experiment with different choices, and figure out how the system works – can be seen as exclusive to interactive systems. We will now discuss how the motivations we have identified relate to the types of rereading which have been described in the related work, and how the new types of motivation which are not applicable to non-interactive stories begin to suggest ways in which rereading changes in the context of interactive stories.

5.4.1   What is the Reader Looking For?

Both the motivation to make sense of things and the motivation to find out more can be seen as representing a desire to figure out "what really happened" or "what is the correct ending" in a story. In a non-interactive story, making sense of things may be a form of Calinescu's partial rereading, where a reader has, for whatever reason, failed to pay full attention to the details of the text in the first reading. In an interactive story, or perhaps even in a highly complex non-interactive story, it may be that the reader is simply not able to make sense of the story in the first reading. This suggests that there is a fine line between partial rereading and reflective rereading, which is motivated by a desire to understand the "fictional truth" of the work. In an interactive story, this becomes more complex, as the reader may literally have not seen everything in the first reading.

This is where our second motivation, the desire to find out more, comes in. Both of these motivations can be seen as related to a search for closure. In the case of an interactive story, the reader may be trying to find out more to complete her understanding of the story. However, it is possible, particularly in the case of stories which make use of an open ending to suggest new variations on the story, that the reader may be looking for variation, rather than closure. This is the idea of the "kaleidoscopic" story, which Murray discusses as a form which provides constant variation and renewal. This is also the type of rereading which is suggested by hypertext theorists such as Moulthrop [92], Bernstein [12], Selig [125], Peacock [103], and Thomas [135]. This raises the question: do readers really look for variation for its own sake, or are they looking for closure?

The motivation to experiment with different choices, as with the motivation to find out more, is about the desire to see things that have literally not yet been seen. The reader wants to go back over the story to try out new things, and to see variation. If a choice not taken is visible to the reader, then the reader

knows that there are paths not taken. Part of the motivation, then, is for completeness – to go back and make sure that everything has been uncovered. However, unlike the motivation to find out more, here there is also a literal desire to *make a different choice* – the desire is not so much about information that has not been seen, but rather is about considering the consequences of choices, and possibly trying to work out the underlying mechanism which governs those choices. What is not clear is what the reader eventually aims to get out of this, i.e. what will satisfy this desire to experiment with different choices? Would "seeing everything" be satisfying? Or perhaps finding the "correct" or "best" ending? Is there a desire for closure, or is the reader more interested in trying out many different variations for their own sake, as would be the case in a work such as Raymond Queneau's *A Story as You Like It* (Queneau, 1967)?

Both in the case of readers rereading to find out more, and that of readers rereading to experiment with different choices, the issue arises as to whether readers are looking for variation, or for closure. This is an important issue, one which we will address directly in Chapter 6.

5.4.2 Does Rereading *Limit* Variation?

Comparing different perspectives can be seen as similar to both partial and reflective rereading. In a non-interactive story, this generally relates to information which is revealed later in the story, which changes the way the reader interprets the story. The reader is then motivated to go back and re-look at those earlier parts of the story, either as a whole or by skipping around and re-visiting only the parts of interest. In an interactive story, this is complicated by the fact that the reader may actually encounter information which she *literally* didn't see the first time. In addition, the reader may complete a repeat reading and *not* see information which she is looking for. This problem, which is similar to the problems raised by rereading to experiment with different choices, will be addressed in Chapter 7.

5.4.3 What Does It Mean to "Reread?"

The desire to go back to a decision point and try something different highlights a problem related to what it means to "reread" a work. If a reader is returning to an earlier point in a story and following a different path, depending on how much that path deviates from the original path, it is difficult to say that the reader is rereading that portion of the story. Some of the text encountered during this new reading may be the same, some may be different, and some text, although similar, may be encountered in a different order or different context. This is similar to the type of recurrence and repetition, what we refer to as "micro-rereading", which Bernstein [11] sees as an essential part of hypertext fiction.

This foregrounds the question of whether or not a complete "rereading" which involves choices is actually a rereading, given that the story is potentially different in each reading. One way to look at this is that a rereading which involves going back to see things not yet seen is a partial rereading. However, the question then becomes whether or not this is a rereading at all, given that there has not been a "complete" first reading. Is there any difference between a micro-rereading and a rereading from the start of the work when the reader has not yet seen all the possible paths? Is it, in fact, ever possible to have seen all

paths, particularly if the story is changing procedurally as the result of reader choice? This raises the question of whether rereading, as a concept, even applies to interactive stories. We will address this question in detail in Chapter 8.

5.4.4 Do Interactive Stories Support Reflective Rereading?

The motivations to look for deeper meanings and reflect on the techniques used are both examples of what Calinescu calls reflective rereading. These motivations appear in both non-interactive and interactive stories. It is not immediately clear how these two motivations change for interactive stories. Deeper meanings which are conveyed through the use of language, symbolism, or intertextual references operate in the same way whether or not a work is interactive.

It may be worth looking at the final motivation, the desire to figure out how the system works, to see whether there could be some difference in the other motivations in the context of interactive stories. The process of coming to understand the way the system responds to choices, as described in our close reading of *Alabaster*, is largely a matter of learning how the system responds and gaining some mastery over that system. There is, however, another way to look at this. In some works, such as Tale of Tales' short character sketch *The Graveyard* (2008), the way in which the reader controls the main character, in this case an old woman walking through a graveyard, is directly connected to the meaning which the work conveys to the reader. As the reader makes decisions about how the woman should move, it soon becomes obvious that trying to get her to move too fast leads to her stumbling and having to take a short rest. This effectively communicates to the reader key elements of the character.

This is a simple example where figuring out how the system works connects to the deeper meanings embedded in a work. This is similar to Murray's [96] notion of "moral physics", where the underlying rules of a story system communicate meaning. At this level, the ways in which a reader can pursue her motivation to look for deeper meanings and reflect on the techniques used becomes very different in an interactive story. We will return to this in Chapter 9.

5.4.5 Do Interactive Stories Support Simple Rereading?

One point to note is that the motivations which we have described for rereading *Alabaster* consist largely of what can be seen as similar to Calinescu's partial rereading. The motivations which are examples of reflective rereading are not exclusive to interactive stories, although it is also possible, as discussed above, to argue that rereading to figure out how the system works can lead to reflective rereading. What is missing here, however, is any mention of simple rereading – rereading to reexperience the story for the pleasure of repeating it. As we will discuss in Chapter 9, it is not clear what this would mean in an interactive story. More research is needed to explore whether this type of rereading exists for interactive stories, and if it does, what form it would take.

5.5   Summary

We have presented a close reading of the text-based interactive fiction *Alabaster*, and derived a set of motivations for rereading based on this close reading. This provides an overview of the ways in which works encourage and reward rereading. We have seen that some of these motivations and techniques exist in both non-interactive and interactive stories, whereas others are exclusive to interactive stories.

In addition, we have identified a number of issues which arise when these motivations and techniques operate in an interactive story. A key issue is whether readers are looking for closure when rereading, or are they looking for variation for its own sake. Another issue that arises due to the use of variation between readings is whether this variation interferes with whether or not readers will be satisfied when rereading. Finally, there is the question of what, in fact, it means to reread a story which possibly changes between readings. We will address these issues in the coming chapters.

Chapter 6

Rereading to Arrive at Something

In this chapter, we investigate whether readers are rereading to look for variation for its own sake, or whether they are attempting to reach some form of closure. Our observations suggest that readers are not rereading to experience variation for its own sake, but instead are rereading to *arrive at something*, and stop rereading when they either reach this goal or feel it is unattainable.

The rest of this chapter is structured as follows.[1] We explain the study design, and then present our observations. This is followed by a discussion of the implications of the results, which leads into the next chapter, where we discuss the implications of our findings in more detail.

6.1 Study Design

Using a modified version of the Piagetian clinical interview (as discussed in Chapter 4), we studied the ways in which a group of 12 readers (3 male and 9 female, ages 20-24) responded to two hypertext stories, focusing on what they claimed to be looking for as they read, and reread, the text, and why they eventually stopped rereading. The participants were drawn from an undergraduate research methods class, and the participants were given academic credit for taking part in the study. The participants were assured that their performance in the study would have no bearing on their academic results, and the researchers were not involved in teaching the class in any way.

6.1.1 Materials

We constructed two simple hypertext stories using HypeDyn [86], representing the two most common ways in which authors structure hypertext fiction: those where links correspond to a choice of *action* within the story, and those where the links represent a choice of *perspective*. These two approaches can be seen as representing interaction at either the *story* or the *discourse* level. Both stories provided one choice between two or more links in the first node, each link leading

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[1]Portions of this chapter originally appeared as [88].

to a different path through the story. The first story consisted of a total of three nodes in each path, including the first node, and the second story consisted of a total of two nodes in each path, including the first node.

6.1.2   Protocol

For each story, we had participants first read through the story once. Immediately before the participant made the choice in the first node, we asked them *what they were doing* when making the choice. Comparisons were given to, for example, buying tickets on an online movie booking website. We then asked them to read through to the end of the story. At that point, we:

1. asked for their initial reaction to the story, and

2. asked if they want to reread, and why.

To begin to understand what they *thought* they were looking for as they read, and reread, the story, we then proceeded to introduce a series of hypothetical variations on the story, based on a strategy of constantly *thwarting* their possible motivations to reread the story. The intention here was to see how they react to these attempts to thwart their motivations, with an aim to foreground those motivations. This is similar to the process of identifying cognitive dissonance in a clinical interview as a means of exposing the participant's cognitive processes.

We started from the assumption that people reread to experience variation for its own sake. Based on this assumption, people should think that they are "following different paths" with the intention to "see something different". This suggests that as long as there is another unfollowed path available, they will want to take it. We wanted to block these attempts in various ways, and see how they reacted. More importantly, we wanted to see how they would explain these reactions, and whether there would be any contradictions in their explanations.

Going into the sessions, we had the following plan for thwarting readers' intentions to follow unfollowed links:

1. make the already-followed path more interesting than the not-yet-followed path through a "reframing" or twist ending,

2. make the not-yet-followed path seem less interesting by revealing what will be seen down the not-yet-followed path,

3. procedurally block whichever path has not been followed, and

4. make it so that it is impossible to follow all paths, by repeatedly adding more links, and either promising that these links will lead to better or worse variations, or by promising that revisiting previous links will always result in different text being shown.

Although we have chosen two relatively simple stories for our study, the subsequent variations contain much more than two links, in the extreme case presenting possibly limitless links to the reader. As the variations were presented to the participants, we asked them whether they wanted to continue to follow the new links, and how these attempts to stop them from following these links made them feel.

6.1.3   Data Collection and Analysis

The sessions were recorded through the use of screen-capture software and audio recordings, to aid with analysis. The researcher also took notes during the session.

Analysis took an emergent grounded theory approach [48], with notes taken during the interviews used to highlight key points that emerged during each session. After each session, these key points were reviewed and used to begin to form theories as to what was happening, which were noted down by the researcher in the form of memos. These developing theories were used to refine the questions and probing in subsequent sessions. Concurrently, the audio and screen recordings were coded for key incidents. After each transcription, this coding was also compared with the developing theory, and insights were captured in memos. The coding and memos were then sorted and collated.

6.2   Observations

From our study, we observed that, although readers did want to reread to follow unfollowed links, they did not do this for long. After only a few rereadings, they came to a point where they no longer felt that it was worth continuing. Readers appeared to be *trying to arrive at something* – rather than simply exploring possible variations, they were goal-oriented, looking for some form of closure, whether this was in the form of the "best ending for their character", an "understanding of what the story was about", or the "most exciting/interesting version of the story."

These observations suggest that the assumption that people reread to experience variation for its own sake needs to be reconsidered, and that some form of the desire for closure continues to exist for interactive stories. We will now discuss the results of the study in detail.

6.2.1   What Are People Doing as They Read?

To begin with, we need to understand what readers felt they were doing as they read the story and made choices as to which link to follow. In the first node of both stories, readers were initially presented with two choices. As the participant was about to click on one of the links, we asked them how they would describe what they were about to do.

The first story involves a choice of action. The first node of the story presents a scenario where the main character, at home alone, hears kidnappers breaking into the house. The choice, of whether the character should make a break for the front door or stay quiet and hide in the kitchen, leads to a second node, where in both cases he is caught by the kidnappers, although he stabs one of them in the process.

In this story, readers claimed to be either choosing the "safest" option for the character, choosing the option which they felt would be "most interesting" in terms of creating an entertaining story, or choosing the option most likely to reveal more information which will help the reader understand what is happening in the story. For example, participant 4 was looking for a "good" ending and a sense of closure:

> *P4*: I was trying to guess what would happen, I'm trying to find the perfect ending.
> *R*: So how would you know when it's the perfect ending?
> *P4*: It just kind of feels right, its more subjective, something rational, there's a cause to it, I hate when it so abruptly ends, there's no closure to the whole thing.
> (14:45)

For participant 3, the focus was more on helping the character to survive:

> *P3*: I chose to remain quiet, I think its the smarter way, because they're armed [pause] it's the smarter way for the character.
> (12:26)

The second story involves a choice of perspective. The first node presents a scenario where two characters, a man and a woman, are having dinner. The woman pays, and outside the restaurant the couple argue, and then drive home in silence. The reader is initially given a choice to hear what happened according to either the man or the woman.

Here, readers described what they were doing as either choosing the person they most "identified with", choosing the person whose perspective they felt would be "most interesting" based on the context, or choosing the person they felt would add the most information to their understanding of the story. For example, participant 12 chose to follow the link describing the man's perspective, because she felt it would give her more information to help her understand the story:

> *P12*: I saw the woman she's like paying with her credit card, and there's nothing about the guy, so yeah it makes me want to know like, maybe the fight started because he has some, uh, ideas about something and I want to find out.
> (12:30)

All of these explanations appear to be describing a careful choice which, rather than simply involving an attempt to "see something different", appears to be aimed at a specific goal or end-point.

6.2.2   The Desire to Follow the Unfollowed Link

Given the participants' descriptions of their choice in the first node, we wanted to investigate whether our initial assumption, that readers will want to follow unfollowed links to see variation, was valid. At the end of each of the stories, readers were presented with a link, labelled *reread?* We then asked them if they want to reread the story, and why.

For the first story, ten of the twelve participants stated that they wanted to go back and follow the unfollowed link. The other two participants both stated that they didn't understand the ending of the story, and wanted to reread the same path to try to figure out what went wrong or what they had missed. For the remaining participants, they all claimed that they wanted to follow the link that they had not followed in their first reading of the story. For example, participant 7 explained that:

P7: I want to try the other option.
R: Oh, why do you want to choose the other option?
P7: Because I want to see what the ending is like.
R: What do you expect to see?
P7: I think it will be different.
(10:50)

In the second story, all participants said that they wanted to reread. One participant said that he'd reread the same path, as he felt the other link wasn't going to add much, and instead he wanted to see the story more clearly by rereading. All the remaining participants wanted to read the unfollowed link.

This appears to support our assumption that readers will always want to follow unfollowed links to see variation. To explore this further, we set out to attempt to thwart the desire to follow unfollowed links to see variation by making use of a number of different techniques.

6.2.3   Thwarting by a Reframing

The first technique used was a *reframing*. Using *The Sixth Sense* (Shyamalan, 1999) as a model, we structured the story such that the ending undermines the reader's initial reading of the story, and changes the way that the reader perceives, and feels about, the main character in the story.

In the first story, the third node reveals that the police who are responding to the disturbance are concerned about a situation where a family is trying to subdue their son, who has apparently gone crazy. This reveals the kidnappers to actually be the main character's family, whom he imagines to be strangers breaking into the house. Note that both paths which the reader could take ultimately lead back to the same third node. We intended this reframing to act as an encouragement for the reader to go back and reread the *same* passage that they had just read, as they may want to see the text a second time now that they know something they didn't originally know.

Despite the presence of the reframing at the end of the story, readers still insisted that they wanted to go back to *follow the unfollowed link*. For example, as participant 6 explained:

> *P6*: If I choose the first scenario, I know what's going to happen. If I choose the first scenario, nothing's going to happen. And now for me as, like, I'll be looking at it, if I read again I want to see more stuff happening.
> (08:16)

Here, participant 6 clearly wants to see something she hasn't seen before.

Interestingly, although participant 7 had originally said that she wanted to follow the unfollowed link, when asked again later in the study, she said she would want to reread:

> *P7*: The part where he grabbed the knife.
> *R*: So how would that be different?
> *P7*: Because a usual boy wouldn't, you know, grab the knife to murder someone.
> *R*: But you didn't find it strange the first time.

P7: No [laughs]

R: Why is that?

P7: Um, because I thought its like self-defense, its something that's close to him and he grabbed it.

R: And now?

P7: Now I think, umm [pauses] he just wants to kill someone.

R: Hmm, so you think the reason for grabbing the knife is very different?

P7: Yeah.

R: Would you want to read that part again?

P7: Yeah! [laughs]

R: Ok, but previously you said that you would go back and do the different one, right?

P7: [nods]

R: So now you want to go back and read the same one again? or are you thinking that maybe he grabbed the knife in the other one as well?

P7: I would read through the original one that I clicked first, make sure I didn't miss out anything.

(23:45)

Note that at this point in the study, as will be described below, the unfollowed link has been procedurally blocked, so that it *cannot* be clicked. The participant has apparently changed her mind, and now claims that she'd rather follow the previously followed, and currently unblocked, link. What is interesting here is that her justification for this preference is not that the previously followed link is unblocked, and is therefore the only available choice. Rather, she says that the unblocked, previously followed link is the more interesting choice, which contradicts her earlier response.

The researcher wanted to probe into this contradiction, to find out what the reader was thinking – why was she now saying she wanted to reread the same link? Did she still want to follow the unfollowed (and now blocked) link, or was the reframing really more enticing? To do this, he presented her with a slightly different dilemma:

> *R*: So if you had a choice, if it was like this [resets system so that both links in first node are unblocked] if it wasn't blocked out when you came back, which one do you think is more interesting to do? What you just said, which is go back and read the same one again and think about the knife for example, or what about finding out what happens if he makes a break for the door?
>
> *P7*: You mean after I read this?
>
> *R*: Yes, so imagine you read through and came back and it wasn't blocked, so you could click on either link.
>
> *P7*: I would click this [gestures to unfollowed link].
>
> *R*: Even though you just said that its interesting to see that bit about the knife again and think about it?
>
> *P7*: Yeah but I wanna know the other ending before I go back and look at the first one again.
>
> (25:34)

It appears that the reframing is indeed encouraging the reader to go back and reread the first link. However, when probed, participant 7 still felt that, if given the choice, following the unfollowed link to see "the other ending" was more interesting, *after* which she wanted to go back and follow the first link again.

6.2.4   Thwarting by Revealing Outcome

A second way that we attempted to thwart the reader's desire to visit unfollowed links to see variation was to reveal the outcome of unfollowed links *before* the link was followed. This suggestion was made before the "reread?" link was clicked.

The idea here was to see how participants respond if they *already know* what they will see when presented with unfollowed links. If our assumption holds, then readers will *still* insist on following these links. We were interested in hearing their rationalization for this behaviour – if they already know the outcome, and their reason for saying they want to follow the unfollowed link was to find out "what happens", then why still insist on following the link, particularly in the face of the reframing, which should make the already-followed link at least somewhat tempting.

All but two of the readers claimed that they would still want to follow the unfollowed link, despite knowing what the path contained. Participants insisted that they "wanted to see for themselves" what the path contained, that the *details* of what happened that would be important, and that being told, in what they assumed would be a summary, was not enough. One participant stressed that the exact wording of the story might reveal information that would help her understand the story:

> *P11*: The way text is being written, the words they use, the description is quite important.
> (16:16)

When it was suggested that the unfollowed link would be *much less satisfying* than the original link, participants still wanted to follow the link, again stating that they would want to "see for themselves" if it was better or worse. Interestingly, at this point participant 2, who had originally said that he would not follow the link if the outcome was revealed, changed his mind. He said this was because he now assumed that the ending would be different – for him, what mattered was whether or not the *ending* was the same:

> *P2*: For me I'm more interested in like, the ending, the end result, like what happens. Even though there's some variation in the process, if the end result is like the same, then I'm like, I don't really find it interesting any more since its going to be the same
> *R*: What if the end result is definitely uninteresting?
> *P2*: I guess then I'd follow it, since the end result is different, even though I find it boring its different.
> (25:46)

This suggests that readers do indeed feel the need to follow unfollowed links, and not merely to have clicked on all the links, but to have actually *seen* everything.

6.2.5   Thwarting by *Literally* Blocking Choices

A more literal way to try to stop the reader from following the unfollowed link would be to actually *disable* the link. In our stories, when the participant first makes a choice as to which path to follow, the system remembers which link was taken. Then, when the participant clicks on the "reread?" link to go back to the first page, the system disables whichever link was *not* previously followed.

At this point, we asked the participant how they felt. We had varying reactions, from mild frustration (participant 6) to "this is shitty!" (participant 10). All participants except for the two who previously claimed that they wanted to reread the first link expressed disappointment that they were unable to follow the link that they had not yet seen. When asked if they would now go back to reread the first link, they still felt that this was not of interest, as they had "seen it before". Participants expected that they would be able to follow the other path, and were disappointed that this option had been removed. For example, according to participant 2:

> *P2*: So its like, I'm rereading it because I already, I don't see a need to actually correct my image because I already know this is describing kidnappers that are actually trying to help the boy because he's mentally unstable, so I'm actually rereading to see what the second option is all about, so now since the second option is actually blocked out, so I'm now like...
> *R*: Would you try to follow the first link again?
> *P2*: I would say on my very first thought that there's no point reading it any more.
> (16:55)

We next suggested that a *new* link would appear below the two existing links. We wondered whether they would still want to go back to the second link, or would it be enough to follow *any* new link. Participants were somewhat less annoyed, claiming that they would want to follow this new link but that they were still disappointed that they couldn't follow the second link. Most said that they had the second link in mind as they were reading the story, and had been planning on going back and trying it once they reached the end. As participant 2 explained:

> *P2*: At least I have some other thing to try other than what I've already chosen, but they're forcing me, I don't have the same choice as before.
> (18:32)

Suggesting that the new link *replace*, rather than appear in addition to, the unfollowed link, generally resulted in the same reaction. However, two participants said that this might not feel so bad, as they may not have clearly remembered the details of the unfollowed link. According to participant 2:

> *P2*: I think it will reduce the effect, because basically perhaps I won't remember the first choice, its like I'm not sure if that's the same as the first one, at least its different than trying to stay as quiet as possible.
> (21:07)

Participant 2 seems to be happy to be able to experience *any* variation, even if it is not what he had originally been planning to read.

6.2.6   Thwarting by Constantly Adding More Links

Finally, we made it *impossible to successfully follow all the links in the story* by dynamically adding new links *every time* the story is reread. This meant that there was no way that the reader could ever finish following new links. We then asked participants whether they would be interested in following these links.

With the exception of the participant who said he had no interest in following any new links, all the participants said that yes, they would like to follow the new links, for the same reasons that they gave when they first saw the second link. When we probed further, reminding the participant that each time they followed a link, another would appear, they admitted that they would "eventually" give up. When pushed as to when they would stop, they tended to give an arbitrary number, such as 5. For example, according to participant 4:

> *P4*: If there are like 3, 5 maximum, if it goes any bigger than 5, then I'd just give up on the story.
> (18:12)

Asked to clarify how they would make this decision, most participants mentioned that the deciding factor would be when they notice repetition or are "not getting anything new" from the links. As Participant 4 explained:

> *P4*: Yes, I would go on until I get bored. If its repeating the same scenario again in different words I might get bored.
> (23:01)

The above observations show that, as we had originally assumed, readers do want to follow unfollowed links, and do so even in the face of techniques, such as reframing, which are designed to thwart this desire. However, readers reported that they would stop rereading after a few iterations. This raises the question: why do readers stop rereading if there are still unfollowed links?

6.2.7   Identifying Reasons for Stopping

In an attempt to clarify this situation, where participants seem to want to follow unfollowed links, but at some point they stop, we introduced two variations to our procedurally added links. Our intention was to figure out if there was some "stopping condition" that the participants were using, and if so, what this condition might be.

For the first variation, we said that subsequent links would be "better" than the previous link. Note that we didn't define what we meant by "better", leaving this up to the participant to interpret. All but one participant said that they would continue to follow links as long as the resulting content was "better", but that they would still stop after several clicks. Although we insisted the story would "get better", they felt this was not possible, and that at some point it would "become predictable" or "start repeating". Even if it could somehow get "better", they felt that this would become almost insignificant.

When probed as to what they thought we meant when we said the story was "getting better", participants had varying responses. These responses corresponded to their explanation as to why they wanted to reread.

In the "choose action" story, except for two participants, all said they were looking for a *more interesting story* in terms of the dramatic impact and events that happened. Of the other two participants, one didn't want to reread, and the other continued to look for the best choice for the character. Some mentioned that they were also looking for what "really" happened, referring back to the reframing and the revelation that the man was not actually being attacked by kidnappers.

In the "choose perspective" story, participants said they were looking for a clearer understanding of "what happened", seeing each link as providing new perspectives on the story. However, they felt that simply giving "new" information was not enough, and that they would judge whether a link was worth following by how relevant they felt the new information would be to their understanding of the story. Some felt that providing new information that further reframed the story, such as suggestions of an affair between the couple, might increase their interest, but only as long as it didn't "go too far" from the original story.

Similarly, they tended to judge whether a link was worth following by "how close" the new perspective was to the original scenario: the waiter's perspective was usually important (although one participant said they already had his point of view as presented in the first page), whereas the couple at the next table were not so important, and somebody passing by outside was largely unimportant. For example, according to participant 11, if offered the waiter's point of view:

> *P11*: Yes I'd like to see it, but it won't give me the true reflection of the main characters, its like a third party view.
> (17:46)

However, she still might click on it, as:

> *P11*: At least I have an option to listen to one more person's perspective [pause] like it forms part of the picture, like a jigsaw.
> (18:36)

For participant 11, reading the story was like putting together a puzzle, and new links were followed as long as they seemed to contribute to that puzzle.

In all these cases, it seems that the participants feel they will reach a point where it "can't get any better", although they resisted the suggestion that they had actually seen the "best" version. The belief that it will become repetitive suggests that they feel that although there is the *possibility* of a better version, it wouldn't be better in any significant way.

For participant 8, reading the "choose perspective" story was all about getting to know the characters clearly. When told that new links would add complications to the story, she said:

> *P8*: It might change how I feel towards the man, maybe the second layer that I want to know about the guy is what the character's like, so I hear from another person then I know what the character is about [pause] it gives more room for me to think about.
> *R*: What if subsequent links continue to add depth to the character?

P8: I think I would, would stop when I hear enough, like if I'm more interested to know about the man's character, if I'm looking for one lead in the story then I would follow that.
R: When is it enough?
P8: Like you know the man's character then ok, so he's a philanderous person, then enough to the point that I can link back to the point that I know why he doesn't want to pay, he doesn't love his wife already, then that's enough.
(23:10)

Similarly, we suggested a variation where each subsequent link is *worse* (by the participant's own measure of "better") than the previous. In this case, participants said they would try "2 or 3" links, to see if there were any better links, and then stop.

These observations suggest a change to our original assumption. We had originally assumed that readers would want to follow unfollowed links *to see variation for its own sake*. Although our attempt to thwart this through reframing and revealing the contents of the link did not succeed, when there were limitless unfollowed links, it became clear that participants were *looking for the "best" link*, limited by their concept of whether the links could actually improve beyond a certain point. This was the case in both the "choose action" and the "choose perspective" stories.

6.2.8   What Are People Doing as They Reread?

Readers tended to claim that they would stop rereading, even when there were unfollowed links. When we pushed for further explanations, it became clear that readers were *rereading to arrive at something* – a "good ending" for the main character, a clear understanding of the story, or some explanation as to "what really happened".

This goal-oriented behaviour can be seen in the participants' descriptions of what they thought they were doing as they *reread* the stories. At the point when the reader has already clicked on the "re-read?" link, we probed them as to what they were doing when clicking on a link, given that previously they had explained that they were either making a choice that seemed best for the main character, looking for the "best" story in terms of the dramatic impact, or trying to find out as much as possible about the story.

Some participants continued to claim the same motivation as when they made the choice in the first reading. Others, however, responded differently. For example, one participant, who had initially claimed to be thinking about the choice from the point of view of the main character, now said he was looking for a dramatically interesting story. He claimed that it was only during that first choice that he was concerned about the fate of the character – after that, his focus shifted to exploring all the possibilities for a satisfying story, where satisfaction was defined in terms of the storytelling rather than the outcome for the character. Regardless of whether their explanation changed, all participants described a goal towards which they were working.

6.3   Discussion

Our observations suggest that readers, rather than exploring or experimenting to see variation for its own sake, are in fact goal-driven, and are rereading to arrive at something. Our initial assumption was that readers would reread to follow unfollowed links, in an attempt to explore variation for its own sake. As we had expected, readers seemed to prioritize trying to follow unfollowed links over rereading followed links. This desire to follow new links remained even in the face of reframing. However, what was more interesting, considering that many theorists [103, 125, 135] suggest that readers will want to reread hypertext fiction to experience different variations, was our discovery that readers claim that they would stop following new links quite soon, after 5-6 links, even if the new links are presented as more interesting than previously read links. Participants felt that, after a certain point, it is highly unlikely that new links will continue to be more interesting, even if a "best" version has not yet been found.

We also saw that participants were trying to arrive at a particular conclusion, based on what they felt that they were doing as they made choices in the story. Participants who were convinced that they would not get any further towards their goal, either because the links seemed not to be getting "better", or because they felt that it was not possible for the links to continue to improve, felt that they would stop rereading. This behaviour is quite different from the notion of the reader who is willing to reread an interactive story to seek out variation for its own sake, or simply to compare the new reading with previous readings. Instead, it supports the arguments made by other theorists [37, 49] that readers of interactive stories continue to desire closure.

6.4   Summary

In this chapter, we have described a study of rereading in which we observed that readers, rather than rereading to see variation for its own sake, are goal-directed, and are rereading to arrive at something. This observation has implications for the ways in which authors can make use of variation in interactive stories which are designed to support rereading. We discuss these implications in the next chapter. There are also implications for the question of how rereading changes in the context of interactive stories. We address this question in Chapter 8.

Chapter 7

Limitations on Procedural Variation

In this chapter, we discuss how the findings of the previous chapter suggest that attempting to support rereading by means of a reframing limits the ways in which an author can vary a story between readings. We argue that there are additional constraints placed on what can be varied in terms of coherence, selection and ordering, both within and across readings.

The rest of this chapter is structured as follows.[1] We begin with a detailed discussion of how supporting rereading motivated by a reframing imposes additional constraints. This is followed by discussion of how designing an interactive story to support rereading motivated by other techniques can also have an impact on the author's ability to make use of procedural variation.

7.1 Constraints Imposed by Reframing

As was discussed in Chapter 2, most implementations of interactive stories have been designed to create a sense of agency and variation, which Mateas argues requires that "each run-through of the story has a clean, unitary plot structure, but multiple run-throughs have different, unitary plot structures" [74, p. 7]. Consider, instead, an interactive story which is designed specifically to motivate *rereading*, and is intended to do so by means of a *reframing*. By reframing, we mean the revelation of new information at the end of the initial reading which fundamentally changes the reader's understanding of the story, and motivates the reader to go back and reread the story to look again at specific parts of the story related to this new perspective. For example, in the film *The Sixth Sense* (Shyamalan, 1999), the revelation at the end of the film that the main character, Malcolm, has been dead for most of the film radically changes the viewer's understanding of the story, and in most cases creates an urge to rewatch the film [65].

Now consider a version of *The Sixth Sense* designed as an interactive story. As we saw in the previous chapter, readers tend to be rereading with a specific goal in mind. If the reader is going back to reexperience the work with the

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[1] Portions of this chapter originally appeared as [89].

specific goal of seeing, again, what they saw the first time, any change to the story which removes or changes those aspects of the story which the reader is looking for will frustrate and disappoint the viewer. For example, the reader may want to see why they didn't notice that Malcolm is dead. If the scenes that the reader is looking for are either missing or different, she will feel frustrated. This suggests that there are additional and different constraints on which aspects of the system can vary procedurally when the story is intended to be reexperienced as the result of a reframing.

We will now discuss how the intention to support rereading as the result of a reframing impacts agency and procedural variation within an interactive story. In this situation, the requirements for *coherence* are extended across reading sessions, and additional constraints are imposed in terms of *selection* and *ordering* both within and across sessions.

7.1.1   Coherence

The requirement for coherence means that "[n]arrative existents must remain the same from one event to the next. If they do not, some explanation. . . must occur" [27, p. 30]. The use of a reframing to motivate rereading imposes additional constraints on coherence, not just within but also *across* readings.

Consider our scenario where a reader is (re)reading an interactive version of *The Sixth Sense*. The events which the reader encounters in the first reading must remain the same in subsequent readings. If the reader's actions during a second reading lead to Malcolm *not* dying, or result in him discovering that he is dead much earlier in the story, then the reader will most likely not be able to reexperience the events which she was motivated to see again as a result of the reframing. This suggests that enforcing coherence within an individual reading may not be enough. If the reader is looking for something in particular, and that changes, then the reader's motivation for rereading will be frustrated.

Similarly, in the film *Vantage Point* (Travis, 2008), we are shown a series of variations on the attempted assassination of the American president, each from the perspective of a new character. Each version adds new information about the events, and puts our initial interpretation of earlier events in question, while at the same time maintaining coherence. Readers are motivated to continue watching out of a desire to "figure out what really happened", as each version reframes the narrative and invalidates their previous understanding. In an interactive version of the film, if the reader was able to take action which contradicts earlier versions, such as stopping the assassination attempt, then this motivation disappears.

The structure of *Vantage Point* suggests an additional constraint on variability for an interactive version of the film. In each variation of the story, the reader receives changing information not just about the events in the story, but also about the roles and identities of the various characters, some of whom were the focus of earlier versions of the story. In order for these revelations to be effective, the reader in an interactive version would have to be restricted in terms of the "obvious things" she might want to do to or with such characters. This places restrictions on reader actions, not just based on events that have already happened, but on revelations that have *not yet happened.*

7.1.2   Selection

In addition to coherence, there are also constraints in terms of what must be shown, and what can be omitted, during rereading. This can be seen as a constraint on *selection* – determining what is to actually be shown, and what will be left for the reader to infer [27] – across readings. Stories often omit scenes which are not directly important to the story, such as the time spent for a character to travel from one location to another. Stories also tend to omit details of scenes when the scene is being shown again. If a reader is going back to a story a second time and is *looking for something in particular*, then if what the reader is looking for is not there during the rereading, her reason for going back will not be satisfied.

Coming back to our *Sixth Sense* example, even if the events of the story remain consistent and coherent (i.e., Malcolm dies and moves through the story thinking that he is alive), the reader could still find the rewatching dissatisfying if *what they want to see* is not shown. When a reader experiences the final scene, she is most likely going to want to go back and look for any scenes where Malcolm was seen together with people other than Cole, to look carefully at these scenes and wonder how she didn't notice that Malcolm was dead. If these scenes are omitted from the second reading, it is likely that the reader will feel frustrated. What this means is that the system must take into account both *what the reader knows about the story* and *what the reader is looking for* in subsequent readings, and ensure that these scenes are not omitted.

Similarly, in the film *Inception* (Nolan, 2010), the final scene introduces a reframing of sorts. Rather than completely altering the viewer's understanding of the story, instead the end of the film *casts doubt* on the viewer's interpretation, leaving the viewer wondering whether or not the main character, Cobb, has actually returned to the real world, or is still trapped in "limbo". At this point, viewers are motivated to go back and rewatch the film, in an attempt to find evidence for their interpretation of the ending. Viewers will be looking for specific scenes which can be used to support their interpretation, such as the transitions between "levels" in the dream sequences, the various times that Cobb uses his spinning top to check if he is in reality or not, or the various times that his children are shown. If, in an interactive version of *Inception*, these scenes are not present in a rereading, the reader will be frustrated and disappointed. This is quite different from an interactive story which supports both agency and variation, but does not attempt to support rereading based on a reframing, in which case there is no explicit relationship between what is shown in one reading and what can be shown or omitted in later readings.

7.1.3   Ordering

In a story which is using a reframing, it is crucial that the information which reframes the story be revealed to the reader *in the first reading*. If not, then the motivation to reread will not be present. This imposes an *ordering* constraint on the fragments of the story across reading sessions.

For example, for an interactive version of *The Sixth Sense* to effectively motivate the reader to return for the purposes of following up on a reframing, the reader must encounter that specific ending in the first reading. If the film ended without the final scene, the reader might assume that Malcolm had successfully

helped Cole overcome his problem of seeing dead people, and that Malcolm may now be able to resolve the estrangement between himself and his wife. It is only in the final scene that the reframing forces the viewer to reassess the entire narrative, and consequently want to go back to resolve the ensuing questions.

A similar degree of constraint can be seen in some "multiform" stories. For example, the film *Rashomon* (Kurosawa, 1950) tells the story of the death of a samurai and the rape of his wife by a bandit in a forest grove. The story is told from four different perspectives: that of the bandit, the wife, the dead samurai (through a medium), and a woodcutter who came across the scene. Each version of the story deliberately contradicts the previous version, leading the viewer to eventually doubt whether there is any way to know what "really" happened. The order of the versions is important, as each is designed to play off the impression given by the previous. For example, the woman is shown to be encouraging the men to fight in the first version, whereas she wants to die as a result of her ordeal in the second. The impact of the reversals would not be the same if, in an interactive version of *Rashomon*, the order could be changed. In particular, the final version, told by the woodcutter, undercuts all three previous versions. While it may be possible for the first three versions to be reordered, the final version *must* come last. The order in which variations are encountered is important. An interactive version of the film which aims to preserve the impact of the variations would need to impose constraints on ordering *across* sessions for this to be effective.

In addition, designing an interactive story to encourage rereading as the result of reframing also imposes constraints on the ordering of events *within* the first reading. The structure of a narrative which involves a reframing is somewhat similar to a mystery or detective story. There is, however, a key difference. Whereas in a mystery the discourse is carefully constructed such that the reader should have just enough information to solve the mystery, in a story with a reframing, the very *existence* of the mystery is kept from the reader [65, p. 56].

Once the reframing has been revealed, the reader will realize that there were actually two versions of the discourse: what she initially thought was happening, and what has now been revealed by the reframing. If the reframing is revealed too early, then the reframing will be rendered ineffective. It is also important that the event which the reframing changes (in *The Sixth Sense*, this is the shooting and death of Malcolm) comes early in the story. There must be sufficient narrative distance between the reframed event and the reframing, as this ensures that the reader is only able to reconcile the reframing by actually reexperiencing the story, rather than by simply thinking through the events of the story. This implies that the system must ensure that there are constraints on the ordering of events within each reading of the story, at least for the first reading.

7.2   Constraints Imposed by Other Techniques

As discussed in Chapter 5, there may be other reasons for wanting to reexperience an interactive story besides the motivations triggered by a reframing, and other techniques besides reframing for encouraging and rewarding rereading. In this section, we expand our discussion to these techniques, exploring how the

goal-directed nature of rereading impacts the ways in which authors are constrained if they aim to support these types of rereading. Specifically, we will look at two examples of other techniques for supporting rereading: narrative complexity and the suggestion of deeper or hidden meanings.

7.2.1 Narrative Complexity

In a complex narrative, the narrative structure deviates from the norm in such a way that the reader must make an effort to comprehend the story. For the reader who is trying to *make sense of things*, the reader needs to feel that there is some progress towards this goal over the course of repeated readings. If not, as we observed in Chapter 6, the reader will become frustrated, and stop rereading. The reader who is rereading to *experiment with different choices* or to *compare different perspectives* is, as we have seen, also looking for some form of closure. In all of these cases it is important that the reader feel that it is possible, with some effort, to reach closure.

The use of procedural variation can add to the complexity of the work, but, as can be seen with even the basic use of procedural variation in a work such as *afternoon, a story* (Joyce, 1990), this complexity can quickly become an obstacle to reader satisfaction. This suggests that the author needs to strike a delicate balance between the level of difficulty created by narrative complexity and procedural variation, and the ability of the reader to reach an understanding of the work.

7.2.2 Deeper/Hidden Meanings

Suggesting that there are deeper or hidden meanings to be uncovered by reading, and rereading, the text is another way in which authors can encourage and reward rereading. This can include the use of techniques such as intertextuality or symbolism.

If the reader is going back over an interactive story to *look for deeper meanings*, similar to a rereading motivated by a reframing, the reader will be expecting to be able to see certain elements of the story which she feels may have some deeper meaning. This suggests that any procedural variation which makes it difficult, or impossible, for the reader to revisit these parts of the story will create frustration. As a result, any changes to the story experience should attempt to preserve those elements which would allow the reader to uncover a deeper meaning. For example, if there are intertextual references which the reader wants to return to on a second reading, these references should be kept intact, and accessible, on that second reading.

A more complex situation exists if the reader is looking for meanings embedded in the rule system. The reader may suspect, after an initial reading, that the underlying simulation system in an interactive story embodies a specific world view. When the reader goes back to reexperience the system, she will be looking at the ways in which the system responds to her actions, and begin to build up a model of the meanings conveyed by this system. The specific content of the story, and the storyworld, may vary considerably, but the pattern of actions and consequences must remain consistent for the process of rereading to be satisfying.

7.3   Summary

In this chapter, we have discussed the implications of our finding that readers are rereading to arrive at something. We discussed how this has implications for what authors can vary procedurally across reading sessions, given various types of techniques for encouraging and rewarding rereading. Both our study of rereading in Chapter 6 and our discussion of the implications of this study in the current chapter suggest that rereading in interactive stories is similar in some ways to rereading in non-interactive stories. In the next chapter, we directly address the central question of this thesis: how does rereading *change* in the context of interactive stories?

Chapter 8

The Paradox of Rereading

Having observed that readers are rereading interactive stories for closure, we now investigate what, if anything, it is that readers feel they are "rereading" when they repeatedly read an interactive story. Our observations suggest that, for stories that change as the result of reader choice, readers have difficulty trying to describe whether or not they are "rereading", and struggle to define what it is that they are doing when repeatedly reading an interactive story.

This chapter is structured as follows.[1] We describe the design of the study, and present the results. We then discuss the implications of these results in terms of what readers think they are doing as they reread an interactive story.

8.1 Study Design

For this study, we conducted semi-structured interviews with 22 participants, 10 male and 12 female, between the ages of 20 and 24. The participants were drawn from an undergraduate research methods class, and the participants were given academic credit for taking part in the study. The participants were assured that their performance in the study would have no bearing on their academic results, and the researchers were not involved in teaching the class in any way.

8.1.1 Materials

The hypertext fiction which we created for the study involves the reader making choices about *what to see next*, an approach usually taken by literary hypertext fiction, as opposed to *what happens next*, which is more commonly seen in computer games and "choose-your-own adventure" books. The story revolves around an altercation between a man and a woman at a train station, who appear to be arguing about a young child. The story is told from 10 different perspectives, consists of 69 nodes and 205 links, and is roughly 2500 words in length. Possible paths through the story range from 5 to 25 nodes in length.

The story was designed to be "complex" in terms of the structure of the hypertext, the narrative structure, and the ways in which the system responds procedurally to reader choice. The hypertext structure of the story can be regarded as complex, as it incorporates several of the patterns of hypertext described by

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[1]Portions of this chapter originally appeared as [91].

Bernstein [10]: counterpoint, split/join, missing link, and navigational feint. The narrative structure is also a complex narrative, making use of multiple characters' points-of-view, which at times contradict each other. Finally, the story is procedurally complex, with links enabled or disabled depending on the path taken by the reader through the story.

We chose to create a new story for the study, rather than use a well-known hypertext fiction such as *afternoon, a story* (Joyce, 1990), as we wanted a story which, while complex, was also short enough to be read several times within a one-hour study session, and which the participants would definitely not have encountered before.

8.1.2   Protocol

Participants were first asked a set of questions related to their experiences with and preferences for various types of stories, to provide context for the interpretation of their responses to the story. They were then taken through a short tutorial explaining the interface conventions and interaction style for the story. After the tutorial, the researcher answered any questions they may have about the mechanics of the system.

They were next asked to read through the story once, on their own. They were not asked any questions nor were they asked to think aloud during this reading. Following the first reading, the participant was engaged in a semi-structured interview, where the researcher probed for the participant's reactions to the story and expectations for subsequent readings. They were also asked whether they wanted to go back and read the story from the start.

After the semi-structured interview, the participant was asked to go back to the start of the story and read it. Again they were asked to do this on their own, without any interference. Following the second reading, they were again engaged in a semi-structured interview. This time, they were asked what they were doing as they were reading the story, and were asked to compare this experience with the previous reading. They were then asked whether they would consider this experience to be "rereading". This term was not explained – instead, participants were asked whether this is a term they would use for what they had just done. Then they were probed about their answer using a clinical interview approach (as described in Chapter 4).

Following the first two readings, the participants were repeatedly asked to go back and read the story again several more times. After each reading, they were engaged in a short interview, focusing on whether they called the repeated experience "rereading", what they felt was similar and/or different from the previous readings, and whether they wanted to read again.

Once the participant indicated that either they understood the story, or they no longer wanted to reread the story, a final "reframing" passage was shown. After reading this new passage, the participant was asked whether they wanted to read the story again. Regardless of their response, they were then asked to read the story a final time, following which they were again asked whether they considered this experience "rereading". The session ended with a brief discussion of their experience.

8.1.3   Data Collection and Analysis

Recordings of the session where made using screen capture and audio recording software, and the researcher took notes. As with the study described in Chapter 6, this data was analyzed using an emergent grounded theory approach.

8.2   Observations

We observed a tension between whether it was the *text* or their *understanding of the story* which readers felt must remain the same for their experience to be considered "rereading". This highlights the paradox raised in Chapter 1 – the problem of reconciling the desire to go back to *get something new* out of the story with the feeling that what you are going back to is still *the same thing*.

When probed as to whether their experience of repeatedly reading our hypertext fiction could be considered "rereading", participants had a range of responses. Some participants only felt that they were rereading if the text remained unchanged. Others felt that as long as their understanding of the story remained constant, they were rereading. For a third group of participants, however, these two views were in conflict, and they struggled to determine whether or not what they were doing was rereading.

We also observed that some participants changed their view of rereading as their understanding of the story changed. At the point when they claimed that they "got the gist" of the story, these participants changed their opinion and started to call the experience "rereading". Many of those who had previously focused on the text as invariant now started to look to their understanding of the story as what must remain unchanged for the experience to be considered rereading. When this understanding was disrupted by the reframing at the end of the session, however, some of these participants again became uncertain as to whether what they were doing could be called rereading.

We now discuss these observations in more detail.

8.2.1   Text Must Be the Same

One model of rereading which we observed was focused on whether or not the *text* changed across readings. For these participants, any change in the text encountered meant that they were not rereading. In some cases, even a change to the *order* in which the text was encountered meant they were not rereading.

For example, participant 8 encountered different text on the second reading. When asked if he considered this rereading, he said:

> *P8*: Rereading? uh, no I wouldn't say rereading, because if I reread, right, I'll be looking for things that I might have missed out in the fixed text, right, like for example I have a certain text and I reread that particular text to see if I have missed any little details, but in this sense what I was looking for was new pieces of text.
> (16:05)

Participant 8 was very clear that the text he was reading had to be exactly the same in each reading. Even when some text was reencountered or seemed similar, as long as *any* new text was seen in a reading session, he felt that he

was *not* rereading the story. This happened during the third reading, at which point he saw both some text that he had seen before, and some new text. When asked whether he was rereading, he replied:

> *P8*: I'll still say no, because I was looking at other things that I didn't look at previously.
> *R*: Was there any passages of text that you've seen before?
> *P8*: Uh, I think it went back to the same thing, like when how the girl mentioned that, how Diane mentioned that its all a deliberate plan, yeah.
> *R*: So even though you saw some of the same text you'd say it isn't rereading?
> *P8*: Yeah.
> (20:19)

In addition to seeing the same text again, participant 8 also indicated that he would only consider what he was doing to be rereading if the *order* of the text was the same:

> *R*: What would it take for you to say yes it is rereading?
> *P8*: I would say yes it is rereading if I was given the previous text, and how I read it, arranged how I read it, and then I would read, I would read everything in the same sequence, and then I'll say that's rereading, yeah.
> (32:15)

For participants such as participant 8, their model of rereading when reading our hypertext fiction was the same as when reading a traditional, non-interactive story. This view allows the reader to feel that what they are doing is rereading because there is very clearly something being held invariant: the text. If this invariant does not hold, then they reject the notion that they are rereading.

8.2.2   Understanding Must Be the Same

Other participants, however, felt that what was important was their *understanding of the story*, and whether or not they encountered story elements which altered this understanding. As long as they were still trying to figure out what the story was about, most felt that they were *not* rereading. However, if they felt that what they were reading matched their current understanding of the story, they felt that they were rereading, whether or not the text they encountered was the same as in previous readings.

For example, even though she had seen a completely different perspective on the events of the story in her second reading, participant 2 considered this to be rereading:

> *R*: So if I asked you to describe what it meant to go back to the start like that, would you describe it as rereading the story?
> *P2*: Yeah.
> *R*: So what you saw the second time is it the same as what you saw the first time?
> *P2*: Uh, similar, similar yeah, but I read it from the passenger['s

perspective], another perspective that I didn't read the first time.
(14:21)

Similarly participant 1 felt that what he was doing was rereading, even though he encountered different text in the second reading. He explained that the reason it was rereading was that he already understood the story:

> *R*: So in what sense would you say its rereading?
> *P1*: In the sense that the whole context is still the same, the train station, it involves the same characters.
> (14:27)

For these participants, there was clearly a concept of "story" which was held invariant across the reading sessions, despite the fact that they saw different text, and possibly different perspectives on the story, each time they read. In this view of rereading, understanding the story has replaced the text as the invariant which allows readers to say that they are rereading.

8.2.3   Conflict Between Text and Understanding

Some participants did not fall into either of the above groups, as they found it difficult to decide whether or not they were rereading. For these participants, there was a conflict between whether rereading required that the text or that their understanding of the story remain unchanged across readings.

Some of these participants began to see that something was "familiar" across reading sessions, but felt that this was in conflict with their awareness that the text was different in each reading. They saw a conflict between their two different views on what they were doing, but were unable to resolve this conflict. Other participants attempted to overcome the conflict by inventing new terms for what they were doing, such as "additional" reading. Finally, one participant reacted by saying that that he was not rereading as long as he didn't yet understand the story, even if the text did *not* change.

Starting To See Something "Familiar"

For those who were unable to reconcile the conflict between whether the text or their understanding of the story should be held constant, they often began by focusing on the text, but then repeatedly encountered the same story elements, which led them to question this view.

For example, although participant 4 began by focusing on whether or not the text he encountered was "the same", he seemed to be having trouble determining what he meant by this. He initially insisted that he would need to see the same text again, at which point the repeated passage would feel "familiar":

> *R*: So what would it take for it to be called rereading?
> *P4*: Um I want to go back and read the same passage again when it feels familiar.
> (17:28)

This suggests that it is seeing the "same passage" again which constitutes rereading.

However, what is interesting about participant 4's remark is that he says the passage should feel "familiar". When the researcher probed this concept, participant 4 struggled to explain what he meant by "familiar":

> *P4*: As long as its unfamiliar, I haven't read it before, I wouldn't consider it rereading, I only consider it rereading if I'm reading the same exact slides again.
> *R*: So even if it completely confirms your understanding of the story, it doesn't add anything to your understanding or experience, its just literally the words are different but there's not additional...
> *P4*: Ok now that's interesting, in that case I might consider it rereading if its exactly the same story but just a different slide [...] I think the primary thing is whether it feels familiar to me, I more or less feel that hey I've sort of read this part before, then I'll think its rereading.
> (21:52)

Participant 4 was trying to come up with some notion of what it means to have "read this part before", and was starting to connect this to whether or not his *understanding of the story* is the same.

In contrast, participant 10 recognized that as she repeatedly read, she was seeing the same story, but continued to insist that she was not rereading because she encountered different text. After the third reading, she continued to hold this position, but was starting to notice that there was actually something constant between readings – the story:

> *P10*: Yeah there was some stuff I saw before but my definition of rereading is more like reading the exact same text over and over again to gain new perspectives and to gain a better understanding of it, other than changing text but in the same context. The similar thing is that the story plot is ultimately the same but the difference is that each time I read it I know new information based on new text that comes out from the different links.
> (24:37)

At this point, she mentions that the story is the same, but still considers this *not* to be rereading, as each time she reads she gets "new information based on new text".

For these participants, they were starting to see that the *something* which was being held constant across readings was the story, but they were still focused on the fact that the text was changing each time they read the story, and therefore were not comfortable calling what they were doing "rereading".

Inventing New Labels

For Participant 13, the way to deal with the conflict between her expectation that rereading requires the text to remain unchanged, and her realization that her understanding of the story had stabilized, was to invent a new label for what she was doing. After the second reading, she said she was not rereading. However, she did say that she felt she was reading *the same story*. Eventually she came up with her own term for what she was experiencing:

> *P13*: I'll take like the definition of rereading as reading the same title or the same thing as a whole, but here even though I read the same thing, the same story, but the content I took in on the second time is different, it was additional information from the first time so I would not really consider that as rereading.
> *R*: What would you call it then?
> *P13*: Additional reading.
> (19:10)

Unable to reconcile the fact that the story was the same, but that she was still seeing new information and different text, she created a new category into which this situation could be placed, calling what she was doing "additional reading".

Unchanging Text is Not Enough

One participant, when faced with the conflict between his view that the text must remain the same and the opposing view that the text can change but the story must stay the same, adopted the position that if he has not yet reached an *understanding* of the story, then he is *not* rereading, even if the text remains the same.

Participant 5 initially felt that he was not rereading because he saw different text each time. Later, as he felt that the story was becoming clearer, he changed his opinion and said that he was now rereading "to an extent", regardless of whether or not the text changes:

> *P5*: Yeah its starting to become a bit clearer, and there are certain overlaps that I can make, to an extent its rereading but I'm still getting new information so its rereading to an extent but not completely.
> (23:44)

Participant 5 was trying to reconcile his feeling that an understanding of the story was important to rereading with his initial position that he had to see the same text again to consider what he was doing to be rereading.

He eventually resolved this conflict by deciding that *even if the text didn't change*, he was not rereading if he didn't understand the story:

> *P5*: If I don't understand what's going on I can't consider that rereading.
> *R*: Even though you see exactly the same text each time?
> *P5*: Yeah I don't think I consider that rereading because rereading has to do with some understanding of the elements as well.
> (25:56)

For participant 5, both the text and his understanding of the story had to be invariant for what he was doing to be considered rereading.

8.2.4   Changing Opinions After "Getting the Gist"

As can be seen from participant 5's experience, there seemed to be a connection between whether readers understood the story, and how they viewed what they

were doing. In fact, some participants changed their view of the process of going back over the story after "getting the gist" of the story. Having "got it", they now considered any further readings of the story to be "rereading".

For participant 6, understanding "what's happening" in the story gradually came to be seen as more important than whether the text changed between readings. She was initially uncertain as to whether she could call what she was doing "rereading", given that she wasn't rereading the same text. After the second reading, when asked if she was rereading, she replied that it was "kind of" rereading. When probed as to what she meant by this, she said:

> *P6*: I think when it comes to rereading you sort of expect to read the same text and find out more about the same thing but for this its sort of you're looking at completely different perspectives so you're not, you're finding out new things but not from this original thing that you read the first time.
> (20:20)

At this point she was clearly struggling with the concepts, and was unable to reconcile her expectation that rereading means reading "the same text" with her observation that in our hypertext story she was encountering different text but "its the same story".

After the third reading, she started to change her opinion, saying that now she was beginning to understand the story so it could be considered rereading:

> *P6*: Here you are not really sure about what's going on, so you keep looking out for different perspectives and stuff and you piece things together along the way, but its only at the end that you get the whole story and so now if I go back to the start and reread, like do it from some other perspective, then that would be like rereading cause I know exactly what's happening.
> (25:40)

This clearly shows that her view of rereading has shifted from a focus on reading the same text, to an emphasis on understanding the story.

Similarly, for participant 7, she initially felt that what she was doing was *not* rereading, but then changed her mind after getting the gist. In her case, she was initially not clear if it was changes to the text or the story which determined whether or not she called what she was doing rereading. After the second reading, she did not feel that she was rereading, as she had encountered a different perspective in the first and second readings. However, after the third reading, she changed her mind and said she *was* rereading, even if she saw new text. When probed about the contradiction with her earlier response, she said:

> *P7*: I think because what the witness is saying [her third reading] its similar to the third person account [her first reading], yeah like the general overview, it doesn't really add depth to what the people within the commotion are feeling, yeah so that's why I feel that its a rereading of the general description.
> (17:06)

Interestingly, after the fourth reading, participant 7 decided that she was *not* rereading, as she had encountered new information which *disrupted her understanding* of the story:

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> *R*: So would you consider this rereading?
> *P7*: No [laughs] because I know another part that I didn't know about.
> (20:43)

When she encountered new information which challenged her current understanding of the story, she labelled this as *not* rereading, because the story was no longer invariant. This is consistent with her view that rereading requires a constant understanding of the story.

For these participants, there was a developing sense that the concept of rereading was closely tied to their understanding of the story. As long as the story was held invariant, they could describe their experience as rereading *the story*, whereas when this was lost, they were no longer rereading.

8.2.5   Rereading Problematized by the Reframing

Once the participants indicated that they understood the story, the researcher introduced a reframing which was designed to disrupt the reader's understanding of the story. After the reframing was introduced, participants struggled with whether to call this rereading, given that they no longer understood the story but the only thing that had changed was the final passage in the story.

For example, participant 10 had been struggling with the question of whether or not she was rereading, but had started to feel that there was something "familiar" across readings (see 8.2.3). After several readings, she mentioned that she understood the story, and that this meant that she *would* be rereading if she went back again. When the reframing was revealed but *before* going back again, she said:

> *P10*: Now its not rereading as its possible that the storyline has taken a completely different turn, so its not rereading because I might be finding out new stuff about the story rather than new emotions based to a storyline that didn't change.
> (40:05)

This is consistent with the view that rereading depends on an unchanging understanding of the story.

However, after actually going back through the story, she changed her mind again, and said she *was* rereading:

> *P10*: Its still rereading because I'm reading the same thing that she does and says, the action is the same but the only difference is my perspective, so actually I'm rereading it from a different perspective.
> (41:39)

When probed further about her definition of rereading at this point, she struggled to reconcile her use of the term with what she was experiencing, and changed her mind again, now saying that she was *not* rereading:

> *P10*: Its rereading because, as in its the same thing, but that's the technical term to use, its the, the most, its the word that just comes naturally to me, but if you ask me whether I'm rereading it I will

still say not really [...] yeah, because its um, I guess its the way I
define rereading, I've always thought that rereading is more of like
going through the exact same thing rather than in this way where
its rather ambiguous, I can't say its the exact same thing but I can't
say its entirely new either.
(49:10)

When asked to compare this experience to rereading a short story with a
similar reframing at the end, she said that she *would* describe the experience of
repeatedly reading the short story as rereading, but felt that the experience of
repeatedly reading our hypertext story was not the same:

> *P10*: Um because, I guess its there, like I'm reading the exact same
> thing in the exact same order, whereas if I'm reading it in this way
> the order keeps changing and everything so its more, its not so much
> rereading.
> (51:46)

This confusion and constant revision of participant 10's notion of rereading
was common, and reflects the difficulty that participants had coming to terms
with what could be considered rereading in an interactive story.

A similar confusion can be seen in participant 13's experience. When asked
what she would call going back again after the reframing, she thought it would
be rereading:

> *P13*: Yes because I already know that there's a bag, I want to make
> sure, I want to find out the exact details about the bag like where,
> who was the one carrying it, how did it end up on the train, yeah,
> so it would be rereading because I know that there's a bag.
> (44:44)

However, she had earlier described this type of reading as "additional" read-
ing, not rereading (see 8.2.3). When probed about this contradiction, she ad-
mitted that she was now confused about how to describe the experience:

> *R*: Before you were saying that if its different or additional informa-
> tion...
> *P13*: It will not be rereading, oh ok yeah [laughs], yeah because I
> don't know where the bag was, hmm. I think, I would say that it
> depends on the amount of new information that I will take in every
> time. I dunno what is my own limit but I think when I said that
> there's a limit, like if its just a little detail about some thing about
> the bag I wouldn't consider its like a very new information, even
> though its new information like its not a major thing, yeah.
> (45:07)

What is emerging here is a notion of *how much* the reader's understanding
of the story has changed. For both participants 10 and 13, there seemed to be a
threshold beyond which they do not consider what they are doing to be reread-
ing. However, they were not able to clearly determine where that threshold lies,
and as a result struggled with what to call their experience.

8.3   Summary

Our observations suggest that there are two different ways in which readers view rereading. One view is that any change to the *text* when a work is revisited means that the reader is *not* rereading. From this perspective, what is invariant between readings, and what is being reread, is the text itself. A second view is that it doesn't matter whether or not the text changes – going back is seen as rereading as long as the reader's *understanding* of the story is the same. This perspective holds the story as the invariant, with rereading involving seeing the same story again, regardless of any changes to the text. Participants in our study often had trouble deciding whether they were rereading, and struggled with which of these two views of rereading they felt was appropriate to their experience. This difficulty highlights the problematic, paradoxical nature of rereading, particularly in the context of stories which change as the result of reader choice. In the next chapter, we discuss how these observations can be incorporated into a model of rereading in interactive stories

Chapter 9

A Model of Rereading in Interactive Stories

So far, we have seen that readers tend to reread for closure, and have difficulty describing this as rereading, observations which are not adequately explained by existing models of rereading. Our model suggests that in non-interactive stories, rereading actually involves reading *differently* for something *new*, whereas rereading in interactive stories generally consists of a *continuation* of the reader's search for closure, with rereading beyond closure depending on whether the core mechanic supports the reader forming new narrative goals.

This chapter is structured as follows. We begin by examining the tension which showed up in our study between whether the text or the story needs to be invariant for going back over an interactive story to be considered "rereading". We re-examine this tension in the context of our observation in Chapter 6 that readers are reading *to arrive at something*, and argue that it is this, the reader's ongoing activity, which should be the focus of a model of rereading. We then describe this model.

9.1   The Problem of Invariance

There is an inherent paradox in rereading, particularly when used as a measure of quality, as it involves reading the *same thing* again to *see something new*. When faced with this paradox, rereaders of non-interactive stories are able to overcome the contradiction by focusing on the fact that, even if their reading experience is different, *the text is still the same*. In an interactive story, on the other hand, as we have observed in the previous chapter, readers often struggle to call what they are doing rereading. We now examine this conflict in detail.

9.1.1   The Tension Between Text and Story

In the case of an interactive story, there is potentially *nothing* which the reader can readily point to as constant between reading sessions. If the reader is going back to see something new, then the story and/or the reader's understanding of the story will most likely *not* be the same. If, in addition, the text that they encounter when going back is literally not the same as what they saw in

the previous readings, then it is hard to see what the reader could possibly point to and say that they are "rereading". It is exactly this conflict which we observed in our study. Many of the participants in the study struggled, when faced with changing text and/or changing story, to describe what they were doing as rereading, often flipping back and forth between a focus on text as invariant and story as invariant. The difficulty which participants showed in coming to terms with what is happening as they reexperienced our hypertext fiction demonstrates the complexity of this problem.

Participants initially brought certain expectations to the situation, namely that rereading involves "reading the same text over and over again" (participant 5). When they repeatedly read the story, eventually there was a point where participants noticed that, although the text was changing, they were starting to see or feel that things were "familiar". At this point, many of the participants became confused, and struggled to make sense of what they were experiencing. This confusion, resulting from the clash between their expectations and what they were seeing, can be viewed as a form of cognitive disequilibrium [106]. To deal with this challenge to their expectations, participants had to find a way to reconcile their earlier notion of the text as the invariant with this new feeling that there is something familiar, but they are not seeing the same text.

One response was for participants to *assimilate* this new experience, struggling to make what they were seeing fit into their existing beliefs. For some participants, they did this by sticking with the opinion that the text must remain invariant, and that they were not rereading unless they saw exactly the same text in each reading.

The other response was to *accommodate* the new experience, trying to adapt their existing concepts to fit the new experience. Some participants struggled with the new concept, and tried to deal with it by inventing new labels, such as "additional" reading or "revisiting" to describe what they are doing. This is a partial accommodation. Other participants were able to accommodate the notion that their understanding of the story, rather than the text, was being held invariant across reading sessions, and changed their concept of "rereading" to include this new situation.

9.1.2   Why Is This a Problem in Interactive *Stories*?

An interesting issue is that, when we asked our participants to reread the story, which we phrased as a request to "go back and read the story from the start", readers initially had no problem. It wasn't as if they were unable to conceive of doing this. What they were uncertain about, rather, was how exactly to characterize this activity. By going back and reading "the story from the start", were they reading the *same* story *again*? Or were they *still reading* the story, having not yet finished reading it for a first time? Or were they reading a *different* story for the *first* time?

It is useful to contrast this with, for example, the act of replaying a computer game. Players do not have any trouble saying whether or not they are replaying a computer game, even though they may encounter a completely different set of game elements, in a completely different order, each time they play a game. For example, when playing *Tetris* (Pajitnov, 1984), a player is very unlikely to encounter the exact same set of blocks, in the exact same order, when replaying the game. There is no doubt, however, that the player is *replaying* the game.

What, then, is the same, if the sequence of blocks encountered is not the same? From the player's perspective, what is the same is *what the player is doing*. Each time the player engages with the game, the player is repeatedly rotating and moving blocks, with the objective of clearing rows of blocks. This is what is often called the "core mechanic" of the game [51]. In addition, each time the player plays the game, what the player is trying to do by performing this repeated action remains constant. The player is trying to stay alive as long as possible and/or get a higher score than in previous play sessions. If any of these aspects of what the player is doing – the repeated action or what the player is trying to accomplish by that action – changed, then the player would most likely have trouble characterizing what they are doing as "replaying" the game of *Tetris*. We can say that the combination of the action and the reason for performing that action are *held invariant* across play sessions.

What we would like to be able to do is find a similar invariant for the situation we are observing. If there is something which can be seen as unchanging across reading sessions, then this will help us to characterize what it means to reread an interactive story. We can begin to do this by looking back at our findings related to what the reader is doing when rereading.

9.2   What Is the Reader *Doing* When Rereading?

In Chapter 6, we saw that readers in our study were rereading *to arrive at something*. This could involve looking for the "best version", looking for "what really happened", or looking for some other form of closure. Regardless, they tended to be goal-directed, and continued to reread until they either achieved this goal, or they felt that it was not achievable. This view of what readers are doing is supported by some of the discussions in the related work. For example, Douglas, in her extended discussions of reading (and rereading) *afternoon, a story* (Joyce, 1990) [36, 35, 37], described her desire to find closure within the work, and how she stopped reading when she felt that she had got what she wanted from it. Similarly, Murray describes how, even in a "kaleidoscopic" narrative, readers are looking for some form of closure, albeit not the same type of closure that they would get from a traditional narrative [96, p. 180].

This suggests that what readers are doing as they reread the story is in aid of achieving this goal, of finding closure. This can be compared with what readers are doing when rereading a non-interactive story.

9.2.1   Rethinking Rereading in Non-interactive Stories

When reading a non-interactive story, the reader is actively building, and revising, a model of the story [52]. This involves developing an understanding of the storyworld, the characters within the storyworld, and the sequence of events that happened to these characters, including the causal relationships between the events and the meaning of those events. This takes place at the cognitive level. At the affective level, the reader is also responding emotionally to the story.

When rereading, there are several different things that the reader could be doing, depending on the type of rereading involved. During partial rereading,

it can be argued that the reader is actually still *reading* rather than rereading, given that partial rereading involves looking for things that the reader missed the first time round. In this case, the reader is continuing the process of refining their understanding of the story, and responding emotionally to that understanding. In this case, the reader is actually doing the *same thing* in each reading, i.e. trying to understand the story and work towards closure. There will be a point at which the reader reaches closure, after which any rereading will no longer be a partial rereading, but instead will be either a simple or a reflective rereading.

During simple rereading, the reader has already come to an (initial) understanding of the story, and wants to go back over the story to recapture something of the initial experience. The key difference, however, is that the reader has already experienced the story. Thus, what the reader is doing is not quite the same as during the initial reading. Although the cognitive process of reading during simple rereading is the same as in an initial reading, the difference is that the reader knows (and expects) that the story will be satisfying. The reader, to a certain extent, also already has a model of the storyworld, characters, and events, although depending on the complexity of the narrative the reader may have forgotten some of the elements of the story. Here it can be argued that what the reader is doing is *not* quite the same as during the first reading. The reader is no longer trying to find closure. Instead, she is seeking to recapture the previous experience. As discussed in Chapter 2, this is the type of rereading which has been explored by researchers who look at the repeated experience of suspense.

In the case of reflective rereading, the reader is consciously stepping back and approaching the text in a different manner: to analyze the use of technique, symbolism, intertextuality, and so forth. In this case, the reader is clearly, and very deliberately, *not* doing the same thing as during the initial reading. The reader may be deliberately analyzing the text to look for patterns and connections which were not apparent in the initial reading. Here, the reader generally shifts from an immersed to an engaged approach to reading [38].

In the case of more complex narratives or stories which involve a reframing, the reader may actually be involved in a combination of partial and reflective rereading. At times, the reader may be encountering elements which she missed the first time due to the cognitive load imposed by the complexity of the narrative. At other times, she may be switching to a more reflective mode and looking at how the author achieved that complexity.

What this discussion suggests is that, paradoxically, for simple and reflective rereading, the reader is actually *not* reading again, at least not in the same manner as in the first reading. This implies that, for non-interactive stories, rereading actually involves *doing something different*. Partial rereading, which it can be argued isn't really rereading [20, p. 277], is the only case where the reader is doing the same thing again. For simple rereading, the actions of the reader aren't quite the same, since simple rereading is an attempt to *recapture* the feeling of reading the story the first time, even though the reader has already experienced the story. For reflective rereading, the reader is consciously doing something different, with the intention of getting something different out of the text. We summarize the key points in the above discussion in Table 9.1.

We propose that simple and reflective rereading do not equal re-reading (i.e. reading *again*), but are different types of experience which involve reading *anew* what has already been read. For simple rereading, the reader wants

Type of rereading	Action of reader
Partial	Reading in the *same manner*, towards closure
Simple	Reading *differently*, to *recapture* previous experience
Reflective	Reading *differently*, approaching the text *analytically*

Table 9.1: What the rereader is doing in non-interactive stories.

the same experience despite having already had that experience, so the way in which she approaches the text must be different. For reflective rereading, both the intended experience, and the way of approaching the text, are necessarily different.

The key insight here, which we can apply to our investigation of rereading in interactive stories, is that when the reader is rereading, there is no invariant in terms of what the reader is doing. Instead, what the reader is doing *changes*.

9.2.2   Implications For Rereading in Interactive Stories

This suggests a way of rethinking the problem of rereading in interactive stories by taking into consideration what the reader is doing while reading, and rereading, an interactive story.

Based on their experience of rereading non-interactive stories, readers expect rereading to take place after reaching closure. When rereading a non-interactive story, the reader already knows the story and/or has seen the text before, and is looking at it again, either to recapture the experience knowing that she enjoyed it the first time, or to probe at the text reflectively. When confronted with an interactive text, however, what tends to be happening is that the reader is experiencing something much closer to partial rereading: the reader doesn't understand the story yet, and possibly hasn't even seen all of the content. This means that, as we observed in Chapter 6, the reader continues to look for closure on repeated readings. At this point, as we saw in Chapter 8, readers had trouble describing what they were doing as "rereading". Instinctively, based on the reader's experience of non-interactive stories, this seems to *not* be rereading, for two reasons.

The first reason relates to the nature of the text. When going back over an interactive story, the reader's understanding of the story is not yet complete, and the text is possibly changing, meaning it is difficult to see what is being "re-read" (i.e. read *again*). In a non-interactive story, once the reader has gone through a work and completed a first reading, any repeat reading of the work would be either a simple or a reflective rereading. In an interactive story, this is complicated by the fact that the reader is aware that there are paths not yet taken, and text not yet seen, even though she has "completed" the initial reading. This makes it unclear whether a repeat reading is actually a repeat, given that the reader is uncertain as to whether she has yet finished the initial reading.

The second reason involves what the reader is doing. Simple or reflective rereading of non-interactive stories involves doing something different when rereading. In the case of rereading for closure in an interactive story, the reader is still doing the same thing – looking for closure. It is only when she "gets it"

that it becomes rereading in the way that she expects: there is now something which can be held invariant (the reader's understanding of the story), and any further rereading would involve doing something different. This is why it is only after reaching an understanding of the story that readers in our study felt that they were rereading.

In a non-interactive story, readers are not made aware of the problematic nature of partial rereading, since the text is fixed. This makes it easier to call the act of going back over the story "rereading". Even in the case of a complex narrative, which forces the rereader to engage in a certain amount of partial rereading, the rereader can focus on the invariant nature of the text, and call this action "rereading". In an interactive story, on the other hand, the invariance of the text no longer holds, and the problematic nature of rereading becomes foregrounded.

Based on this discussion, we propose that *rereading for closure* in interactive stories is equivalent to *partial rereading* in non-interactive stories. In both situations, the reader is doing the same thing when going back over the story. The key difference is that, in an interactive story, the text may not be the same on each reading.

This leaves open the question of what the reader of an interactive story is doing when rereading *after* reaching closure. As we saw in Chapter 8, readers appeared to call what they were doing "rereading" at this point. This suggests that they felt they had successfully completed an initial reading of the work, and are now able to go back to read the work again in a *different* way. But what would motivate the reader to continue rereading after reaching closure, and what would make this rereading satisfying? We will discuss this in the next section.

9.3 Rereading Beyond Closure?

In this section, we consider whether, after reaching closure, readers would continue to reread for variation, or would engage in either simple or reflective rereading. We examine each of these possibilities in turn.

9.3.1 Rereading for Variation

In Chapter 7, we argued that, to support goal-directed rereading, there are certain limits which need to be placed on variation. What is not clear, though, is what happens once the reader reaches that goal. If at this point the constraints on variation are lifted, would this encourage readers to reread for variation?

To explore this possibility, we will begin by considering another interactive form, computer games, where people *do* pursue repeat experiences for the sake of variation. Juul [57] has proposed two ways of looking at the structure of games: "emergence (simple rules combining, leading to variation) and . . . progression (serially introduced challenges)" [57, p. 323]. Juul argues that games which incorporate emergence are replayable, since each play-through is potentially different, whereas games which incorporates progression can be "completed", after which point there is no reason to replay.

It is important to note that repeatable, emergent games such as Tetris encourage replay, not just through the provision of variation, but also by providing

the player with an ongoing *challenge* [118]. In this type of game, replay is often driven in part by a desire to "do better", and in part by the desire to re-attain "flow". The concept of "flow", as described by Csikszentmihalyi [32], is the state in which a person experiences a balance between ability and challenge. Games can encourage flow by adapting the level of difficulty of play to the player's ability, as measured by success and failure in the use of the core mechanic to overcome the main obstacles in the game. The key point here is that players replay games not just to experience variation. Variation is essential as a support for the larger goal of doing better and reattaining flow.

Interactive stories, however, are not quite the same as games. To clarify this difference, we can make use of Ryan's [122] distinction between "playable stories" and "narrative games". She associates narrative games – games which have a story component, but in which the *gameplay* is the main focus of the reader's activity – with Callois's [21] concept of "ludus", or rule-based play. She contrasts this with playable stories, where the main focus of the reader's activity is the narrative meaning. She associates playable stories with Callois's concept of "paidia", or free play without goals or winning/losing conditions.

In the absence of a goal or winning/losing condition, it is not clear whether readers would reread simply for variation. As we have seen in our studies, readers, initially at least, tend to be goal-oriented, and reread to achieve closure. Once they have reached closure, however, and their goals change, will they then shift to free play, to rereading for variation? Even if they did, and the reader's motivation when rereading was focused on variation, the resulting experience may not contribute to the reader's experience of the *story*. The free play with the system is more likely to focus on the system itself, rather than the story. It is hard to consider this to be rereading – it is more like a form of replay, but without any clear goals. Alternately, the reader may form her own goals, and engage in rereading to pursue these new, emergent goals. This would constitute a form of reflective rereading, which we will discuss below.

9.3.2   Simple Rereading in an Interactive Story

The process of simple rereading is the attempt to recapture the experience of the story, once the reader knows what will happen. In the context of an interactive story, it is not clear what this would mean. The experience of an interactive story consists of both the unfolding of the narrative, and the process of making choices which impact the narrative experience. To reexperience an interactive story, it may be that a reader could go back through the story, and make identical choices a second time. Depending on how non-deterministic the story system is, it may not actually be possible to retrace the same story path. Assuming it is, can this retracing actually be seen as the same experience? It is the same narrative experience, but the reader is no longer making choices – instead, she is carefully repeating her actions. This can perhaps be seen as simple rereading at the narrative level. However, it is not clear whether this can still be considered an *interactive* story experience, given that the element of choice has been deliberately removed by the reader.

Another way to view a simple rereading of an interactive story would be to see the reader as attempting to recreate the experience of making choices, rather than attempting to reexperience the exact same story. It is not clear, however, whether the repeated experience of the choices would be satisfying on

its own, disconnected from the story. For the repeat experience of an interactive story to truly be equivalent to an interactive version of simple rereading in a non-interactive story, both the experience of the story and the experience of the interaction would have to be repeated. This requires further research.

9.3.3   Reflective Rereading in an Interactive Story

Reflective rereading in a non-interactive story involves taking a step back from the text, and approaching it analytically rather than in an attempt to become lost in the story. This often involves engaging with the structure and mechanics of the story, in addition to the story itself. For example, a reader may reread a story to examine how the author achieved certain effects, or to look for a deeper meaning encoded in the use of symbolism and intertextual references. A key point here is that the reader is not engaged purely with the structure and mechanics, but with how those elements relate to the story. This suggests that, for this type of rereading to be meaningful and satisfying in a non-interactive story, the reflection involved in rereading must connect to the reader's appreciation and experience of the story, in addition to an appreciation of the mechanics of the text.

We would argue that, as with non-interactive stories, in reflective rereading in an interactive story there must be a connection between the reader's appreciation of the story, and the reader's reflection on the mechanics of the system. For example, the process of rereading to explore how the system works must involve more than a mastery of the various interaction techniques. Instead, this process must also add to the reader's understanding of the aesthetic message which the author is trying to convey through the work. If the reader is focused solely on the mastery of the system, then the experience becomes more like a game than an interactive story. We will return to this point in our discussion of *Façade* in the next chapter.

An important point is that, in a non-interactive story, the reader is *reading*, whereas in an interactive story the reader is both reading and *making choices*. In a non-interactive story the reader may adapt the way in which she reads the story to the goals which she is pursuing, either during reading or rereading. In contrast, the reader of an interactive story needs to make choices within the structure created by the author. It is not clear how much the reader would be able to adapt this structure to her new reading goals during reflective rereading. This is another area which requires further research.

9.4   Describing Rereading in Interactive Stories

We are now in a position to describe, based on our observations and discussion, how rereading changes in interactive stories. We will do this by looking at what the reader is doing, and what the reader encounters, on the first and on repeat experiences (see Table 9.2).

When reading a non-interactive story, the reader is repeatedly performing certain mental actions (revising the story model and responding affectively) to achieve a specific goal (closure). This continues to be the case in partial rereading, which can be seen as a continuation of the initial (incomplete) reading. On rereading, whether simple or reflective, the reader expects to be doing something

Type of story	Closure?	Action taken	What is encountered
Non-interactive	before	same	same
	after	different	same
Interactive	before	same	different
	after	different	different

Table 9.2: Comparing first and repeat experiences of stories.

different, both in terms of the repeated action and the goal to be achieved. The reader forms new goals, either to recapture the experience of the story or to approach the story analytically, and reads to accomplish these new goals. The text, by definition, stays the same. Thus, when rereading a non-interactive story, what the reader is doing changes, whereas what the reader specifically encounters stays the same.

When rereading an interactive story, the reader is initially attempting to reach closure. At this point, as with a non-interactive story, what the reader is doing stays the same. However, what the reader specifically encounters *changes*. This is what makes it difficult for readers to consider what they are doing to be rereading, highlighting the paradoxical nature of rereading.

Once the reader reaches closure, if the reader continues to reread, both what the reader is doing *and* what the reader specifically encounters changes. Although the core mechanic, the action which the reader literally performs moment-to-moment, may stay the same, what the reader is *trying to achieve* has changed.

This comparison highlights the fact that in both contexts, readers change what they are doing when rereading. However, whereas in a non-interactive story the text is constant, in an interactive story the text changes. In addition, what it means for the reader to change what she is doing is quite different in an interactive story, where the reader is not just interpreting the text, but is also making choices based on the rules put in place by the author. How much the reader is able to adapt her actions to her new goals depends in part on the flexibility of the rule system.

Our model of rereading in interactive stories can be summarized as follows:

- Readers initially reread *to arrive at something*. This is a form of partial rereading, which readers do not consider to be "rereading", but which can encourage repeated experiences of the work.

- Once a reader has achieved closure, the reader's goals will change: to either simple rereading to reexperience the interactive story, or to a more analytic, reflective rereading. This requires a change in what the reader is doing while reading the story.

- The degree to which interactive simple and reflective rereading are supported relates to whether what the reader is doing can be adapted to the reader's new goals, and whether what the reader is doing relates to both the reader's experience of the story *and* the choices the reader is making.

9.5   Summary

In this chapter, we have proposed a model for rereading in interactive stories. In the next chapter, we show how our model of rereading can be used to explain readers' responses to existing interactive stories by focusing on one specific interactive story, the interactive drama *Façade* (Mateas and Stern, 2005).

Chapter 10

Explaining Readers' Responses

Having described our model of rereading, we test this model by using it to provide insight into why readers of *Façade*, one of the most well-known interactive stories which was also explicitly designed to be reread, tend to initially reread to explore the story, but quickly shift to "playing with the system", and do not continue to reread for long. We argue that readers of *Façade* respond this way because the core mechanic does not afford inexperienced readers taking action to pursue narrative goals, which frustrates their initial goal-oriented rereading, and makes it difficult to move on to rereading beyond closure; instead, readers find it easier, and more rewarding, to form non-narrative goals related to, for example, undermining the system.

This chapter is structured as follows. We begin with an introduction to *Façade*, in which we describe the structure of the work, and then summarize how readers have generally responded to *Façade*, based on a study of readers by Knickmeyer et al. [62], our own experiences, and our informal observations of our students reading *Façade*. We then make use of our model of rereading in interactive stories to explain these responses.

10.1 Overview of *Façade*

Façade is an interactive drama which was designed specifically to support repeated experiences. The reader of *Façade* takes on the role of an old college friend of the two main characters, Grace and Trip. An initial, non-interactive and audio-only opening sequence explains, in the form of a voicemail message from a very uncertain-sounding Trip, that the reader's character has been invited over for the evening. After choosing a name for her character, which indirectly also decides the character's gender, the story session begins.

The reader's character begins in the lobby outside Grace and Trip's apartment. Sounds of an argument can be overheard through the door. After the reader knocks, a rather flustered-looking Trip invites the reader's character in, and then goes off to get Grace. More arguments are heard from the kitchen, and eventually the couple come out into the living room. As the session progresses,

it quickly becomes clear that the reader's character is caught in the middle of the breakdown of Grace and Trip's marriage.

The reader interacts with *Façade* through two different mechanisms. The reader is able to construct utterances by typing in text. This text is parsed by the system and converted into a set of discourse acts [76], which in turn trigger reactions from the system. These reactions can consist of local responses from the characters, or can involve the transition to a new set of "beats" within the system's overall model of the story. The reader can also interact with the physical environment, by moving around the space and by picking up and manipulating objects. It is not clear, however, whether this second form of interaction has any impact on the story.

The session is structured roughly into two parts, during which the reader is taking part in three psychological "head games" [77]. The first game, which Mateas and Stern refer to as the "hot-button" game, involves triggering off specific hot topics about which Grace and Trip will argue. For example, a photograph of Italy near the main door of the apartment becomes the focus of an argument about romance and love. In the process, the reader will trigger off fragments of story which uncover some of the background to the couple's current marital problems. The second game, which the authors refer to as the "affinity" game, involves the reader making statements which determine whose "side" Grace and Trip think the reader's character is taking. These two games take place simultaneously during the first half of the story. During the second half, the reader is involved in a "therapy" game, in which the reader's discourse acts increase either Grace or Trip's level of self-realization.

Eventually, the session will move towards one of several different endings, which variously involve one character or the other deciding to leave, or the reader's character being asked to leave.

10.2   Readers' Responses to *Façade*

Based on our own repeated readings of the work, and based on observations of students who were asked to experience *Façade* as part of a university course on interactive storytelling, we can describe most readers' reactions as follows. The first session can be satisfying, as the reader can see that her actions are having some impact on what is happening, and, despite the occasional frustrations, can get the feeling that Grace and Trip are actually responding to her statements. Over the course of the session, the reader will gradually uncover some of the backstory, and come to an initial understanding of the situation.

In the second session, as described in [62] and supported by our own experiences and observations, the reader may try different strategies, and be rewarded with some variation in the progression of the story and the responses of the characters. Based on their study of readers playing through *Façade* twice, Knickmeyer et al. observed

> a general tendency for players to switch from immersive gameplay
> (acting naturally) to one involving more strategy...players actively
> adjust their interaction strategies in response to the previous experi-
> ence, and actively note and enjoy the conversational and story-level
> differences evident during replay.
> [62, p. 1550]

The use of "different interaction strategies" suggests that readers are not actually engaging with the story, but are more engaged with the interface and mechanics. Although Knickmeyer does mention readers' enjoyment of story and conversation variations, it is not clear whether they are enjoying this variation as part of the story experience, or as part of the experience of local agency.

Our experiences suggest that readers are not likely to be motivated to reread more than twice. For those who do reread, subsequent sessions tend to involve "messing" with the system. This often involves pursuing emergent goals such as trying to get kicked out of Grace and Trip's apartment as fast as possible by transgressing social conventions. This is very clearly *not* behaviour which can be described as interacting with the story. Similarly, Milam et al. [84], in their study of readers' responses to *Façade*, reported that participants initially wanted to replay to explore different endings, but were dissatisfied and instead tended to "test the boundaries" of the system.

10.3   Explaining Readers' Responses to *Façade*

We will now make use of our model of rereading in interactive stories to explain why readers tend to respond in this manner.

The core mechanic of *Façade* involves the indirect generation of discourse acts, which in turn trigger responses from the system. During the three social games, the discourse acts serve to steer the direction of the story by triggering new beats, and also alter the state of the two characters. The main activity in which the reader engages is these social games, which presumably can be played in such a way as to direct the characters towards different resolutions of their marriage dispute. However, as the system has been carefully designed to position the reader's character as a third party, there is often a feeling that Grace and Trip are off in their own world, and are ignoring the reader's actions. This gives the reader the impression that, although she can make an impact on the immediate state of the story, she has little control over the overall story arc.

As Grace and Trip argue, the reader occasionally gets access to fragments of backstory, such as Trip's secret stint as a bartender, about which he is very embarrassed. What the reader is doing, however, is very much focused on the present, and on attempting to direct the outcome of the social games, as opposed to determining which of the fragments of backstory are revealed in a given session. We would argue that, in terms of story, what is interesting is in fact the backstory, which reveals the deep-seated resentments and conflicts underlying the marriage.

10.3.1   Partial Rereading

As described in our model of rereading, the reader is initially goal-directed. There are two possible goals which the reader could focus on: moving the story towards a specific resolution, or uncovering and understanding the backstory.

For the reader who chooses to focus on controlling the outcome of the story, the reader will quickly realize that there are limits to how much control she can exercise. What becomes obvious is that it is easiest to get reactions which lead to early termination of the story, by acting against social conventions. This approach quickly degenerates into playing with the system, rather than playing

with the story. The reader who persists in engaging with the story, and tries to, for example, reconcile Grace and Trip, is engaged in a form of partial rereading, with the goal taking the form of reaching a specific story outcome.

If the reader chooses to focus on uncovering the backstory, the inexperienced reader will quickly become frustrated. The core mechanic is oriented on the social games, which indirectly result in revelation of backstory. In principle, a persistent reader should be able explore the underlying story. It is possible, through repeated rereadings, to become familiar with which topics will trigger a reaction, leading to story fragments which contain elements of the backstory. In practice, it requires many rereadings for a reader to learn how to trigger these story fragments. An inexperienced reader will initially feel that there is little that she can do to actively uncover the backstory, as the reader has little direct control over revelation of past information.

Partial rereading is problematic in *Façade*, as there is a disconnect between the core mechanic (triggering responses in the social games), and the goals which the reader forms (reach a specific ending or uncover the backstory). In both of these cases, the reader will tend to exhaust the possibility for partial rereading after 1-2 repetitions. Variation tends to be in terms of specific local interactions, and the reader will quickly discover that its easier to get kicked out than to engage with the story.

For the reader who has either reached closure (by achieving a desired ending or coming to an understanding of Grace and Trip's situation) or has given up on reaching closure, the question is then whether there is any possibility of engaging in either simple or reflective rereading.

10.3.2   Simple Rereading

Simple rereading requires that there is some emotional experience which the reader wants to recapture. At the level of interaction, the reader may be motivated to repeat certain satisfying choices, which may have led to a particularly rewarding ending. This, however, is purely at the mechanical level. At the emotional level, as Ryan [122, p. 57] describes, the reader is not able to form any emotional attachment with the characters, and therefore is unlikely to have any desire to repeat the experience. This can be explained in terms of the disconnect between the core mechanic and the reader's goals. Without the ability to directly engage in the story, the reader does not have any strong emotional experience which she would want to repeat. This suggests that readers of *Façade* are unlikely to engage in simple rereading.

10.3.3   Reflective Rereading

In terms of reflective rereading, the reader may, as described by Knickmeyer et al. [62], be motivated to experiment with different interaction strategies. This could constitute a form of reflective rereading, but it is more likely to involve a desire to master the system, given the disconnect between core mechanic and narrative goals. As such, this type of reflective rereading would be disconnected from the story, and is not be satisfying as a *narrative* experience.

Alternately, the reader may be trying to reread to reach some understanding of what message the author is trying to communicate through the interactive story. The underlying message of *Façade*, as described by the authors, is: "To be

happy you must be true to yourself" [74, p. 9]. This is not, however, the message that is conveyed through the interaction which the reader has with the system. The interaction tends to convey the feeling that a third party, no matter how close she is to a couple, can never really make an impact on their relationship. The reader experiences the frustration of standing to one side as two people tear each other apart. All the reader can do is attempt to "push their buttons". This quickly degenerates into "playing the system". Essentially, the core mechanic is not connected to the deeper message, which makes it difficult for the reader to engage in reflective rereading. Instead, repeated reading becomes the type of narratively unsatisfying reading-for-variation seen in works such as Raymond Queneau's *A Story as You Like It* (Queneau, 1967), and the reader soon gives up.

10.4   Summary

In this chapter, we have used our model of rereading to explain readers' responses to *Façade*, an interactive drama which was explicitly designed to support repeated experiences. In *Façade*, the reader is unable to continue with partial rereading for long, as this becomes frustrating due to a disconnect between the reader's actions and both the revelation of the interesting part of the story (the past), and the outcome of the story (the present), over which the reader has no direct control. Simple rereading is unlikely to occur, as the reader is not able to make an emotional connection with the work. Finally, it is difficult to engage in reflective rereading, as the reader will find it hard to connect her actions with any deeper meaning, and any attempt to understand the underlying system will most likely focus on the system itself rather than on the connection between the system and the narrative.

Chapter 11

Conclusion

This thesis has explored the complexities of rereading in the context of interactive stories, and has suggested that existing models of rereading, both for traditional and interactive stories, are not adequate. We have proposed a new model of rereading in interactive stories which focuses on what the reader is doing when rereading. This model provides a deeper understanding of rereading both in interactive and traditional stories, and suggests new directions for interactive storytelling research, both in terms of analyzing and designing interactive stories that are intended to be reread, and for interactive storytelling research in general.

11.1   Contributions

In this thesis, we have explored the ways in which rereading changes in the context of interactive stories. Through an analysis of existing stories, we have developed a classification of motivations for rereading and a categorization of techniques for encouraging and rewarding rereading in interactive stories. We have also conducted two studies of rereading of procedural hypertext fiction. The first study suggested that, when rereading, readers are reading to achieve some form of closure. The second study showed that readers struggle to call what they are doing as they go back over an interactive story "rereading".

From these observations, we have developed a new model of rereading in interactive stories, which focuses on *what the reader is doing* when rereading. According to our model, readers who are rereading to find closure are involved in what is equivalent to Calinescu's *partial rereading*. It is only when they achieve closure that they can potentially shift to either *simple* or *reflective* rereading. This shift involves changing from doing the same thing each time the story is read (reading to understand the text), to doing something different (reading to reexperience or to analyze the text). This highlights the paradoxical nature of rereading – that rereading, rather than involving reading something *again*, instead involves reading *anew*. This is particularly true in the case of interactive stories, where the text may, literally, be new each time it is read.

The thesis also makes a contribution to methodology, by introducing an approach to studying interactive stories which involves a combination of a modified "clinical interview" with stories designed to investigate reader behaviours.

11.2   Implications

Our findings suggest that the study of rereading should focus on what the reader is doing when rereading. This has implications for the study of rereading in both non-interactive and interactive stories. Our findings also have implications for the design of interactive stories.

Looking at non-interactive rereading from this perspective, we can see that partial rereading involves reading again, in the same manner, having not understood the story the first time. Simple and reflective rereading, however, are not actually rereading in a strict sense, as what the reader is doing is different, although the text is the same. This suggests that reexamining rereading of non-interactive texts from this perspective may provide new insights into both reading and rereading of non-interactive stories.

For interactive rereading, our model suggests that looking closely at what the reader is doing, the role of the reader, and the connection between the core mechanic of an interactive story and the reader's experience of the story, may provide deeper insights into what it means to experience an interactive story.

Our model of rereading also has implications for the design of interactive stories which are intended to be reread. The finding that readers initially reread to arrive at something suggests that authors should provide mechanics which allow readers to pursue *narrative* goals, and these mechanics should be designed to support these goals to be pursued *across* readings. In addition, our observation that readers' goals *change* after reaching closure suggests that authors should provide mechanics that can *adapt* to these new goals, such that the reader's actions remain connected to both *story* and *choice*.

11.3   Future Work

The work presented in this thesis has focused largely on rereading for closure, which we have characterized as analogous to *partial* rereading. We have also been looking at the desire to *immediately* reexperience an interactive story. Our observations suggest that more work needs to be done to look at other types of rereading, analogous to simple and reflective rereading in non-interactive stories. It may also be worthwhile to study why people may want to reexperience interactive stories after some time, as the motivations and rewards for this type of rereading are likely to be somewhat different that immediate rereading. There are, however, methodological issues which need to be addressed to study this type of rereading.

In addition, we have focused on interactive stories which involve the reader making choices in terms of configuring or exploring the story. We have excluded approaches where the reader contributes content to the story (category 5), and approaches where the reader's actions do not change either the story or the discourse (category 1). Given our observation that what the reader is doing while rereading is of key importance, it would be very interesting to explore the impact of changing the role of the reader on the process of rereading. This suggests that there is still much work to be done to explore the issue of rereading in interactive stories.

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