Exposing potential narrative structure through user choice

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ABSTRACT

The reading of a hypertext fiction could simply be veiwed as the reordering of events, reviewing and accessing fragments of a story that has already taken place. A different reader experience would come from different orderings and the effects that these might produce.

This doesn't have to be the case however. The fragments of a fiction also can represent possibilities that have yet to occur. This is independent of the over-arching narrative of the piece. At points in the fiction the reader is presented with choices. Do I follow this link or do I choose a different path? Here, the narrative structure of the piece is leaking through the text and not just the read structure but potential future structures. These choices must be presented to the reader by the author. This paper will examine some of the consequences of exposing the visibilities of these narrative structures, using the presentation of choices in hypertext fiction as an exemplar.

1. INTRODUCTION

When constructing hypertexts, as with any text, assumptions are made about the reader. With a traditional novel this might be assumptions on language comprehension, age etc. Hypertext adds to these assumptions due to the nature of communication. For example. the second node of a hypertext might only be accessible by having clicked on a link at the end of the first node. When at the second node the author can be reasonably sure that the reader clicked on the link as it is the only 'authored' mechanism for arriving at this point. There could indeed be others (someone mailed the reader a link to the node, the reader guessed the URL for the node, google gave it to them on a silver platter) but it does stand as a reasonable assumption.

These types of assumptions are often implicitly made of readers of more conventional paper based fiction. The author will normally assume that the reader will start reading at page 1 and continue turning the pages until they reach the end. This is not guaranteed of course, but a reader that skips pages or reads out of order is implicitly seen as breaking the rules, and as a result if they end up not understanding the text when they reach the end, they take responsibility for this.

Some authors have gone beyond these assumptions in the production of their work.

> "So, then you noticed in a newspaper that *If on a winter's night a traveler* had appeared, the new book by Italo Calvino, who hadn't published for several years. You went to the bookshop and bought the volume. Good for you" [6, p.4].

Calvino uses this technique to draw the reader into the fictional world created by the book. Indeed the entire opening chapter continues in such a style, with Calvino describing how 'you' the reader purchased the book from a bookstore, all the time describing situations evoked so concretely and with such a variety of options that every reader might recognize themselves in some part of it.

> "This book so far has been careful to leave open to the Reader who is reading the possibility of identifying himself with the Reader who is read: this is why he was not given a name, which would automatically have made him the equivalent of a Third Person, or a character" [6, p.141].

Aside from the obvious gender connotations (introduced, as I understand it, by the translation from Italian), Calvino begins to make guesses about the reader based on what little information is available to him. The reader has a copy of the book; is reading the book, not listening to it; purchased it in a bookshop.

When presenting the reader with choices in a hypertext fiction however, the author may wish to relinquish a number of their assumptions about the reader. Even if the hypertext fiction were to follow a fairly traditionally branching approach where the author can know the possible paths through the fiction in advance, they may not always be able to assume the reader has read all of the text.

2. THE IN-LINE LINK

Take the humble inline link for example.

> The majority of hypertexts we read contain links embedded into the text. In the case of the Web an anchor reference is placed around the particular source of the link and **the reader can click here** in order to carry on with their hypertext browsing.
>
> Of course there may be more text on the rest of the page. Where the information is factual, this may not be important but perhaps, in the case of a designed fiction, the author might wish to know if this section had been read. It could contain the vital piece of characterisation about the Colonel and his love of parrots.

So if the reader *had clicked there* and been taken to the start of this paragraph, could it be assumed that the reader had previously continued to the end of the paragraph, fragment, node? If not, did the events of the latter half of the text actually happen? Much of the time the author works with the assumption that the reader has absorbed the text of the node in its entirety.

So did that latter section of the story occur? Is it the case that the reader doesn't know about the Colonel's love for brightly feathered birds, or rather that the Colonel may not have a love for parrots?

Most system would make the assumption that it had been read, keeping a history on a node by node basis. But is this a fair assumption to make of the reader? Why place the link in the middle of the text if we wish the reader to read all of it before moving on? Some styles of hypertext are less susceptible to this problem than others.

3. SCULPTURAL HYPERTEXT

Sculptural hypertext, a term coined by Mark Bernstein [4], describes the authoring of a hypertext system where initially every node is linked to every other node, and the authoring process removes links to produce the final hypergraph. These links are normally pruned using preconditions and assertions; in most systems describing themselves as sculptural, link pruning is dynamic. The term subtractive hypertext might also be used should the word sculptural appear to overloaded with connotations.

With familiar hypertext systems like Microcosm [7], Storyspace [2], and the World Wide Web, new items are created unlinked and writers add links progressively to achieve the desired pattern of connection. This style of hypertext is *calligraphic* because link-creation involves drawing connections between nodes. Recently, interest has been awakened in *sculptural* hypertext, in which items are initially linked to everything, and in which writers create structure by removing unwanted links until only the desired connections remain.

In his seminal paper on sculptural hypertext, Bernstein described each node in the hypertext as having sets of requirements and assertions. Nodes can only be read if their requirements are met by the current state of the reading. Once read, a nodes assertions are made leading to a new reading context which might make new nodes available, or previously available nodes no longer valid.

Simultaneously, we were presenting our own sculptural hypertext system [14]. Here, the nodes were specified as FOHM objects [10] and held in the Auld Linky structural link service [9]. Each node of the text had a context associated with it that specified when the node was 'visible' and a set of behaviours that could modify the global context of the reading. This maps directly to the notion requires and asserts introduced by Bernstein.

Both systems operate by maintaining a global context, or system state, and then deciding which of the fragments of story available in the system fit with the current context. When a fragment is read, the global context changes. As both of these systems were desktop text based systems, the global context was defined almost entirely by the context specified with the fragments. The Southampton system did support a few additional contexts exterior to the story in terms of a global system time as well as a maintained 'story time' reflecting the amount of fragments of the story that had been read to that point.

The issue is clearer, and perhaps more confusing in the case of sculptural hypertext. Partly because it is a node dominant form rather than link dominant in one respect. The hypertext is read by node, with links connecting the nodes. At the end of each node a choice of links is presented to new nodes. These could contain information about the link, a reasoning choice, or they could contain information about the destination. Unlike the inline links, the text of the source anchor does not form part of the body of the text but sits outside of it.

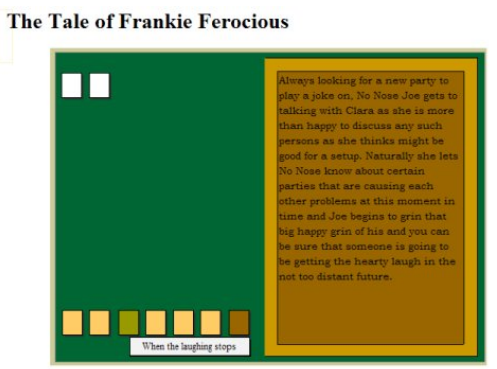

Figure 1: A sculptural hypertext reader.

Figure 1 above is a screenshot of a sculptural hypertext reader based on the Card Shark system described by Bernstein. The current card is displayed on the right, with seven unplayed cards shown bottom left. Some of the cards are playable, and some are not. When the reader hovers over the cards a description of the card appears, as can be seen on the third card from the left. In presenting this information, we choose to open up the possibilities of what might happen in the story for the reader, but at the same time, we incorporate those possibilities into the readers model of the

story.

4. THE PRESENTATION OF CHOICE

So what options are there for presenting the choices? Even if all the links are collected at the end of the node, as in the case with some sculptural hypertext systems, there are a number of ways of portraying link choices to a reader including:

Secondary interaction by the reader. Base the choice on when the reader clicks on a single presented link. They may be aware of affecting the choice but are not aware of exactly how. For example, the time that the current node has been on the screen could be used as the decider for where the link goes.

Choose from unlabelled links. Here, the reader is offered a number of possibilities that are unlabelled. Clearly there may be spatial positioning, or perhaps the links are numbered, but the intention is that the link labels have no inherent meaning to the reader. The reader chooses but does not know the criteria for the choice.

Offer cryptic links. Allow the reader to guess the content of the destination via a cryptic clue. Once the link has been followed, the reader may gain an understanding of why the link was labelled the way it was, but this will not necessarily be clear from just the source anchor.

Offer rationales. Let the reader choose based on additional information that suggests why they might like to view the destination. The rationale is not a summary of the destination, but may provide a justification for following the link. 'Find out more about the Colonel,' may lead to an anecdote that sheds light on his parrot fixation but the source anchor does not directly indicate what that anecdote might be.

Offer summary descriptions. Allow the reader to see a summary of the destination but not the whole thing. The link anchor may provide the reader with a good overview of the destination node, with just some of the finer details pruned. For example 'The colonel gets trapped in a lift with only *Treasure Island* for company'.

Offer the entire node. In some cases, it may be possible to offer the entire destination node as a choice for the reader.

Others have written about the problem of readers avoiding links which the author may wish them to read [3]. Indeed, in non-fiction hypertexts, clarity of link labelling is often an important goal [11]. In the case of hypertext fiction however, some of these options for presentation, depending on the nature of the hypertext, have more consequences than others.

5. CONSEQUENCES

Where the hypertext is constructed from nodes representing events that have taken place, a graphical representation of the narrative might appear as shown in Figure 2 below. Here, the choices made by the reader move them through the fabula.

The term *fabula*, was proposed by the Russian formalists such as Propp [12] and Thomashevsky, "a series of logically and chronologically related events that are caused or experienced by actors" [1]. The three layers of narrative in Bal's view were:

Fabula: This represents the raw chronological events and information. For example individual events that occurred during the Napoleonic wars.

Story: For any given fabula we can imagine multiple stories, each is a particular trail through the fabula, presenting a subset of the information from a particular perspective. For example, events concerning Napoleon's participation in the Battle of Waterloo.

Narrative: Any given story needs to be given a form to be told, in effect it needs to be rendered. For example, a novel following Napoleon through the battle. A film of the same story would be regarded as a separate narrative.

The story is a recounting of events with the reader choosing the order of the recounting. Depending on the links chosen by the Reader they may move backwards and forwards through the fabula.

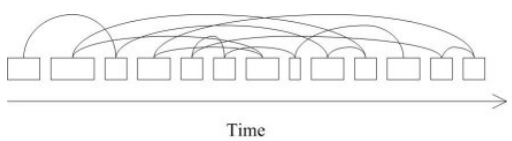

Figure 2: A simple hypertext re-arrangement of events.

The fragments read are building up an overall picture for the reader. The non-linearity of the chronology might make use of analeptic and proleptic transitions between nodes as part of the story telling structure [5] but essentially the events have all occurred.

The chronology of the events can be tracked. Luesebrink describes a wide variety of different chronologies present in fictions, including interface time such as reading time, but also cognitive time such as real, narrative and mythic time [8]. These all function with the chronology of a single reading.

Should the reader be presented choices as to where to go next, the summary or descriptions of any unvisited nodes still describe events that have happened, even if they are never revealed to the reader by the reader following the link.

The text need not always just represent a single story however. It is quite possible that the hypertext fiction be constructed in such a way that the choosing of one link precludes the possibility of the other choices subsequently taking place.

Re-joining our example, the following fragment of text is currently being displayed for the reader. Underneath the

The Colonel steps to the side to allow Flaubert to enter the pet shop in front of him, worried that his courteous action may backfire. Hurrying to arrive at the counter at the same time, the assistant hears in duplicate "I'd like to purchase that fine parrot in the window please."

⟶ The Colonel smiles. ⟵

The Colonel frowns.

The Colonel's dog, Nelson, chases the parrot out of the shop.

Figure 3: An example story node.

Perhaps out of fear of the Colonel's stare the assistant chooses to hear his request first. With profuse apologies to Flaubert he accepts the Colonel's money and hands over the parrot. The Colonel smiles at last.

Figure 4: The first link is chosen.

fragment of text are three link anchors offered to other pieces of the story. Two of the anchors are currently available to be followed, the third, although displayed, is not available for selection.

Having chosen one option, the alternative, Flaubert buying the parrot, is now precluded although the reader is now aware that this possibility could have occurred in an alternative reality.

As the reader moves through the hypertext, alternative possibilities are presented and chosen between. Figure 3, attempts to represent this with each choice made the reader moving them between parallel worlds. This structure might well represent a typical branching novel or the structure of many text adventure games.

It is here that the choice of link presentation previously discussed can have a major impact on the story constructed by the reader. Where the link anchors summarise the contents of the destination nodes in some way, the reader is invited to construct their own mental model of future events which may then not occur depending on their choices. The narrative structure is leaking out through the presented choices.

5.1 Glimpses of Future Worlds

Each choice made introduces one or more discarded alternatives. The more restricted the source anchor, the less defined these discarded alternatives become. If the whole destination node were revealed the reader will have gained more information than if a more ludic, cryptic summary had been

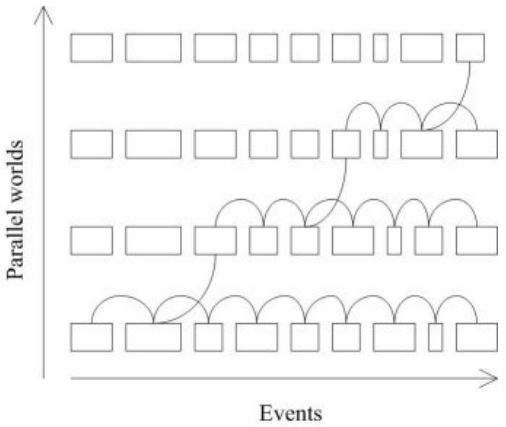

Figure 5: A crossing to parallel possibilities.

provided.

Figure 4 shows a possible reading of the hypertext, with the discarded choices highlighted in red. These will be absorbed into the readers construction of the story.

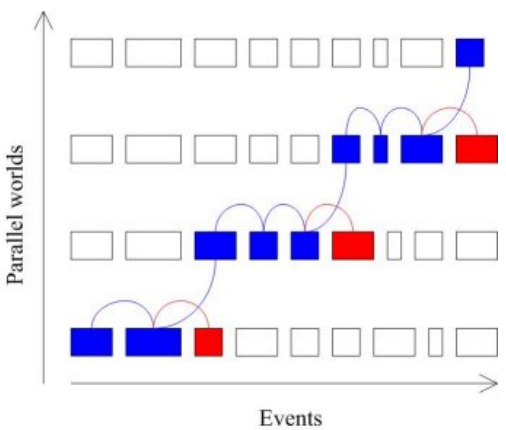

Figure 6: The discarded possibilities.

As in the example given previously, these possibilities may be mutually exclusive, and the discarded possibilities are obviously no longer possible. In systems such as Card Shark however this may not necessarily be as clear cut.

The Card Shark system described by Bernstein dealt a fixed number of cards to the reader and then indicated which of those cards were playable at the current time and which weren't. Depending on how the system is configured it might be possible to read summaries of unplayable cards or even the entire cards themselves. Rather than presenting problems for the author this could be exploited to suggest goals to the reader that are unattainable.

A card which is never playable could lead the reader to believe in an unreachable state. Consider the previous example. Some readers might assume that the Colonel has a dog called Nelson. This may not be the case however. The thought was placed by the link anchor

The Colonel's dog, Nelson, chases

the parrot out of the shop.

even though this link could not be followed. The chain of logic that assumes that this must be true even if the link cannot be followed at that moment in time is contradicted by the other two anchors which are forced to be mutually exclusive. The movement of the link anchors out of the body of the text also places the link anchor outside the current story model until the link is selected. It exists as simply an alternative possible future for the story.

Even if the card could be reached in some readings, a point may be arrived at in the current reading that renders it unplayable thereafter. Again, the author may never be explicitly stating that the story is unfolding and the reader may be viewing the fragments as elements of a single Story.

6. CONCLUSIONS

So why might this be important to recognise? Everywhere a choice of link is presented to the reader, possibilities can be revealed that never come to pass. Although this need not be seen as a problem to overcome, these discarded realities are part of the reading. Existing as potentially unintentional *trompe-l'oeil* that are never explicitly demystified by the author unlike the 'variable reality' segments of such postmodernist fiction as Gravity's Rainbow [13]. Here, episodes of the story are retroactively revealed to have been dream sequences, one level "down" from reality.

The presentation of the choice, be it in-line or at the end of the node, has a bearing on the text constructed by the reader. The more of the destination of the links that are revealed the more scope for alternative realities being constructed and then perhaps erased, or at least "pushed down" to a different level. It may be that this is precisely the intention of the author, or perhaps the nature of a recounted story requires that all choices lead to events that have already occurred in the world of the fiction.

The issue of the 'Back' button as been deliberately sidestepped in this paper. It can be viewed as more a feature of the interface itself than the text, but unlike in a paper medium where the reader can skip back to re-read sections, the nature of hypertext can permit different paths to be chosen as the reader moves forward again. This increases the cognitive load on the reader, as previously read material may now form part of alternative possible futures as a result of the changing of previous decisions. Depending on how the fiction is constructed, the engine may not compensate for the backtracking and the systems model of the readers state could easily become distorted.

The presentation of choice is an additional tool for use by the hypertext author, opening up opportunities to foreground the ontological nature of hypertext narrative structures.

7. ACKNOWLEDGEMENTS

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