Using Bidirectionally Hyperlinked Concept Maps To Analyze Nonlinear Narratives

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ABSTRACT

This paper describes the use of bidirectional hyperlinking to enhance the applicability of concept maps to literary criticism by supporting discussion of recurring themes within a complex nonlinear narrative. The motivating example is an analysis of an episode of the television series, *The Sopranos,* selected for the central importance of cycles in its structure and themes. While hypermedia concept maps are ideal for enriched visualizations of television criticism, we aim to show that bidirectional hyperlinking provides additional support for the recurrence [1] necessary to communicate structure. Our example maps demonstrate not only that hypermedia concept mapping can support arguments for underappreciated connections between plot elements, but also that bidirectional hyperlinking between maps helps to express the importance of cycles [2] not only in hypertext composition but in analysis of nonlinear non-hypertext narratives.

Categories and Subject Descriptors

H.5.1 **[Information Interfaces and Presentation (I.7)]**: Multimedia Information Systems – *hypertext navigation and maps.*

General Terms

Documentation, Design, Experimentation, Human Factors

Keywords

Hypermedia, spatial hypertext, concept mapping, argument mapping, IBIS, bidirectional hyperlinking, literary criticism, television criticism

1. INTRODUCTION

This paper shows how bidirectional hyperlinking can increase the power of hypermedia concept mapping to analyze recurring themes within complex narratives. By providing bidirectional links outwards to maps of related narrative elements and back inwards to the point of origin, users can not only depart from but revisit nodes, increasing the understanding of cycles and reducing disorientation [2]. The narrative under discussion is the controversial and misunderstood final episode of the television

series *The Sopranos* [3]. The inconclusive ending was a source of confusion for many, and the cyclical presentation of themes over several series, essential both to the structure and the message of the programme, was not only underappreciated but misperceived by many viewers as "lazy" [4]. We have used example maps created with an existing open-source concept mapping application, Visual Understanding Environment (VUE) [5], which we have enhanced by adding bidirectional hyperlinking between maps. Our original purpose in implementing bidirectional linking was to offer grouping of sets of simpler maps as an alternative to single complex maps. In this paper, however, we show how bidirectional hyperlinking can be leveraged to reorient the audience's understanding by highlighting what Bernstein calls "the central importance of cycles" [2] in an analysis of a complex non-hypertext narrative with a nonlinear structure.

The next sub-section will introduce the software tools used to create the concept maps. Section 2 explains the question, *What happened at the ending of the Sopranos?* that the maps attempt to answer, and the role of bidirectional hyperlinking in answering it. Section 3 shows how the linked maps are used to answer the question. Section 4 discusses our findings and their applicability to other nonlinear narratives in popular culture. Section 5 explains how bidirectional hyperlinking of hypermedia concept maps has helped us to answer the question by highlighting the cyclical structure of the narrative.

1.1 Tool Support

We are in the process of enhancing the open source concept mapping application, VUE [5], which is file-based for easy sharing and has good support for embedding images. We have implemented additional functionality for bidirectional hyperlinking between maps, as well as support for IBIS [6] argument mapping, and have made use of these enhancements to create some example hypermedia concept maps.

2. RECURRENCE

Despite the popularity of the television series *The Sopranos* [3], many viewers were left with unanswered questions. Bernstein [2] wrote "As early worries about disorientation receded, writers adopted larger and more diverse structural schemes while relegating simple topologies to a less prominent role." A similar increase in complexity has been observed in popular television [7] as related technology has increased audiences' opportunities to view and discuss episodes on demand. Despite the proliferation of viewer discussions and analysis using various media, the question *What happened at the ending of the Sopranos?* remains vexed for many. The final scene [8] shows the main character, the Mafia capo Tony Soprano, in a restaurant with his family. The scene ends abruptly with a hard cut to black and 10 seconds of silence,

followed only by the credits. Viewers were confused and infuriated because they wanted to know whether Tony Soprano had or had not been killed. A Google search using the terms "ending of the Sopranos" brings forth an abundance of detailed analyses and arguments. The series creator, David Chase, maintains that all the necessary information is in plain sight: "Anybody who wants to watch it, it's all there." [9] This apparent commitment to ambiguity was viewed as "an easy out" by a number of viewers, including at least one television writer [10]. The ending is not the only aspect of the series that has been criticized in this way: "Some of the similarities in arcs as the story progressed seemed very lazy to me." [4] This paper shows how concept maps enhanced with bidirectional hyperlinking can be used to facilitate presentation of analysis that addresses these questions, despite the complexity of the narrative. A set of example maps have been created to show how the repetition and inconclusiveness is in fact essential to the message and structure of *The Sopranos* and how the cyclical structure itself provides the answer to the question apparently posed by the ending. In the next section we will show how concept maps can be used to gather examples from various media of recurring themes within the series, and how the use of bidirectional hyperlinking of these maps uses recurrence to impress upon the user the intentionally cyclical nature of these themes, augmenting the use of node layout to visualize these cycles in the maps themselves.

3. ARGUMENTATION
3.1 The Proposed Answer
The proposed answer to the question: *What happened at the end of The Sopranos?* Is *Adriana comes back as Schrödinger's Cat.* In the next section, we will show a straightforward usage of concept mapping to present the evidence for this assertion. In the following sections, we will show how we have used bidirectionally hyperlinked concept maps to explain why the answer *Adriana comes back as Schrödinger's Cat* is more satisfactory than other answers thus far proposed.

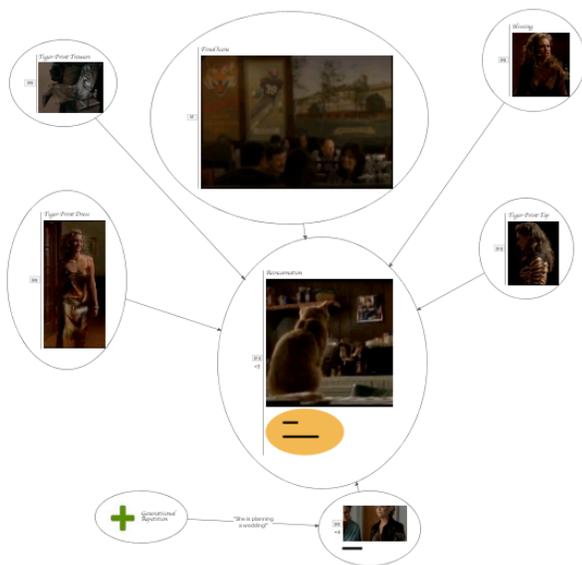### 3.2 Mapping the Evidence For Adriana's Reincarnation

Figure 1. Overview of map showing Adriana as a cat.

Figure 1 shows an overview of a map that presents some of the evidence for Adriana's reincarnation. The node at the centre of the map shows the cat that appears in the final episode. The cat spends its time gazing at a picture of Adriana's fiancé, who in recent episodes was murdered by Tony. Adriana herself was murdered on Tony's order in an earlier series. Around the central node are a number of stills clearly showing Adriana's preference for cat-printed clothing. Connected to the central node is a still of the mural in the diner where the final scene takes place; on the top left is the face of a tiger.

The assertion *Adriana comes back as Schrödinger's Cat* turns out to be simple to argue for. What has yet to be explained is why this is an answer to the question *What happens at the end of The Sopranos?* Here is where bidirectional hyperlinking can help us. In the next paragraph we will show how we have used bidirectional hyperlinking to highlight the recurrence of themes.

3.3 Bidirectional Hyperlinking of Recurrent Themes
It is not enough to assert that Adriana is reincarnated as Schrödinger's Cat without explaining why this answers the original question of how the story ends. There are two nodes of particular interest in showing how Adriana's reincarnation – itself an instance of recurrence – fits into the overall recurrent structure of *The Sopranos*. The first is nested within the central node showing Adriana reincarnated as a cat, and is shown in Figure 2. The second is nested within an image node. The image shows Adriana's mother, also wearing clothing with a cat print. The dialogue for that shot, shown in the accompanying link caption, is "She is planning a wedding!" – a stage in the cycle of life. The similar choice of clothing shows the child repeating the behaviour of the parent. The link, appearing more than once in this simple map, takes us to another more detailed map, which is shown in Figure 4. The next paragraph will explain how the bidirectional linking increases the expressiveness and clarity of both maps.
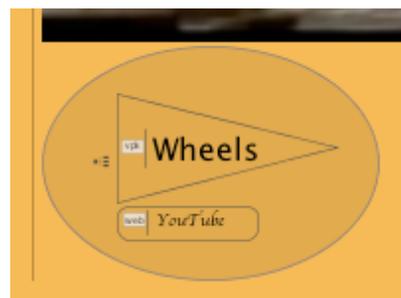

Figure 2. Bidirectional hyperlink to map showing circular structure from map showing Adriana as a cat.
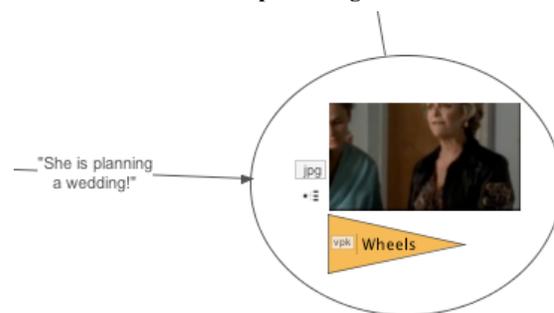

Figure 3. Bidirectional hyperlink to map showing circular structure from map showing Adriana as a cat.

3.4 Enriching Visualization of Structure with Recurrent Bidirectional Linking

Adriana's reincarnation becomes meaningful when one understands its place in the overall structure of the story. Figure 4 shows an overview of a map that argues for a cyclical view of The Sopranos structure and themes, drawing a circular path from birth through death.
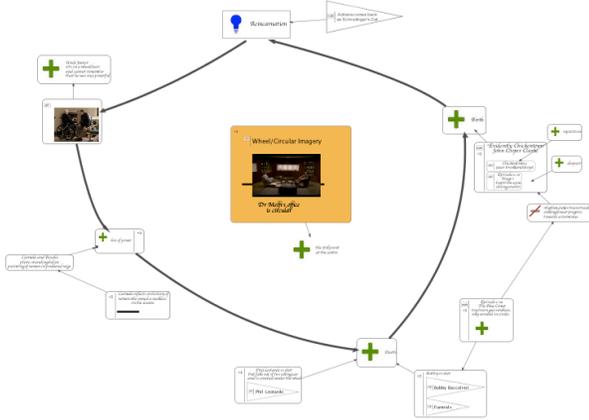

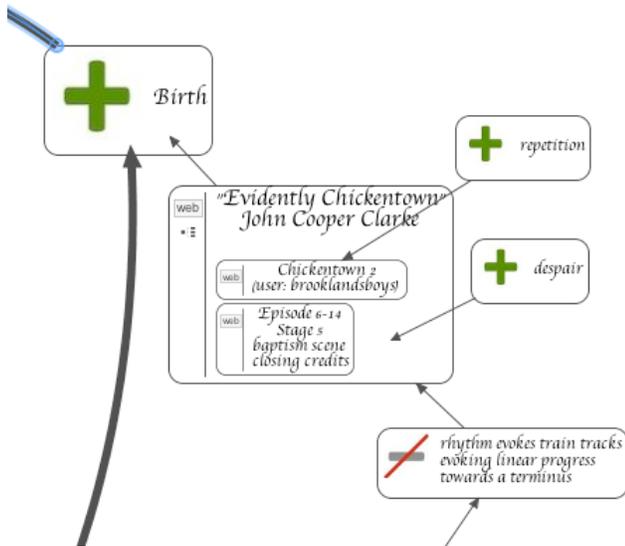**Figure 4: Overview of map showing argumentation for circular structure.**

Figure 5: Detail of map showing argumentation with links to external multimedia.

Figure 5 shows a detail of the map that argues for and against the use of circular symbolism relating to birth. Making full use of VUE's hypermedia potential, there is a unidirectional external link to a video file for a poem which was used as the closing credit music to a christening scene near the end of the series. [11] The audio strongly evokes linearity and the linked video file (which is not related to the television series) shows the view from a train moving in a straight line. IBIS nodes are used to show that this evidence fails to support an argument for plot linearity, by relating it to evidence shown in death scenes (specifically, a toy train moving endlessly around a circular track). The central node

shows a still of Tony in session with his psychotherapist, Dr. Melfi. The office is a circular room probably representing the still point at the centre. Various connected nodes contain bidirectional links which lead to, *and return from,* maps for relevant characters. This early draft of the map shows two bidirectional links to character pages, one link to the recurring theme of loss of power, one link to the recurring event of funerals, and one link to the map arguing that Adriana is reincarnated as a cat (Figure 6). As the map develops, more such links will be added, all departing from and returning to the map showing the series' recurring symbolism with circles. Note the light bulb in Figure 6, which is the IBIS symbol for "Answer"; as the argument is fleshed out with more evidence the answer will be marked as "Accepted".
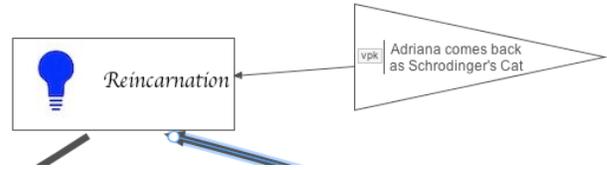

Figure 6: Node containing bidirectional link from the map of circular structure to the map of Adriana as a cat.

The maps can be developed further to relate Adriana's reincarnation to the inconclusive ending and show the evidence, already well argued by fans, that clues to a death scene were being presented [12]. Many insightful commentators have expressed their interpretations in essay-style blog posts with few links [13]. A number of analyses recognize that the ending of the series is not the outcome "Tony dies" or "Tony lives" but that the audience was denied the opportunity to observe the outcome. Some [14] have explicitly related it to Schrödinger's cat. However, only one commentator [15] has recognized the cat as Adriana and no-one has explicitly connected her reincarnation with a cyclical, rather than a linear, storytelling structure with a historical perspective on sinful human nature. It is noteworthy that nobody has explicitly connected these two interpretations even though making that connection is what gives us the answer to the question of how the story ended. While there is nothing about the essay format to prevent anyone from making that connection, we have not only shown a use of concept mapping to better enable meaningful connections between these interpretations [16] but used bidirectional hyperlinking to enforce recurrence and continually relate the part to the whole by returning the user again and again to the circle.

4. DISCUSSION

It is possible to show that bidirectionally hyperlinked concept maps are ideally suited for criticism of complex narratives, especially those that have a cyclical structure. What is not possible is to argue that because a given nonlinear narrative can be satisfactorily explained, audiences therefore ought to enjoy it [17]. Nevertheless, with or without a linear narrative, television series are increasingly complex, and a number of them, such as Buffy the Vampire Slayer [18], are demonstrably cyclical in structure [19], making bidirectionally hyperlinked concept mapping intrinsically well suited to their analysis and criticism.

One of the goals of the project that is developing VUE [20] is to enable new kinds of digital collaboration. Given this suitability, it would be good if this sort of hypermedia became a part of the mix of media available for critics and the public to analyze and discuss modern narratives.

5. CONCLUSION

This paper has shown a usage of bidirectional hyperlinking between hypermedia concept maps to analyze one of the complex narratives that are an increasingly common feature of popular culture. We have created example maps using a version of the hypermedia concept mapping application VUE [5] to which we have added enhancements including bidirectional hyperlinking. In

mapping the answer to the question *What happened at the end of the Sopranos?* we use the cyclical structure of the television series to show how bidirectional hyperlinking can encourage recurrent navigation to and from maps of recurring themes, thereby using what Bernstein calls "the central importance of cycles" [2] in hypertext to reorient the audience's understanding towards the central importance of cycles in a complex non-linear narrative of the kind that is increasingly prevalent in popular culture.

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