visible language 45.3

Interactive Visualizations of Plot in Fiction

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ABSTRACT

In this paper, we expand on our presentation at ICDS2010 (Dobson et al., 2010) in describing the design of several new forms of interactive visualization intended for teaching the concept of plot in fiction. The most common visualization currently used for teaching plot is a static diagram known as Freytag's Pyramid, which was initially intended for describing classical and Shakespearean tragedy. It has subsequently been applied to a wider range of fiction, but is not always applicable. The alternative interactive forms that we propose allow a more dynamic approach that can be customized by the teachers and students to accommodate various interpretations of a single piece of fiction. We provide a mechanism for people to select significant features of a story, such as characters, objects, events and transitions in time or space, and see how the different models react to the presence of these features. Our designs include one that is primarily sequential, another that emphasizes the structural complexity of the story and a third that places a single feature as a central focus. The data for this visualization is provided through an XML encoding of the significant features of a given story.

INTRODUCTION

In this paper, we investigate the possibility for 3D visualizations related to the notion of plot in fiction. In teaching narrative forms, teachers, particularly in North American K–12 classrooms and to a lesser extent in undergraduate university programs, have relied on the five-stage plot mapping first described by Gustav Freytag (1863) in *Die Technik des Dramas*. This mapping, developed in consideration of ancient Greek and Shakespearean tragedy, has widely become known as "Freytag's Pyramid" (*figure 1*).

However, since many plots follow other patterns, the superimposition of this model on forms beyond those it was originally intended to describe is often confusing and at worst can be downright misleading (Dobson, 2002).

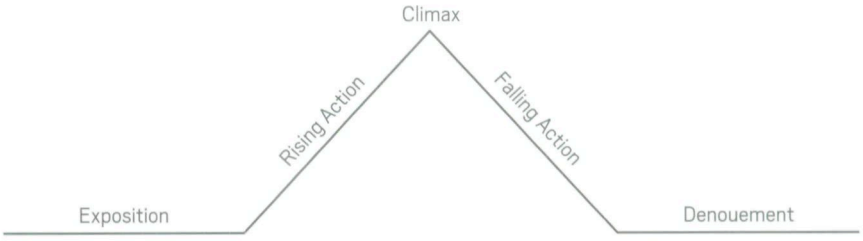


Figure 1: Freytag's Pyramid shows five basic components of plot, based on Greek and Shakespearean tragedy.

Kurt Vonnegut Jr. famously attempted to address this problem with the plot diagrams (*figure 2*) he proposed for his MA thesis, which were concerned with changes in the fortune of the protagonist over time, and which are published in *Breakfast of Champions* (Vonnegut, 1973).

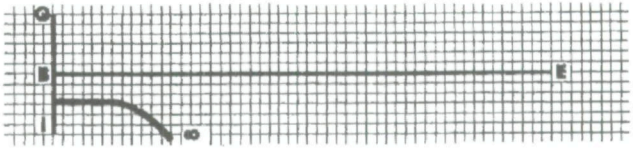


Figure 2: Vonnegut's plot diagram showing Kafka's *Metamorphosis*, in which a man wakes up to find he has been transformed into a cockroach and is eventually murdered by his own father. The Y axis represents the fortunes of the protagonist (from ill luck to good luck), and the X axis is the beginning to end of the book.

Although simple to read and deeply revealing in nature, like much of Vonnegut's own writing, the diagrams are limited in scope by their reliance on the Cartesian graph. As Van Peer and Chatman (2001) observe, the "diverse narratives of the Twentieth and Twenty-First centuries" (p. 5) are incompatible with contemporary narrative models because most of these models reflect a Western perspective. Further, as Dobson (2006) has noted, they do not take account of new media genres. Considering the latter, some, such as Bernstein (1998), have proposed two-dimensional plot patterns that account for various narrative forms emerging in digital media. Others, such as MIT's Drew Davidson (2005), have been exploring diagrammatic representations of plot in video games, demonstrating that the Freytag schema is inappropriate to the new context.

The problem of how best to visualize plot, though, was identified as a challenge long before Freytag or Vonnegut. Sterne's *Tristram Shandy*, published in nine volumes over ten years commencing in 1759, is often cited as an example of complex narrative structure—a precursor of later experimental forms in print and a harbinger of hypertext (e.g., Bolter, 2001). The novel is replete with digressions and temporal disruptions to which Sterne takes pains to alert readers. In volume VI, for example, he draws a series of five plot lines (*figures 3 and 4*). The first four graphs, he explains, represent the "lines I moved in through my first, second, third, and fourth volumes" (Sterne, 1847, 287).

He offers the following explanation for his final graph (*figure 4*):

> ... except at the curve marked A, where I took a trip to Navarre, and the indented curve B, which is the short airing when I was there with the Lady Baussiere and her page, I have not taken the least frisk of a digression, till John de la Casse's devils led me the round you see marked D; for as for CC CCC they are nothing but parentheses, and the common ins and outs incident to the lives of the greatest ministers of state (287).

Shlovsky (2000) remarks upon the challenge of visualization in the case of *Tristram Shandy*:

> If we visualize the digressions schematically, they will appear as cones representing an event, with the apex representing the causes. In an ordinary novel, such a cone is joined to the main story line at its apex; in *Tristram Shandy* the base of the cone is joined to the main story line, so that all at once we fall into a swarm of allusions (66).

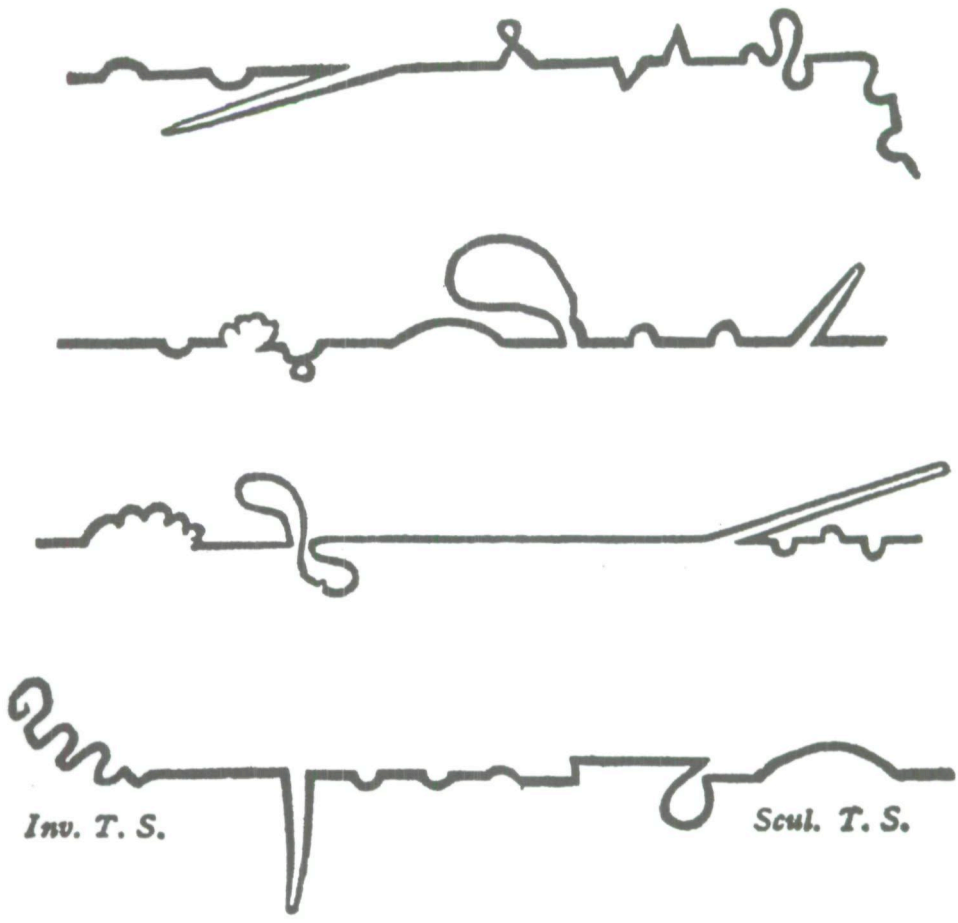


Figure 3: Sterne's plot graphs from the novel *Tristram Shandy*, p. 287.

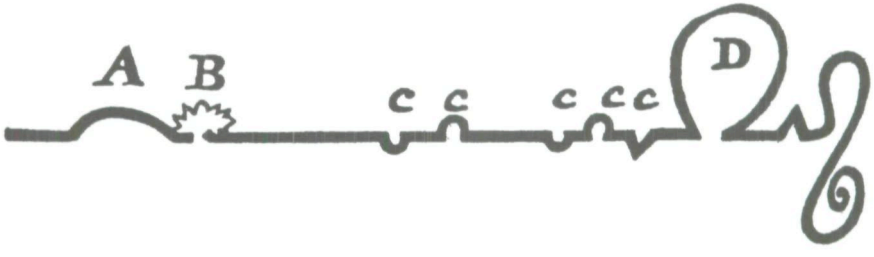


Figure 4: Sterne's final plot graph, with labels for explanations, p. 287.

NARRATOLOGIAL FRAMEWORK

Concepts drawn from narratology inform our interest in developing models for 3D visualizations of plot, as does a fundamental principle of this field of study, that the elements, themes and patterns that give shape to plot also help us make sense of and interpret stories. Rather than determining a single model for plot structure to be applied to any narrative, a narratological approach is guided by discovering patterns in and across actual narratives, making it a valuable theoretical framework for our study. Prince (1988) outlines the two broad aims of narratology as the investigation of features shared in common by narratives, and the description of general rules informing the production, and processing, of narrative structure (p. 39). Contemporary narratology traces back to the Russian Formalists, and most notably to Vladimir Propp in *Morphology of the Folktale* (1928/1968); for example, Propp analyzed and broke down a corpus of Russian fairy tales into their smallest narrative units, which he called "narratemes," and which relay to the reader the sequence of plot functions—or building blocks—that make up a fairy tale's story (e.g., Transfiguration, when the hero of a story is given a new appearance).

While Propp's morphology has been criticized for attending more closely to similarity than difference within the context of narrative, it has also been credited as a useful method for producing systematic descriptions and representations of narrative structure, as well as for making sense of how different features of a story's plot structure inform its meanings. In addition to similarity, a Proppian analysis accommodates narrative complexity: both at the level of the story, by demonstrating how one story may be made up of a unique series of numerous varied, and occasionally repeated, narratemes; and across multiple stories, by showing how, even though the narratemes recur across a cluster of stories, they will often occur in new and unusual sequences, in some cases developing new meanings for a story by placing greater emphasis on one narrateme over another. As with Propp's analysis, which isolates a wide range of narratemes (thirty-one function elements that can be classed within seven broader spheres of action, as well as eight broad character types), our approach has been informed by the need for plot visualizations capable of representing both narrative structure *and* narrative complexity.

Narratology has further relevance to the development of new forms of interactive visualization to be used for teaching the concept of plot in fiction. Digital narratology, for example, investigates the narrative structure of new media forms, such as hypertext fiction; hypertext theorists (Bolter, Ryan, Hayles, Landow, Moulthrop and Joyce) offer persuasive analyses that consider how structural

and organizational techniques made possible by new media (e.g., non-linearity, hypertext linking, reader interaction, visuality) produce not only multiple readings of the same story, but multiple stories entirely. From this perspective emerges a view of plot structure as a "reading path," of which there may be more than one, and through which all narrative, printed or digital, can be seen as a space in which the reader participates (Bolter, 2001). While digital narratology attends broadly to the implications for narrative structure, of the move from traditional to new media forms, Ryan (2006) proposes an explicitly interactive narratology to account for the new features acquired by the elements of traditional narratology—space, characters and events—in texts designed to be highly interactive (p. 100). Our contribution to contemporary and digital narratology is the development of new media tools for reading and experiencing both complex print and digital narrative, making it possible for readers and instructors to explore different structural features of the same story even in cases where such interaction has not necessarily been a part of the text's production. Together, digital narratology and new media forms of storytelling draw attention to the increasing need for pluralism in teaching the concept of plot.

Finally, contemporary narratology shifts new focus onto the visual features of literary narrative. According to Bal (1997), "attention to visuality is tremendously enriching for the analysis of literary narratives" (p. 162). Prior models for representing plot structure, however, primarily map only the passage of time or the sequence of events that make up a story: these diagrams either ignore or fail to accommodate certain elements of plot that shape a story's visual field, such as space, places, objects and characters. Moretti (2005) proposes that analytic tools drawn from other disciplines—for example, graphs and maps—may offer readers a new perspective on the visual features of literary narrative, not to mention the relationships that develop between these elements as they structure literary narrative. Moretti terms his loosely visual narratology "distant reading," through which "distance is however not an obstacle, but *a specific form of knowledge*: fewer elements, hence a sharper sense of their overall connection" (p. 1). This notion of distant reading—of developing visual models to discover and make connections between different elements of literary narrative—informs both the design and scale of our 3D visualization prototypes.

3D VISUALIZATIONS

Although simple to read and deeply revealing in nature, diagrams such as Vonnegut's and Sterne's to which we alluded earlier are limited in scope by their reliance on the Cartesian graph. In this paper, we describe a process of prototype design for a digital tool that would enable learners to manipulate 3D visualizations of narrative structure. To begin this process, we considered a known example of a complex print narrative that does not conform to conventional understandings of plot, the title story of Alice Munro's short story collection, *The Love of a Good Woman*. This long short story (almost a novella in length at 92 pages) begins with a brief section describing three small-town boys who discover the body of a local man—an optometrist—drown in his car at the bottom of a local river. Having apparently established the kernel of a murder mystery, and having instilled in readers a sense of intrigue in this regard, the narrative then digresses for well over half of its length, covering a range of discursive material about the boys and the town before diverting to describe an apparently unrelated scenario in which the local practical nurse tends a terminally ill patient in an isolated farmstead. The subject of the drowning eventually arises again, some two thirds through the narrative, but readers are offered only a series of glimpses as to the possible circumstances of the event and must accept that this story about the complexity of human relations in a small-town setting will not offer overt answers or conform to traditional plot structures. Indeed, as Ross (2002) remarks in contemplating the challenges of the story for readers, it is a "*tour de force* of deferral" (795).

Dobson (2006) has summarized some of the critical reception of this narrative in relation to its complexity as follows. New (2000) observes, considering *The Love of a Good Woman* collection, that for Munro "'story' is neither linear nor one-dimensional; story layers narrative—and as these stories make clear, no one ever knows how many layers there are" (570). Ross (2002) likewise notes that reading the stories in *The Love of a Good Woman* requires "digging down through layers and following threads backward through to earlier handlings of the same material" (p. 786). She also points out that Munro has described her own writing process as one of identifying the "soul" of a story and layering material around it (1998).

In a similar vein, Carol Shields, another Canadian fiction writer, has characterized narrative as a "subjunctive cottage," observing that it isn't "something you pull along like a toy train, a perpetually thrusting indicative. It's this little subjunctive cottage by the side of the road. All you have to do is open the door and walk in" (2000, p. 54). Considering such metaphors, one and two-dimensional

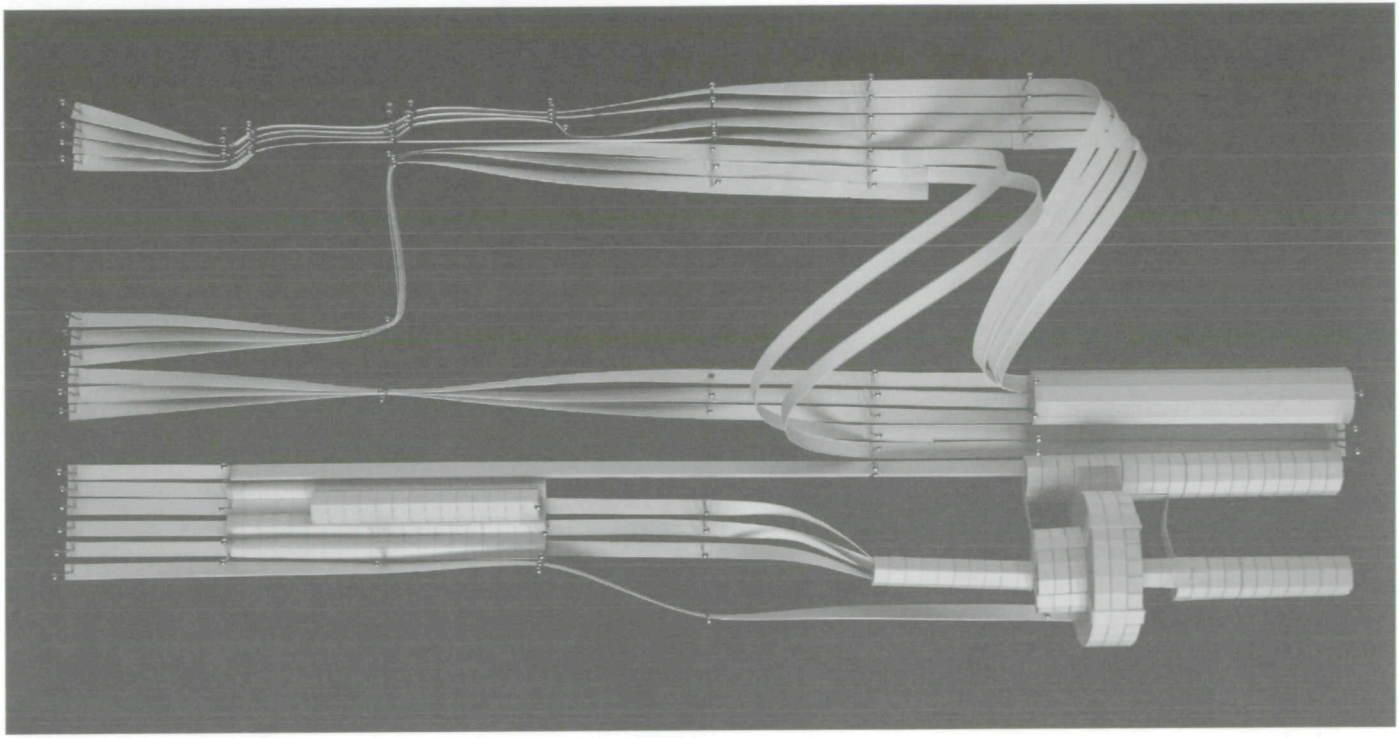
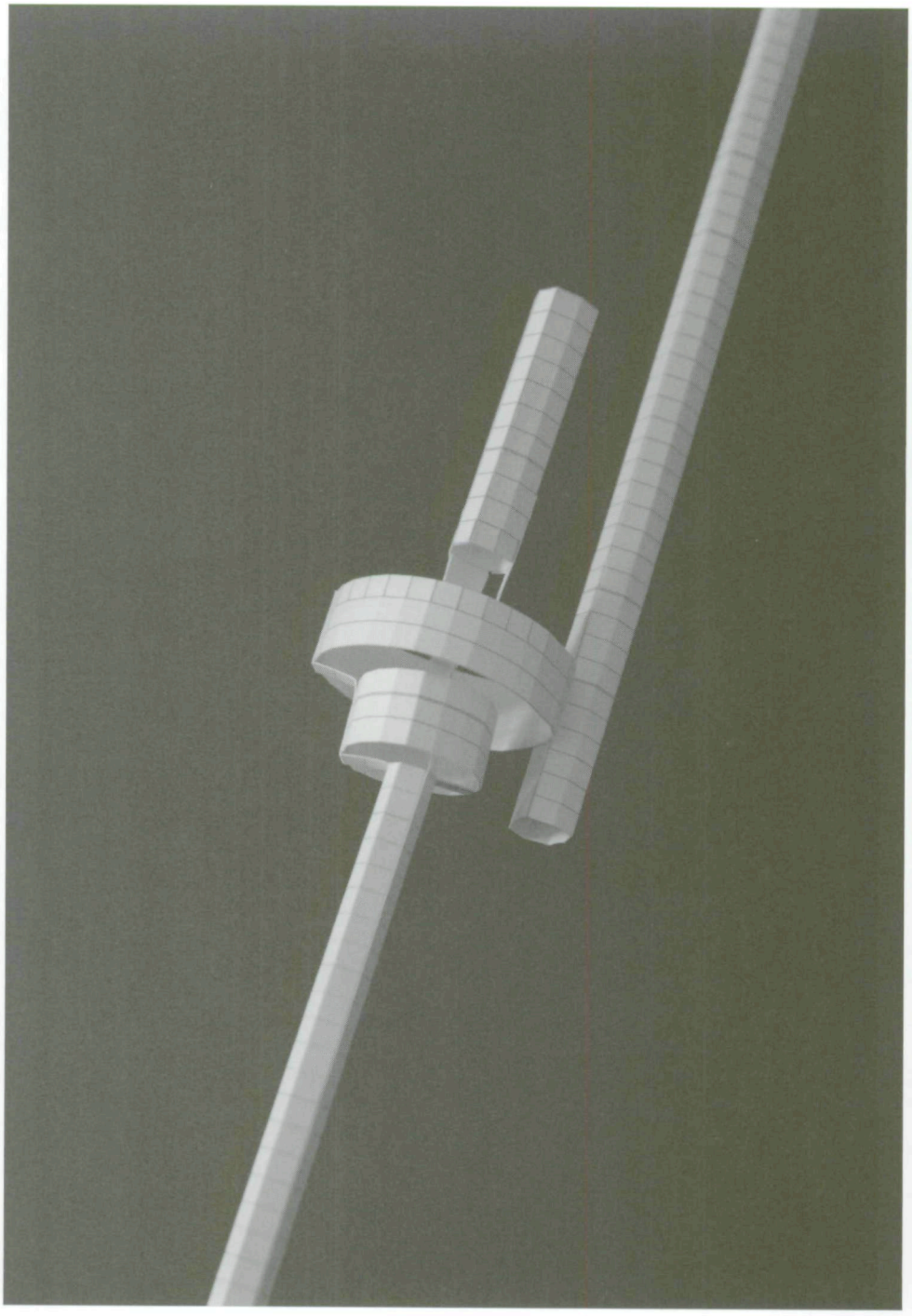


Figure 5: This image shows a portion of a relatively complex story that contains tagging about characters, events and objects in multiple locations, with several digressions visible and a density of tags that appear as cylinders of various sizes in the lower right.



models appear insufficient to capture the complexities of contemporary narratives that are layered, multithreaded and so on—narratives written by authors such as Alice Munro, Jorge Luis Borges, Italo Calvino and James Joyce to name a few.

In our approach, we attempt to map changes in plot using a variety of 3D sculptures, which we feel will accommodate in a more appropriate manner this notion of the three-dimensionality of narrative structure. Our goal is to build a prototype that will provide the user with the opportunity to tag a narrative using an XML schema that describes significant features such as characters, objects, events and transitions in space and time. The tagged text can then be put through a series of visualizations that reify different aspects or approaches to understanding the document.

For example, our first display (*figures 5 and 6*) retains a sense of the linearity of the document while simultaneously showing moments of digression, developments of parallel plotlines, inversions and so on.

The facets of the tubes around the core text represent tags added to words, phrases or sentences. A larger or smaller circle around a particular part of the text means that more or fewer tags were added. A resulting sculpture will be structured by finding connections between tags (by interactively separating them from the main stem and gluing them together in space), thus relating even distant parts of the text to each other.

However, the fundamental model at work here is one of linear text, as represented by the linear tubes. A visualization based on the concept of a linear chronological sequence in a story can be misleading, since in many stories a straightforward chronological sequence is not present. In terms of their connection to time, stories can proceed in a wide variety of ways. Stories that begin in a linear manner can subsequently digress, while those that begin *in medias res* may include a subsequent flashback in order to accommodate antecedent action. Stories can also have multiple timelines that are interwoven or that run in parallel. References to time can be implicit, but they can also occur explicitly in a story, where the author is flagging either another story element through an anaphoric reference, or else is signaling to time occurring outside the story through a kind of temporal deictic reference. The options available are practically endless, given the inventiveness of authors and the various combinations of available approaches.

Figure 6: Here we show a detail from Figure 5 that attempts to convey structural information about plot. The central tube or stem of the object represents the text, while the insulating circular sleeves represent instances of tagging.

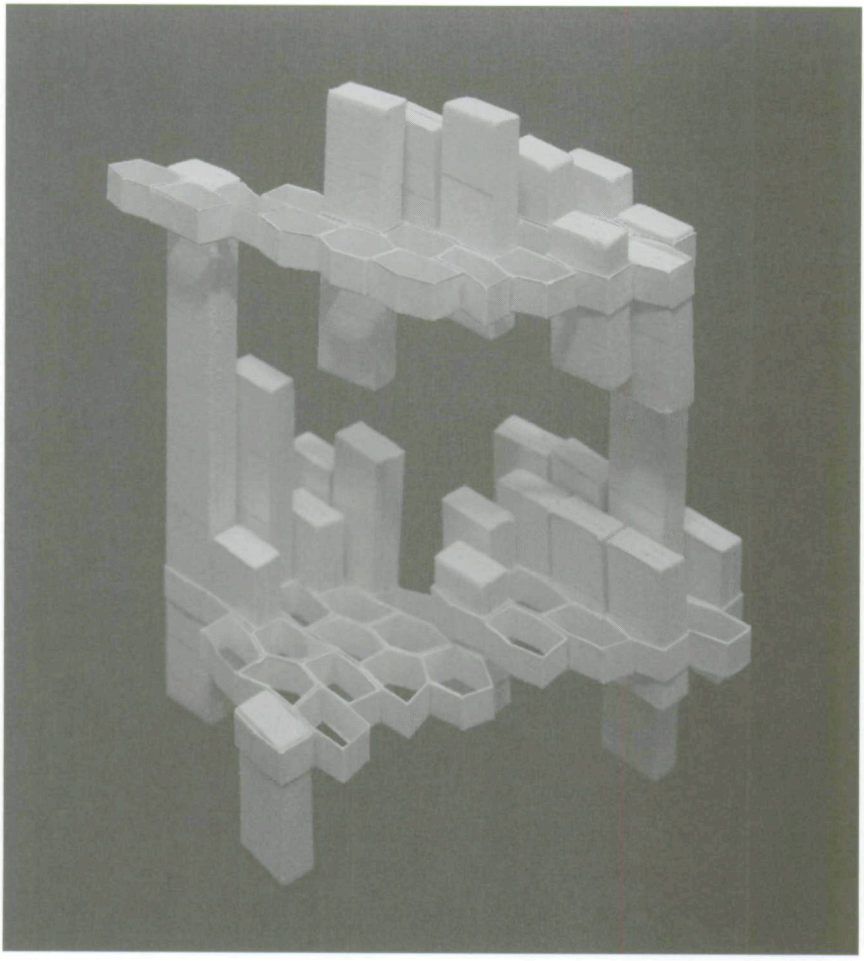


Figure 7: Our inspiration for the structural concept of story visualization draws on related concepts of the cabinets of curiosities and the palace of memory (Daston, 1998; Goldyne and Garver, 2000). Here building blocks of different sizes are placed in layers. Some cells in the layers are empty. The model can grow in all directions.

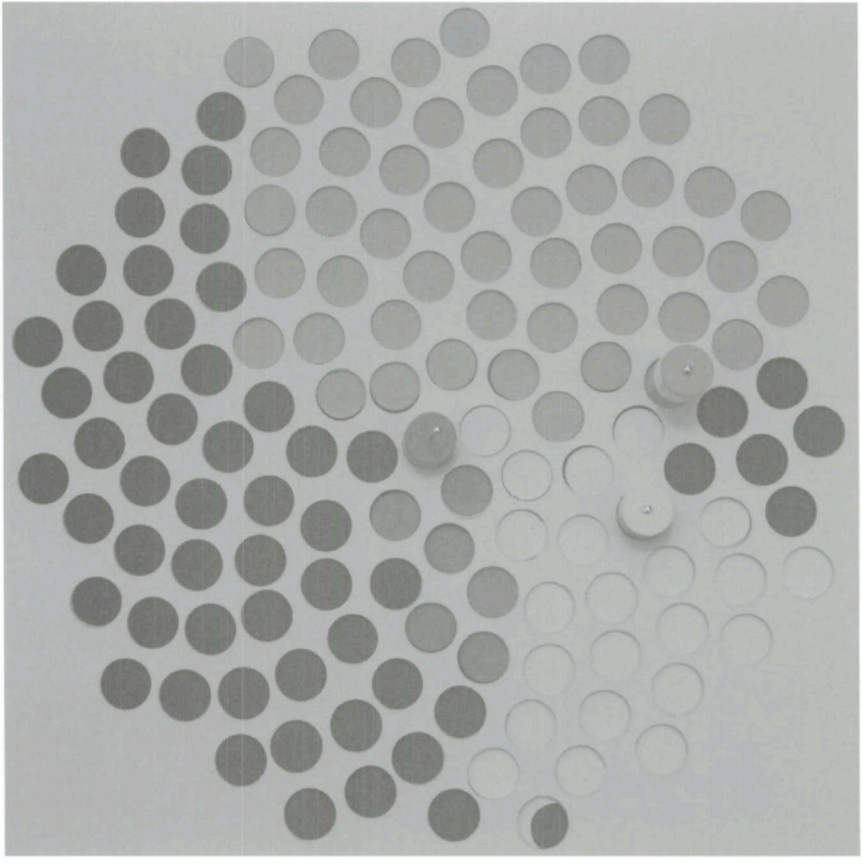
Even stories that appear to proceed sequentially will often contain elements of recollection or proactive construal, where characters speculate about the possible future from within the timeline of the story, and elements of their recollection or speculation can be present, with or without variation, in the actual events that have occurred or will occur.

Since our schema provides us with what are essentially a set of discrete building blocks, we are able to include these complexities in the representation of time by

producing structures that display time in a variety of ways, then populate the structures with the blocks (*figure 7*). This architectural approach to visualization relies on a clear visual distinction between form and content, emphasizing that there are story structures that can be recognized, like Freytag's Pyramid or Vonnegut's graphs, as being somewhat independent of the particular details of the story. Our contention however, like Vonnegut's, is that the complexity of stories results in a relatively wide range of possible structures.

Alternatively, we can choose to visually de-emphasize the structure of the story and instead focus on the interrelationship of the different story elements or blocks. Our next approach therefore emphasizes one or more of the blocks by placing them

Figure 8 Alice Munro describes some of her writing as proceeding in rings from a central soul. In this visualization, the user chooses some of the story's building blocks as the center and sees other blocks form around them.



at the center of a circular space (*figure 8*), in essence proposing that this block or this set of blocks is serving as Munro's "soul" of a story. The user then has other visual elements to invoke in order to represent the relationship between the central blocks and the others. For example, color might be attached to type of block, so that characters are purple, objects are black, events orange and transitions are yellow. Proximity to the center could then be used to convey proximity in time, or else proximity in the story, depending on the user's preferences.

In this sketch, we have also included height of a block to convey emphasis, which is helpful but also necessitates using the third dimension; alternatively, we could have chosen to emphasize some blocks over others by varying size.

Based on the Fibonacci series, our visualization provides an opportunity for sequencing the spiral of related features in a more complex way than would be possible with a visualization that relied on a series of concentric rings.

PLOT AND GENRE

The connection between the form of a plot and the genre of a story provides another complicating factor that is of potential interest in pedagogical approaches to dealing with fiction. Vonnegut's (1973) premise was that there are a sufficient number of these conventional plot/genres that they can be used as a kind of characterizing thumbprint for a culture, much as the patterns of chipping on stone arrowheads are a sign of different prehistoric societies. In some cases, such as the Cinderella story, the larger form of the plot has become the label for a genre. Similarly, most murder mysteries begin with a murder and most romantic novels end with requited love. However even in these cases, the details of the plot can vary, so that there are Cinderella stories, for instance, that lack any characters who are analogous to the three wicked stepsisters.

It is therefore possible to use our interactive visualizations of plot in order to examine variations within a genre. However, perhaps more interesting are those cases where the genre does not imply a particular plot. Many literary genres are of this sort, including a wide range of contemporary short stories and plays that are taught in the classroom. By providing teachers and students with the opportunity to interactively explore these materials, our 3D visualizations hold some promise for being useful in a large number of contexts.

XML ENCODING

A key part of the process of producing plot visualizations is the encoding of digital versions of stories using Extensible Markup Language (XML). XML is not a programming language, but a meta-language that establishes the rules for generating unique sets of elements—called schemas—to mark up or "tag" text files based on a user's preferences or interests. For example, HTML, a markup language for structuring web pages, could be a schema developed in XML. XML allows users the flexibility to choose which parts of a text are important and to mark them with tags, indicating that they are elements within the text's schema. Users can also provide additional information about tagged elements by adding attributes.

Figure 9: This diagram shows the basic structure of an XML element using an example from our encoded version of *The Love of a Good Woman*. Every XML element in a schema has a start tag and an end tag. Together, these tags are used to mark up the content of a story. Elements can also have attributes, which are then assigned a value. The value of an attribute can be predetermined or closed, or it can be open, meaning there are no limits placed on what kind of information is provided as the attribute value. In the case of this element, dialogue, the attribute value of speaker would be closed in that it is limited to the characters of the story.

XML has a wide range of uses, from content management to database development. Rissen and Lawrence (2010) note for instance, that semantic markup practices such as XML encoding permit a "more detailed analysis and visualization of digitized documents and the conceptual links between them" (55). In their description of a linguistic markup project related to the Proppian fairy tale Markup Language (PftML), Lendvai et al. (2010) compare XML to a structural or narratological analysis. Developed by Malec (2001), PftML is, like ours, a custom XML schema designed for encoding narrative, in this case to mark up fairy tale following Propp's thirty-one narrative functions. According to Lendvai et al., a considerable benefit of the

semantic markup of narrative using a custom XML schema is the ability to describe narrative structure in reference to multiple aspects of plot, such as relationships or actions.

We apply similar insights specifically to the semantic markup of digitized stories on the grounds that basic XML functions for marking up the structure and content of a text document make it ideal for tagging, analyzing and visualizing both the common and unique features of literary narrative. Although the key elements used to encode Munro's *The Love of a Good Woman* were characters, objects and action, the schema we developed to test our 3D visualization prototype also allowed us to tag additional features, such as narration, dialogue and thought, that are common to narrative, and that tend to be flexible or unstable within the context of complex narrative. Using attributes, we could then specify which characters were either speaking, narrating or representing their thoughts in certain passages of the story.

The following short excerpt (*figure 10*) from *The Love of a Good Woman* has been marked up using sample tags from a simple XML schema for literary narrative. Enclosed in brackets, the elements dialogue, character, object, action and narration are used to tag these parts of the story. The attribute, "reg," which appears within the character tag, is used to specify or "regularize" the name of the character in question in cases where a proper name is replaced by a pronominal reference. The element, dialogue, also contains an attribute, speaker, to indicate which character has spoken a line of dialogue; this attribute is more useful in passages where such information is not included.

<dialogue speaker="Enid"><character>Enid</character> said, "Nonsense."</dialogue> <narration> To see her husband would do a woman more good than to have a little doze.</narration> <action><character reg="Enid">She</character> took <character reg="Lois,Sylvie">the children</character> up to <object>bed </object> then, to give <character reg="Rupert">man</character> and <character reg="MrsQuinn">wife </character> a time of privacy.</action>

Figure 10: An example sentence with XML encoding that demonstrates our use of attributes.

This figure is intended to demonstrate some of the basic principles of XML. For example, the text is divided into elements, which are marked off using start tags and end tags (e.g., <character>Enid</character>). Elements can also have attributes in cases where more information about the content may be helpful (e.g., <character reg="Enid">She</character>). Elements can also nest within one another (e.g. <dialogue speaker="Enid"><character>Enid</character> said, "Nonsense"</dialogue>).

Texts encoded using an XML schema are then displayed using publication tools, which can also be designed to display encoded documents in unique and informative ways. Our 3D plot visualization prototypes are essentially publication tools, developed specifically to generate interactive models that produce customizable views of the narrative structure of an encoded story. Battino and Lancioni (2010) describe the development of one such tool, specifically to visualize the narrative structure of digitized tales that have been marked up using PftML. While many such publication tools tend to generate highly textual graphical displays of XML documents, our prototypes pair textual with predominantly visual information. As we have found, interactive models generated from stories encoded using XML can be highly persuasive, helping readers to iteratively investigate patterns that reveal the significant or meaningful aspects of a story or series of stories.

XML is affordable to use in the classroom and easy to learn—especially if students or instructors limit their early tagging efforts to fairly straightforward plot elements, such as characters and objects. The process of marking up a short story or brief passage from a novel is not unlike close reading in that it requires sustained analysis and some interpretation of text. Although we have been working to develop our own schemas, other efforts to produce standard schemas for encoding narratives, such as FicML, PftML and StoryML, are ongoing. One outcome of our development of interactive models for 3D plot visualization is a contribution to these efforts, since in encoding short stories for visualization, we have developed and documented a number of schema prototypes that might be useful to others interested in encoding literary narrative.

INTERACTIVE PROTOTYPE

We constructed the first interactive prototype based on our designs using the Unity 3D programming environment, which provides the developer with a set of interaction controls that are familiar to people who have used video games. The system allows the end user to load an XML-encoded file, select tagged elements of interest, then manipulate the resulting display by yawing, rotating, zooming, panning and so on. Figure 11 shows a screenshot of the Fibonacci series design, where the tags are represented as colored cylinders that together form a Fibonacci-based disk. The disk has been positioned by the user in order to emphasize the selected set of tags that have been raised above the level of the other tags at the center of the screen.

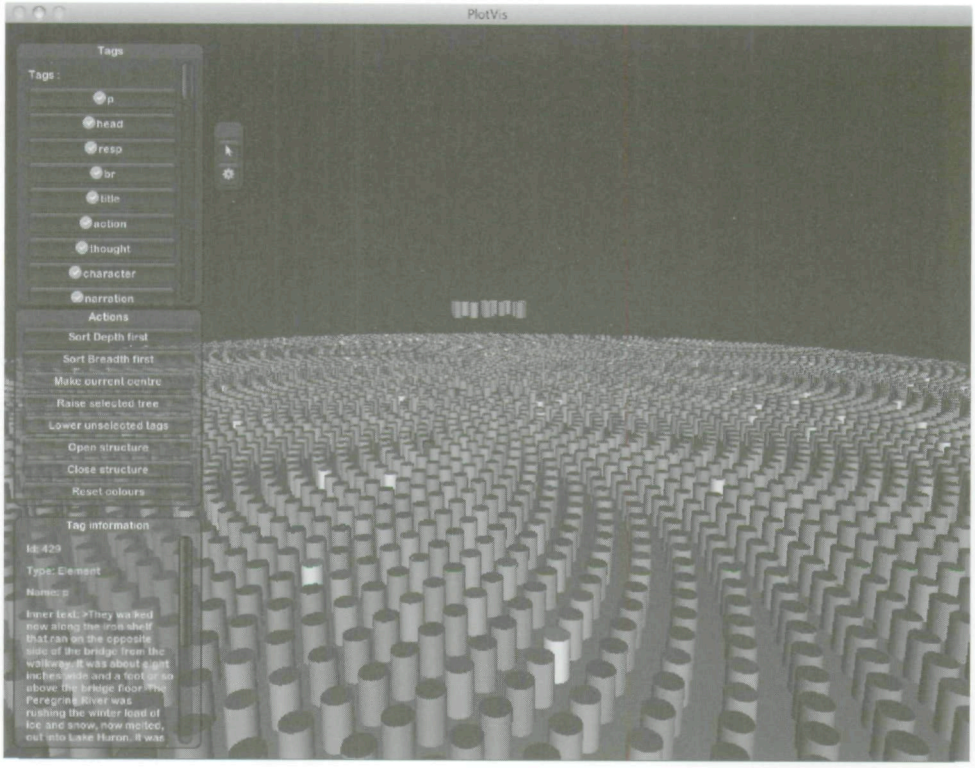


Figure 11: This screenshot of Munro's story demonstrates the complexity of the tagging, with each colored cylinder representing one of the roughly seven thousand tagged pieces of text.

Each of the colored cylinders represents an appearance within the text of an XML tag or a tag attribute. The colors correspond to the taxonomy of tags, with different shades of green for action, thought, character and narration, while blue is for objects and yellow for dialogue. One of the implications of this approach is that the same parts of the text may appear more than once in the display, if they have been tagged in more than one way. A character name, for instance, might also appear in a passage about action, thought or narration. Since most names have a regularizing attribute to encode the standard form of the name, nearly all characters appear multiple times. In order to help sort through this complexity, the user has the ability to raise and lower selected tags. It is possible, for instance, to choose all the tags that deal with characters and raise them above the level of the others.

The system provides the user with three different ways of organizing the display of the tags: either through a traversal of the tag tree, or by starting at the beginning

of the story and following sequentially, or by referencing a timeline that has been manually created and associated with the story. Any of these organizing principles can be adjusted by the user who is interested in seeing the effect of placing a different starting point at the center of the diagram, by choosing for instance, an object or character that seems primary to the narrative.

For example, the user might be interested in the role played by the pronoun "you." The second person pronoun is arguably a central idea, because it is important to the theory of narration that Munro has reified in the story. By placing it at the center of a display that follows the sequence of the text, the start of the story is changed to correspond to the first instance of the word "you" in the story. By placing "you" as the center of a display that follows the tree hierarchy, the root node is changed to "you." If the display is following a timeline, the point where the word "you" first appears would become the new start of the timeline. In each case, the other narrative elements such as objects, characters, events and so on are all rearranged to accommodate the new center element.

The second person pronoun is one possible example, made relevant by Munro's narrative theories, but alternatively someone might consider an object, such as the red box, to be at the center of the story; yet another reader might argue that one of the characters represents the center. By reconfiguring the disk each time with a new center, it is possible to see the effects of these choices in the visual relations of other elements in the story.

PEDAGOGY

For use in classrooms from grade school through higher education, it will be possible for teachers and students to choose between a couple of different approaches, depending in part on the technical and literary sophistication available. For a teacher who is well versed in both XML and literary theory but has relatively inexperienced students, it may be most useful for the teacher to produce the XML encoding, demonstrate the interactive system, then allow the students to try changing the parameters and record or observe the results. More advanced students and researchers may wish to experiment with different ways of marking up the narrative elements in the text in conjunction with observing how the different visualizations render the forms that result from the markup.

Although some approaches to modeling story are going to be more convincing than others, the opportunity for teachers and students to examine alternatives,

looking for the pros and cons of different configurations, can offer valuable lessons not only in the understanding of a particular story, but also in providing an increased awareness of the hermeneutic or interpretive approach to studying fiction, where the goal of the exercise is to generate as many valid perspectives as possible, rather than attempt to find some definitive single perspective.

In the sense of providing multiple perspectives for discussion, the three different approaches that we propose for visualizations of plot can play a role at different points in the process. For instance, it is possible to use the basic set of XML tags we have established for our schema (characters, objects, events and transitions in space and time), but it is also possible to spend some time in formulating an alternative set of appropriate tags, or in modifying the existing schema. By examining the various representations that can result from these changes, teachers and students can study the effects of choices made at the level of the semantic markup of a story.

Alternatively, the visualizations can be used once the markup of a story is completed. At this point, the task consists of generating various models and comparing them. For instance, in the central visualization shown in Figure 6, it is possible to choose any of the blocks to serve as the central element of the story, resulting in a wide range of possible configurations of blocks for comparison and discussion.

CONCLUSIONS

Although straightforward sequential narratives do exist, our various visualizations provide the opportunity for teachers and students to examine plot in all manner of stories, including those that are not sequential, and in any case to explore the inter-related roles of various story elements such as characters, objects, events and transitions in space and time. The fundamental goal is to show the key elements of a story (characters, objects and actions) as recorded in the metadata (in this case XML tags). In conjunction with various methods of indicating time, these elements combine to indicate plot in text and allow the viewer to see similar patterns of various elements across the text.

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