"Reconfiguring Narrative" Using Digital Tools

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Abstract
This article describes the use of digital technology and text markup in the production and dissemination of scholarship. Traditional narrative – as static, linked arguments and paragraphs – reflects the constraints and limitations, but nonetheless important use, of print technology. "Reconfiguring the narrative" to reflect the capabilities of online scholarship enables readers and writers to engage in more thorough explorations of the text, theory, concepts, and interpretations (Landow, 2006).

Keywords
Digital scholarship; Digital history; Components; Reconfiguring narrative; Non-linear narrative; Hypertext; Links and associations; Scholarship presentation

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The INKE Research Group comprises over 35 researchers (and their research assistants and postdoctoral fellows) at more than 20 universities in Canada, England, the United States, and Ireland, and across 20 partners in the public and private sectors. INKE is a large-scale, long-term, interdisciplinary project to study the future of books and reading, supported by the Social Sciences and Humanities Research Council of Canada, as well as contributions from participating universities and partners, and bringing together activities associated with book history and textual scholarship, user experience studies, interface design, and prototyping of digital reading environments.

Introduction

The use of digital tools and technology change how research is conducted. Their implementation results in the creation of humanities methodologies which are practical and not just theoretical. Digital tools change how we carry out research; it is only fitting that they should reconfigure the narratives or text that this research produces. This article considers how digital manifestations of scholarly output require us to rethink how we present scholarly narratives in light of new user activity centred on engagement with information online. Willard McCarty recently wrote that "the stylistics of digital scholarship is a new ball-game, demanding attention to how we write" (McCarty, 2010, msg. 546). How we write often reflects structures built upon print technology. "Reconfiguring the narrative" to reflect the capabilities of online scholarship enables readers and writers to engage in thorough explorations of the text, theory, concepts, and interpretations.

Overview

The context of this article will be outlined before illustrating a number of Use Cases. A brief history of the conception of hypertext demonstrates the use of technology to lay bare our interpretational trails and how Vannevar Bush and others before him conceived of using technology. We will then look at George Landow and his call to "reconfigure narrative," before moving on to look at the work of William G. Thomas and Edward L. Ayers, who promote reconfiguring narrative in a non-linear, non-sequential fashion.

This research, driven by a particular historical thesis, Associational Culture in Ireland, uses readily available and accessible technology to inform the creation of scholarship at all stages – research, argument development, and indeed presentation. The use of XML, XSLT, XQuery, and Web technologies such as XHTML, JavaScript, et cetera, support humanities methodologies that are more akin to scientific empirical research and Cartesian modes of scholarship than traditional ones (Rockwell, 2009). By considering the activities we carry out, as described by John Keating and Aja Teehan in their article on activity theory, we can isolate Use Cases associated with traditional modes of scholarship and new Use Cases made possible by the online medium and its various software components (Keating & Teehan, 2010).

Use Cases and Use Case diagrams, used in software engineering and specified by the UML, or Unified Modelling Language, are used to "structure the behavioral things [of a system] in a model" and describe "actions that a system performs[,] that yield an observable result… to a particular actor" (Booch, Rumbaugh, & Jacobson, 2004, p. 19). These visual models, outlined in Figure 1, define the interactions between the text and the various users, whether student, scholar, or otherwise. The use of various markup and

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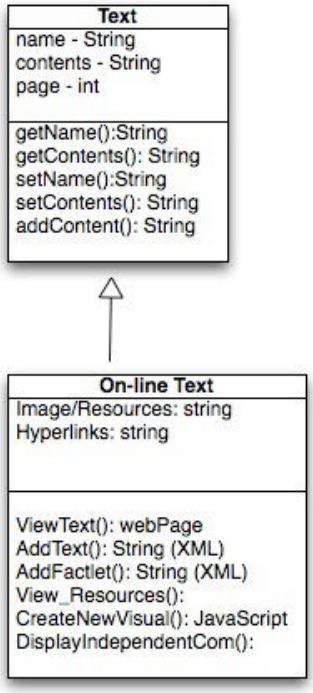
scripting languages can realize the creation of simple user interfaces which are driven by these Use Cases, which implement various activities within academic research – both the final narrative in a historical sense and the scholarly steps taken to produce it.

Figure 1.



Hypertext, Vannevar Bush, and associative thinking

All of these Use Cases implement the idea of hypertext or hypertextuality, which is a prominent feature in the theory and implementation of scholarship in digital format. Hypertext, however, is the fundamental mechanism that enables the Web. Tim Berners-Lee created the Web in the late 1980s to enable document sharing using client-server guidelines implemented by HTML (hypertext markup language). The linking of documents and other resources enable hypermedia that create the interactive web environments that we are all used to. Yet even before the conception of modern computing, Charles Babbage had conceived of machines for computation in the 19th century. Indeed literature of the same period, particularly Edward Bellamy's *Looking Backward: 2000-1887* (1888), points toward a socialist utopia supported by Internet-like technology. More than one hundred years later, George Orwell would also refer to technology, not as the positive utility described by Bellamy, rather as a destructive medium to control and coerce the masses through surveillance and the ability to rewrite history. This produced one of Orwell's most famous quotes, "Who controls the past controls the future; who controls the present controls the past" (Orwell, 1949, p. 35). This sentiment's relevance today does not go unnoticed. In the same decade, Vannevar Bush (1945) conceived of a machine to aid in the production of history rather than of rewriting it.

This machine, called the Memex, or Memory Extension, encapsulates the idea of hypertext and supports associative thinking, a feature of historical research. Bush (1945) describes how the Memex could leave a trail of links and associations between different

texts, articles, et cetera, and could demonstrate how a train of thought or interpretation had been reached. The Memex was a hypothetical, mechanical instrument, devised to make the task of wading through the ever-increasing amount of publications and scholarship easier and more manageable. Bush isolated the "inadequate means of storing, arranging, and tagging information" (Landow, 2006, p. 10) as the major difficulties facing scholars. Some sixty years later, in the presence of modern computer technology, we are still faced with these difficulties and an ever-increasing problem of information overload and data retrieval. Our means to store, arrange, and tag information are adequate, and are constantly being revised and updated. The presentation of scholarship, however, often lacks transparency of interpretation and could benefit from leaving the trails of links and associations described by Bush.

Preserving interpretation and historical narrative

As we all know, text encoding, whether using standard or custom schemas, has become the default methodology for presenting text documents, both born digital and transcribed from print. The use of XML for "storing, arranging, and tagging" primary and secondary sources provides alternative means of knowledge dissemination and consumption, and is an intrinsic part of primary and secondary source research. The use of XML structures, such as the creation of "factlets" and factoids, detailed in the DH2009 article, can address issues surrounding transparency of interpretation and subjectivity (Webb & Keating, 2009). Close examination of the various functional movements within historical scholarship, as described by Caroline Coffin, reveals the existence of "the genre of argument and the genre of narrative," and explains the "difference between historical recount and historical account, as explaining rather than recording the past" (quoted in Webb & Keating, 2009). The factlet structure linked to primary and secondary documents allows the writer to "ascribe significance" to the text, and embedded references to factlets in encoded scholarship can expose processes of interpretation and subjectivity. Factlets make assertions and encapsulate the process of writing and creating argument and historical narrative. Preserving these stages of scholarship embeds self-sustaining functionality that requires no additional work at the final stages of scholarship. Using the same structures to allow annotation by additional users enriches scholarship, creating new learning experiences, as well as extending the life cycle of the text and narrative, and thus leaving trails as described by Bush.

Traditional narrative – as static, linked arguments and paragraphs – reflects the functionality, constraints, and limitations of print technology. Geoffrey Rockwell states that an "online [text] extends the book" (Rockwell, 2009) – a digital text inherits the functionality of a printed text but can extend this functionality through semantic and presentational encoding, hypertext or hyperlinks, visualization, and text mining enabled by the encoding. This additional functionality and the relationship between print and digital text can be demonstrated using UML class diagrams (Figure 2), demonstrating how an online text extends the book, both through Rockwell's use but also as a specific software modelling paradigm, which outlines the attributes and methods of a particular class and its objects, again specified by the UML.

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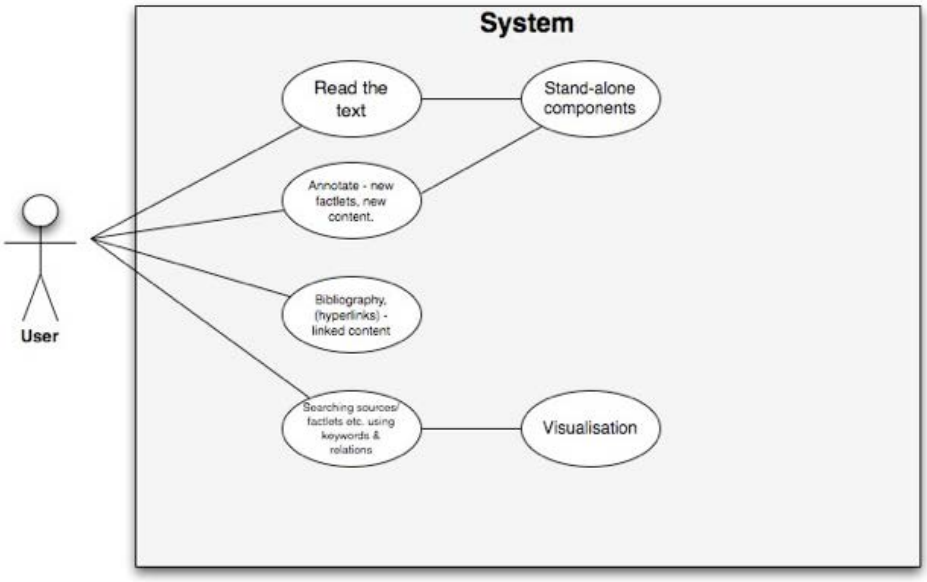
Figure 2: UML class diagram, showing inheritance from text class



Functionality: Non-sequential writing and engagement

Looking back at the Use Case diagrams, we see that the first of these specifies the ability to simply view a text online, achieved by displaying a basic PDF or applying HTML tags. We can also use more visually attractive software, such as the social publishing specification provided by issuu.com which emulates a printed text and can be embedded in an online environment. XML encoding and the use of XSLT transforms facilitate the production of simple text viewers but can also inform or instruct how a text is deconstructed or dissected, creating new manifestations of the same text, both user- and system-driven. This ability extends the first Use Case (viewing the text) and implements another (viewing stand alone components), to be discussed shortly.

Providing digital narratives that are linked to resources, argument, and interpretation engage readers and users in the environment where the historiography and historical narrative was produced. An online environment that includes access to primary sources can enable navigation of a digital narrative in non-linear fashions. George P. Landow explores the use of hypertext in contemporary writing and how its use affects the various activities associated with the production and consumption of narrative and critical writings in digital form. Landow quotes Theodor H. Nelson, the creator of the term *hypertext* in the 1960s, to define hypertext as "non-sequential writing – text that branches and allows choices to the reader, best read as an interactive screen...popularly conceived [as] ... a series of text chunks connected by links which offer the reader different pathways" (Landow, 2006, pp. 2-3). These pathways and links enable readers to consume text, images, videos, and other media related to the original context or text. Digital technology is essential to hypertext, yet even traditional printed media "offer the reader different pathways" to follow. Scholarly articles that include citations, references, footnotes, endnotes, and so on provide links to other texts, which are not directly part of the initial calling text. Intertextuality also connects various textual and physical objects, but just like references and citations in print, the reader cannot directly access related material. Hypertext, hypothetically, allows users to infinitely traverse between related materials on the web instantaneously. Landow refers to these

texts as "metatexts" or "metametatexts" (Landow, 2006, p. 69), depending on the distance between the original text or webpage and the current one.

Just as there are various reader activities, there are various user activities, many of which destabilize the text as the online user is likely to reference one article and then quickly move on to the next. Willard McCarthy recently wrote about this on the Humanists Discussion Group feed, stating:

> My readers can rejoice (I have told myself) in the treasure-trove of references, speeding from my argument into the network of scholarship I have uncovered. On the other hand they leave my argument quickly behind. Indeed, I am implicitly urging them to do so. (McCarthy, 2010, msg. 546)

The technology that drives the Internet, links documents and resources, and indeed guides users to online articles is the same technology that can make users leave our texts behind. "Reconfiguring" text and scholarship by enhancing text functionality and interactivity may refocus user engagement, and reiterates McCarthy's statement that "digital scholarship" demands "attention to how we write" (McCarthy, 2010, msg. 546).

Landow discusses this idea of "reconfiguring narrative" using hypertext that "encourages branching story lines" as opposed to traditional linear ones (Landow, 2006, p. 264). But as Coffin (2004) demonstrates, narrative is also an intrinsic part of historical research. Historians and other scholars go through a number of processes or activities to produce scholarly output. These processes include identification of primary and secondary sources (whether these are digital or not should not dictate their use), analysis of sources, creation of argument, and presentation of a linear narrative. These activities should be accounted for in any digital representation of scholarship. The ability to include sources, and the representations of their interpretation, were previously limited by time and physical space but can now be included as a legitimate and essential part of digital scholarship.

Reconfiguring and dissecting narrative

In 2001, William G. Thomas and Edward L. Ayers produced an article for the American Historical Review, *The Differences Slavery Made: A Close Analysis of Two American Communities* (Thomas & Ayers, 2001). This article was published in the traditional manner in the journal, and was also presented in a digital one. The digital article, however, was not just a replica of the printed article in a digital format. Each aspect of the original article was constructed differently to allow for digital publication and hypertext. In this way the digital article and the print article became two different entities or manifestations of the same information or content. Apart from obvious differences between print and digital format, their entire constructions were generated to comply with different reader and writer activity, and stand-alone "components" linked to other "components" formed the basic structure of the digital article. Thomas and Ayers maintain that the digital article cannot simply be reverse engineered from the printed one, as "extracting components from a preexisting unilinear text not only proves to be equally (or more) difficult but also appears to produce inferior

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components" (Thomas, 2007, para. 15). While this may be true, it is difficult to divorce the digital article from the printed one entirely.

These stand-alone components as described by Thomas and Ayers are supported and enhanced by access to sources, maps, historiography, and analysis. They support current user activity, which can involve jumping from one text to another, rather than fixed, linear reading. A reflexive process between "final" scholarship, sources, and other resources is required to reconfigure the text and the narrative and create these "text chunks," as described by Nelson in the 1960s (Landow, 2006, pp. 2-3), or stand-alone components, as described by Thomas and Ayers in 2001.

These stand-alone components engage the user in multi, non-sequential text derived from the original scholarly article. Thomas and Ayers state two key aspects of these basic units, as:

> 1. Each component is tightly focused on a single idea, event, description, or problem.
> 2. No component of an article substantially repeats anything stated in another component in the same article (Thomas, 2007).

Implementation

To achieve this, an iterative process between final research products and the creation of these components is required. Modifying existing XML schemas and using XSLT transforms establishes a methodology to create and produce these components in such a way that once this is done for one component it can be repeated for many others. The individual components, categorized and specified by the content within the research, creates a digital environment that is not fixed to the linear structures of the article or chapter it is derived from, although access to this and the ability to view components in their original context preserves this traditional Use Case. In many respects the creation of these components involves mining the original artifact.

Yet rather than just snippets of their original manifestation, a careful consideration of their content allows users to engage in meaningful text bites that, while linked to a larger piece of scholarly work, can be read, usefully, on their own. This online environment teases out the semantics of the scholarly text and presents the contents in a non-linear, non-sequential manner. Linked resources to each component, including secondary or primary sources, transcriptions, images, maps, and so on confront the user with the evidence that informs the component. The ability to add factlets or annotations reinvigorates the original text as it becomes a living piece of scholarship. Visualizations, similar to that described in the DH2009 article on factoids, can demonstrate the relationship between components, sources, factlets, and indeed other components and also signifies an implementation that not only "reconfigures the narrative," but leaves it totally behind.

Conclusion

Vannevar Bush envisaged a machine to support the creation of academic scholarship that could leave a trail of links and associations between various texts. He conceived of this to cope with what he considered in the 1940s a significant increase in the

amount of publications and information a writer had to contend with. Given a recent statement by Google founder Eric Schmidt that "every two days we are creating as much information as we did from the dawn of civilization up until 2003" (Beck & Pele, 2010), it is easy to see how the logic Bush articulates holds significance today. Hypertext realizes the capability of the Memex by creating links and associations between different texts, and these are the texts that can benefit from reinvention or reconfiguration in a digital environment.

By giving "attention to the way we write" and reconfiguring our ideas of narrative or text as linear, static entities, we can utilize digital technology to engage users in new reading activities. The provision of environments for scholarship, such as those outlined above, "reconfigures the narrative" that we produce.

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