

Encapsulating Streams of Consciousness into the International Children's Digital Library

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ABSTRACT

Digital libraries provide a great deal of flexibility by allowing users to explore and annotate their collections. The majority of digital libraries and research in the field have concentrated on the needs and habits of adult users; little is known about the habits and specific needs of children using digital libraries. This paper introduces Alph, a prototype interface specifically designed with a child annotator in mind.

Keywords

Digital libraries, children, annotations, graphical user interfaces.

INTRODUCTION

The International Children's Digital Library (ICDL) [1] provides children around the world with access to a diverse multi-lingual child oriented collection of books. By accessing the ICDL, searching through the collection, and viewing digitized versions of the books, children can explore and benefit from the rich literary history contained in the ICDL. However like all other libraries, physical or digital, the ICDL is an information repository, an edifice to knowledge that is as restrictive as it is inviting. Visitors are invited to search and explore the library and its collection, but are discouraged from expressing their feelings. A visitor may find an exciting book, but may not shout in excitement; he or she may have a brilliant thought but is not provided with the tools to express it.

As a result the meanings, interpretations, ideas and questions invoked by a reading are never retained by the library; the library invites us to explore its structure but excludes us from becoming a part of its fabric. When library visitors leave they take whatever enlightenment they have achieved with them.

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The primary objective of a library is to capture and disseminate knowledge and ideas. The loss of so many ideas in a place entrusted with preserving them is more than a bit ironic. In the physical library with its collection of books the loss of knowledge and ideas is an unfortunate outcome of the technology used to produce the books. Paper provides us with an effective mechanism for storing and disseminating information. It may also accommodate the occasional mark or the formation of an idea, but it does not scale well to multiple users. Therefore libraries have had to discourage their visitors from marking up or otherwise manipulating the books in order to preserve the books for use by others.

In the digital library the loss of knowledge and ideas is a consequence not of technology but of oversight and infatuation. As Nelson [4] points out, the concept of the page and the notion of hierarchy have dominated most implementations of digital technology.

This is not to say we should forgo paper and hierarchy all together but that we can build upon these ideas using digital constructs. Unlike paper, digital data scales well to multiple users: a digital library can supply any number of copies to any number of visitors and provides a mechanism through which the markings, comments and annotations of visitors can be captured and stored without causing damage to the original work. The proper application of digital technology will allow libraries to serve as repositories for the collective intelligence and knowledge of society as a whole, encompassing the ideas and comments of readers as well as the work of writers.

ANNOTATIONS

The origin of the word text is from the Latin *texere*, 'to weave' [3]. The author weaves her ideas into a text, traditionally presented to the reader in the form of a book. The reader in turn weaves his own interpretation of the text and its relationship to his specific context. Annotations are the means through which the reader records his conscious reaction to the text. By including the annotations of a reader in the collection of a library we are in effect capturing a particular stream of consciousness which can be used by

the reader himself or other readers when considering the work at later date.

Annotations may take many forms but a developer seeking to support annotations in a digital library can start by examining the notion from two basic perspectives. The first looks at the mechanics of the annotation, i.e. how will the reader mark up the work he or she is reading. The second will look at the purpose and relationship of the annotation to the reader, the work annotated, other readers and the library itself [2].

Research into the creation of annotations as exemplified in the work of O'Hara and Sellen, and Schilit, et al to name just two examples [5, 6] has traditionally focused on readers with specific objectives, e.g. lawyers, university students, etc. with the test subjects invariably being adults.

The objective of this project is to extend prior research into reading, annotation, information visualization and social navigation to the world of children by incorporating annotation and social navigation tools into the ICDL and exploring the ways in which children make use of the new functionality.

THE ALPH PROTOTYPE

Alph is a Macromedia Flash based interface to the ICDL designed to foster annotations and annotation based exploration.

Alph is being developed using an inter-generational participatory design approach in which a group of 10-14 year olds collaborate as design partners with adult members in defining and implementing the prototype.

Alph will provide children using the ICDL with a variety of annotation tools that include:

- Iconic annotations, using symbols such as a question mark, thumbs up, thumbs down, etc. to mark an area on a page
- Highlighting annotations, used to highlight a particular passage in the text
- Textual and Graphical annotations used to add text or graphics to the work
- File upload, enabling the reader to upload external files to the library
- Hyperlinks, allowing a hyperlink to a web resource.

In order to support multiple possible types of interactions Alph will allow children to create private annotations, public annotations, or annotations directed at a specific individual such as a friend or a teacher.

Alph will provide several ways in which annotations and books can be viewed; one will be able to view annotations

in relation to a specific page, a specific book, a specific time or with relation to topic or creator. A reader will be able to view all the comments they created on a particular day, or within a particular book, or comments others created for a specific book. The display of books could also be structured using the collection of annotations for example a view showing popular books could be generated using a count of the number of annotations it accumulated instead of the number page views served. These views will provide children using the ICDL with new ways of exploring the collection.

PROPOSED WORK

The Alph prototype is a work in progress. We intend to continue developing the prototype to include all of the functionality discussed in this paper as well as other ideas that will evolve as we develop the prototype.

The main users of Alph so far have been members of the intergenerational design team at the University of Baltimore. It is our intention to increase the circle of users to initially include children from area schools and later children from various countries to better reflect the international audience base of the ICDL.

As Alph's user base increases and the collection of consciousness streams in its data repository grows, we will be able to explore how children are using the different tools provided in the prototype and how the growing collection of consciousness streams influences and contributes to their use of the library.

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