

The Use of Book Metaphors in the Design of
Electronic Books: A Proposed Topic for the Designing
Electronic Books Workshop

Brief position paper written by Harold Henke and presented at the
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Overview

Research conducted by Henke (1998) has shown that users are dissatisfied with electronic books and the applications used to view them. One reason for user dissatisfaction may be the lack of familiar book metaphors embedded into the electronic books. In Henke's study, users preferred using table of contents and indexes (both of which were hypertext linked) to find information as opposed to using a search tool. User satisfaction could have been improved had more detailed indexes and table of contents been incorporated in the electronic books.

Workshop Questions

User preferences for familiar book metaphors raises this question: Can user satisfaction with electronic books be improved by embedding book metaphors such as table of contents and indexes into the design of electronic books? The research questions which I am exploring as part of my work as a candidate for the Doctorate in Computing Technology Education degree, Nova-Southeastern University, and which I would like to discuss at the workshop are:

- Do users prefer features in electronic books that emulate paper book functions?
- Do users prefer an electronic book that appears more like a paper book than an electronic book?
- Can users find information quicker using a table of contents than using a search tool?
- Can users find information quicker using an index than using a search tool?
- Can users can find information quicker using a table of content than using bookmarks?

Background: Paper Book Metaphor Versus Other Metaphors

Researchers (Aikat and Aikat, 1996; Argentesti and Rana, 1994; Barker, 1993; Barker, Richards, and Benest, 1994; Catenazzi and Sommaruga, 1994a; Catenazzi and Sommaruga, 1994b; Catenazzi, Aedo, Diaz, and Sommaruga, 1996; Crestani and Melucci, 1998; Landoni and Gibb, 1997; Preece, Sharp, Benyon, Holland, and Carey, 1994; and Wearden, 1998) conducted research on electronic book design and concluded that embedding book metaphors, such as table of contents, indexes, page numbers, in electronic books enabled users to use familiar mental models and their experience with books to reduce their cognitive load when navigating and acquiring information in electronic books.

Catenazzi and Sommaruga (1994a) developed a model for electronic book design called Hyper-Book based on a book metaphor that incorporated annotation, bookmarks, notes, front and back covers, page numbers, table of content, list of figures, index, and side by side pages. Catenazzi and Sommaruga (1994b) tested and validated the use of the Hyper-Book model using experienced and novice computer users and stated the model “guaranteed ease of use and understanding.” Landoni and Gibb (1997) extended Catenazzi’s and Sommaruga’s research with Visual-Book, which emphasized the visual design of electronic books with traditional print techniques including fonts, typeface, headers, footers, and use of white space. Landoni and Gibb tested a prototype of Visual-Book using experienced and novice computer users and found both groups were satisfied with Visual-Book’s ease of use.

Other researchers (Nielsen 1990, 1996, 1998; Rowland, Bell, and Falcon 1997; Woodward, Rowland, McKnight, Meadows, and Pritchett, 1997; and Shneiderman 1998) rejected the theory that use of paper book metaphor in electronic books is necessary for ease of use. Nielsen (1990) stated that use of a book metaphor limits the potential of electronic books because once users become familiar with electronic books, they no longer rely on paper book metaphors to help them find or read information. Nielsen (1998) stated that the “book is too strong a metaphor” for electronic book design and leads to poor design that at best attempts to match the paper book but not surpass it. Shneiderman (1998) stated that while “a close match between printed and online manuals can be useful”, electronic books would be more effective if the electronic books were designed to fit the medium to take advantage of functions which are not part of the paper book metaphor, such as multiple windows, text highlight, animation, and sound.

Debate: What Should an Electronic Book Look Like?

This debate will continue with the growth of electronic books. Key factors in the growth of electronic books, especially technical documentation, include the ability of authors and publishers to update information quickly and reduce publishing cycles, enable publishers to eliminate or minimize distribution and printing costs, and take advantage of technology including adding multimedia

elements such as audio and movies to electronic books. (Catenazzi and Sommaruga, 1994a and 1994b; Baldasare, 1993; Barnett, 1998; Harmison, 1997, Rawlins, 1993; Shneiderman, 1998)

Esperet (1996) and Narayanan and Hegarty (1998) observed that much of the literature has focused on how to apply technology to create electronic books rather than how to create electronic books based on sound design frameworks or design criteria. Rouet and Levonen (1996) stated that research on electronic books has focused on development of applications and content in a “non-theoretical, technology driven way”. Dillon (1996) stated that the literature on electronic books is lacking in validated guidelines and frameworks that help developers create usable electronic books. Mangiaracina and Maioli (1995) and Crestani and Melucci (1997) acknowledged that there is a lack of extensive evaluation criteria. This research topic will investigate whether the inclusion of book metaphors as proposed in Catenazzi’s and Sommaruga’s Hyper-Book and Landoni’s and Gibb’s Visual-Book guidelines provides improved design and user satisfaction.

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