E-book Navigation - The contribution of design elements used in maps and diagrams to the navigation process within electronic text / Hadar Ronen

Hypermedia navigation is still considered a crucial problem of usability. Diverse remedies to the problem of "getting lost in hyperspace" share a common goal of providing the user with the information he needs for spatial orientation. The need for optimal electronic-text reading conditions is growing with the expanding exposure to different configurations of textual non-linear spaces such as browser-based interfaces on the web, dedicated software for presenting text and e-books.
This research examines the effectiveness of a diagram based **graphic** navigational aid, combining intuitive mapping concepts, and its contribution to the feeling of orientation and user's location.

An application was developed for this purpose, providing the knowledge of relative location at any given time, by using a "Context Based Navigational Diagram", combining two elements:
1) a "Wire Frame Box" (WFB) which visually marks the current location on the navigation diagram, and
2) knowing the history of the user's activity by graying out visited areas.

The addition of "knowing the relative location" is provided in addition to other navigational aids that are in the two interfaces: a main menu, a navigational diagram with "hot areas", and paging arrows for going back & forward between the article pages. So it fits well with existing tools and user skills.

The Experiment compares two groups of users, one of which was provided with the additional navigational-aid, namely a "Context Based Navigational Diagram". The users performed 8 specific tasks, in which they were asked to reach certain pages in an article in order to correctly answer questions, and also answered 3 additional general questions regarding their impression of the e-book's structure.

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The contribution of knowing the relative location for creation a mental model of the book's structure in the user's mind was also tested, assuming that a more precise mental model will make navigating in textual space easier.

The results show that knowing the relative location improves navigational effectiveness in term of **steps taken** but not in terms of **reaction time** or **percentage of correct answers**. Knowing the relative location by using the graphical navigational aid improved the **accuracy of the mental image** of the book's structure.

In order to examine whether the mental model intermediates between the WFB navigation-aid and navigational affectivity, a path-analysis was performed, but it didn't show this was the case.

Surprisingly, the use of the Diagram Navigational Aid (with and without the manipulation) did not replace entirely the usage of main menu (TOC), which is supposedly still a safe "anchor" for understanding the article structure, or for orientation feeling, and it is directly and firmly connected to the printed book/article metaphor. In this context, we can point out a tendency for using different navigation strategies, according to the mission type the user was facing (target-oriented tasks versus free browsing).

This issue challenges hypermedia interface designers, to look for the most appropriate navigational aids, set to provide the user with the required spatial information for orientation.

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