

Metaphors and Categories

- Impact on the Navigation Process within Cyber Space -

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Introduction

In order to prevent users from "getting lost" in cyber space, two types of interactive navigation aids have been proposed. One is the standard navigation aid used in most hierarchical structures including the conventional UP and DOWN buttons. The other type is the metaphoric navigation aid based on either the spatial or directory metaphors (Dieberger, 1996). A navigation aid based on the *spatial* metaphor maps the spatial relations of real world such as elevators, whereas one based on the *directory* metaphor relies on the textual structure such as an alphabetic index. Although these metaphors have been used widely, their effectiveness has not been examined yet. We hypothesize that the effectiveness of metaphoric navigation aids depends on the categories of items being searched: common or ad-hoc (Barsalou, 1982). Items in the *common* category have well-defined concepts such as computers, whereas those in the *ad-hoc* category, such as birthday gifts, have ill-defined concepts. An experiment was conducted within a cyber mall context to test our hypothesis.

Method

Seventy-three subjects participated in the experiment for course credits. They were randomly assigned to one of four groups: Spatial-Common, Spatial-Ad hoc, Directory-Common, and Directory-Ad hoc. Two versions of a cyber shopping mall were developed, whose basic structures were identical except for the type of navigation aids provided. The spatial version used escalators and elevators, while the directory version used indexes and search-engines. Before the experiment, subjects were asked to fill out a pre-questionnaire to measure their level of expertise in the Internet and WWW, which turned out to be equivalent across the different groups. They then were asked to buy five items of the common category or ad hoc category. The common category included products such as notebook computers, while the ad hoc category consisted of products such as birthday gifts. After the experiment, they were asked to fill out post questionnaires to measure their perceived ease of navigating and level of satisfaction.

Results

Post Questionnaires Data

The spatial metaphor was perceived to be easier to navigate

than the directory metaphor ($F = 8.78, p < .01$). Subjects were also more satisfied with the spatial metaphor than with the directory metaphor ($F = 5.19, p < .05$). Moreover, subjects were more satisfied with the spatial metaphor when they were looking for ad-hoc category items than for common category items ($F = 4.72, p < .05$).

Navigation Process Data

The Total Number of Pages. Results from the system log files indicate that subjects browsed more pages for the ad-hoc items than for the common items ($F = 43.92, p < .01$). Moreover, subjects using the spatial metaphor browsed more pages than those with the directory metaphor when they were looking for common items, while subjects with the directory metaphor searched more pages when looking for ad hoc items ($F = 5.23, p < .05$).

The Use of Navigation Buttons. Results from the usage data of the standard navigation buttons indicate that subjects using the directory metaphor used the navigation buttons more frequently than those provided with the spatial metaphor ($F = 17.29, p < .01$). They also used the buttons more frequently when looking for ad hoc items than for common items ($F = 49.76, p < .01$), and this increased usage of buttons was more evident with the directory metaphor than with the spatial metaphor ($F = 7.59, p < .01$). In terms of metaphoric navigation, subjects with the spatial metaphor used the navigation aids more frequently than those with the directory metaphor ($F = 114.32, p < .01$).

Conclusion and Discussion

In summary, people used the navigation aids with the spatial metaphor more frequently than those with the directory metaphor, inducing them to consider cyber space navigation via spatial metaphor aids easier. Moreover, the benefits from the spatial metaphor were greater when people were searching for items in the ad-hoc category than when searching for common category items.

References

- Barsalou, L. W. (1983). Ad hoc categories. *Memory and Cognition*, 11 (3), 211-227.
- Dieberger, A. (1996) Browsing the WWW by interacting with a textual virtual environment. In *Proc. Of ACM Hypertext'96, Washington DC*, 170-179.