A Design Study for the Investigation of Browsing Behavior

Barbara H. Kwasnik
and
Kyung-Hye Yoon
School of Information Studies
Syracuse University
Syracuse, N.Y. 13244
bkwasnik@suvm or k61yoonx@suvm
PROPOSAL

INTRODUCTION

Browsing can be viewed as that behavior in which people engage when they search, navigate, or explore physical objects or conceptual representations of physical objects. It is variously defined in the literature as searching, scanning, navigating, skimming, sampling, and exploring. As a cognitive behavior browsing has received a great deal of attention recently, primarily in information retrieval research as an important system feature for interface design in relation to end user searching and as a retrieval mechanism. Browsing allows more flexible and creative searching in that a searcher is relieved of having to formulate a precise query and can navigate the knowledge base more freely. Thus, the study of human browsing behavior will help us not only to understand the nature of browsing as a cognitive behavior, but also to design and develop a better system device that enhances the interaction between the system knowledge base and the human searcher.

The research described in this paper is a design study for a future investigation of human browsing behavior. Specifically, we test the feasibility of our proposed methods of data collection and analysis. In addition, we will make a preliminary description of how people browse through representations of concepts (pictures, words, numbers) and through physical objects in a general context. The analysis will yield a preliminary functional description of the cognitive movement. By looking at browsing behavior in a variety of situations, we hope to isolate and describe any special movement or pattern across the diverse situations.

PROCEDURES

A pilot test was conducted on two subjects. Results from the pilot generally support the feasibility of the study. In order to observe browsing in a wide variety of situations, we tentatively divided possible browsing situations into a matrix defined by purposive or nonpurposive browsing along one dimension and by browsing of the objects themselves or representations of objects (pictures, numbers, words) along the other dimension.

	objects	representations
purposive		
nonpurposive		

Data is collected from six subjects. In the first phase we ask the subject to think-out-loud while actually browsing through objects or representations of objects. This protocol is recorded. We have

chosen three sites as representing a cross-section of browsing environments that allow purposive and nonpurposive browsing.

1. Farmers' market. Objects are arranged in stalls with very little discernible structure in terms of which stall is adjacent to which. Subjects browse with no particular purpose in mind.

2. Gift catalog. Representations of objects in the form of drawings, photographs, text, and numbers are browsed with the purpose of choosing a gift for a friend.

3. TV Guide. Television shows are represented by text. Subjects are asked to browse with the purpose of finding some shows to watch in the following week.

In the second phase, we conduct debriefing interviews with the subjects if necessary to fill in missing information: reasons for choices, general strategy, accounts of gaps in the protocol and so forth.

ANALYSIS

The purpose of data analysis is to isolate those aspects of browsing that will yield a general functional description of this activity. The first step is to isolate primitive actions. These primitives combine to form patterns of action or functions. The outcome of this study is a set of specifications for conducting a full study of the functions of human browsing and to provide preliminary categories for a typology of this behavior.

We focus on the movement of people's attention from item to item or from representation to representation, or from group of items to group of items. These movements or transitions form the boundaries of our units of analysis. We think of the foci of attention as nodes. People can move, stop, pass by quickly or slowly, retrace steps, look while moving, and so on. We analyze what draws a person to focus attention on a node and what prompts him or her move on or delve "deeper." We note what features of the node, what cognitive state, and what contextual aspects affect the movement of attention. For example, our preliminary analysis has found that people investigate more closely those nodes that interest them for some reason, but also those that puzzle them. That is, a stop can be made for further information or for clarification.

At the next level, we investigate the formulation of "views." These are what a person articulates as seeing at one time, that is, a span of attention. In the catalog, for instance, this is frequently two facing pages. They can be viewed in one glance, and the view is changed by flipping the page. At other times it is is a single page, or even a section of a page. At the farmers' market it might be a single stall, a section of a stall, or a view down the aisle into the distance. One clue to the identification of views is the label a person attaches to it, e.g., "kids' stuff," "apples," "pink, flowery things."

On another level we note the general strategy of browsing. This includes physical orientation, definition of scope, familiarization with the "scheme" or structure of the browsing environment, formulation of place markers for possible return visit, and so on.

Finally, we analyze the nature of transitions. Often they are made to physically adjacent nodes, that is, proximity suggests a stop at the node. Sometimes the transition is made for a conceptual reason, as when a person moves from a stall with potatoes past several stalls to the next stall with potatoes in order to compare prices. The movement is then "potatoes to potatoes" rather than "stall to adjacent stall." We are interested in investigating the process of how people get to a point and not just the fact that they have "visited" it. Thus, the functional description should include an analysis of what has been rejected as well as what has been the object of attention.

SUMMARY

Our study is quite preliminary at this point, but even at this stage we are confident that our method of data collection yields information that can be profitably analyzed for the purpose of a functional

description of browsing. Furthermore, we note that the general behavior we call browsing has some identifiable features that are present regardless of the browsing environment or the task at hand. We hope to refine our methods of investigation sufficiently to enable us to formulate a more specific description of browsing and the behaviors of which it is composed.