

No Stranger in the Strange Land: *Users' expectations of website content organization*

Poster Description

Svetlana Symonenko

School of Information Studies

Syracuse University

Syracuse, New York, 13244

ssymonen@syr.edu

Introduction

Although the notion of the Internet as an information environment that has difficulty lending itself to organizing efforts still prevails, there appears to be a trend towards conventionalization in website architecture, in terms of both explicit structure and implicit organization of sites' content. This is a bottom-up process, driven by practices rather than by prescribed standards (Morville & Rosenfeld, 2002; Nielsen, 2000, 2004). On the other hand, research on information seeking behavior (Cothey, 2002; Marchionini, 2002) and HCI (Dillon, 1991; Dillon & Shaap, 1996; Farris et al., 2002) offers evidence in support of the existence of certain expectations of sites' external design and internal structure, which users have developed based on accumulated experience in online searching and browsing.

To date, major research effort focused on *interface*-related aspects, with insufficient attention to similarities in the organization of websites' *content*, similarities both existing and as perceived by users. These two aspects, however, appear mutually informing and critical for ensuring "findability" of Web-based information. To address this need, a dissertation study is under way to explore users' expectations of the websites' content organization, and whether such expectations depend on the type of the site¹. Similarly to the way the results of system usability studies inform the system's design, implications of such

study of "content usability" will contribute to the improved organization of web-based content, as well as to a more user-oriented design of online search interfaces.

The study is conceptually related to Dillon's (2000) notion of "information shapes", integrating semantic and spatial characteristics, as well as to digital genre research (Bates & Lu, 1997; Dillon & Gushrowski, 2000; Roussinov et al., 2001). The novelty of the study is in taking a holistic approach to a website, as it extends the concept of digital genre (which, to-date, has been largely applied to individual web pages) to cover an entire website as an information entity.

To tap into users' expectations, the study employs a theoretical framework of internalized mental representations that people form of empirical phenomena in order to perform various tasks (Bartlett, 1932; Johnson-Laird, 1983; Norman, 1983; Sasse, 1997). A pilot of the study, conducted in the summer of 2004, validated the research questions and tested the methodology for data elicitation and analysis.

Pilot Study Description

The study combined think-aloud browsing sessions and interviews, with a path-drawing component. Pre-browsing interviews aimed to elicit users' pre-existing expectations of the content structure of a site of a particular type. Post-browsing interviews focused on users' recollections of paths taken through the sites. One post-browsing interview was conducted immediately after each session, and another one took place on the following day, to probe into the possible effect of time delay on the users' recollections².

¹ Within the framework of this research, a *web site* is defined following (Terveen et al., 1999) as a coherent structured multimedia document. *Site type* reflects the institutional aspect of a site's owner and is not equal to a top-level domain name. For example, the *www*.org* URL can belong to a non-profit organization, trade or professional association, international institution, and so on, and it will be analyzed as a site of such particular type.

² According to theories of mental representations, people tend to rely on their internalized (and generalized) mental constructs when failing to remember actual details of a situation or an artifact (Bartlett, 1932; Minsky, 1981; Norman, 1983).

The study employed a “convenience” sample of six PhD students, with comparable (8 to 10 years) Internet experience. Each user was given the same task of browsing for information about employment opportunities on the same university³ and corporate⁴ websites, beginning on the home page and finishing when they decided that they had found the information or that they did not want to pursue any further. After each browsing session, users were asked to draw the pathway they just went, using boxes to represent pages and arrows to draw links; they were also asked to label the pages visited and links taken. To prompt for richer verbal accounts, the next-day interviews were designed as “teach-back” sessions: users were to explain to the researcher (as a “colleague”) how to find job-related information on each site visited during the first session. All “think-aloud” and interview components were audio-recorded. Actual paths taken by users were recreated by the researcher through the browser’s History.

The unit of analysis constituted a “node” - a individual webpage visited or a link taken. Transcripts of think-alouds and interviews were analyzed to extract users’ expectations of the website content structures (pre-existing before the session and formed or adjusted as a result of the session). Next, the analysis focused on errors in users’ recollection of the paths. Each case of mismatch between the actual and the remembered node was analyzed in terms of whether such recollection complied with the expected structure⁵. Recalled paths were then coded to reflect their compliance with the actual path or the expected structure.

Findings

The share of correctly remembered nodes decreased from Day 1 to Day 2 by 29.4%. Some of this “memory deterioration” resulted in an increase in the number of nodes recalled structurally correct, but with label variations (10.7%), as well as simply missed or misplaced nodes (5.3%). An almost equal “compensatory”

effect, however, appears to be related to missed nodes that were also absent from the users’ expected structures (10.1%); as well as to nodes relocated in a way, which brought the recalled structures more in-line with what was expected by the users (4.6%).

Comparison of individual expected structures demonstrated certain similarity across users, as well as dependency on the type of site. Most users expected to find employment information in a *Human Resources* section of a site. In an academic site, however, they expected to reach it through *Faculty & Staff* and/or *Academic Departments* sections; and in the corporate environment, most users “pictured” it just one level down from the *Home* page or linked to from the *About* section. Such expectations can be adjusted as a result of an individual’s exposure to the actual site (as was the case for the *About* section). A full-scale study is needed to support preliminary results.

The study also tested methodology for data collection and analysis. Consistent with what was reported by earlier studies (Sasse, 1997; Shneiderman, 1997), users demonstrated strong tendencies to make the task relevant to their current situation. Such task contextualization contributed to more naturalistic session settings. Teach-back interviews proved to be an effective technique of eliciting rich narratives, as well as a more natural way for users to verbalize their thoughts than think-alouds. Path drawing, on the other hand, turned out to be quite an unusual task for users. One even switched from drawing to writing down a “script”-like sequence of steps. For the purposes of this study, both drawing and scripting appear to be viable options, as both help users think in terms of steps taken and pages visited.

Conclusion & Future Tasks

Although, given the size of the subject pool and the “convenience” sampling method, the results of this study are not representative, they do point to possible trends in the way people internalize content organization of a website. The findings also suggest that people tend to rely on such internalized representations when failing to remember the actual structure. Full-fledged study will build on the piloted design to further test the preliminary findings.

³ Syracuse University (www.syracuse.edu), Louisiana State University (www.lsu.edu), and Columbia University (www.columbia.edu)

⁴ Google (www.google.com), Verizon (www.verizon.com), and Amazon (www.amazon.com).

⁵ to discern if, in order to compensate for memory gaps, the users substituted the actual node with what they expected to take (based on their model of organization of that kind of content on that kind of site).

References

- Bartlett, F. C. (1932). *Remembering*. Cambridge University Press.
- Bates, M., & Lu, S. (1997). An Exploratory Profile of Personal Home Pages: Content, Design, Metaphors. *ONLINE & CDROM Review*, 21(6), 331-340.
- Cothey, V. (2002). A longitudinal study of World Wide Web users' information-searching behavior. *JASIST*, 53(2), 67-78.
- Dillon, A. (1991). Readers' models of text structures. *International Journal of Man-Machine Studies*, 35, 913-925.
- Dillon, A., & Gushrowski, B. (2000). Genres and the Web: Is the personal home page the first uniquely digital genre? *JASIST*, 51(12), 202-205.
- Dillon, A., & Shaap, D. (1996). Expertise and the perception of structure in discourse. *JASIST*, 47, 786-788.
- Farris, S. J., Jones, K. S., & Elgin, P. D. (2002). Users' schemata of hypermedia: what is so 'spatial' about a website? *Interacting with Computers*, 14, 487-502.
- Johnson-Laird. (1983). *Mental Models*. Cambridge University Press.
- Marchionini, G. (2002). Co-evolution of User and Organizational Interfaces: a Longitudinal Case Study of WWW Dissemination of National Statistics. *JASIST*, 53(14), 1192-1209.
- Minsky, M. (1981). Framework for representing knowledge. In Haugeland, J. (Ed.), *Mind design: philosophy, psychology, artificial intelligence*. MIT Press.
- Morville, P., & Rosenfeld, L. (2002). *Information Architecture for the World Wide Web: Designing Large-scale Web Sites* (2nd ed.): O'Reilly.
- Nielsen, J. (2000). *Designing Web Usability: The Practice of Simplicity* (1st ed.): New Riders Press.
- Nielsen, J. (September 13, 2004). The Need for Web Design Standards. *Jakob Nielsen's Alertbox*.
<http://www.useit.com/alertbox/20040913.html>
- Norman, D. A. (1983). Some observations on mental models. In Gentner, D. & Stevens, A. L. (Eds.), *Mental models*. Lawrence Erlbaum Assoc.
- Roussinov, D., Crowston, K., Nilan, M., Kwasnik, B., Cai, J., & Liu, X. (2001). *Genre Based Navigation on the Web*. Paper presented at HICSS-34, Maui, Hawaii.
- Sasse, M.-A. (1997). *Eliciting and Describing Users' Models of Computer Systems*. Birmingham.
- Shneiderman, B. (1997). Designing information-abundant web sites: issues and recommendations. *International Journal of Human-Computer Studies*, 47, 5-29.
- Terveen, L., Hill, W., & Amento, B. (1999). Constructing, Organizing, and Visualizing Collection of Topically Related Web Resources. *ACM Transactions on Computer-Human Interaction*, 6(1), 67-94.