Hypermedia Systems in the New Millennium

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Frank Halasz, "Seven Issues"

Each August, the *ACM Journal of Computer Documentation* reprints a classic article, book chapter, or report along with several analytical commentaries and a response by the author of the classic document. In this context, a "classic" document means one that was published at least five years ago but is no longer in print. It also means one that raises issues of lasting importance to the profession.

Cathy Marshall examines three themes: the heterogenous nature of hypertext, its uses, and its users; the importance of hypertext readers and their tools; and the tension between formal structures and informal practices. Her first point is that, although the creators of early hypertext systems assumed that those systems would be used by researchers and academics for intellectual purposes, the Web is instead used by a diverse spectrum of users for a wide variety of purposes. Her second point is that hypertext readers perform fundamentally different tasks from hypertext writers, including personal annotation, re-retrieval, gathering, contextual access, and collaborative reading. Marshall's third point is that hypertext users ignore or reject formal structures such as typed links. Web page designers focus their attention on the physical appearance of the page, not on the underlying functional structures.

Elli Mylonas observes that hypertext doesn't necessarily require either nodes or links as defined for NoteCards. She points out that the Web is neither a system nor always hypertext. Instead, it is a series of standards and practices. She says that, although this shift has led to the universal acceptance of the Web, the ubiquity of the Web works against the pursuit of some of Halasz's agenda.

Frank Halasz, Renewed Vision

In his response to these four commentaries, Halasz candidly acknowledges that "the most remarkable aspect of 'Seven Issues' is that it missed the Web entirely." Nevertheless, he says that much of the thinking in "Seven Issues" and "Revisited" is still relevant. His goal is "to better understand how the Web has shaped and often overshadowed how we look at the tremendous possibilities of hypertext."

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The majority of Halasz's article consists of his reconsidering seven dimensions that characterize hypertext systems and thirteen issues that defined his vision for those systems when he wrote "Seven Issues" and "Revisited":

Dimension 1: Scope. This dimension concerns the size of hypertext systems. The Web is so vast that the question of scope has little relevance today.

Dimension 2: Browsing versus Authoring. This dimension concerns whether the primary user is just a consumer of published hypertexts or both a producer and a consumer. The dominant pattern for the Web is that a few people publish Web pages and many people browse them.

Dimension 3: Target Task Domain. The Web uses a very general set of mechanisms, including TCP/IP, HTTP, HTML, and Javascript, along with an assortment of task-specific technologies and standards such as SMIL, Common Micropayent Markup, MathML, and TVWeb.

Dimension 4: The Navigators versus the Architects. The Navigators focus on node contents, whereas the Architects focus on network structure. "Seven Issues" has a strong Architect bias, but the Web is fundamentally a Navigator.

Dimension 5: The Card Sharks versus the Holy Scrollers. The Card Sharks view each node as a fixed-size card and navigation as a matter of jumping from card to card. By contrast, the Holy Scrollers view hypertext as a collection of lengthy documents and navigation as a matter of jumping within as well as between documents. The distinction, says Halasz, is superficial.

Dimension 6: The Literati versus the Engineers. This distinction focused on the difference between those who view hypertext as literary expression and those who view it as structure. However, this categorization ignores the most important users of the Web: the Business People.

Issue 1: Search. "Seven Issues" emphasizes the importance of automated search to supplement link traversal, and of course search engines are the primary means for finding information on the Web. "Seven Issues" also distinguishes between content search and structure search, but the Web lacks a meaningful node-link structure, so the dominant alternative on the Web is content search.

Issue 2: Composites. "Seven Issues" points out the need to manipulate groups of nodes and links, a need that the Web addresses via mechanisms such as frames and embedded HTML Objects.

Issues 3 and 4: Virtual Structures and Computation in/over the Hypertext. (Also Dimension 7: The Literalists versus the Virtualists). "Seven Issues" anticipates the need for computational engines that continuously crawl the Web, dynamically calculating node content. Such engines exist today and keep the information current.

Issue 5: Versioning. This issue has become a nonissue. There is neither interest in the topic nor standard mechanisms for versioning Web pages.

Issue 6: Collaboration in/over Hypertexts. Although "Seven Issues" states that collaboration requires both infrastructure and social interactions, Halasz now says that the infrastructure is unnecessary. On the other hand, the social interactions are vital because they affect usability.

Issue 7: Extensibility and Tailorability. "Seven Issues" argues that users must be able to extend and tailor hypertext systems, and the Web provides those abilities very well.

Issues 8 and 9: Open Systems and Standards. "Revisited" urges that self-contained hypertext systems be replaced by open systems and common standards. Not only has this change occurred; it has enabled the Web to grow at an explosive rate.

Issue 10: User Interfaces for Large Information Spaces. "Revisited" predicted that users would interact with large network structures, but the Web does not require users to deal with large structures. Instead, they deal directly with specific information of interest.

Issue 11: Very Large Hypertexts. "Revisited" imagines hypertext systems as large as 100,000 documents, but the Web includes billions of hypertext pages, so this issue is moot.

Issues 12 and 13: Hypertext Markets and Publishing Hypertexts. "Revisited" foresaw that hypertext would not be just an academic pursuit but a commercial vehicle, a situation that has indeed come to pass.

Halasz concludes that the power of the Web lies in is simplicity and its practicality. He adds that "Seven Issues" remains relevant, but says that the important issues facing the hypertext community today include security, privacy, and commercial transactions.