



## **World Wide Web usability: introduction to this special issue**

SIMON BUCKINGHAM SHUM

*Knowledge Media Institute, The Open University, Milton Keynes MK7 6AA, UK.  
email: S. Buckingham.Shum@open.ac.uk*

CLIFF MCKNIGHT

*Department of Information and Library Studies, Loughborough University, Loughborough,  
Leics LE11 3TU, UK. email: C.McKnight@lboro.ac.uk*

This special issue arises out of a symposium entitled “The Missing Link: Hypermedia Usability Research & The Web”, held at The Open University’s Knowledge Media Institute in May 1996 (Buckingham Shum, 1996). As the title suggests, we felt there was something missing between the vast amount of hypermedia and related human–computer interaction (HCI) research that has been conducted, and the most popular hypermedia system in existence—the World Wide Web. Certainly, the web community, by and large, seemed to be ignoring the hypermedia research literature and, as Santayana (1905) notes, “*Those who cannot remember the past are condemned to repeat it*”. However, it was possible that our view was inaccurate or even that the web was sufficiently different to its predecessors to make earlier findings irrelevant. The symposium set out to explore such issues.

The idea for the symposium was obviously timely, following closely after two similar but independently organized events in the US. A workshop (Instone, 1996*b*) held during the Hypertext 96 conference was structured around the questions: What hypermedia research has influenced the web? What hypermedia research needs to be implemented in the web? What issues has the web raised which should be researched further? Similarly, the CHI 96 conference included a workshop on “HCI and the web” (Instone & Pemberton, 1996), subsequently reported by Instone (1996*a*).

### **Contents of this special issue**

This special issue reflects the concerns of all three events, and includes additional articles submitted in response to an open call. The seven articles provide a representative snapshot of the current state of web-related HCI research, and a valuable resource for setting the web within the broader context of hypermedia research and development.

Shneiderman’s (1997) article begins with a survey of the different genres of web site and associated user tasks. He then introduces the Objects/Actions Interface model for mapping domain objects and user actions to a web user interface, offering it as a practical way for designers to reason about web design from the user’s perspective. He concludes

by focusing on the particular demands of web searching and navigation, analysing user tasks and actions and their design implications.

Bieber, Vitali, Ashman, Balasubramanian and Oinas-Kukkonen (1997) draw an analogy between the evolution from first- to fourth-generation computing languages and the current maturity of the web. They conclude that the web is predominantly still in the second generation, and examine a range of hypertext technologies which have yet to be adopted. They argue, and illustrate through an extended scenario, that fourth-generation hypertext on the web would not only provide information providers with more powerful authoring environments, but also provide users with better service.

Smith, Newman and Parks (1997) focus on information structuring and searching. They review a number of persistent problems for users searching and browsing large hypertexts, problems that are all the more relevant with the emergence of the web. They then introduce the concepts of virtual hierarchies and networks as a way for both information providers and end-users to overlay helpful structures on a large web information space. This is illustrated by a case study of the successful provision over the web of a large information resource for researchers.

Tauscher and Greenberg (1997) provide valuable information for web browser designers, with their focus on the design of history mechanisms in browsers. They present a detailed analysis of empirical data on how users revisit sites, and evaluate a number of history mechanisms as implemented in various web browsers in the light of these results. On this basis, they propose design guidelines for better navigational history mechanisms in web browsers.

Thimbleby (1997) opens with a comparative analysis of book-based text and hypertext, and argues that comprehensive, iterative design and testing of web structures soon becomes impractical without good authoring tools. He documents the tasks that authors face, and describes a tool for web authoring which uses a page layout language and database of pages to relieve cognitive overhead for authors. He also proposes the principle of “author/reader dual requirements”, which emphasizes parallels between hypertext authoring and reading tasks and the possibility of supporting both with similar design solutions.

Erskine, Carter-Tod and Burton (1997) describe the application to web-site redesign of an adapted form of scenario-based design through claims analysis (as originally developed by Carroll & Rosson, 1992). This article is also of interest since they ground their approach to design in Dewey’s theory of inquiry, contrasting this with other theoretical approaches found in the HCI field. Erskine *et al.* present a case study of web-site redesign which illustrates how scenarios can serve as tools to reason about interaction.

Finally, Benyon, Stone and Woodroffe (1997) present a sobering case study of iterative, courseware design to support distance learning. They describe the challenges of converting part of an established course text to the web as they negotiated the different presentation and linking constraints imposed by mark-up and browser technology. They also document the limited tool support for courseware designers seeking to implement multiple link types and navigational routes to support different student tasks. Their conclusion is that better authoring tools and clearer pedagogical design principles are needed before web-based delivery of learning materials is a practical, effective option for educators.

## Looking to the future

This issue highlights the links that have been forged so far between the work of the HCI, hypermedia and web communities, as well as those links that remain “dangling”, to borrow a hypertext metaphor. There are signs of increasing contact and collaboration between the communities, e.g. the live link between Hypertext 97 and the Sixth World Wide Web conferences in April 1997, and the dedicated Usability track at Web 97. The HCI community continues to contextualize its skills to the web, as witnessed by the Human Factors and the Web conference series (e.g. HF&Web-2 and HF&Web-3) and the new tutorials and workshops on the web at CHI 97 (CHI97-Web). We note, in particular, the workshop organized by Kellogg and Nielsen (1997), which seeks to develop more powerful analytical constructs for understanding the web. Currently, the best resource for tracking these and many other developments is the ACM WebHCI site and related mailing list (WebHCI).

Finally, it is only natural that this special issue should also be available on the web [<http://www.hbuk.co.uk/ap/ijhcs/webusability>] in order to explore the role that electronic journals can play in supporting the work of intellectual communities. In addition to providing print-quality digital copies of the articles and links between articles and sites, the web version supports threaded commentary and debates, tightly integrated with the articles. It is relevant to point out that the site itself makes use of an environment based on usability studies of hypertext argumentation systems (Sumner & Buckingham Shum, 1996). Thus, “publication” within this interactive, conversational model is not the end of the discursive process, but a point of departure for subsequent debate by, and linkage into, the research community.

In compiling this special issue we were assisted by a committed Editorial Board and Review Panel, to whom we are extremely grateful. All articles were reviewed by at least three reviewers and two editors.

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