

Hypertext: Library Applications

Joan M. Parker
California State University, Long Beach
Long Beach, California

ABSTRACT

The current explosion of interest has left many librarians excited, but still skeptical, about the practical uses of such technology in libraries. Since the variety of software can be overwhelming, is it really worth jumping on the hypertext bandwagon?

This presentation will provide an overview of hypertext and an introduction to Hypercard for the Macintosh and Guide for the IBM, as examples of hypertext software packages. Practical applications in the areas of library instruction, computerized library tours, and database management will be demonstrated.

A BRIEF HISTORY OF HYPERTEXT

Although the word hypertext was first used in the 1970s,¹ the concept has existed for decades. In a 1945 *Atlantic Monthly* article, Vannevar Bush, President Roosevelt's Director of the Office of Scientific Research, described a machine called a memex. This theoretical workstation consisted of a desk containing a microfilm reader and storage area and a platen on which documents could be photographed and reduced to microfilm. His idea was to allow scholars to read materials, make notes in the margin, and then form "associative trails" between this document and other related documents, and perhaps even link the corresponding marginalia.² Twenty years later, Doug Englebart of the Stanford Research Institute developed a computer which would support these associative trails or links.³ In the early 1970s, Ted Nelson coined the word hypertext and began work on a hypertext system called Xanadu.⁴ Although not yet available, Project Xanadu will challenge accepted ideas about information storage and retrieval.

DEFINITION

A hypertext system consists of machine-supported, linked nodes with movement between links accomplished by one or two keystrokes. Each node contains information, and although it may be a document or a smaller unit of text, nodes are not limited to textual information. A node may be anything — an image, a performed piece of music, a citation, a video, a photographic slide — that is linked to other nodes.

A familiar analogy is the traditional card catalog. Each catalog card is a node with the subject tracings functioning as links. Users enter the system at any point and decide whether or not to pursue other nodes, and if so, which link(s) to follow.

There are two broad classes of hypertext: browsing systems and authoring systems. The card catalog analogy describes a browsing system. Users browse through nodes via pre-established links. Nelson's Xanadu is an example of an authoring system. This type of hypertext supports thinking, planning and writing, and may be used simultaneously by several "authors." Each author may contribute new information, or nodes, establish new linkages or do both.

Hypertext may be further described as a broad category of software which supports the way we think and do research. As hypertext continues to gain momentum, librarians may be asking what, if any, role our profession should play. The following, taken from the keynote address at Hypertext '87, describes one very clear way in which librarians not only should, but must, become involved. Van Dam states that to make hypertext a viable replacement for the printed page will require "people who are concerned about layout and design and typography of hypermedia and can think about classification and indexing and how we put things together."⁵

Furthermore, it is becoming clear that many hypertext systems are already in place or under development at the federal government level: REGIS, NOAA's COMPAS and certain applications of GIS.

COMMERCIAL SOFTWARE

The second generation of commercially available software brings hypertext into the realm of the practical. Many software packages will run on personal computers, requiring a relatively minimal amount of programming resources, and most are inexpensive.

Although there are currently several commercially available hypertext software packages on the market, I will summarize the features and present applications for two, Guide and Hypercard.

Both packages may be used as either browsing or authoring systems, with nodes linked through "buttons," and both function most efficiently when a point and click device (referred to as a mouse) is attached to the keyboard.

Guide

Guide is text-based software, marketed by Owl International, Inc. Both IBM and Macintosh versions are available; however, the version described here is version 2.0 for the IBM.

A Guide document, or Guideline, is a connected string of text paged through using scroll bars, located on the right side of each screen. Nodes are primarily textual in nature, as the use of graphics in this package is limited to those which can be drawn using the ASCII character set, or created using software compatible with Microsoft Windows Clipboard. There are four different types of buttons available: expansion, note, reference, and command. The following is a brief overview of the function of each button.

An expansion button allows the highlighted text or graphic to be replaced, or expanded upon, by another string of text, a graphic or even another button, when the user clicks the mouse on the button. Expansion buttons are displayed on the screen in uppercase letters. The existence of an expansion button is further highlighted by the changing of the standard cursor to a circle with crosshairs as it moves over this button. Once the button has been replaced, the cursor is displayed as a box. The example in Figure 1 shows the word MAIN as the expansion button. When users click the mouse on the word MAIN, this text is replaced with NORTH CAMPUS.

Note buttons, indicated on the Guide screen by underlining, allow additional information to be displayed. When a note button is clicked, a corresponding pop-up window appears over the original screen (Figure 2). Movement back to the original screen is accomplished through a backtrack icon, located in the upper right-hand corner of the screen.

A reference button provides a cross-reference to a section of the same document or another document, and is indicated by the use of italics. In the example shown (Figure 3), both *Main library* and *North campus library* are reference buttons. Clicking the mouse on *Main library* produces the screen with a brief history of the Main library. In most Guidelines the user would then have the option of either going back to the original place in the document or moving forward or backward from this point.

Figure 1
Example of a Guide Expansion Button

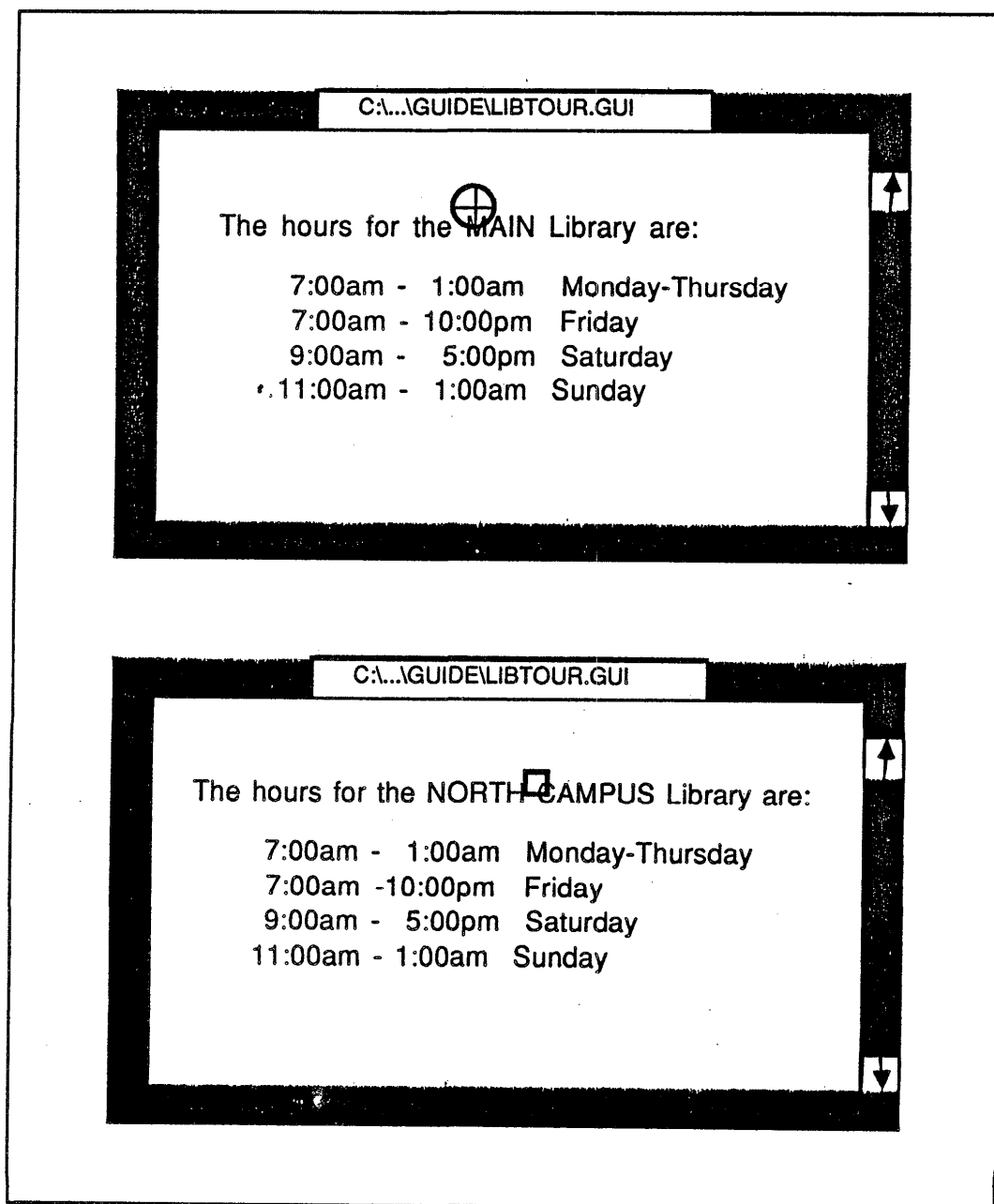


Figure 2
Example of a Guide Note Button

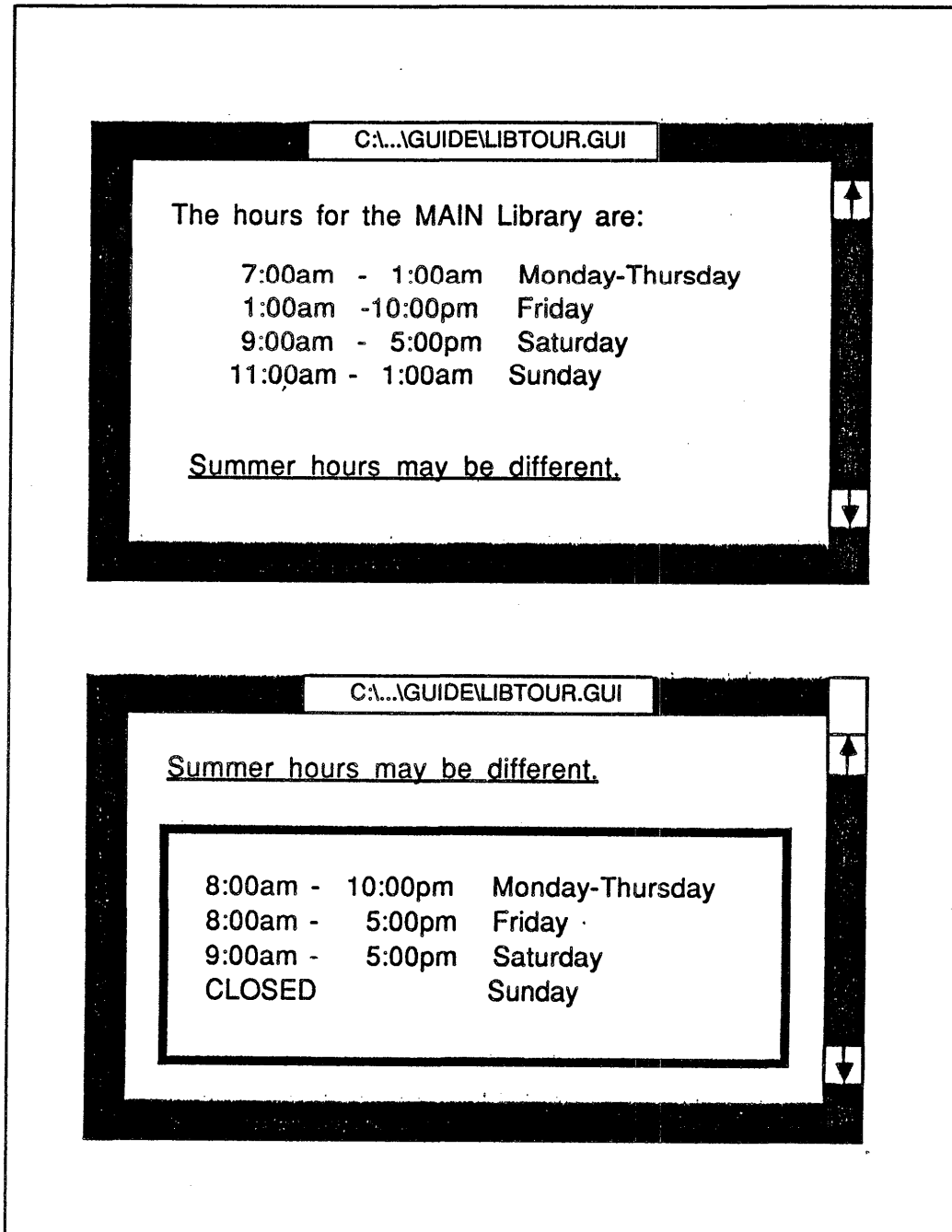


Figure 3
Example of a Guide Reference Button

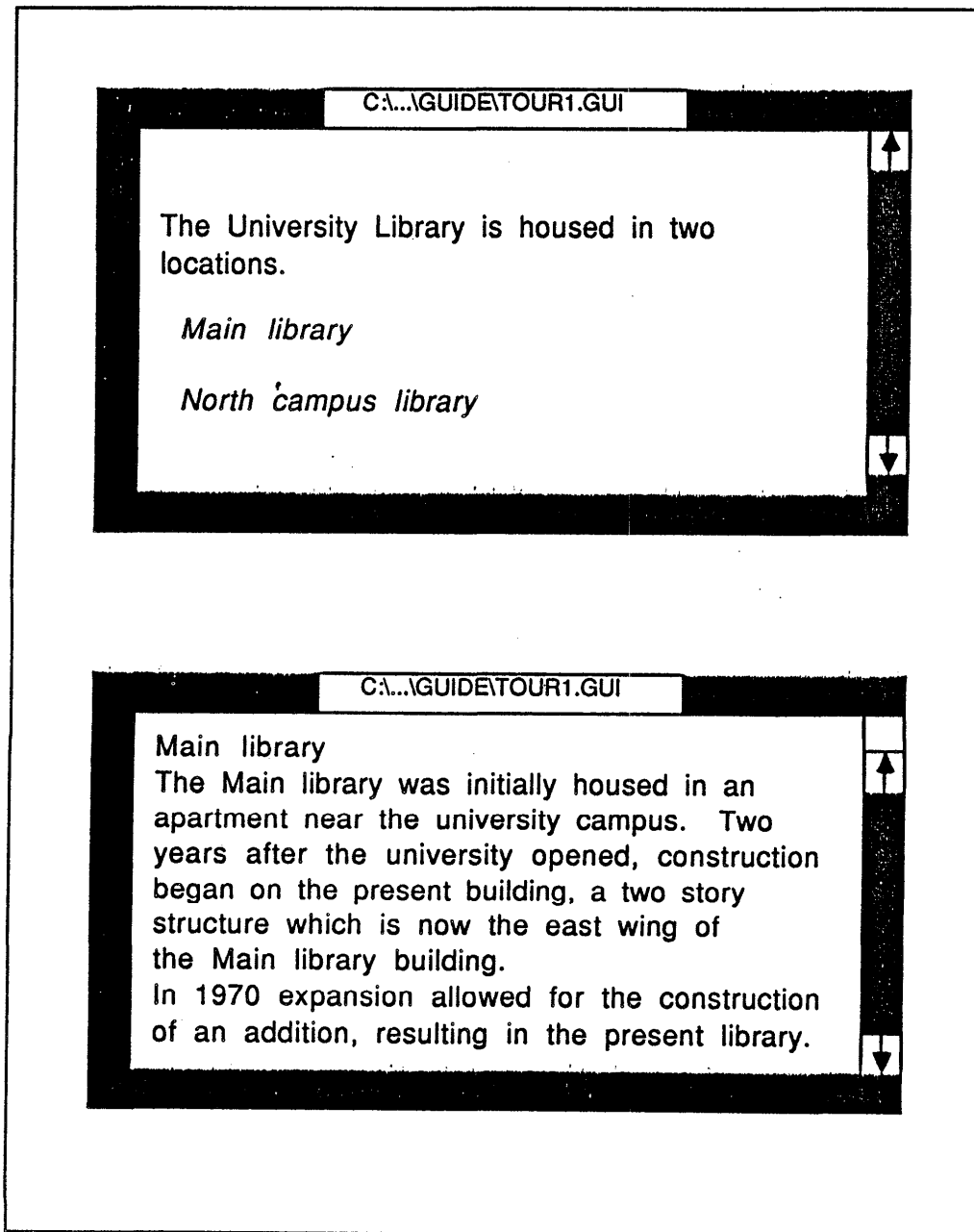
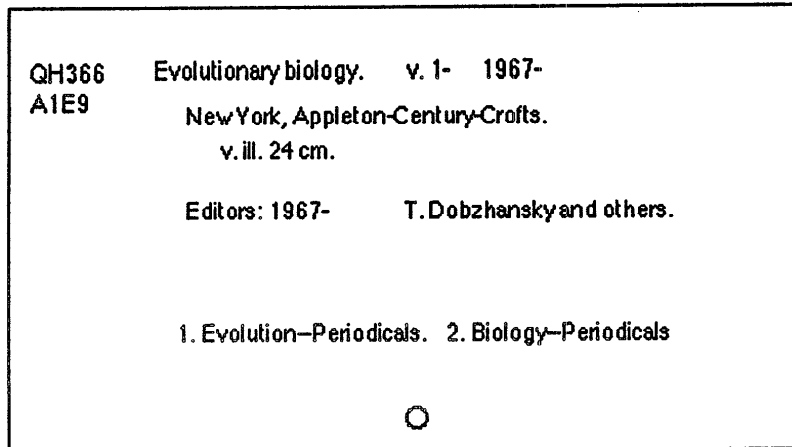


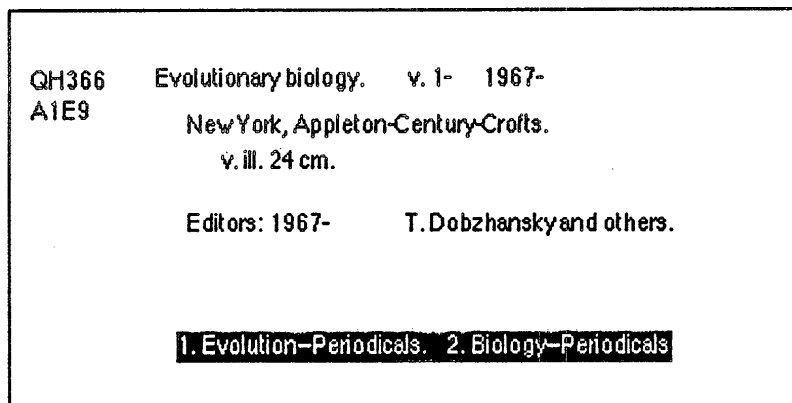
Figure 4

Examples from a Hypercard Stack



This is the catalog card for Evolutionary Biology.

[Click for Info](#)



Evolutionary Biology has been given two official subject headings.

[Click to Continue](#)



Command buttons enable users to link two different types of documents, such as word processing and spreadsheet, through the click of a button. Linking is not just limited to opening other applications from within a Guideline. Text may also be imported from these nodes. The limitation is that both applications must run under Microsoft Windows.

Guide may be used as a text management package for documents such as policy manuals, as authoring software for creating unwieldy reports, or for many other uses. The use of this hypertext package as an instructional tool is somewhat limited due to lack of graphics.

This summary is not intended to serve as a review of the product. Interested readers are encouraged to look at a recently published review.⁶

Hypercard

Much of the excitement surrounding hypertext software in the late 1980s may be tied to the introduction of Hypercard. Although many do not consider Hypercard to be a true hypertext program, it does allow nodes to be linked and moved between rapidly. Graphics are also easily designed within Hypercard or may be imported from other sources.

A Hypercard program consists of a stack of linked cards containing buttons. As with Guide, a button is the device you click to begin some action; however, Hypercard buttons may be used for more than linking text and graphics. Many buttons function as links to nodes which are, in fact, programming code written to perform some function, such as sort records, dial a telephone number, or calculate a statistical formula. The uses for buttons are limited only by the developer's imagination and programming resources.

Because of the graphical nature of both Macintosh computers and Hypercard, one of the most common uses of this program in libraries is computer-aided instruction and computerized library tours. A Hypercard stack developed by the author for undergraduate biology students includes sections on using the card catalog, printed indexes and computerized databases. The cards shown in Figure 4 are from the section on catalog cards. Users are instructed to either click on a special button when one appears on the screen (in this case "Click for Info") or else on the left and right arrows located at the bottom right hand corner to move through the stack. The "Click for Info" button initiates a detailed explanation of a catalog card with each section highlighted, while a further explanation appears in a box at the bottom of the screen.

However, Hypercard will also function as a database management program and has been used for telephone directories and membership lists. During an intensive serials review project, the author developed a stack to assist with the process. Each journal title is represented by a card such as the one shown in Figure 5. In addition to information such as publisher, cost, holdings, indexing, etc., clicking the mouse on the buttons located across the bottom of the screen will initiate a variety of actions. The button located in the lower right hand corner begins a sort by title, publisher or call number. The button to its left will pull out all the cards with question marks (included where information was missing for a title) in any field and print these records. The other unique button is the question button, which will run a series of checks for each card and calculate certain values, such as price per volume and number of indexes.

CONCLUSION

Although hypertext may seem to many to be the latest buzzword, the potential for applications in libraries is considerable. As with any other technology, the hardware and human resources required to produce any hypertext program are not inconsequential. However, speaking from personal experience, the time and effort spent developing any hypertext application has been well worth it.

REFERENCES CITED

1. Nelson, Ted 1974. *Computer Lib*. Chicago: Nelson.
2. Bush, Vannevar 1945. "As We May Think." *Atlantic Monthly* 176(1):101-108.
3. Englebart, D.C. 1963. "A Conceptual Framework for the Augmentation of Man's Intellect." In P.W. Howerton and D.C. Weeks (eds) *Vistas in Information Handling: Vol. 1 The Augmentation of Man's Intellect by Machine*, 1-29. Washington, D.C: Spartan Books.
4. Nelson, Ted 1981. *Literary Machines*. Swathmore, PA: Nelson.
5. Van Dam, Andries 1988. "Hypertext '87 Keynote Address." *Communications of the ACM* 31(7):816-819.
6. Kinnell, Susan, K. 1989. "Hypertext on the PC: Guide, Version 2.0." *Database* 12(4):62-66.

BIBLIOGRAPHY

- Brown, P.J. 1986. "Interactive Documentation." *Software-Practice and Experience* 16(3):291-299.
- Bush, Vannevar 1945. "As We May Think" *Atlantic Monthly* 176(1):101-108.
- Bytes, Torrey 1988. "A Context for Hypertext: Some Suggested Elements of Style." *Wilson Library Bulletin* 63:60-62.
- Conklin, Jeff 1987. "Hypertext: An Introduction and Survey." *Computer* 20(9):17-41.
- Englebart, D.C. 1963. "A Conceptual Framework for the Augmentation of Man's Intellect." In P.W. Howerton and D.C. Weeks (eds) *Vistas in Information Handling: Vol. 1 The Augmentation of Man's Intellect by Machine*. Washington, DC: Spartan Books.
- Franklin, Carl 1989. "Hypertext Defined and Applied." *Online* 13:7-49.
- Frisse, Mark E. 1988. "Searching for Information in a Hypertext Medical Handbook." *Communications of the ACM* 31(7):880-886.
- Halasz, Frank G. 1988. "Reflections on Notecards: Seven Issues for the Next Generation of Hypermedia Systems." *Communications of the ACM* 31(7):836-852.
- Hewett, Thomas T. 1989. "The Drexel Disk: Hypertext-based Instructional Software As a Tool for the Exploration of a Constrained Knowledge Space." *Behavior Research Methods, Instruments & Computers* 21(2):316-325.
- Kinnell, Susan K. and Tyde Richards 1989. "An Online Interface Within a Hypertext System: Project Jefferson's Electronic Notebook." *Online* 13:33-38.
- Kinnell, Susan K. 1989. "Hypertext on the PC: Guide, Version 2.0." *Database* 12(4):62-66.
- Lopez-Suarez, A. and T.T. Carey 1988. "MetaReference: The Architecture and Construction of a Hypertext System." *The Canadian Journal for Information Science* 13(3):63-78.
- Manes, Stephen 1987. "Hypertext: A Breath of Air Freshener." *PC Magazine* 9 June: 91-92.
- McClelland, Bruce 1989. "Hypertext and Online: A Lot That's Familiar." *Online* 13:20-25.

McKnight, Cliff, John Richardson and Andrew Killon 1988. "The Construction of Hypertext Documents and Databases." *The Electronic Library* 6(5):338-342.

Nelson, Ted 1974. *Computer Lib*. Chicago: Nelson.

Nelson, Ted 1981. *Literary Machines*. Swathmore, PA: Nelson.

Rada, Roy 1989. "Writing and Reading Hypertext: An Overview" *Journal of the American Society for Information Science* 40(3):164-171.

Raymond, Darrell R. and Frank Wm. Tompa 1988. "Hypertext and the Oxford English Dictionary." *Communications of the ACM* 31(7):871-879.

Scacchi, Walt 1989. "On the Power of Domain-Specific Hypertext Environments." *Journal of the American Society for Information Science* 40(3):183-191.

Smith, John B. and Stephen F. Weiss 1988. "Hypertext." *Communications of the ACM* 31(7):816-819.

Smith, Karen E. 1989. "Hypertext - Linking to the Future." *Online* 13:32-40.

Van Dam, Andries 1988. "Hypertext '87 Keynote Address." *Communications of the ACM* 31(7):887-895.