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Can hypertext ‘relevate’ tacit design information?

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Absract
Although the recent popularity of the InterNet has enabled many designers and educators to become conversant with ‘hypertext’, most current (HTML) systems employ rigid hierarchic structures, are barely interactive, and tend to ‘dumb-down’ the information presented. Conceived within a post-Enlightenment mindset, hypertext was originally intended for military, rather than for educational or commercial purposes. Within today’s consumerist culture it has tended to become commodified as a convenient instrument of information access, rather than as a catalyst for productive learning and communication.

The author adapts ideas by the physicist, David Bohm - principally, his metaphor of ‘relevation’ - as an underlying principle for the design of a networked hypertext authoring system. Such a system is intended to facilitate stronger author-communities by emphasising psychoanalytical cues, and by emphasising the embodied nature of how we ‘relevate’ knowledge, whether individually, or collectively. This approach is also intended as a challenge to the outcome-centred, instrumentalist tenets of Western dualistic design.

The idea of hypertext

It has long been hoped that IT and CT systems would empower busy designers, or facilitate more sustainable, socially responsible design practices. This aspiration is a specialised version of the dream of a ‘paperless office’ which still eludes most of us in our working lives. A contributory element in attaining this scenario is the idea of hypertext, which is a computer-based form of text with links to other texts. In recent years, it has become very popular, and millions of users are now conversant with a simple form of hypertext on the internet - using HTML - that enables documents to be created and inspected via user-friendly browser applications. Although many professional educators have found hypertext technology helpful in the classroom, we should remember that it emerged from a post-Enlightenment mindset in which knowledge was perceived as instrumental to management and control.

The generic idea for hypertext is attributed to Vannevar Bush who co-ordinated some six thousand leading American scientists in the application of science to warfare whilst Director of Roosevelt’s Office of Scientific Research and Development. In 1945 he urged scientists to ‘turn to the massive task of making more accessible our bewildering store of knowledge...instruments are at hand which, if properly developed, will give man access to and command over the inherited knowledge of the ages’. Although current technologies were not yet adequate for the task, Bush envisaged a ‘mechanised private file and library’ with which users could create mnemonic codes and ‘connect’ data items together into information ‘trails’.

Behind this vision was the psychological principle of ‘associationism’ that emphasised the idiosyncrasies of human memory and the way that humans link seemingly arbitrary events and experiences together. Ultimately, what Bush conceived is limited by epistemological boundaries which stand between the ‘known’ and the ‘unknown’. These boundaries are familiar to librarians. For example, in looking at a given problem a solution is, by definition, not consciously available to the searcher. The temporal paradox of the search task can therefore be characterised by an apparent need to recognise something that has yet to be ‘cognised’.

The technology and philosophy of hypertext

Hypertext took several decades to become technologically possible. Xerox’s ‘System 33’

(1982) enabled the user to create, index, annotate, retrieve and save documents independently of how they were created. Three years later, researchers at Bellcore, USA produced a system incorporating 'search histories', and 'structured feedback' to the reader by answering search queries with a visible array of possible 'hits' — each one showing its immediate surrounding context.

These corporate developments coincided with the refinement of 'reader theories' (e.g. Ricoeur, Barthes (1977), Lacan, Derrida, Foucault) which challenged assumptions about the hegemony of 'the Book' and which tended to mask the subtle process of collaboration and consensus which, arguably, attends all authorship. In dismantling the power relations inherent in this model of knowledge, several theories have had to be developed. Arguably, many are only thinkable within a post-Freudian belief system that emphasises the role of the psychoanalyst as leading a conversation by 'listening', rather than by 'speaking'.

It has taken Western thinkers some time to accommodate reader theory because it undermines the rationalistic determinism behind ideas such as 'agency' and 'ego'. David Bohm was a physicist who used theories of the quantum realm to reinterpret everyday experiences such as observation and action. Perception, he argued, should be interpreted as a reciprocal act in the sense that entities 'occur to' the individual who notices them, and vice versa. This is still a difficult notion for us to accept. In describing his view, Bohm (1983) adopts the word 'relevant', but uses it as a verb to describe the way that perceived objects 'relevate' themselves — i.e. literally, 'raise themselves up' and make themselves visible to — the viewer.

The disembodied nature of text

It is obvious that the embodied knowledge which informed a given text far exceeds the information that the text can signify in any clear or explicit way. This raises particular questions in a practical design context if we consider the question of a given text's helpfulness in enabling design practice to be effective or wise in its outcome. Here, the situated context of the reader and the site of reading become more critical in attributing meaning/s to the text in question. We have come to think of writing as a rather 'disembodied', self-denying activity. As such, it usually takes place away from action and discourse. Such features have a bearing on the usefulness of texts for informing the practices of design. (Wood, 1997)

Pragmatically speaking, for busy designers, the fact that a particular text may appear to match the author's original intentions is far less important than the ability of the reader to relevate meanings which inform workable and responsible action/s. Importantly, the revelatory capability of writing and reading can be enhanced by nominating a specific 'reader-as-problem-holder'. This brings writing closer to the practice of design, and helps the designer-writer to choose certain arguments, that speak on the reader's behalf. Within the textual tradition of the (academic) book, this invokes the problem of the reader that was alluded to above. As Plato said: books are like the painted figures that 'seem to be alive, but do not answer a word to the questions they are asked'.

The limits of hypertext

In 1988, it was suggested (Dede, 1988) that there are four main problems which impede the ultimate usefulness of hypertext:

- High probability of user disorientation within a vast array of possible 'information spaces'.
- The cognitive overheads on the user that such a system demands.
- The 'combinatorial explosion' that soon emerges when the number of links between data items is increased.
- Collective communications dysfunction.

Although some of the above problems may be solved by novel technological solutions, they will also call for new attitudes and methods that must respond to the demands of the design studio in a more socially and ecologically sensitive way. We can frame this idea in the context of communication as a shared, performative act (Wood and Taiwo, 1998). This paper asks whether hypertext can offer the designer anything beyond what we

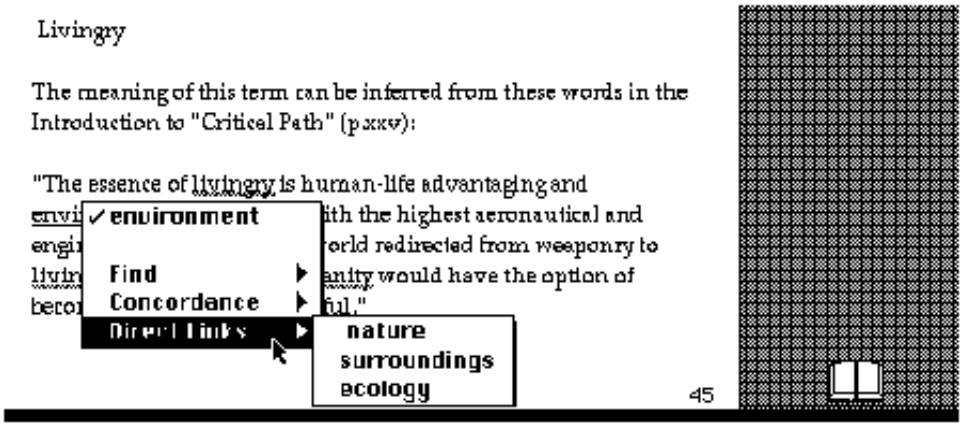


Figure 1 Screen shot of a hypertext search within IDEAbase

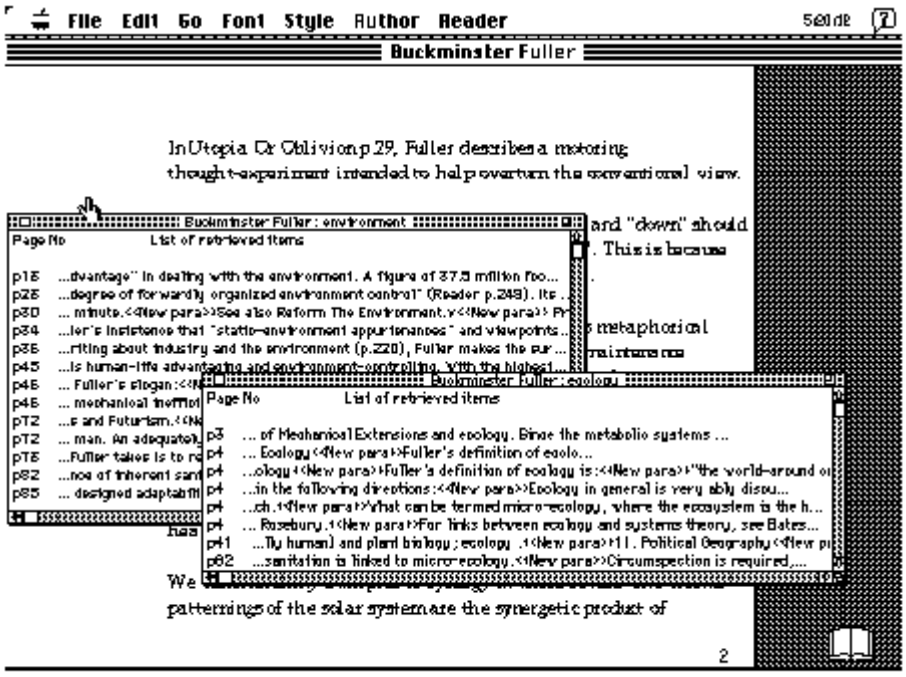


Figure 2 Screen shot of retrieved options using IDEAbase

have within paper-based 'text' for design as we know it? It builds upon the author's previous work with the design, and implementation of hypertext authoring systems for designers. (Wood, 1993; Wood and Taylor, 1997)

Making hypertext work better

Some empirical research has also given hypertext a bad press. One 1991 experiment showed that many users preferred reading a paper version of a particular hypertext document and seemed to remember more from it (McKnight, Dillon, and Richardson, 1991). Yet some techniques were not included in this study. For example, Bellcore's 'unlimited aliasing' facility (Furnas, Landauer, Gomez and Dumais, 1987) allowed users to create an unlimited number of mnemonic terms for a given search object. This has been found to improve the average reader's ability to access documents quickly when required.

Similarly, the 'adaptive indexing' system (Furnas, 1985) logged unsuccessful search strategies and asked the user to choose one or more of them for permanent attachment to the target object. These and other techniques may serve to make hypertext a far more effective vehicle for informing practices

in the design studio. Yet because (internet) hypertext has made such a dramatic impact on the accessibility and breadth of information available to non-professional searchers, we may forget that it has also tended to 'dumb-down' the average content of readable documents by promoting a weakly interactive, shallow, and over-hierarchical structure that relies increasingly upon automated processes of information editing. As the Web's inventor, Tim Berners-Lee commented "It was to be a very interactive medium; that was the idea. But you ain't got that."[1]

Psychoanalytical coding for keywords

This paper suggests that hypertext systems should be made more responsive to psychoanalytical and performative aspects of human communication and thought. Normally, when we read a document we are oblivious to its author's situated actions; i.e. to its 'time-space' of writing. We have come to ignore the interruptability of (word-processed) writing because we use it rhetorically to synthesise the illusion of uninterrupted temporal flow for the reader. Our scholastic tradition is still characterised by a writing for the unknown, non-specifically situated reader. Therefore, it seldom refers to the 'lived time' of its own writing (Wood, 1996).

By contrast, techniques of 'situated criticism' (Wood, 1997) are more akin to the practice of design because they can be regarded as a 'saying-at-the-site-of-showing'. Electronic systems make it possible for authors and readers to 'tune in' to one another's situated responses within an actual design predicament. Telephones and video-conferencing systems already offer such a capability but do not readily lead to the intelligent creation of documentation.

Ideas for a new approach

(To avoid unethical use, the following techniques must be controllable by, and be transparent to the user/s.) 'Author identifier' tags could be generated and classified automatically, governed by the unique spatio-temporal aspects of how they were made. This would be accomplished using data from keyboard actions. The 'keystroke objects' thus produced would record the relative duration of each alphabetical character across the total period of time taken to create the complete word, sentence, or section.

These spatio-temporal clusters of keywords could then be automatically converted into easily memorable and modifiable graphic forms so that they could be filed away in a format chosen by any individual with the required access privileges. In this form they could be ranked for memorability by their author/s, or for their perceived psychoanalytical significance for other readers. Readers could give names or other annotative markers for these passages, guided by the qualities they, or the system, have registered. By doing so they would acknowledge and record an agreed state of mind or emotion.

Neural net technology could be employed to assist in this process. This would work by observing and registering the salient, comparative features of all documents and indexing their perceived features with any annotations or signs which the user/s decide to attach. The data that reflected the changing performative actions could be used to generate an abstract graphic pattern that would be available to both readers and authors, such as a subtle watermark behind the respective textual content to which it refers. The stored data that represents the interruptedness in flow (patterns of fluency) could be used to locate, search for, or to link to other documents or their search algorithms. A modified 'spell-checker' could also search for, and archive, errors or 'slips' - i.e. what Freud described as 'symptomatic actions' which may behave like 'strange attractors'[2] in the communication process. (Wood, 1994)

Notes

1 From an Interview with Tim Berners-Lee, inventor of the internet, by Marguerite Holloway. Scientific American December 1997, PROFILE; 'Molding the Web'

2 A name invented by Ruelle and Takens in "On The Nature of Turbulence" (1971). Hayles has said that an "attractor is any point of a system's cycle that seems to attract the system to it." quoted in N.

Katherine Hayles, "Chaos and Order", University of Chicago Press, Chicago and London, 1991. p.8

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