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Books, E-Books and Augmented Books

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Brief Description of Research

E-books introduce many new possibilities to structure, comment and annotate books. However, most discussions thereof have not gone beyond replacing traditional printed books with digital devices.¹ Our research suggests that printed books can be combined with new technologies to create augmented books: i.e. wireless, Internet can link texts to virtual reference rooms, provide contextualisation and give static texts dynamic features. This research offers practical experimentation in the direction of a theoretical framework concerning the reorganization of knowledge.

Electronic versions of books are associated with hypertext and hyperlinks, which have inspired a series of thinkers including Vannevar Bush, Douglas Engelbart, and Ted Nelson to go beyond a strictly a linear presentation. Scholars such as Professor Robert Darnton (Princeton) have suggested that the e-book of the future might be pyramidally structured beginning with an abbreviated (paperback) version, followed by longer versions, discussion groups, pedagogical versions etc.² Our approach is also layered but emphasizes historical and cultural dimensions.

Innovative Character and Impact

On the surface this will lead to what a decade ago would have been called new kinds of multimedia productions. In effect it will do more. For instance, it will combine information about physical objects in museums (paintings, instruments) with theoretical primary literature and subsequent secondary literature from libraries and archives. This will provide a deeper understanding of the practical consequences of theory, and conversely a better understanding how practical objects are linked with theoretical texts and ideas. As such it will provide us with new insights into the knowledge (production) life cycle.

This work has fundamental implications for the future of publishing, the function of libraries and memory institutions. It can change the way we approach education. Work which leads to a re-organization of knowledge is of fundamental significance as we move from an industrial society to a knowledge society. In the present context this work can be seen as preparatory background for the ICES-KIS Productuustraat project.

Approach

The proposal entails complex interplays of text, images (diagrams, paintings), which do not lend themselves to publication in traditional book form. (Too many pictures say the publishers). The author's research over the past 30 years brought to light these limitations of printing. Study of Renaissance science and art led to three related, specialized themes: perspective, Leonardo da Vinci and universal measuring instruments (sector, proportional compass and reduction compass). Leonardo was one of the pioneers of renaissance perspective, which was about drawing in three-dimensions and also about surveying and measurement: (universal) measuring devices thus became closely linked with the evolution of perspective.

These limitations with printed expressions led the author to an exploration of the potentials of electronic hyperlinks as new ways of relating different kinds and levels of sources as well as new ways of connecting theoretical writings, physical instruments and practical results (drawings, paintings etc.). This led to two preliminary results: a) publications (77 articles, books on *Frontiers in Conceptual Navigation* (1999) and on *Augmented Knowledge and Culture* (Munich: Fink Verlag: 620 pp. in press); b) a prototype System for Universal Media Searching (SUMS), leading to a virtual reference room.³ This previous work will provide content in the form of case studies for our approach, which is layered and has five distinctive features:

- 1) Traditional, analogue footnotes/references can be seen as explicit predecessors of hardwired hyperlinks. These notes refer sometimes to books, sometimes to journals and sometimes to newspaper articles. We are interested in developing new kinds of layered footnote, which allow one to distinguish references by kind of reference and by medium: print, web, video, television etc.
- 2) An extension of this approach means that what has traditionally been classed as secondary literature could be further distinguished in terms of internal analyses, external analyses, restorations and reconstructions.
- 3) Any given claim in a book is time bound. For example the number of users on the Internet was 30 million in 1995 and 300 million in 2000. We are concerned with creating mechanisms whereby quantitative aspects of books become self-updating.
- 4) In addition to explicit, hardwired footnotes we are concerned with developing implicit footnotes which allow one to consult information about any proper name, place, or concept by means of a virtual reference room.
- 5) Traditional references refer to a source outside the book. We are concerned that books of the future are linked directly with the sources to which they refer. Those sources can in turn be linked to their sources in order to create new kinds of knowledge chains, which reveal the knowledge (production) life cycle.

One programmer is requested to help in making prototypes. Support is requested for three doctoral students (AIOs) to deal with points 1, 2 and 3 respectively. A post-doctoral assistant will address points 4-5 throughout the period. This team can explore possibilities for future books and e-books.

¹ Cf. http://www.davidreilly.com/epublishing/articles/ebooks/introducing_rocket-ebook.html

² Robert Darnton, "A Program for Reviving the Monograph," March, 1999.

See: <http://www.theaha.org/Perspectives/issues/1999/9903/9903PRE.CFM>.

Cf. Robert Darnton, The new age of the book. *New York Review of Books*, March 18, 1999.

See: <http://www.nybooks.com/nyrev/index.html>.

³ Please see the Institute's website at www.mmi.unimaas.nl.