

## What can we learn about hypermedia navigation from a book history study ?

Hervé Platteaux

Centre NTE, University of Fribourg, Switzerland

A literature study was done to reconstruct a history of book reading tools (indices, table of contents, title pages and page numbering) with the purpose of determining how the reading process was changed by the introduction and development of such tools in the codex (Platteaux, 1999). The study was based on publications of book historians (Cavallo & Chartier, 1997 ; Céard, 1996 ; Chartier, 1996 ; Chartier & Martin, 1989 ; De Boüard, 1991 ; Eisenstein, 1989 ; Eisenstein, 1991 ; Garin, 1968 ; Hamman, 1985 ; Hindman, 1991 ; Johannot, 1994 ; Mary & Rouse, 1989 ; Ong, 1958 ; Paulmier-Foucart, 1991). Extracts dealing with reading tools were collected and assembled into three synoptic and chronological tables. These show the transformation of book structure and usage due to the reading tools. The three main results of this study give a better understanding of the process of navigating through hypermedia and the application of this process to educational purposes.

First it makes clear that the non linearity of such a navigation process is not an intrinsic propriety of the electronic documents not of the printed documents. It is the association of documents with different navigation tools, such as indices, tables of contents, key-word research tools, etc. that allows the reader/surfer to choose his path among the documents according to his aim and his task (Platteaux, 1999). One can thus not simply oppose books and hypermedia environments by saying the book is linear and hypermedia is non linear (Balpe & al., 1996 ; Calvi, 1997 ; Dee-Lucas & Larkin, 1995 ; Dias & Sousa, 1997 ; Le Coadic, 1997 ; Nanard, 1995). This result was asserted already (Foucault, 1969 ; Landow, 1992 ; Mohageg, 1992) and reaffirmed more precisely (Espéret, 1996 ; Rouet, 1996 ; Vandendorpe, 1999).

The introduction of tables of contents and indices in a paginated book has transformed reading and made possible a non linear usage of text (between the 12<sup>th</sup> and the 13<sup>th</sup> centuries) well before the appearance of hypermedia. As a consequence, what is now called a fragmentary reading has also become possible. And the study of the book reveals that this kind of activity can bring very positive effects for learning activities. Instead of being obliged to read a text in a linear manner to extract its meaning, the introduction of reading tools made possible to jump very easily from one passage to another, in a single book or in different works. But, according to the book historians, this did not lead scholars to a lack of meaning and a superficial reading. On the contrary, this allowed them to follow more deeply a single idea or subject (Cavallo & Chartier, 1997 ; Paulmier-Foucart, 1991).

This is the second result of the book history study: a solid argument against the fear that reading from hypermedia just leads to disorientation problems and to superficial knowledge. This is not to say that finding one's way in hypermedia is easy but it reinforces the importance for the reader to establish a specific aim when navigating in a hypermedia environment: the coherence of the selected links depends on this aim (Rouet & Tricot, 1995).

A third result is the better understanding of basic navigation principles and the necessity for complementary navigation tools. Since book usage is structured by two main reading tools (the table of contents and the alphabetical index), the reader has many possibilities for organising his reading activity. He can follow the global organisation of the book by reading it, or a part of it, according to the page ordering. This corresponds to following the discourse of the author and the table of contents gives an overview of its structure. He can also follow a more personal path that makes him jump directly to specific parts of the book by choosing different items of the table of contents or of the index. These reading tools help this process by showing the relation there is between the material structure of the book and the conceptual structure of its contents (Platteaux & Rickenmann, 1998). Finally the reader is also able to alternate these two types of reading. One can thus say that there are certainly two basic activities during a single reading session: looking for information and going deeper into the meaning of the information that was found. Similar complementary tools are already implemented in the hypermedia environments which must also allow both the research of information and the deepening of reading.

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