Typographic Access Structures for Educational Texts

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The term "access structure" refers to the co-ordinated use of typographically signalled structural cues that help students to read texts using selective sampling strategies. In spite of their prevalence, however, the research literature contains very few references to access devices which include contents lists, headings, glossaries, and so on. This paper suggests some reasons for this and proposes that for research to be truly actionable it must be more firmly rooted in real-world problems. Evidence for the significance of selective reading is presented and some implications for research strategies are discussed.

If you were to compare an educational textbook and a novel, both in a language you do not know, you would very probably be able to tell them apart just by appearance. The novel will almost certainly consist solely of continuous prose. The text of the educational book, though, may be surrounded by additional pedagogical components, such as contents, index, glossary, summaries and so on. Why is the difference visible? It is not because the textbook has a structure and the novel has none. It is because the structure of the textbook has been typographically signalled, while the structure of the novel is signalled by linguistic means alone. So, whereas the typography of plain text can be evaluated by criteria of congeniality and legibility, the typography of textbooks clearly involves additional factors.

Consider the readers' problem if the contents list or index of this publication were to be laid out as continuous prose. If we accept at face value the conclusions of many studies in the field of reading, there would be few problems. The words would be legible, recognisable, comprehensible (by themselves), and memorisable. Although the page might look attractive, it would never-

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P. A. Kolers et al. (eds.), *Processing of Visible Language*
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theless be completely unusable for its intended purpose. The problem would not be legibility so much as accessibility.

A contents list of index uses typographic layout and signalling to display structural (typically hierarchical) relations in its content. The structure of a complete book can be made accessible in a similar way. That is, typographically signalled devices can be used to help readers overview the text and locate relevant parts efficiently. To the list of such devices in the first paragraph might be added headings, concept maps, questions, study notes, and learning objectives. Used together in a co-ordinated way they comprise the access structure of a text.

Typographic signalling is not, of course, an inherent characteristic of all these devices. Much of the information they convey might well be communicated in the main explanatory discourse. That they often are signalled represents a prediction that publishers make about the purposes and strategies of readers. Whereas a continuous discourse assumes and perhaps enforces a relatively passive sequential reading strategy, a typographically structured text allows for more selective sampling. For example, when summarising paragraphs are embedded in the middle of a continuous text, they are useful only to the reader who is reading the book through in a sequential way. If the paragraphs are typographically signalled, they can be easily accessed and used for text selection, previewing the argument, reference, and revision.

It might be thought that the various components of an access structure, being so prevalent in modern textbooks, would have been the focus of reasonably thorough experimentation. Instead, it is extraordinary that whereas innovative devices, such as the advance organiser or behavioural objectives, have been the subject of dozens of studies, there are only two or three papers that even mention headings as an aid to learners; and to my knowledge, no-one has yet looked at contents lists.

If it is accepted that there are circumstances in which readers may need to read selectively, then the models, theories, or methodologies used as the basis for empirical research should take this into account. This paper was prepared for a conference one of whose aims was to promote dialogue between psychologists and graphic designers interested in implementing research findings. It is therefore appropriate to examine why access devices have so rarely been featured in the research literature. Until they are, communications-media professionals will continue to complain with some justification that empirical research is not relevant to their needs.

**What Practical Research has been done?**

It would be a difficult task to classify all the research that has been published on texts. We are here primarily interested in studies that specifically aim to inform and evaluate the work of professional communicators. However, not only has a wide range of topics been identified for investigation but the purposes of researchers have differed greatly. Studies range from the highly theoretical to the pragmatic, from molecular issues to whole textbooks. Much of the research has investigated theories of memory, learning, or language processing and only incidentally the use of texts. Even research that is specifically concerned with text does not always aim at the same outcome. Frase (1973) has distinguished between three kinds of problem -- theoretical,