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WILLIAMS, NOEL and HOLT, PATRIK (eds), *Computers and Writing: Models and Tools*. Oxford: Intellect Books, 1989, 166 pp., £17.95/$29.50.

This book is a collection of papers stemming from the first conference on computers and writing convened by the Communication and Information Research Group at Sheffield City Polytechnic in April 1988. The papers chart a flow of topics on computers and writing, beginning with models of how people write and how software can be developed to facilitate the many aspects of that process, and moving on to considerations in producing hypertext and computer-generated story writing, in which the author may be not an individual but a group of authors and finally the computer itself. As such, the book documents not only how computers can assist people in familiar forms of writing, but also how the nature of writing changes when writers are given access to software tools to enhance what they formerly did when writing.

Six of the books's nine articles are about the development of what are traditionally thought of as computer assisted writing tools. Three of these articles (those by Stefanie Cookson, Anthony Sanford and Linda Moxey, and Patrik Holt) describe such tools in conceptual terms, while two discuss particular implementations; i.e. Noel Williams's chapter on RUSKIN, a post-writing grammar and style checker that helps writers tailor work to a pre-established profile of genre, purpose and audience characteristics; and Mike Sharples, James Goodlet and Lyn Pemberton's article on Writer's Assistant, which helps writers at all stages to work in unorganized, non-linear organized and linear organized phases in order to reach a suitable level of linear-organized instantiation. A final article by Unni Hovstad rather optimistically assesses the prospects for a battery of programs to assist essay writing in grammar schools in Norway despite formidable constraints ranging from inability of students to type to shortages of computers, of time on task, of hard disk space, and of the promised programs.

Two of the remaining three articles discuss writing for hypertext. Patricia Wright and Ann Lickorish comprehensively detail considerations in using this medium, satisfyingly supporting their work with frequent reference to research. The authors discuss nodes, links and signposts to alert readers to possible actions with respect to linear, modular, hierarchical and multi-theme hypertext. Roy Rada's article is an experiential, quasi-empirical comparison of mainframe and HyperCard implementations of software supporting multiple authors collaborating in the creation of hypertext documents while facilitating the creation of semantic nets and the conversion of the hyperdocument into a linear printed document (a similar system, IBIS, was used by Sharples *et al.* in documenting design issues for Writer's Assistant). Despite problems in getting students to understand and seriously perform the tasks required, Rada's work suggests that paperless assignments in which students collaboratively produce something useful might serve as an alternative to the traditional and often fruitless term-paper mill.

In the final article not yet mentioned, Masoud Yazdani develops a theory of story telling and relates it to recent efforts in computer-based story generation. Yazdani's ROALD is

provided with a database of world knowledge and characters with individual planning systems with varying motivations and capabilities (theft, for example). Character plans are submitted to a monitoring module working to an overall agenda (while introducing accidents), and a narrator module produces a sequential version of the interactions with the possibility even to mislead (as in detective fiction). This is a departure from previous work in that it combines structure-driven method with data-driven simulation, producing stories with "shape" distinct from content.

Even as the topics of the papers collected here show some diversity, there is much common ground. The authors show evidence of having shared ideas, perhaps even reaching agreement, at the conference. For example, the work of Flower and Hayes (1980) is taken as a point of departure on all the models of writing presented in this volume (and the authors generally depart from that model); Holt, for instance, in critiquing Flower and Hayes for their reliance on self-reported protocols, points out that the Writer's Assistant reported in Sharples *et al.* was also developed from a model of the external representations of writers (their own, which they developed after finding that of Flower and Hayes lacking) while RUSKIN, reported in Williams, was not.

Several software packages, particularly Writer's Workbench, Critique, Guide and NoteCards, must have been demonstrated, or at least described, at the conference, as each is mentioned in more than one chapter. Shortcomings are found in all—Holt writes that "no postwriting software allows any degree of interaction and flexibility" (p. 57), while Williams (p. 6) says "the concept of postwriting software implies a linear model of the human writing process which is at best simplistic and at worst may be completely misleading". Writer's Workbench is taken to be the benchmark text analysis package, and improving on the often confusing overload of statistical output is a recurring goal of the authors of these articles.

What emerges is a composite view of an alternative to Writer's Workbench that would be available as needed rather than suggest a particular path in working with it, and that would flexibly give writers as much or only that information as was needed, in digital or analog form (whichever the user prefers), and with brief (or expandable, and with examples, as the user wishes) explanations of why particular data might be useful and how to interpret it. The software would offer multiple views of the emerging document and maintain the writer's context when moving between views, would be interactive with the user (but not interruptive), and would evaluate and immediately provide feedback on the effect of any change suggested. The software would be fully integrated with the writer's other tools (e.g. word processor, database), would operate on any level of text desired (e.g. sentence, paragraph, section), and would suggest changes in such a way that they could be incorporated into the document at a keypress, rather than from consultation of a disconnected hard copy or on-screen report.

Accordingly, a healthy amount of attention is given throughout the book to interfaces. Almost all the authors devote at least some space to a discussion of considerations of the "user friendliness" of the software described. At a recent conference in Paris, Alfred Bork and Bertrand Ibrahim (1992) presented their conception of the ideal interface, which would be completely self-explanatory without documentation or on-line help to anyone running

the program. It is not strange then, that Holt characterizes two distinct problems to be overcome by developers of writing software which might appear at first glance to be both the same problem: designing the software itself and then designing "the interaction between the software and the user" (p. 58); nor that Wright and Lickorish note that one disadvantage of embedding signals for jump opportunities is that users would then have to receive training in the system. Although none of these packages achieve Bork and Ibrahim's ideal, the authors are at least thinking along these lines.

Obviously, the complexity of what the software is trying to accomplish makes transparency proportionally more difficult to achieve, and some of the software decribed in this volume would have users follow processes that even its authors are not clear on. As Williams suggests, it is hard to imagine how self-explanation for complex processes can be achieved without some sort of hyper-network allowing elaboration on concepts that are difficult to convey on a given screen, which is one reason that the two papers on hypertext are appropriate to this volume. Wright and Lickorish, for example, address keeping track of context and progress through hypertext, with some indication of where you are in the textbase with respect to how much there is to go. They suggest multiple windows on screen and fisheye views for navigating large hierarchically organized materials, with options to jump forward or backwards following "footprints" or to bookmarks, with the ability to store, retrieve and annotate text. Lest one wonder if their chapter is about reading or writing, Wright and Lickorish point out that this distinction is blurred with hypertext when new links are forged by readers.

There are several places where presentations by one author are subsumed in another's work; for instance, the fisheye technique mentioned above is incorporated in the work of Sharples *et al.* Similarly, Sanford and Moxey cite the heuristic profiles approach of Williams as one solution to the dilemma of pinpointing computable values in style checking. In suggesting that some spoken form of the text (perhaps a synthesized version) be used as a check on balance and prosody in style analysis, they build on Cookson's paper showing how models of speech might provide insights into computable models of writing.

Frequent reference by almost all the authors to each other's work contributes to the volume's cohesion, a quality not easily achieved in a collection of papers deriving from a conference. In providing balanced yet provocative views of current topics in the development of writing software, this book is a valuable addition to a practitioner's library.

REFERENCES

BORK, ALFRED and IBRAHIM, BERTRAND (1992) A self-instructional mailer. Poster session presentation at The Ninth International Conference on Technology and Education, Paris, France.

FLOWER, L. S. and HAYES, J. R. (1980) Identifying the organisation of writing processes AND The dynamics of composing: making plans and juggling constraints. Both in Gregg, L. W. and Steinberg, E. R. (eds), *Cognitive Processes in Writing: an Interdisciplinary Approach.* Hillsdale, NJ: Lawrence Erlbaum.

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