Book Reviews

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Concurrent Systems. Addison-Wesley. 1993. ISBN 0–201–41677–8. £21.95, 602 pp. softbound.

Lest a student interested in concurrency theory run away with the idea that he can learn about CSP and CCS or even Petri-Nets from this book, let me clarify at the outset that this book is really a text on the design and implementation of operating systems. It is quite a comprehensive text spanning the whole range from uniprocessor operating systems through distributed operating systems to the issues of concurrency control and crash resilience in large distributed transaction-processing systems. The only notable systems that are not covered in great detail are real-time systems, though there is considerable material on interrupt processing and at most places in the book where design and policy-decisions are discussed there is a mention of the consequences of these decisions in the case of real-time applications with hard deadlines.

The book has been organized in four parts of which the first part (despite what the author says in the preface) describes the functional responsibilities and the overall structure of an operating system. The second part is devoted largely to issues pertaining to what is conventionally regarded as concurrency in an operating system. Part 3 expands upon the material of Part 2 and describes transaction processing. In the course of this issues like deadlock detection and avoidance, concurrency control in data bases, etc., are also described. The last part consists of case studies.

The author has a thorough and complete understanding of the various issues involved in the design and implementation of operating systems, and has written an excellent treatise that has attempted to answer all the questions that come to a lay reader's mind. The prolific use of diagrams throughout the text attests to the concern the author has in conveying understanding rather than information. The diagrams themselves have a certain natural structure and grammar which pervades the book. She has evolved very good icons for representing processes, delays, data types, modularity, hierarchy, etc. Most examples and design decisions are amply illustrated by attractive diagrams.

The book has been organized in a strictly top-down and modular fashion very much in the spirit of current software design methodologies. However, it is not clear that this is pedagogically a very good idea. A consequence of this decision is that there are frequent forward references (intended perhaps, to assure an impatient student reader that the questions that have leaped to his mind are not being glossed over and would be answered in due course). A further result of this is that when the reader does actually reach the answer to one of his innumerable questions he does not remember whether he a had question earlier at all. Other consequences are that even concepts like deadlock which are fundamental issues come very late in the text.

Another important point is the conspicuous lack of algorithms/pseudo-code in most parts of the text, especially in Part 1 where there could be a multitudes of design decisions. After all, a book on operating system design is meant for someone who already does know programming and is a potential designer himself. Further the dynamic behaviour of algorithms is better explained by code rather than by pictures or by long-winded paragraphs (as is done in several places in the book).

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MIKE SHARPLES (ed.)
Computer Supported Collaborative Writing. Springer-Verlag. 1993. ISBN 3–540–19782 6. £26.95, 222 pp. softbound.

STEVE EASTERBROOK (ed.)
CSCW: Cooperation or Conflict?. Springer-Verlag. 1993. ISBN 3–540–19755–9. £29.50, 211 pp. softbound.

Recently there has been considerable interest in developing systems to support collaborative work. There are now three journals devoted to the field and a series of established conferences on this topic in the United States and Europe. In Britain, a special interest group meets regularly in London as a forum to discuss particular issues and themes pertinent to CSCW systems. Papers from these workshops have been collected together in this new series of books by Springer-Verlag. As yet there is no text book in the field, but there are several collections of readings including *Readings in Groupware and Computer Supported Cooperative Work* (Baeker, 1993) and the collection *Intellectual Teamwork: Social and Technological Foundations of Cooperative Work* (Galegher *et al.* 1990). Therefore, the time seems right to draw together papers on more specific research themes on collaborative work and the design of groupware technologies.

The first collection in the Springer Verlag series *CSCW in Practice: An Introduction and Case Studies* (Diaper and Sanger, 1993) gives a general overview of the area. The second and third books deal with more specific themes. *Computer Supported Collaborative Writing* outlines some case studies examining joint or group authoring of documents, reviews current technologies to support collaborative authoring and editing, and draws out some implications for new technologies to support these activities. Authors approach the topic of writing from a wide variety of orientations and consequently adopt differing definitions of the activity ranging from

the more narrow such as 'puting pen to paper' through to the asynchronous joint production of technical documents. The technologies suggested to support collaborative writing range from focused activities using multi-media systems through to enhanced electronic mail systems.

Some authors outline observations that seem to support the use of groupware for these activities. However, as with much CSCW technology, few of the systems described are in day-to-day use or have had long-term evaluations. The ubiquity of paper documents in real world settings and the flexible ways in which they can be used may suggest that the focus on collaborative writing taken in this volume may be too narrowly conceived; the general focus on 'co-authoring' may constrain the possibilities for new technologies rather than extend them. A more qualitative approach to the analysis of the detailed production of documents may be able to show the ways documents are utilised *in situ* in a wide variety of settings. Researchers are currently investigating radical innovations which appear to support this conception of collaborative writing. This work is not included in this volume.

Nevertheless, from this collection, the reader gets a reasonable grasp of current research on collaborative writing. However, there is little development and progression of themes throughout the book and consequently implications for the development of systems may be too vague for those considering the design of new technologies.

One of the issues raised in this collection is the possibility of conflict among group authors of a document. This topic is dealt with in more detail in the third book of the series, *CSCW: Cooperation or Conflict*. Given the current focus on cooperation, should not designers also examine conflict, how to conceptualize it and develop technologies to support it? This collection reviews various theoretical frameworks with which to explain conflict. Though the notion of conflict is often vaguely expressed, most of the authors agree that it is essential for organisational life and that is should be made apparent. However, it is still unclear how designers should do this. The collection provides a useful introduction to social psychological work on conflict but nevertheless still appears premature. Conflict could itself be seen as a gloss for a range of activities. It may be more useful to encourage empirical and conceptual studies which attempt to 'unpick' this notion rather than taking it for granted.

By and large the papers in these two collections are unavailable elsewhere. However, being written for a more academic audience, they may be less suitable for readers either interested in getting a general view of CSCW or aiming to design collaborative applications.

REFERENCES

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Galgher, J., Kraut, R. E. and Egido, C. (ed.) (1993) *Intellectual Teamwork: Social and Technological Foundations of Cooperative Work* Lawrence Erlbaum Associates, Hillsdale, NJ.

Diaper, D. and Sanger, ? (eds) (1993) *CSCW in Practice: An Introduction and Case Studies*. Springer-Verlag, Berlin.

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