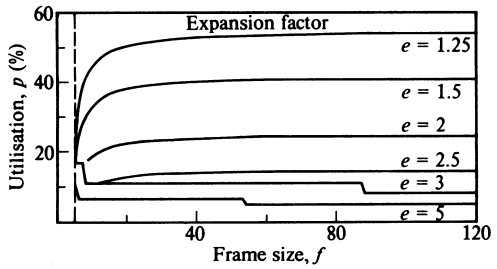

Fig. 5 Expansion factors (error corrected)

Summary

Two methods of constructing an ATDM system using 8 bit microprocessors are proposed. Evaluation of their performance indicates that they are more efficient than STDM for utilisation below 80%, although a significant improvement is probably not achieved until the utilisation drops to below 50%. The boundary between the choice of our two methods occurs at ~ 12% utilisation.

Both ATDM methods are sensitive to line errors, but this can be reduced by the use of forward error correcting codes. When these are applied the peak utilisations for which the methods are an advantage falls to about 75%. However, for practical purposes the criteria for choice between the two methods is not affected by these changes.

At low levels of utilisation, encoding the terminal address with each character is more efficient than the bit map technique.

In implementing an ATDM system, accurate estimates of the utilisation are required in order to ensure that the system does not fail by becoming overloaded. This constraint can be relaxed by provision of buffering within the system (Sudhindra, 1981). The authors intend to present a separate study of this aspect of ATDM system design.

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Book reviews

APL in Practice: What you Need to Know to Install and Use Successful APL Systems and Major Applications, edited. A. J. Rose and B. A. Schick, 1980; 375 pp. (*John Wiley & Sons*, £13·60)

The book reproduces papers prepared to provide background for presentations at 'The Practical APL Conference,' sponsored by STSC, Inc. and held in Washington, DC on 9–11 April 1980. The Foreword indicates, that the conference had the following goals: to to provide general management with sufficient knowledge of APL to cut through the mystique that surrounds the data processing profession; to aid data processing managers and working professionals in bridging the gap between their familiar turf and new fields—such as financial planning and conceptual information management—that are easily mastered with APL; and to broaden the horizons of convinced APL users so that they can better relate to the real problems of general management and data processors.

The papers addressing these goals are divided into three sections, dealing with the data processing viewpoint, the general management viewpoint, and the core of APL. Unfortunately, many of the printed papers are too brief as though they were intended to be supplemental to the talks rather than standing on their own. There are also too few references to other work. Thus, the book must be seen as a survey that does a reasonably good job of meeting the first two goals, but falls somewhat short in satisfying the reader who is experienced in APL.

For the reader seeking familiarity with APL, there are tutorial papers on a wide variety of relevant topics including even a guide to chosing an APL terminal, and a discussion as to when APL is inappropriate. The productivity of APL appears as a continuing theme.

G. Foster in *Computing Reviews* has listed some minor typographical errors. On page 22 there is reference to 'IBM's new 64 bit chip' where obviously a 64k bit chip is intended. On pages 106–107 the equations are neither APL nor algebra because of mixed use of the negative sign and the minus sign. On page 260 near the bottom of the page one suspects that the line should be: SUPER ′ → TEXTEDIT → XMIT′. Finally, on page 345 the expression to extract the first of the sizes of the departments is suspect.

M. LEHMAN (London)

Progress in Cybernetics and Systems Research, Vol. 7, edited by F. R. Pichler and F. de Hanika, 1980; 393 pages. (*Hemisphere*, $50.00)

This book represents the text of the papers which were presented at the Austrian Society for Cybernetic Studies. Let me say immediately that for those interested in this field of endeavour the book is a 'must', and produced for what is these days an incredibly modest price.

It starts with a keynote introduction entitled "Systemic versus Morphological Approach in General System Theory" by René Thom (Paris) which sets the scene effectively. The book proper is divided into three main sections: (1) *General Systems Methodology*, chaired and edited by Professor Klir; (2) *Organization and Management*, chaired and edited by Drs F. de Hanika and R. R. Hough, and Professor Pichler; and (3) *Cognition and Learning*, chaired and edited by Professor Gordon Pask.

"The Structure of Reconstructable Relations" by Cavallo and Klir was of special interest and has a high degree of generality and pinpoints important problems. The other interesting article, among a whole lot (eleven in the first main section alone), was "The Literary Work of Art as a System" by Rudnick. This served as a reminder of the breadth of the subject and it was a pity that he did not, as others did, add a reference section.

One of the most interesting papers in the second main section is "Management Information Systems" by Espejo and Watt, where the authors have drawn considerably on the well known work of Stafford Beer.

The last section was of special interest to the reviewer and contains excellent articles by Andrew, Elstob, Pask himself (on consciousness) and Johnson on "The Growth of Knowledge". This last mentioned paper, which is clearly of a philosophical flavour and includes an interesting section on practical reasoning, I found of special value.

Altogether a very interesting, even rather daunting, book to read. It gave me the feeling that new ideas were occurring so quickly that I would be overwhelmed by them; it gave me the sort of feeling that I would imagine King Canute had as the seas approached. Altogether an excellent book.

F. H. GEORGE (Uxbridge)