5. Concluding remarks

The automatic implementation of a special purpose language by the DEPOT system has been demonstrated in the paper. The time needed to write the ELEQ translator program was about 20 hours. Experience gained in using the DEPOT system (about 40 languages implemented so far) has shown that the system enables special purpose languages to be defined, implemented and modified in an easy and quick way. The spectrum of languages implemented by DEPOT is diversified. They are of practical as well as of research and educational value. To give an idea of the application area and of the programming effort involved, we include the following choice of special purpose languages realised by DEPOT:

(*a*) an extension of BESM-ALGOL (i.e. ALGOL 60 containing the types **string** and **bits**) by including record handling operations (200 man-hours),

(*b*) a language for dimensioning workpieces (400 man-hours),

(*c*) a simulation language for automaton networks,

(*d*) a decision table language containing the type **set** (100 man-hours),

(*e*) an extension of BESM-ALGOL by including the type **diagram** (150 man-hours),

(*f*) a sample language for formula manipulation,

(*g*) a language for schoolchildren aged from 9 to 12 years (50 man-hours),

(*h*) a language for program correctness investigations,

(*i*) a control language for an ordinary differential equation program package,

(*j*) a language for planning goods-train connections (800 man-hours),

(*k*) a PASCAL-like language for real time control,

(*l*) an extension of ALGOL 68 subset by providing the possibility to attach measures to types,

(*m*) a language for geometric element handling.

Current application of DEPOT is centred around the development of a series of languages for printing presses, and the construction of a translator enabling program packages to be transferred from one computer to another.

In the majority of DEPOT applications BESM-ALGOL has been chosen as a target language due to the fact that its compiler produces very effective machine code. In other applications the target languages were FORTRAN, PL/I and an assembler language of a small-size computer.

It has been found that students of the third and fourth years are able to develop translators of special purpose languages. It is our belief that the DEPOT-MS metalanguage, which itself is a special purpose language, is well suited to describe preprocessing of special purpose languages into high level languages.

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Book reviews

Globally Optimal Design, by D. J. Wilde, 1978; 288 pages. (*Wiley*, £17·70)

This book, written for engineers, has as its goal the finding of 'simple design methods guaranteed to give the global, rather than any local, optimum through computations easy enough to be done on a manual calculator'. The text is well illustrated by 15 examples based on actual engineering design projects.

The book differs quite fundamentally in its approach to optimisation from that usually adopted by numerical analysts. Mathematical elegance and numerical analysis interests are given less prominence (though they are not ignored) than practical utility. Considerable emphasis is placed on the interpretation of results in simple terms, the practical importance of which a numerical analyst might overlook. The author gives considerable attention to finding upper and lower bounds to the optimal value of the function before deciding how far to press the solution. The feel that engineers have for the significance of constraints is exploited to simplify the function being optimised, and 'design rules' sought, for example 'Design the cofferdam so that the (linear) construction cost equals the expected flooding cost'. Several valuable comments are made on the scope and comparative usefulness of various methods. Readers more familiar with the work of numerical analysts will probably be surprised to see the importance attached to geometric programming and mathematicians and numerical analysts may raise their eyebrows at the absence from the bibliography of most of the prolific writers on optimisation of the last fifteen years or so.

I find this an immensely readable book and one which deserves study by anyone concerned with practical or theoretical aspects of processes of optimisation.

A. YOUNG (Coleraine)

The Team Approach in Data Processing, by L. J. Chadd, M. J. B. Naughton, and B. Tebay, 1979; 116 pages. (*Langton Information Systems Series, Input Two-Nine*, £9·95)

This is an overview of the psychology, organisation and management of teams of people working on DP projects. It covers the psychology of individuals, group dynamics, team structures, management problems and benefits, and practical considerations.

As an introduction to the subject this book succeeds quite well. Unfortunately the design of this series of books seems to be biased towards an audience with large budgets and poor eyesight. Republished in A5 format, with the irrelevant diagrams and wide open spaces omitted, at two or three pounds, this could command reasonable sales; at nearly £10·00 it is poor value for money, but may be worth borrowing from your public library for an evening.

MARTYN THOMAS (Bath)