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Fortran, PL/I and the Algols

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Preface

The first remark of a comparative nature about programming languages which I can recall was made to me by a former colleague at IBM in Wigmore Street in London. It must have been about 1957. I was describing to him some features of one of the then current autocodes, and he commented on one of them, favourably, in relation to the equivalent feature of what must have been a very early version of Fortran, which at that time was to me no more than a name. The remark was not important in itself, but the fact that it stuck in my memory, I later came to realise, suggests that it was one of the things which first sparked an interest which has grown over the years, the first recognition of an infant programmer scarcely weaned from machine code (at that time our mothers' milk) that programming languages of a higher level were not merely tools to write machine code more quickly, but had characteristics of their own which were worth examining.

The attitudes and judgements which find expression in this book have, since then, developed in many ways: use of different languages on different machines with different compilers, discussions with students in lectures and tutorials, advisory sessions with computer service users, talking with and listening to colleagues at conferences, both in formal sessions and over the coffee cups and beer mugs outside. As explained in the prelude, the views expressed are distinctly those of a programming language user (rather than designer or implementor), though I hope they will be of interest and value not just to other users and programmers (by which I mean anyone who has in the course of his work to write computer programs), but to programming language specialists, compiler writers, and computer scientists generally, especially students. I have of course read a good deal of the now extensive literature on programming languages, from Bryan Higman's *A Comparative Study of Programming Languages* onwards, and have been influenced by what I have read; however, in writing this book I have deliberately avoided going back too often to the literature, preferring to base my judgements on the language definitions themselves and on observation and experience rather than 'received opinion'. To those who might remark tartly that 'it shows', I can only repeat the quotation which appears at the end of chapter 1.7.

Nevertheless many have helped directly to bring this text into being, and have earned my thanks. The bulk of the writing was done during a period of sabbatical leave from my administrative duties, given me by Queen Elizabeth College; I am deeply grateful to the College for giving me the time for this, to my colleagues in the Computer Unit who had an increased workload as a result, and in particular to Patricia Heath, who was Acting Director in my absence. Pam Thompson, of the Unit, has done a great deal of retyping, copying and other necessary secretarial

work, which has been of great assistance. I should like to thank Malcolm Stewart of the Macmillan Press for his unfailing encouragement and support, and especially for his understanding of the problems of authorship such as those caused by the volatility of the various drafts of Fortran 77. Professor J. S. Rohl, series editor at the time the book was first mooted, made many valuable and perceptive comments on the initial proposal and sample drafts which led to very substantial improvements in format and approach. Dr P. G. Barker of Durham University and Christopher Bird of Altergo Ltd both read the main draft of part 2, correcting numerous errors and suggesting several improvements in presentation. Most of all, however, I should like to thank Dr Chris Kirkham of Manchester University, for his thorough and meticulous reading of the whole of the main draft. As well as suggesting a number of changes which considerably improved the treatment of some topics, he pointed out mistypings, slips, omissions, misleading statements or ambiguities, and downright untruths, at least some of which would, I am sure, have remained uncorrected without his help.

*Burgess Hill, Sussex,
October 1977*

BRIAN MEEK