

## Preface

The idea to organise this symposium was induced by the feeling that the gap that exists to some extent between the mathematical professionalists at universities and the practical mathematicians working industry should be closed.

This would be beneficial, both for mathematics as a scientific discipline (by being challenged with hard, but attractive problems from applications), as well as for the understanding of the increasingly complex problems that arise in the technological societies of today.

Triggered by an informal discussion during a workshop at Nijmegen in early 1985, and promising sounds for funding a little later, the aims of the meeting were focussed on three points.

First, on a national level, the meeting could further the existing, mostly informal, contacts between universities and industry, meanwhile investigating the possibilities and necessity to formalize these contacts. A 'Committee for developing industrial mathematics in the Netherlands', chaired by Prof. J.F. Benders, was formed and played an active role to prepare the panel discussion.

The second aim was to directly exchange information with in other, mostly European, countries between University and Industry were being established, in which way university teaching was influenced by such contacts and so on, as well as concerning the kind of problems, and mathematics, that can be expected, by providing typical examples of successful cooperations.

The actual outcome of this aspect of the meeting is essentially covered by the contents of these proceedings, which contain most of the lectures that were presented.

Recognising the fact that each country on its own has only a limited capacity to tackle interesting problems and to develop special courses in this field, the third aim was to provide a starting point of whatever kind of cooperation on a European scale on these aspects. As a result of this, ECMI (European Consortium for Mathematics in Industry) has been founded in the meantime. More information about this is also contained in these proceedings.

Organising a meeting like ESMI needs financial support. The organising institutes (CWI, Amsterdam and WD, Nijmegen) contributed (of course). The largest amount of support came from the Air Force Office of Scientific Research (London Office) though the good offices of Col. Jack Ferguson, although it was a discussion with Charles Holland of the Office of Naval Research (London Office) that launched the organization. Very substantial support was also received from Nationale Nederlanden and further important support was received from Shell International and, on a contingency basis, the ministry of economic affairs.

To all these we express our thanks. Finally it behoves us to thank the 'Committee of recommendation' (H.L. Beckers, Shell; T.C. Braakman, Nationale Nederlanden; C.J. van Lede, Verbond Nederlandse Ondernemingen; K. Teer, Nat. Lab, Philips), the 'Committee for developing industrial mathematics in the Netherlands', the more general speakers of the scientific-political first day of ESMI: E. van Spieghel, W.A. Koumans, H. Plate and H. Bosma, and, finally, all those who through conferences, panels and discussions contributed to ESMI.

The proceedings contain most of the scientific talks given at ESMI. In addition there are some 40 pages of capsule descriptions of various uses of mathematics in industry. This can be seen as representing, say, the first 1% of a catalogue of what can be done with mathematics. Certainly it is a future task of ECMI to compile such a catalogue. Maybe this  $\varepsilon$ -sized hopelessly biased beginning will still serve to give a first indication of how varied and how plentiful such applications are.

E. W. C. van Groesen  
M. Hazewinkel  
R. M. M. Mattheij