

*New Directions in Machine Translation*, edited by Dan Maxwell, Klaus Schubert and Toon Witkam (Proceedings of an international conference held in Budapest, August 1988). Dordrecht, Foris. ISBN 90 6765 377 2 (hardback), 90 6765 378 0 (paperback). 60 pp.

These proceedings are of a special conference highlighting some new approaches and viewpoints against the background of a world survey of the state-of-the-art.

In his survey "Recent develop-

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ments in machine translation — a review of the last five years", by *John Hutchins* (University of East Anglia) provides an astonishingly comprehensive overview. John Hutchins is without a doubt the world's leading authority on the history and development of machine translation, and this paper can be seen as a bringing-up-to-date of his book, *Machine translation — past, present, future*, published in 1986, but still the nearest thing to a definitive history of MT.

Mr Hutchins finds that the past five years had seen an upsurge in machine translation activity, especially in Japan. He classifies systems according to whether they are single-stage ('direct'), two-stage ('interlingua'), or three-stage ('transfer') systems, explores the extent to which current machine translation can be said to use artificial intelligence (reminding us of the important distinction between implicit knowledge and explicit knowledge), looks at various types of 'transfer' and of system grammars, and proceeds to give a comprehensive list of commercially marketed systems and research projects currently being pursued throughout the world.

A more theoretical paper is that of *Tibor Vámos* (Hungarian Academy of Sciences) contributes a theoretical paper in which he considers the interaction of computers and language, and the effect on society. This is followed by articles on the state of the art in machine translation in the USSR (still largely at a research stage, it appears, although one operational system, ANRAP, is translating English and German into Russian), and another on machine translation research in China, unfortunately not very detailed.

A thoughtful article by *Christian Boitet*, of the French GETA project at Grenoble, reflects on the advantages and disadvantages of the pivot and transfer approaches in multilingual machine translation, both from the point of view of the experiences at GETA and the problems facing the European Community with its nine

official languages.

Other articles deal with heterogeneous topics — approaching the problems of Japanese to English machine translation by using a sub-language, experiments on using the South American Indian language Aymara as an interlingua, whether the architecture of the Dutch system DLT can be described as interlingual or double direct, how an examination of discourse structure can throw light on work in machine translation, terminological data banks, terminology in Esperanto (Esperanto gets a good showing in this book — it is used by DLT as an interlingua, and Boitet suggested it as a possible interlingua for EC machine translation, strongly advocated in his conclusions on the conference by Petr Sgall of Charles University, Prague, and is the language used for summaries of each article), dependency grammar, and finally two articles on languages which have not previously figured to any extent in machine translation literature: a description of a Swedish machine translation project at the University of Lund, and a consideration of the challenge which the unusual features of the Hungarian language would offer to machine translation.

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