

PRESENTATION AND DISCUSSION OF PAPER 6

PRESENTATION BY PROF. YNGVE

BEFORE presenting his paper, Prof. Yngve announced that the COMIT programming language had now been fully revised for the IBM 709 and 7090 computers and was being distributed to interested MT workers by the SHARE organization. Experience showed that the use of COMIT speeded up the programming of linguistic operations by a factor of about twenty.

In the formal presentation of his paper YNGVE claimed that it was easier to describe a language in terms of rules for the generation of sentences than in terms of recognition rules. In setting up rules for generation the several different small problems could be separated out and handled one at a time. Since the submission of the paper for the Conference the grammar described in it had been expanded considerably: it now had two and a half times as many rules and six times the vocabulary. In particular, three further uses of of had been added and rules for dealing with the additional discontinuous constituents and ... either (in negative sentences) and what ... for. Correction of the output of the earlier version of the grammar had revealed the rule that the discontinuous interrogative, what - - for, does not occur in negative sentences.

DISCUSSION

DR. GARVIN stated his belief that the purpose of linguistic research was to discover procedures for analysis and saw the random generation of sentences by computer programme primarily as a means of testing such rules as had already been discovered by the linguist.

DR. EDMUNDSON wanted to know what form Yngve's research was likely to take in the future.

PROF. YNGVE replied that he had some ideas about the improvement of details in COMIT, but did not foresee the need for any fundamental changes. He felt that rules of the three kinds already incorporated in the grammar would be adequate for the analysis of English. Future work would be directed to the investigation of this, as also to the further testing of the depth-hypothesis for English.

DR. EDMUNDSON then asked how the programme chose which rules to apply in sentence generation.

PROF. YNGVE pointed out that, although the choice between different rules was made by the programme at random, the probability of a given rule being applied could be, and in some cases was, in the present version of the grammar, increased by listing the rule in question more than once. COMIT included a provision for "crossing out" branches that had been previously selected, but so far no use was made of this facility.

DR. SCHNELLE had doubts about the necessity of imposing upon grammars the condition that they should be finite state devices with their storage capacity fixed in advance. He pointed out that growing automata did not suffer from this limitation and referred, in this connection, both to the work of A. W. Burks, *Self Organizing Systems* (1960), and to his own doctoral dissertation (submitted recently to the University of Bonn), in which is described a Turing machine in the form of an asynchronous parallel network expandable while the machine is working. That growing automata, like human beings, were finite did not imply that they had associated with them an a priori fixed storage limit.

PROF. YNGVE replied that his depth hypothesis postulated two kinds of human memory: a temporary memory of limited capacity and a permanent memory, the limits to which might be set only by the rate of learning.

MR. McLAUGHLIN added the fact that recent psychological tests had demonstrated beyond doubt that human beings do have limited immediate memories.

J. LYONS