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XX. MECHANICAL TRANSLATION\*

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RESEARCH OBJECTIVES

The primary objective of this basic research program is to find out how languages can be translated by machine. Secondary objectives are concerned with evaluating the fidelity which can be achieved with different approaches, the usefulness of the translations for various purposes, and their respective costs. Another objective is to add to the general knowledge of noncomputational uses of digital computing machinery and to the basic understanding of human communication.

The Mechanical Translation group has always stressed a basic, long-range approach to translation. We are placing emphasis on completeness where completeness is possible, and on an attempt to find out how to do a complete job where it is not now possible. We are not looking for short-cut methods that might yield partially adequate translation at an early date—an important goal pursued by other groups. Instead we are looking for methods that will be capable of yielding fully adequate results whenever they apply. We are thus seeking definitive solutions that will constitute permanent advances in the field rather than ad hoc or temporary solutions that may eventually have to be discarded because they are not compatible with improved systems.

In order to write adequate translating routines, we need, among other things, an adequate and detailed knowledge of the languages in question—a knowledge of their formal properties as codes and a knowledge of how they are used to communicate. Linguistic research on the structure of individual languages thus constitutes an important part of our effort. German and English are being given primary attention, but other languages are also being studied. Each language is studied as an isolated system. The translation relationship between languages is a separate question and is being given separate consideration.

An important part of our objectives is to investigate the various questions raised in the attempt to mechanize language operations. We feel that some of the problems of mechanization can profitably be studied without reference to any particular language. There may be aspects of the manipulation of language that are essentially nonlinguistic. One of our aims continues to be the development and provision of adequate research tools in the form of computer programs that will facilitate linguistic research by providing the linguist with easy access to the machine. Thus far, we have developed a method of searching large quantities of English or German text for examples of particular constructions. In cooperation with the Computation Center, M.I.T., we have developed and have nearly finished programming an automatic programming system that provides the linguist with a problem-oriented notation system for use in writing computer programs.

Some work is also being carried out that has as its aim the investigation of the feasibility of programming computers in English. This work is being carried out in cooperation with the Solid-State and Molecular Theory Group of Massachusetts Institute of Technology.

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