

SEMANTICS AND WORLD KNOWLEDGE IN M T

Yorick Wilks

I presented very simple and straightforward paragraphs from recent newspapers to show that even the most congenial real texts require, for their translation, some notions of inference, knowledge, and what I call "preference rules", over and above those found in standard approaches to the problem of MT.

I argued that the MT problem has not been solved in any sense even though there have been real improvements in the performance of large commercial systems, yet, contrary to some impressions given at the seminar, we are by no means exactly where we were twenty years ago and about to go through the same agonizing cycle of optimism and disillusion again. That is because the lesson of the 'first MT cycle' has been appreciated within Artificial Intelligence (AI), or at least some parts of it, and solid attempts have been made to produce small-scale intelligent systems directed towards tackling the great problems thrown up, but not solved, by MT research: ambiguity, of word sense, case structure and pronoun reference.

I then presented a sketch of a small research English-French MT system that takes in paragraphs on-line and translates them via an interlingua of deep meaning structures and inference rules. This system was described in the course of a recent survey (AJCL Microfiche 40, 1976).

I argued finally that systems of this sort can play an important role in advancing MT, by occupying a space, as it were, between three better-known positions: (i) that we can just go on as before with "brute force" systems (ii) that we can only get advance by devoting ourselves here and now to purely theoretical AI systems that "represent all knowledge" and (iii) that we should make do with techniques that are simple but fully understood, such as on-line editors.

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My doctoral work was done at Cambridge, after which I worked with a small group who was attempting to apply semantic methods to the processing of natural language with the aim of Machine Translation. In 1967 at SDC (Sta. Monica, Calif.) I constructed a system in LISP that input paragraphs of text, converted them to deep semantic structures, from which the resolved ambiguities of the word sense were then read off (i. e., output was still in English). Later, while at Stanford University (artificial intelligence lab.) I constructed an on-line system that would input paragraphs of English and produce French translation, via a representation in a semantic interlingua that could be suitably massaged with inference rules representing "real world knowledge." On leaving Stanford in 1974, I went for a year to the Institute for Semantic and Cognitive Studies in Switzerland and then to the University of Edinburgh, where I have worked on theoretical defects in that Stanford model and ways of overcoming them in a later implementation.