LETTER TO THE EDITOR

IS MT LINGUISTICS?

Reading Jonathan Slocum's survey article of machine translation in **Computational Linguistics**, Volume 11, No. 1, some points struck me. Slocum's paper aims to be an overview of the state of the art in MT. As such it is good work. But some methodological points of view could have been considered more accurately; for example, the relation of MT and the computational linguistic paradigm to linguistics (seen as a study of the nature of human language), and the notion "fully automatic high quality translation".

It was a stunning surprise to learn that translation as a profession and discipline is so underweighted in the U.S.A. This, coupled with the state of linguistic theory and the computational devices at hand, surely explains almost in itself the failure of early attempts made in machine translation in the 1950s and 1960s in the U.S.A. If one's premises are bad, one's methods will not be any better and results still worse. And this really seems to be the situation in the history of MT (cf. Zarachnak 1979).

The second point I want to address is Slocum's argumentation in favour of level of automaticity and quality of current MT systems. As Slocum puts it, it goes something like this: human translation is a many-step process, where it is not unusual for products to revised many times. Thus far we agree. Everyone with some experience in translation knows this. And this is no wonder, considering that linguistic competence is open, without definite limits. One never "learns" language totally, competence is never "perfect" whether we speak about mother tongue or some foreign language (cf. Sampson 1980, 1983). But Slocum takes this step-by-step revision style of human translation to mean – at least it seems so to me – that we actually already have fully automatic high quality MT systems in some sense. Following is a crucial passage in Slocum's argumentation (p. 2)

> It is easy to see, therefore, that the "fully-automatic high-quality machine translation" standard, imagined by most U.S. scholars to constitute minimum acceptability, must be radically redefined. Indeed, the most famous MT critic of all eventually recanted his strong opposition to MT, admitting that these terms could only be defined by the users, according to their own standards, for each situation (Bar-Hillel 1971). So an MT system does not have to print and bind the result of its translation in order to qualify as "fully automatic". "High quality" does not at all rule out post-editing, since the proscription of human revision would "prove" the infeasibility of high-quality Human Translation. Academic debates about what constitutes "high-quality" and "fully-automatic" are considered irrelevant by the users of Machine Translation (MT) and Machine-aided Translation (MAT) systems; what matters to them are two things: whether the systems can produce output of sufficient quality for the intended use (e.g., revision), and whether the operation as a whole is cost-effective or, rarely, justifiable on other grounds, like speed.

It seems that Slocum's argumentation is not sound here; it blurs too many arguments together. Some of the arguments concern linguistic methodology – for example, human translation is of a certain nature and thus machine translation has the right to be that way as well. Other arguments are pure pragmatic – for example, the only thing that counts to users is the cost-effectiveness of the operation; an MT system does not have to print and binds its results.

But what should matter most is, of course, linguistic argumentation. If MT wants to be a proper linguistic discipline, it should pay more attention to its linguistic premises. Especially, it should pay more attention to the idea of linguistic openness and to the idea of rationality behind language (cf. Sampson 1983, Itkonen 1983). If rationality, or rational behaviour, is the very essence of language behaviour, this surely will limit the term "high-quality" to something other than somebody's "own standards". This is one point. The other point is, the notion of linguistic rationality may have two sides: nomic (i.e., deterministic laws) and non-nomic (undeterministic laws). This very idea, if true, puts certain limits on MT. According to this thesis, language has open ends, because of its creative nature, and all of it cannot be easily – if at all – described with deterministic methods, i.e., using computers and algorithms.

The ideal notion of fully automatic high quality translation (FAHQT) is still lurking behind the machine translation paradigm: it is something that MT projects want to reach. [They can try to reach it only asymptotically, of course, but nevertheless they aim at it.] Once again pragmatics has come into play: human intervention in MT, as post-editing or whatever, is the thing that slows down the process. MT systems can be made to translate faster and faster, but the usefulness of these systems is limited to the capacity of the human support team if much post-editing is needed.

So, to be cost-effective, an MT system has to produce output that is good enough to need little or no human post-editing. To produce "good enough" output, an MT system has to be based on linguistically sound principles, at least in the long run. To get the linguistically sound ideas, we have to study language more intensively. We are left with linguistics, once again, as it should be. If we are doing something we understand weakly, we cannot hope for good results. And language, including translation, is still rather weakly understood. Therefore, I think it is rather deceptive to give an impression that currently existing MT programs resemble closely, or even are equal to, FAHQT. They seem to work astonishingly well as, for example, test runs of METAL show (cf. Slocum et al. 1985). But if MT wishes to be a part of the

computational linguistics paradigm, it should pay more attention to its linguistic premises. Working programs are an end in themselves, but if they are not based on linguistically sound principles, the results may not have much to say to computational linguistics or to linguistics proper. It seems the most attention is paid to results in the MT complex, but we may not know what we are talking about if the premises of MT are omitted from the discussions.

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