

Some early MT predictions, proposals, and desires

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How soon will full MT be here?

(Dostert 1954)

- “Those in charge of this experiment,” the professor [Leon Dostert] continued, “now consider it to be definitely established that meaning conversion through electronic language translation is feasible.” Although he emphasised it is not yet possible “to insert a Russian book at one end and come out with an English book at the other”, the professor forecast that “five, perhaps three, years hence, interlingual meaning conversion by electronic process in important functional areas of several languages may well be an accomplished fact.” (Report of IBM-Georgetown demonstration, 7 January 1954, in *Christian Science Monitor*)

How soon?

(Locke 1956, Reifler 1958)

- In answer to the question “When shall we see a machine translation?” my best guess is, within five years. By that time there should be in operation one or more models turning out a good deal better than a word-by-word translation. (W.N.Locke: ‘Translation by machine’, *Scientific American* 194 (1), Jan. 1956, pp.29-33)
- “... it will not be very long before the remaining linguistic problems in machine translation will be solved for a number of important languages.” (Erwin Reifler ‘The machine translation project at the University of Washington...’, *Proceedings of the Eighth International Congress of Linguists*, Oslo, 1958.)

How soon?

- “I agree that semantics is perhaps one of the most difficult problems. I also want to underline the fact, as I see it at the moment, that syntax is also an extremely difficult problem, and I think probably 10 years from now it will still be a difficult problem. I don’t think MT will be passé in 10 years... Semantics, I think, is perhaps more difficult than syntax.” (Victor H.Yngve, at UCLA conference, February 1960)
- “From what Dr.Hays and Professor Yngve have said, one gets the impression that we have 10 years’ work ahead of us. On the other hand, ... there are those who say they will be in production within a year.” (Anthony G.Oettinger, at UCLA conference, February 1960)
- “I think I can account for 15 of those 10 years! In order for a machine to go from something roughly comparable to the worst of what passes for human translation to the best of human translation it would require about that length of time.” (Don R.Swanson, at UCLA conference, February 1960)

Literature and MT

(Booth and Locke 1955, Delavenay 1960)

- “It seems not unreasonable to anticipate thoroughly literate translations of literary works as good as published run-of-the-mill translations. By extension, even a translation of poetry might not be less intelligible than the original.” (Booth and Locke: ‘Historical introduction’ to *Machine Translation of Languages*, 1955)
- “Will the machine translate poetry? To this there is only one possible reply-- why not? All of us have done it in our schooldays, when neither our Latin syntax, nor our grammar, nor our vocabulary, nor our sense of rhythm, nor our skill in rhyming could rival those of the electronic machines of tomorrow.” (Delavenay *Introduction to machine translation*, 1960)

Literature and MT

(Bel'skaya 1959)

- “... the applicability of MT depends on whether it is possible to identify the implicit set of rules governing this or that particular sphere of language applications, be it as narrow a sphere as say, Wordsworth’s poetry, and further, on whether these rules can be formulated into a formal set.
- “... every piece of writing... can be analysed on these lines within the sphere to which it belongs... it is immediately obvious that problems posed by stylistic peculiarities of literary works of art can be satisfactorily resolved...
- ... poetry, as indeed any piece of literary art where formal elements are of no small importance, is particularly susceptible to machine translation, in this sense.”
- (I.K.Bel'skaya, Unesco conference 1959)

Spoken language?

(Locke 1955, Booth 1958)

- “It might be argued that the appearance of new variables in the spoken material further complicates the situation. I take the opposite view... When we translate speech, a relatively small number of words and grammatical constructions will have to be looked up in the memory; simultaneously, accentual and melodic patterns will be looked up and translated into patterns appropriate to the output language... the smaller vocabulary and less complicated grammar of the spoken language, particularly conversation, give us a body of material that should be easier to handle by machine than the written language.” (W.N.Locke: ‘Speech input’, in Locke and Booth collection, 1955)
- “An experimental machine capable of translating into any given language from the spoken word was visualized in about five years as a result of present research”, said Dr. A.D. Booth, head of the Department of Numerical Automation, Birkbeck College, London University, at a Press conference. (Times report, August 1958)

How good? (Weaver 1955)

- “No reasonable person thinks that a machine translation can ever achieve elegance and style. Pushkin need not shudder...”
- “Not to charm or delight, not to contribute to elegance or beauty; but to be of wide service in the work-a-day task of making available the essential content of documents in languages which are foreign to the reader.” (Warren Weaver, foreword to Locke and Booth collection, 1955).

How good?

(Reifler 1960, Delavenay 1960)

- “I believe that we shall one day be able to achieve an automatic translation output which, even if it is not as good as one a good human translator is able to produce, may already be as good, or perhaps even better, than one a bad human translator would produce” (Erwin Reifler at National Symposium on MT, UCLA, February 1960)
- “While a great deal remains to be done, it can be stated without hesitation that the essential has already been accomplished.” (Emile Delavenay, *Introduction to machine translation*, 1960)

Controlling the input (Reifler 1952)

- People desirous of a MT may... be required to write their manuscripts in, or transcribe their publications into, an artificial language, or to submit them in a completely regularized form of the foreign language...
- I suggest a kind of ‘Universal MT Orthography’ in which all alphabetized texts destined for MT should be written...
 - all nouns... written with a capital first letter
 - all principal verbs with a capital second letter
 - all attributive adjectives with a capital third letter
- Erwin Reifler, ‘MT with a pre-editor and writing for MT’, presented at first MT conference, June 1952

Man-machine partnership (Bar-Hillel 1952)

- “Even if it should turn out that none of the possible machine-brain partnerships would be more effective than a human translator, in the sense that they will be neither quicker nor cheaper nor more exact than the human translator, under conditions existing today or in the near future, I would strongly advocate a continuation of this research. Electronic machines will doubtless become cheaper, human brains probably more expensive. A partnership that could not stand free competition today may well outbid its human competitors in some not too remote future.”
- Yehoshua Bar-Hillel: ‘Mechanical translation: needs and possibilities’. Paper at first MT conference, MIT, June 1952

Reading MT output, and post-editing (Bar-Hillel 1952)

- “... it is quite possible that in spite of the fact that the machine output will be multiple... the reader of this output who understands the target language may well be able to pick up a unique and adequate correlate, if he is sufficiently familiar with the topic. Since, however, not every prospective reader will have the required training, it is... preferable to have a special post editor select the unique correlate together with some stylistic smoothing.
- Notice that the post-editor must understand the target-language and be an expert in the respective topic... but - and here is the decisive point - he need not understand the source-language!”
- Yehoshua Bar-Hillel: ‘Mechanical translation: needs and possibilities’
Presented at first MT conference, June 1952.

Usefulness of poor quality MT (Gilbert King 1960)

- “... it is an empirical fact that information can be conveyed by some kind of rendering of one language into another. The amount of information conveyed is a function of the quality, and it is an observed fact that useful amounts can be conveyed by rather primitive procedures.”
- “If one looks at the automatic translation of languages from an operational point of view and accepts the proposition that perfection is a long way off, one finds that the impediments to the transfer of information are largely of a secondary nature... Most of the secondary problems have been resolved by a technique of addressing a large memory...”
- (Gilbert W. King: ‘Functions required of a translation system’, *Proceedings of the National Symposium on Machine Translation*, February 1960, UCLA.)

Usefulness of poor quality MT

(Bar-Hillel 1959/60)

- “Those who are interested in MT as a primarily practical device must realize that full automation of the translation process is incompatible with high quality... There are very many situations where less than high quality machine output is satisfactory....”
- “Fully automatic, high quality translation is not a reasonable goal, not even for scientific texts... Reasonable goals are... either full automatic, low quality translation or partly automatic, high quality translation..”
- (Yehoshua Bar-Hillel: ‘The present status of automatic translation of languages’, *Advances in Computers*, 1960.)

Economics of MT

(Bar-Hillel 1951)

- “... for reasons of cost MT will have to be undertaken on a large scale, if at all. It will be justified only if the equipment operates on a full-time basis. Reasons of economy also dictate that the equipment be as well adapted to its special task. Computers in their present form are not ideally suited for MT.” (Yehoshua Bar-Hillel: ‘The present state of research on mechanical translation’, *American Documentation* 2(4), 229-237).

National MT service

- “A national center for machine translation will be required in the near future. The national center could well have branches in specific areas throughout the world... Exceptions for intelligence and military necessity will undoubtedly be made.
- An eventual national machine translation production program will most likely be operating on a full-time basis. A special-purpose computer, designed for translation and not including other costly benefits of an all-purpose computer, will be desirable.”
- (Conclusions of 1960 US House of Representatives’ hearings on ‘Research on mechanical translation’)

Semantics and understanding

(Yngve 1964)

- “Work in mechanical translation has come up against what we will call the semantic barrier.... We have come face to face with the realization that we will only have adequate translations when the machine can ‘understand’ what it is translating and this will be a very difficult task indeed.”
- (Victor H. Yngve: ‘Implications of mechanical translation research’, *Proc.American Philosophical Society* 108: 275-281.)

Translation archive

(Krollmann 1971, Arthern 1979)

- “... [V]ia descriptors or keywords, large batches of text could automatically be searched for particular passages and then be displayed on video screens as an aid to the translator; for revised new editions of translations only the changed passages would have to be retyped. Insertion of changes and corrections into the old text would automatically be done by computer.” (Friedrich Krollmann: ‘Linguistic data banks and the technical translator’ *Meta* 16: 117-124.)
- “... the text-processing system should have a large enough central memory store. If this is available, [my] proposal is simply that the organization in question should store all the texts it produces in the system’s memory, together with their translations into however many languages are required.” (Peter Arthern: ‘Machine translation and computerized terminology systems’, *Translating and the Computer*, ed. B.M.Snell, Amsterdam: North-Holland.)

EBMT?

(Booth and Locke 1955)

- “... it is possible to envisage a machine with a large enough storage to contain descriptive phrases relevant to most standard literary situations. The act of ‘translation’ would then consist in identifying the ideas contained in the original text and expressing these in terms of stored phrases.” (A.D.Booth and W.N.Locke: ‘Historical introduction’ *Machine Translation of Languages* (MIT Press, 1955))

MT and the human translator

(Yngve 1956)

- “The way will be opened to translate much more than is now possible. Millions of words will be translated roughly by machine. The existence of rough translations, adequate for many purposes, will call attention to many articles that are of merit. The demand for accurate, carefully made translations of these important papers will be increased. Thus the demand for competent translators will be greatly increased.” (Victor H. Yngve: ‘The outlook for mechanical translation’, *Babel* vol.2 (3), 99-101)

Computers and the translator (Snell 1981)

- “I see the translator in the not very distant future, living in some secluded spot -- if that is what he enjoys... He will probably still use a keyboard to output his translation until we reach the stage of dictating into print... Translators will share a printer with colleagues but it could be in the office in town... Most of the output will be transmitted direct to customers and received on their own word processors. Our workplace of the future will be pleasantly uncluttered, the only books will be leisure reading; gone shelves groaning with ancient and modern dictionaries... Reference material will be our personal glossaries stored in a computer memory and when stuck we ask a universal data bank.”
- “We hope our translator will look happy, relaxed and be comfortably off. The way things are going it will soon be considered a privilege to work and selfish to spend more than a few hours a day making money...” (Barbara Snell: ‘The translator in the office of the future’ *The Linguist*)

Gilbert King (1960): MT pragmatism

- “The program at IBM Research has been to examine the question of automatic translation of languages from an operational point of view rather than an interesting academic exercise.”
- “... it is an empirical fact that information can be conveyed by some kind of rendering of one language into another. The amount of information conveyed is a function of the quality, and it is an observed fact that useful amounts can be conveyed by rather primitive procedures.”
- “If one looks at the automatic translation of languages from an operational point of view and accepts the proposition that perfection is a long way off, one finds that the impediments to the transfer of information are largely of a secondary nature... Most of the secondary problems have been resolved by a technique of addressing a large memory...”
- (‘Functions required of a translation system’, *Proceedings of the National Symposium on Machine Translation*, February 1960, UCLA.)

Warren Weaver (1949): cryptographic methods

- “... it is very tempting to say that a book written in Chinese is simply a book written in English which was coded into the ‘Chinese code’. If we have useful methods for solving almost any cryptographic problem, may it not be that with proper interpretation we already have useful methods for translation?”
- (‘Translation’, July 1949, repr. Locke and Booth, 1955)

ALPAC (1966)

- “Machine translation presumably means going by algorithm from machine-readable source text to useful target text, without recourse to human translation or editing. In this context, there has been no machine translation of general scientific text, and none is in immediate prospect”
- “the supply of translators greatly exceeds the demand.”

Martin Kay (1973): lunatic fringe

- “It is not difficult to learn something about how computers are programmed, and many people know a foreign language. Those who know a little of both will always be susceptible to revelations about how a machine might be made to translate. What is to be feared is the predilection that some government agencies are apt to show for proposals that come from precisely this lunatic fringe.”
- (‘Automatic translation of natural languages’, *Daedalus* 102 (3): 217-230.)

Peter Arthern (1979): translation memory

- “... the text-processing system should have a large enough central memory store. If this is available, [my] proposal is simply that the organization in question should store all the texts it produces in the system’s memory, together with their translations into however many languages are required.”
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