

Has machine translation improved? some historical comparisons

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Aims and limitations

- no doubt about technical improvements
- aim: whether any justification in claiming that MT quality has improved -- and, if so, over what period
- limitations: scarcity of usable examples
 - not individual sentences
 - examples with original source texts
 - operational (commercial) systems, not experimental
 - unedited ('raw') output
 - not 'doctored' demonstrations
- therefore this paper gives informal impressions, **not** true evaluations

Languages and systems

- Russian to English
 - IBM-USAF Translator at FTD, USAF
 - Georgetown systems at Euratom and US Atomic Energy Commission
 - Systran at FTD, USAF
- French to English
 - Systran at Commission of European Communities
- German to English
 - Logos at SAP
 - Globalink
- current systems
 - Systran (Babelfish, Lycos, Systran Personal)
 - PROMT Online, FreeTranslation, Reverso Online, Intertran
 - Personal Translator PT

IBM-USAF Translator, 1959

- System **Russian-English** system installed at Foreign Technology Division, USAF, Dayton, Ohio, in 1959; daily use till 1970.
- example from 1959:
- In arsenal means scientific-**ateistichesky** propaganda, materialistic training worker appeared new weapon – magazine “Science and Religion”. Issued in light **it** first number. This collection contained **kh**, various, **with/from interest reading matter** **evily**, **sharp** that directed against religious **suerveriy** and prejudice.

Output from Babelfish (Systran), 2003

- In the arsenal of the means of scientific atheistic propaganda, materialist training of workers did appear new weapon periodical is “Science and religion”. Its first number appeared. This is the collector/tank of the meaningful, diverse, with the interest read materials, whose point is directed against the religious superstitions and the prejudices.

Output from PROMT Online, 2003

- In an arsenal of means of scientific - atheistic propagation, materialistic education of working the new weapon - magazine " a science and religion " has appeared. His(its) first number was published. It is the collection substantial, various, with interest of read materials which edge is directed against religious superstitions and prejudices.

Georgetown system (EURATOM), 1967

- Georgetown **Russian-English** systems installed at EURATOM in 1963 and at US Atomic Energy Commission in 1964
- example from EURATOM, 1967
- Concerning the possibility of emergence of instabilities in plasma, which was captured by cross magnetic field. **Studied** the conditions of emergence and the developments of instability in plasma, which was captured by cross magnetic field and which passed through diaphragm. **Showed**, that upon the grounding of metallic diaphragm of instability plasmas are not developed.

Output from Babelfish and Promt, 2003

- Babelfish:
- On the possibility of the appearance of instabilities in the plasma, **seized** by transverse magnetic field. **Are investigated** the conditions for appearance and development of instability in the plasma, **seized** by transverse magnetic field and which passed through the diaphragm. It is shown that during grounding of metallic diaphragm the instabilities of plasma are not developed.
- PROMT, 2003:
- **About an** opportunity of occurrence **нестабильностей** in the plasma **seized** by a cross magnetic field. Conditions of occurrence and development of instability in the plasma **seized** by a cross magnetic field and **past** through **диафрагму** are investigated. It is shown, that at grounding metal **диафрагмы** instability of plasma do not develop.

Systran, 1976

- Systran **Russian-English** system installed at FTD in 1970
- example from 1967:
- A helicopter, a flight vehicle heavier than air with vertical **by** takeoff and landing, lift in which is created **one or by several (more frequent than two)** rotors. .. A helicopter takes off upward vertically without a takeoff and it accomplishes vertical **fitting** without a **path**, motionlessly ‘will hang’ above one place, allowing rotation around a vertical axis to any side, flight in any direction **at speeds** is produced from zero to the maximum.

Output from Babelfish (Systran), 2003

- Helicopter, **aerodyne** with the vertical **by** the takeoff and landing, lift in which is created by one or several (**more frequent than two**) rotors... Helicopter takes off vertically upward without the takeoff/run-up and accomplishes vertical fitting/landing without the **path/range**, motionlessly it will hang over one place, allowing rotation around the vertical axis to any side, flight in any direction with speeds **of from** zero to maximum **is produced**.

Output from PROMT Online, 2003

- The helicopter, **the** flying device is heavier than air with vertical rise and landing(planting), elevating force in which is created by one or several (**is more often to two**) bearing (carrying) **screws** ... the Helicopter flies up vertically upwards without **start** and makes vertical landing(planting) without **run**, motionlessly hangs above one place, **supposing turn around** of a vertical axis in any party(side), makes flight in any direction with speeds from zero up to maximal.

Systran (CEC), 1983

- Systran **French-English** system installed at European Communities in late 1970s
- example from 1983:
- **How far was**, approximately a year after the meeting of the Standing Committee on Employment? At the time, the trade-union organizations had felt that the Commission had taken the problem **by the small end of the lorgnette**, without locating it in the context of a total strategy and of a **politique industrial more dynamic**. It was necessary to share work, to reduce the working time, but **it was there** only one palliative.

Outputs from Systran and Reverso, 2003

- [Babelfish, Systran Personal] Where is one, approximately a year after the meeting of the Standing Committee on Employment? At the time, the trade-union organizations had **estimated** that the European Commission took the problem **by the small end of the spyglass**, without locating it in the context of a total strategy and a more dynamic industrial policy. Work should be shared, to reduce the working time, but it is only one palliative **there**.
- [Reverso] Where are we, **on** approximately one year after the meeting of the permanent Committee of the employment(use)? **In** the time, unions had considered that the European Commission took the problem **by the small end of the opera glasses**, without placing him(it) in the context of a global strategy and a more dynamic industrial politics(policy). It is necessary to share the work, to reduce the working time, but it is **there** only a palliative.

Output from InterTran, 2003

- Where at am on , about a an after her sitting any Board continuous about the application? HAS the era , the organizations trade unionism had appraised as her Comission Europe took him issue by the snip any leer at , without him locate in 1994 context d'une strategy aggregate and d'une political industrial anymore dynamic. He must share him employment , curtail time about employment , but thanksggiving n'est there than it is to a palliatif.

Systran (CEC), 1983: another example

- The Chairman reminded the meeting that the problem of the reduction of the working time had been studied **to** the meeting of Munich. Various theses **faced themselves**: for the trade unions, the reduction of the working time would contribute to suppress unemployment, but the employers thought that **she** would **suppress** an employment either by increasing the costs, or by increasing the productivity. It would be desirable to continue today this discussion by leaving **some** on the side of all ideological **presupposed them**. To start, it was advisable to require from the European Commission representative, which had succeeded in joining Luxembourg despite a strike movement in Brussels, if **it** wished to supplement the statement that **it** had presented in Munich.

Output from Babelfish (Systran), 2003

- Mr. the President points out that the problem of the reduction of the working time was studied **with** the meeting of Munich. Various theses clash: for the trade unions, the reduction of the working time will contribute to remove unemployment, but the employers think that it will remove employment either by increasing the costs, or by increasing the productivity. It would be desirable to continue this discussion today by leaving **side** all the presupposed ideological **ones**. To start, it is advisable to ask to the European Commission representative, **which** succeeded in joining Luxembourg in spite of a movement of strike in Brussels, if **it** wishes to supplement the talk that **it** had presented in Munich.

Output from FreeTranslation, 2003

- Mr. the President recalls that the problem of the reduction of the work time was studied at the meeting of Munich. Different theses **confront themselves**: for the unions, the reduction of the work time will contribute to eliminate the unemployment, but the employers think that **she** will eliminate from employments **be** while increasing the costs, **be** while increasing the **productivité**. It would be desirable to **follow** today this discussion while leaving out **all them presupposed idéologiques**. To begin, it **suits** to request the representative of the European Commission, that succeeded rejoining Luxembourg despite a strike movement to Brussels, if **it** wishes to complete the exposition that **it** had presented to Munich.

Logos (at SAP), 1983

- Logos **German-English** system installed at SAP in early 1980s.
- Example from 1983:
- In the business-life, the business transactions are documented regularly by document/vouchers, as for example posting documents, **orders, orders**. The data included in them are designated as movement data – in contrast to the master data -.
- The data of a business transaction were often processed and stored separately in conventional EDP-application-**S**-systems. In the SAP-systems, we avoid this unnatural **breakdown** and store a business transaction **instead of which** than **sucked** uniform. **At any time, to make possible document**, about the person in charge an overview of the entire occurrence.

Output from Babelfish (Systran), 2003

- In the business life the business transactions are documented regularly by vouchers, as for instance **vouchers, orders, orders**. The data contained in them become - in contrast to master data - **when "designates** transaction data".
- In conventional EDP application systems the data of a business transaction were often worked on and stored separately. In the SAP systems we avoid this unnatural allocation and store a business transaction **instead of its** uniformly as if **sucked**. "document", in order to at any time make for the specialist **possible** an overview of the entire **incident**.

Output from Reverso Online, 2003

- In the business life the commercial **incidents** are documented regularly by vouchers, **approximately like vouchers, orders, orders**. The data contained in them are called - in contrast to the master data - "movement data".
- In conventional EDV **Anwendungen to** systems the data of a commercial incident were treated often **separated** and were stored. In the SAP systems we avoid this unnatural subdivision and store a commercial **incident** instead uniformly as so-called. "Document" to make possible a view about the whole incident for the specialist at any time.

Output from Personal Translator PT

- In the business life the business transactions are regularly documented by pieces of evidence such as booking pieces of evidence, orders, orders. The data contained in them are described as "movement data" in contrast **for** the master data.
- The data of a business transaction were **finishedly** and **storedly** often differentiated in conventional EDP application systems. In the SAP systems we avoid this unnatural division and store a business transaction **instead of this one** uniformly as a so-called "document" to make a summary of the complete occurrence possible for the clerk any time.

Globalink GTS, 1990

- Globalink GTS (**German-English** version) on market in late 1980s; evaluated at Essex University in 1990.
- We have processed Your **proposition** on a place for the above named course and I please me, **You communicate to be allowed to**, that You are admitted for the **@@Studienkolleg** – program the **at the 1. October 1990 beginning** study year. If Your performances Are during the study course of lectures satisfactory, **can begin You** in the October 1991 a three-year study with the conclusion “Bachelor’s **@@degree**” in the area of the economy sciences.

Output from Babelfish (Systran), 2003

- We **worked on** your request on a place for the course specified above and are pleased **I to be allowed** to communicate to you that you are certified for the preparatory course program on 1 October 1990 of the academic year **beginning**. If your achievements are **satisfying** during the preparatory course, you can begin a three-year study in October 1991 with the conclusion "Bachelor's degree" within the field of the economic science.

Output from Reverso Online, 2003

- We have treated your application(motion) for a place(square) for the course named at the top and I am glad to be allowed to inform you that you are admitted for the study lecture-program of the academic year beginning on the 1st October, 1990. If your performances (achievements) are during the study lecture satisfyingly, you can begin in October, 1991 a three-year-old study with the conclusion " Bachelor's degree " in the area of the economic science.

General impressions

- Russian to English
 - definite improvement since 1960s, but not since mid 1970s
- French to English
 - improvement since 1970s and mid 1980s, but not obviously in last decade
- German to English
 - slight improvement since mid 1980s, but still poor.
- Points to remember:
 - unfair to judge MT exclusively on unedited output out of context
 - MT systems should be judged on usefulness (saving time or money) for specific intended purposes
 - nevertheless, first impressions count, and for general public using on-line MT services this ‘raw’ output is what they see.

Problem areas

- anaphora, pronouns
 - *it* or *she* instead of *he*, *which* instead of *who*, etc.
- articles: perennial problem (not just for Russian and Japanese but also for French and other Romance languages when translating into English)
- verb placement, e.g. verb initial (Russian): *Are investigated the conditions...* verb final (German)
- morphology: *finishedly, storedly, employments*
- pre-nominal constructions, e.g. *with the interest read materials, the at the 1. October 1990 beginning study year*
- prepositions, e.g. *with the meeting of Munich, speeds of from zero to maximum...*

Recommendations

- benchmarks, consumer evaluations (comparative), for general public
- benchmarks, evaluations for MT community
- need to demonstrate ‘progress’ (not least to ourselves)
- scarcity of materials for longitudinal evaluation
 - soundly based, not impressionistic (as this has been)
- archiving, preservation of old MT systems