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Miss Zhuang was born in the city of Fuzhou in Fujian Province, China, in 1977. She obtained her B.A. in English language and literature in the English Department of the School of Foreign Studies, Nanjing University in 1999. Presently she is a full-time graduate student, pursuing her M. Phil. degree in the Department of Translation, Chinese University of Hong Kong. Her major research interest is in literary translation in the early 20th century in China.

Miss Zhuang can be reached at zhuangxinglai@yahoo.com

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The Emerging Role of Translation Experts

in the Coming MT Era

by Zhuang Xinglai

It is a rather strange fact that translators, who are translation professionals, as well as anticipated users of MT products, have rarely been involved in the research and development of machine translation. Their expertise and needs have seldom been taken into serious consideration in the development of MT tools.

It is also worth noticing that after more than 50 years' research, no satisfactory solution has been found yet in the field of automatic translation. Machine translation developers (who are exclusively computer scientists and linguists) have proposed and experimented with various approaches but none of them seem to have been able to provide the right answer. Theories and methods that have been looked at, such as "mainstream linguistics," "universal grammar," "statistical modeling," "derivation trees," "parsing algorithms," etc., all seem to be dead-end approaches because no significant improvement has occurred. Why? And where is the way out?

Now that machine translation has become an undeniably valid technology, it is time for translation experts to stand up and offer their input for solving the problem.

I. Machine translation booming, human translators doomed?

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Incredibly, and yet inevitably, machine translation (MT) is becoming a global industry in this computerized era. With the information explosion and globalization of all kinds of business, the world is badly in

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need of competent translators. Confronted with enormous volumes of documents either composed in or to be translated into an increasing number of different languages, people are coming to the realization that it is neither realistic nor humane to devote human resources to such translation exercises, a considerable portion¹ of which would be mechanical, routine, and imagination-suppressing. It is the growing practical demands for cheap, quick, and automatic translation that has enabled research in the field of MT to survive all the criticism and thrive in the past fifty years. Despite the overall disappointing quality of most MT output so far available, the market for commercialized MT products and services is expanding. As evidence, AltaVista's Translation Service BABELFISH (powered by SYSTRAN), which has pushed MT awareness to the forefront of the Internet community by offering any Internet user free real-time translations of web content since 1997, now receives more than 1,000,000 translation requests per day.² According to Muriel Vasconcellos (1997: 3),

"Today, there are more than 500 vendors of MT software for the personal computer around the world, and among them they put out well over 1,000 products. One of the vendors, Globalink, sells its extensive line of software in at least 6,000 stores in North America alone, and at present Europe is its fastest-growing market."

In China, Huajian (which has a staff of 150) has grown from a company of 2 million RMB in 1998 to a publicly owned corporation with assets of 20 billion HKD, within the short span of three years. The sale of Huajian translation software in the year 2000 reached the staggering figure of 400,000 sets.³ Since China's entry into WTO, translation has become a more mission-critical task, and the demand of MT market is expected to grow exponentially.

In the foreseeable future MT should assume a relevant role in the translation industry. There is no doubt that machine translation has found its place in this postmodern world, but does it mean that human translators are being pushed to a marginal position in future translation activities? The answer should be negative, and an opposite statement should be put forward: translation experts, including professional practitioners and theorists, will not only have their legitimate place in the profession of translation, but will also find a significant position for their expertise in the MT industry.

II. The proper place of translation experts in MT

First, the machine translation tools we now have are not capable enough to replace human translation or to cause a decrease in the human translator's role in technical translation. According to Christian Boitet (1995), there are two types of MT systems available, i.e. MT for screening purposes and MT for diffusion purposes.

MT for screening purposes produces large volumes of rough translations automatically, quickly, and cheaply. These

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low-quality "gisting" translations can provide the user with an idea of the content. The need for screening MT is more than actual; gisting translation is perhaps the fastest growing use for MT. However, as observed by Alan Melby (1997:29), the increasing use of gisting translation at the European Union administrative centers and elsewhere has not reduced the need for high-quality translation by humans; for, if the user wishes to have a high-quality translation of a portion that looks interesting, the document will be passed on to a human translator and re-translated from the source text. Human translation is still considered as most acceptable and reliable for accurate information collecting.

MT for diffusion purposes automates the production of professional quality translations by letting the computer produce the first draft. One of the possible arrangements that have been generally accepted is pure MT followed by postediting. And only experienced professional human translators are entrusted to do the job of post-editing.

Second, translation experts must play an essential role in the future development of MT. A revolution has taken place in the R&D of MT; as a consequence, both the goal of and the approaches to MT have experienced great changes. As a result of this revolution, we see an emerging role of translation experts in MT R&D.

The past fifty years' research and development in MT has brought people to the realization that the attainable goal of MT lies not in FAHQ (Fully Automatic High Quality Translation), but in MATPUT (Maximum Assistance in Text Processing, Understanding and Translating) (see Rosenhouse, 1997: 163). MAHT (Machine-Aided Human Translation) and HAMT (Human-Aided Machine Translation) are seriously advocated nowadays, the goal no longer being to produce automatic translations, but rather to build tools for supporting human translators. Since human translators have become the anticipated major end-user of MT tools, the design of MT tools must be tuned to their practical needs. Professional translation practitioners' demands and translation work methods will become a major concern of MT developers.

The traditional rule-based MT approach is now severely challenged by empirical approaches, namely corpus-based MT and knowledge-based MT, which must be developed after thorough research of the translator's actual translating experience and the mental processes involved. Since the early stage of MT development, people have thought of linguistic knowledge as characterizing human translators, because the translator's common sense and knowledge of the everyday world has usually been taken for granted in a way that clearly cannot be done for machines. People have begun to realize that "translation relies heavily on information and abilities that are not specifically linguistic." On the basis of these views, great efforts are being exerted to construct bilingual corpora and knowledge-based systems. The traditional view that the problem is mainly a linguistic one is clearly not tenable, but the alternative that requires a translation system to be taught a substantial part of the general knowledge and

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common sense that humans have also seems to be unworkable. Researchers are looking for compromises where knowledge in restricted domains can facilitate the translation of texts in those domains. The most obvious gains will come from those domain-specific interactive systems based on hybrid approaches (see Kay, 1995). Professional translators are the most authoritative spokesmen when it comes to specific problems and knowledge concerning their respective domains. And their expertise must be incorporated into MT systems for further development.

There is a role that translation experts should play in the future research and development of MT; however, current MT practice shows that this role has not been sufficiently recognized. Many so-declared "professional" versions of MT software in the market fail to produce satisfactory translations because they contain little more than a few "professional" terminology dictionaries. Some researchers have criticized this situation (Agirre, *et al*, 2000: 295):

"Interaction between humans and translation tools has been deeply studied in the field of machine-aided translation. However, support tools for translation are often designed without the co-operation of human translators. The underlying idea is that human translators must adapt to the new technologies, and it seems that new computerized tools would not need to consider translators' practical use and experience."

MT tools are meant to assist human translators and adapt to the human way of translating, not the other way around. MT systems, especially those for diffusion purposes, must be designed to fit translators' needs, to produce raw translations good enough so that professional revisors will accept to postedit them, and that the overall costs and turnaround times are reduced. That is possible only if the work methods of translators is sufficiently analyzed and their expertise is incorporated into the MT systems under construction.

The problem is, besides the fact that translators' expertise has for long been ignored by traditional MT research, translators themselves tend to deny the significance of MT and exclude MT from their profession. The fiercest and most hostile attacks against MT often come from people working in the field of translation. This phenomenon may be attributed to two reasons. Firstly, as Eugene Nida puts it, MT has "unfortunately been publicized rather out of proportion to its present tangible results"(Rousenhouse, 1997:162). Therefore, translators have no trust in MT products. Secondly, the output of MT systems usually abounds with "non-human" mistakes that are beyond human translators' comprehension; working with such systems is not a happy experience. Post-edition will be impossible without consulting the original text, and it can be more costly and time-consuming than pure human translation.

To translation experts, current MT tools are more confusing than helpful for real translation tasks. But, in this electronic age, when traditional modes of translation cannot meet the

demands of information, MT has become a trend that can no longer be ignored. Everything has its positive side. As Martin Kay (1997: 3) points out in his famous paper *The Proper Place of Men and Machines in Language Translation*,

"A computer is a device that can be used to magnify human productivity. Properly used, it does not dehumanize by imposing its own Orwellian stamp on the products of the human spirit and the dignity of human labor but, by taking over what is mechanical and routine, it frees human beings for what is essentially human."

MT does have the potential to "take over some of the humdrum tasks of 'low-grade' translating of certain types of material" (see Rousenhouse, 1997: 162), enhance the productivity of the translator, and make his work more rewarding, more exciting, more human. In the end, the human translator should benefit the most from MT. Translation experts should stand up and participate in the development of MT to develop truly helpful tools of their own.

It's time.

III. Early attempts to establish translator-oriented MT systems

Researchers, including some translation experts, have conducted some preliminary experiments with the attempt to build translator-oriented MT systems.

In a paper entitled *A Methodology for Building Translator-oriented Dictionary Systems* (Agirre, et al, 2000), the researchers present an experiment to incorporate human translators' expertise into an already constructed lexical system—a Lexical Knowledge Base (LKB). The operational or functional aspects are emphasized in adapting this LKB to a specific task. The experiment consists of three steps: (a) specification of the real work environment, (b) elicitation of the functional knowledge and, (c) incorporation of the elicited knowledge into the dictionary system. The human translator is the central concern of the first two steps. It is suggested that no proper further development is possible without a suitable functional specification. Researchers must try to reuse the lexical knowledge as the basis of *a dictionary system for humans* when translating words. In the second step, researchers work with human translators in a real context to extract expert knowledge from the translators, so that task-dependent *modus operandi* can be incorporated into the dictionary system and the lexical system can be endowed with the functionality needed by human translators.

Some translation experts have also begun to take part in MT R&D. For instance, *TransRecipe* (Chan, 2002) is a fully automatic domain-specific translation system developed by the Machine Translation Laboratory of the Department of Translation, the Chinese University of Hong Kong. The

designer strongly advocates a "translational approach" to MT and emphasizes the importance of using translation methods in the construction of a machine translation system to produce a good translation. Practice actually shows that there is room for the intervention of human translators' expertise at every step of development of MT tools, and that, based on handcrafted grammars generated on the basis of hands-on experience of professional translators, "practical systems" are very likely to produce humanly intelligible translations (instead of streams of codes mechanically strung together) and make a breakthrough in MT.

All these pioneering efforts indicate the possibility of a prosperous future for MT through inter-faculty and inter-collegiate collaboration, in which translation experts have a central role to play.

IV. The future: a conclusive remark

The design of MT systems has so far been in the hands of computer scientists and linguists. Some people tend to believe that the breakthrough in MT may only come through the development of computer science and linguistics. Maybe. In twenty or thirty years from now, there may be super-powerful computers with much smarter Operating Systems (neuronal, bionic or whatever) that may be able to produce high-quality automatic translations. But, as globalization is knocking at our door, can we ever afford to wait until all these hypothetical tools become available? What we can do is improve current MT products through better use of available resources and by integrating these resources. The human translators' expertise is, perhaps, the most potent resource that has so far been unexploited.

There is a lot to be done to develop user-friendly and domain-specific MT systems. Translators' expertise must be systematically and thoroughly studied and incorporated into existent systems. Translation experts, computer scientists and linguists must work hand in hand for an efficient design based on a hybrid approach. And professional translators should be organized and trained to manage the evolution and maintenance of MT tools.

It is high time that translation experts should play their part and make the best use of their expertise to promote the development of MT within limited domains, to make a history for their own profession.

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http://202.112.108.158/forum/forum.asp?Forum_ID=18

<http://www.systransoft.com/PastPresent.html>

¹ somewhere around 30%, according to an on-line article "互聯網: 像上帝一樣能幹" at http://202.112.108.158/forum/forum.asp?Forum_ID=18

² See <http://www.systransoft.com/PastPresent.html>

³ This example is taken from "Future Perspectives of Machine and Machine-aided Translation: Some Observations," a handout given by Prof. Chan Sin-wai in the 13th lecture he delivered for the course "Computer-aided Translation" on December 4, 2001.