What Is Really at Stake with Machine Translation?

By Rosana Wolochwianski

The topic of machine translation (MT) gives rise to all kinds of reactions and concerns. Large companies, always eager to reduce costs, wonder how it can be implemented and if it is worth the investment. End users have divided opinions: some enjoy the possibility of having access to a low cost or free translation, even if it is imperfect; others express disappointment over the poor quality of the results. Translators seem to be worried about the possibility that these programs might displace them in the production chain, turning them into mere editors of pre-translated material. They also wonder to what extent MT will affect work availability or if it will impact their rates. On the other side of the spectrum, researchers and developers of these programs have been asking themselves repeatedly, for over 50 years now, why these programs do not deliver better results.

Machine Translation Versus Human Translation

As translators dealing with language on an everyday basis, it is quite obvious to us that the quality of these programs is still poor in many cases. We tell jokes and anecdotes concerning these shortcomings that make us feel all powerful and that we cannot be replaced. To reach publishable quality, we reason, MT output still requires human intervention, either in the authoring phase (by means of controlled-language efforts) or at a later phase through post editing. It would seem, therefore, that MT implies quality constraints.

Despite this, it is evident that the scope the democratization of technology has reached in this globalized era has generated consequences we would never have imagined a few years ago. Today, it is estimated that nearly 1.5 billion people are online, with almost 104 million Web domains, accounting for about 30 billion pages.[1] The quantity of information circulating today is so vast, and the eagerness to access it so urgent, that it is almost impossible to think that only a group of qualified professionals can satisfy such a great demand. Human translation implies time and volume constraints. Thus, it is necessary to admit that a good part of this information will never reach the hands of professional translators—either for lack of time or

money—and will possibly be processed by MT programs. For many, MT serves as a good alternative to no translation at all.

Dissemination Versus Assimilation

The use of MT programs goes in two directions nowadays. In the original development plans for MT, the purpose was to create a tool that would be capable of translating text, which could then be disseminated by the original authors to the users. Since these types of commercial systems render a result that needs to be reviewed and corrected by human translators in order to achieve an acceptable level of quality, they have been widely criticized by the translation community.

However, there is another reality that needs our attention, which is that every day millions of people click on the links to the free MT tool on an Internet page (e.g., Yahoo! Babel Fish, and Google Translate) to "translate" short messages and other material. The result is something that is merely indicative of translation, enabling the user to gain a rough understanding (the gist) of the central idea of the text. This process—which goes in the opposite direction of "dissemination"—is called "assimilation," in the sense that the translated information is not pushed toward the user by a publisher, but is pulled or retrieved by the user on-demand, in real time, for his own consumption. It has been an unexpected result of the extended and decentralized use of the Internet.

In this sense, it is necessary to accept that translation is no longer associated exclusively with a translator's job, that is, the traditional translator devoting hours to find the best possible translation for a word. The scenario has become much more complex. When thinking of translation today and assessing the value of MT, we must consider the different viewpoints of all the players involved in this new and intricate reality, flooded with information and urgency.

The User: Certain users approach MT from a pragmatic viewpoint. This could be a person trying to find a resource online and making use of the free MT programs available to get to know, at least vaguely, what a page is about, or a tourist trying to decide which hotel or meal suits his needs best during a trip. This type of user focuses on what works for him and might not care much about quality, especially when it comes from a free resource and provides him with an instant solution to his immediate needs. His questions are more likely to be "Does this technology work?" "Does it solve my problem?"

The Researcher: This individual represents the academic viewpoint. He is curious and a perfectionist by nature, and is not satisfied with the quality of the results generated by the MT program. He wants to understand why this technology does not work better and, possibly, find a solution to improve its performance.

The Corporation: Let us not forget the large corporations with translation departments, or the translation companies, that need to translate endless manuals or support documentation into several languages in a very short time frame and at the lowest possible cost. In other words, replacing labor with technological resources to the maximum. They want to know if the return on investment from using MT is justified and if the quality of the products they deliver will be compromised.

The Translator: What about professional translators? Many of them are reluctant to admit the usability of MT, as they see it as a tool that, together with translation automation processes in general, aims at displacing them in the production chain. The translator would then be confined to the role of an "editor" of material digested by MT, instead of being the one who translates texts from scratch. This might be true for certain types of texts, and it is already the case with the use of translation memories (TMs). It becomes, no doubt, a bit alienating for us translators, who probably dreamt of translating classic literature in our early school days. It also calls for a redefinition of our compensation schemes, maybe a shift from a ➡

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per word compensation into a per hour compensation scheme, or other new options to come.

Limits of MT Systems

For almost 50 years, MT research focused on what is called rule-based machine translation. This is the classic system, which makes use of bilingual dictionaries and a set of lexical, syntactical, and semantic rules for each language pair. In the 1990s, new alternative methods started to be explored. After almost two decades of TM usage, huge amounts of aligned bilingual material (databases comprised of segments in both the source and target language) started to become available. The new challenge was: Could this corpus of aligned material be used to feed an MT system and, combined with good search engines, render an MT program capable of "learning" through successive translations? That is where statistics-based and example-based systems entered the scene, with their probability-driven and pattern-driven approaches, respectively.

In spite of all these years of research, the application of different technologies, new investments, and lots of previously aligned bilingual information to feed MT systems, these programs still do not work so well, are still criticized, and are the butt of jokes and anecdotes. Why? Well, the preliminary answer is quite simple: because translation depends on a unique human capacity— that of interpreting meaning, making inferences, and conveying sense. Pragmatic processes allow us to close the gap between the semantic representation of a given text and its interpretation as a statement realized within a certain context. What is said is comprised not by conventional meanings alone, but by the result of reference allocations, disambiguation, and the enrichment of some expressions— what takes us from the level of conventional meaning to that of communication.

The result any MT program can generate is just a target-language proposed equivalent, the product of rule application and/or matching efforts, but not a translation in its proper sense. Everyone in the industry (not just translators) should understand that the meaning of an expression does not exist beyond the usage it is given in a certain context, and that there is no preexisting translation that a program can just find, probabilistically deduce, or decode.

On the contrary, a piece of translation should be "elaborated" on the spot. It is not a mere transfer of meaning from one language to another, and that is why different translators might use different translations for the same original text, or the same original text can require different translations in different contexts. Therefore, retrieving an exact equivalent from a database is just not good enough. This process relies on human extra linguistic knowledge such as culture, experience, beliefs, assumptions, and, above all, interpretation skills and common sense, which is something machines do not have and will most probably never have.

New Models:
The End of the Utopic Phase

At this point, we might be tempted to think that we can relax. MT pro-

We rarely know the final destination of our work.

grams cannot, due to the very nature of human language, translate the way we, human beings, do. It is not a question of time; it will not happen in the next five years. In this sense, the industry has reached a very similar conclusion, and has decided to change its perspective to a more realistic one. They have concluded that the classic idea of "Fully Automatic High Quality Translation" is still to be developed, but that a form of "Fully Automatic Usable Translation"—as an alternative to no translation at all—can already be achieved and leveraged. This 180-degree shift in perspective has revolutionized the translation industry at many levels.

For 50 years researchers have been struggling to create tools that can translate with the same level of quality a human being does. This, obviously, has not been possible so far. Now the need to access translations in huge volumes and almost in real time is so high and so urgent that, in many cases, the user does not care about quality. There are situations in which, due to lack of time or budget, an imperfect translation is preferable to having no translation at all. "Let's embrace the imperfection of MT," claims the Translation Automation User Society (TAUS), founded in 2005, in its vision statement.[2] TAUS is trying to champion a new localization model, in which the final users and the market are the ones that dominate the translation flow, not the publishers. They are working on the "self-service" information model propagated by

Google, and this is becoming a reality, so we should be aware that TM sharing and the development of large TM repositories are under way. For example, the TAUS Data Association was incorporated in 2008 by 40 founding members with the goal of selecting and pooling data to increase translation efficiency and improve translation quality.[3]

Of course, that makes us wonder if a potentially larger TM repository, even if organized by industry domains, could effectively feed and train MT systems, given the subtle context restrictions any piece of translation poses. Anyone who might have tried to merge TMs from different clients probably knows the matches rendered are usually far from relevant. In 2002, Yves Champollion warned us in one of his articles against this trend to make up for lack of relevance with size through the use of "blind, random TMs."[4]

MT in Practice

Notwithstanding all that was just said, one thing remains true: technology is neither good nor bad, it is just a tool, and it all depends on who uses it, how, and for what purposes. MT has been applied creatively and effectively in order to reduce lead times, cut costs, facilitate searches, preselect materials to be translated, and even please translators with new negotiated win-win compensation schemes. Here are some examples:

- MT application for the translation of knowledgebases / customer support (translation on demand / prioritizing localization needs).

- MTM solutions: TM + MT combined in high-volume time-restricted projects.

- Automated translation of intranets and news bulletins for multilingual employee bases (for the sake of reaching out / keeping confidentiality).

- Patent search engine translation projects.[5]

- Translation of extranets (like the case of movie distributors and product catalogues).[6]

- Virus alerts (where instantaneity becomes a must).

Some Critical Points

Where do we stand, then? There are plenty of scenarios in which MT can be applied, either for a less than perfect quality translation or for a pre-translation to be polished by human professionals at a later stage. There are still many concerns, however, namely:

- **How can the quality of MT translation be measured?** So far, there is one predominant standard called BLEU (Bilingual Evaluation Understudy) by IBM (See www1.cs.columbia.edu/nlp/sgd/bleu.pdf), which identifies in MT output similarities to a referenced human translation. There is also a four-level painstaking process metric used by human translators, in which the degree of usability of the output is graded. (See www.ics.mq.edu.au/~szwarts/MT-Evaluation.php.)

- **How can return-on-investment be justified without clear metrics?** If a company has to assess the cost of controlled language + post editing + statistics-based machine translation continuous training, is the investment in MT still profitable?

- **How are clients' expectations handled?** Are translation companies conscious of what they sell when they offer MT? If they post edit everything, there might just be a risk of loss of profit. However, when translation companies offer MT directly as a low cost option to clients, are the clients aware of the kind of quality they will receive? As it is popularly said, there is no second chance at making a good first impression. Could not MT become a business boomerang if the client is disappointed?

- **How is resistance among translators handled?** Are there new balanced options regarding productivity per hour that could entice professionals into working with MT?

Post Editing: A New Job Opportunity?

It is clear that MT still relies on the post-editing abilities of human translators, at least for the moment. Its use is restricted to certain highly repetitive areas, and is integrated into the job workflow just like other tools. There will still be a need for translators for many other areas in which quality is non-negotiable, such as marketing, law, and literature. So, if they want, seasoned translators will still find ways to go on working without using MT. In that case, who will work on MT post editing?

A few years ago, I came across an article in *The ATA Chronicle* in which post editing was considered a new job opportunity.[7] The authors explain that post editing is a type of work with its own characteristics, for which we can get specifically prepared by developing special skills like speed, gaining an understanding of the different post editing requests (complete, minimal, partial), and so on. ➡

I wonder if we can really tell editors to do a "partial" editing. I also wonder how they would feel about having to edit terminology but ignore grammatical mistakes, or vice versa. The article also highlights that the best candidates for this type of work are, of course, the newcomers, the junior translators, as they tend to be more open-minded and need to work. The article has led to more reflection on my part.

In 2000, French anthropologist Marc Auge pointed out that it is at the moment we develop our writing abilities that we discover the subtleties of reading.[8] We can all agree that this is certainly true. When we learn how to read, we do not get stumped by the differences between an "s," a "c," or a "z," or between a "v" and "b," we just go on reading. It is when we intend to write, to produce, that we start to doubt ("Which is the correct letter to use here?"), and we become aware of the subtleties of language. I think there is a possible analogy to translation work here. We learn to translate by translating. It is through creative decisions, and by making mistakes repeatedly, that we become experienced translators and acquire that subtlety of language that makes us good translators.

If novel translators enter the industry as editors of material that has been preprocessed by an automatic program, will they really be able to acquire that subtlety? Is it not possible that the first time they notice a strange expression they will change it, the second time think "this sounds familiar, I saw it somewhere else," and the third time assume that "this is the way it is usually said?" What kind of translators will get formed through such a process? What will the threshold of quality be in the future?

Is Creativity at Stake?

On the other hand, this profession that was born as an eminently creative and expressive one, is being somehow jeopardized nowadays by all of this technological progress. The possibility of being creative in our everyday tasks becomes more and more limited: we have to follow the glossary; we have to respect the client's preferences; we have to imitate the style in the TM; we need to use Neutral Spanish (if there is such a thing); we have to unify the style of all the translators on the team…and now, we have to post edit texts which have been automatically translated.

These new work modalities estrange us from the final result of our work. Many of us work on high-volume projects of which we only see a small part. We rarely get to know the final destination of our work. We just press "click" and send it, having no authorship rights over it. We are increasingly more involved in a numeric rather than a communicative process: words, hours, and dollars counting.

After learning and having a better understanding of what MT is and how it works, I have come to the conclusion that, as a translator, MT really does not worry me so much. I am much more worried by the overall automatization of the daily translator's workflow.

Finally, I would like to share with you a paraphrase from another text by Marc Auge, written in 1995, about technology, which I think can well be applied to the translator's profession, and explains somehow why I, as a translator, felt the need to do research on this topic:

"Only by intensifying the relationship with the technological instruments will we be able to control them. If we understand how they work, we will feel less alienated by them. The new humanism is just that: forming people not as consumers, but as creators. Forming them so that they can control the instruments. Forming them to create."[9]

I think the bottom line is that a translator's attitude should not be one of rejecting progress or opposing technology. What we all should be involved in is understanding technology, using it responsibly and productively for our benefit to the greatest extent possible, and helping clients and users become aware of its benefits and limitations.

Notes
1. Netcraft, www.imakenews.com/lweaver/e_article001189962.cfm.

> ## Technology is neither good nor bad, it is just a tool, and it all depends on who uses it, how, and for what purposes.

2. Van der Meer, Jaap. "Local Language First," paper presented at Localization World Berlin, June 20, 2007.

3. TAUS Data Association, www.translationautomation.com/whitepaper/taus-data-association-business-plan.html.

4. Champollion, Yves. "Automated Translation: The Next Frontier." *Translating and the Computer 24* (ASLIB, November 2002).

5. For example, the European Patent Office (EPO) is currently in the process of developing and installing a machine translation service for translating patent documents from a national language of the EPO into English and vice versa, which is based on a similar system developed by the Japanese Patent Office. For more information, see www.trilateral.net/projects/documentation.

6. Van der Meer, Jaap. "The Business Case for Machine Translation," in Proceedings of the Twenty-fifth International Conference on Translating and the Computer (London, November 2003).

7. Schwalbach, Ursula, and Franco Zearo. "Machine Translation: Translating Automation into New Opportunities," *The ATA Chronicle* (American Translators Association, May 2006).

8. Auge, Marc. *Fictions fin de siècle* (Fayard, 2000).

9. Auge, Marc. *Introduction to an Anthropology of Supermodernity* (W.W. Norton & Co, 1995).

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