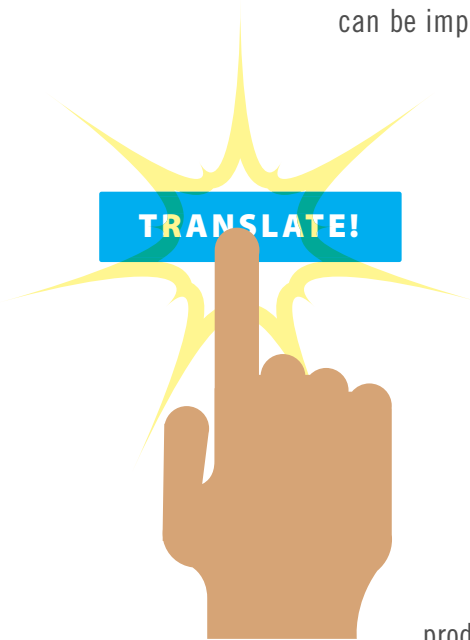# What is Really at Stake with Machine Translation?

An Overview of its Impact on the Different Stakeholders

by Rosana Wolochwianski

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. Final users have divided opinions: some of them enjoy the possibility of being able to access a low-cost or free translation, even if it is imperfect; others express disappointment because of the (lack of) quality of the results. Translators seem to be worried at the possibility that these programs might displace them in the production chain, turning them into mere editors of pre-translated material. They wonder to what extent this development will affect work availability and compensation. MT researchers and developers have been asking themselves time and again, for over 50 years now: why can't these programs deliver better results?

Machine Translation vs. Human Translation

For translators who deal with language on a day-to-day basis, it is quite obvious that the quality of these programs is still poor in many cases, and this generates jokes and anecdotes among us, making us feel that we are all-powerful and cannot be replaced. To reach publishable quality, MT output requires human intervention, either in the authoring phase (by means of controlled-language efforts) or at a later phase, through post-editing. There is no doubt that MT entails quality constraints. However, it is evident that the scope the democratization of technology has reached in this globalized era generates consequences that we would have never imagined. It is estimated that today there are nearly 1.5 billion people online, and almost 104 million web domains actively in use (which account for about 30 billion pages, according to Netcraft).

The amount of information that circulates today is so huge, and the eagerness to access it is so urgent, that it is almost absurd to think that only a group of qualified professionals producing flawless 300 to 400 hundred words per hour can satisfy such a great demand. Human Translation entails time and volume constraints. So, it is necessary to admit that a good part of this huge amount of information—especially information that, in any case, would never reach the hands of professional translators, either for lack of time or lack of budget—will possibly be processed by MT programs. An alternative to zero translation has emerged.

Dissemination vs. Assimilation

MT programs can normally be used in two directions. In the original development plans for MT, the objective was to create a tool which would be capable of translating text for distribution by the original authors, in a process traditionally called "dissemination" of information towards the users. So far, these types of commercial systems (e.g., Systran ProfessionalTM, Language Weaver SMTS, SDL Enterprise Translation ServerTM, and so on) 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 to which we need to pay attention. Everyday, millions of people click on the links to the free MT tool on an Internet page (e.g. Yahoo!, Babelfish, SDL Freetranslation, Google Translate, and so on) to perform searches, translate short messages, etc. This merely approximate translation that is retrieved by the final user with the intention of roughly understanding the central idea of a text is what we call 'gisting'; in a way, it is opposite to the "dissemination" process, and we can call it an "assimilation" process. This 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 exclusively a translator's job, with a traditional translator devoting hours to finding the best possible translation for a word. When we think of translation today, we must also think of a cybernaut 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 how to fix a bug in a computer program. Additionally, we must think of a tourist trying to decide which hotel or which meal would suit his needs best during a trip. So this new complex reality, flooded with information and urgency, can be considered from different viewpoints, which reflect a variety of interests.

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The Different Players and Their Points of View

When it comes to assessing the usefulness of MT, we come across the pragmatic perspective of users (the cybernaut, the tourist, someone in a chat room), who focus on what works for them, and might not care much about quality—at least when it comes from a free resource and provides an instant solution to immediate needs. Their questions are more like, "Does this technology work?" "Does it solve my problem?"

Researchers, by contrast, have an academic perspective. Curious and perfectionist by nature, they are not satisfied with the lack of quality of the results. They want to understand why this technology does not work better and, possibly, find a solution to improve its performance.

Let us not forget the large corporations with translation departments and the translation companies that need to translate endless manuals or support documentation into several languages in a much reduced time, and at the lowest possible cost—in other words, companies that need to replace labor with technological resources as much as possible. These companies want to know if MT's return-on-investment is justified, and if the quality of the products they deliver will be compromised.

Last but not least, what about professional translators? Many of them are reluctant to admit the usefulness of MT, as they see it as a tool that, together with translation automation processes in general, has the purpose of displacing them in the production chain and confining them to the role of "editor" of material spit out by MT, instead of letting them be the one who translates texts from scratch. This might be true for certain types of texts, and it is already the case when Translation Memories (TMs) are used. It becomes, no doubt, a bit alienating for translators, who probably dreamt of translating classic literature in their school days. It does call for a redefinition of how translators are compensated. It could signal a shift from a per-word compensation to a per-hour compensation scheme, or to other new alternatives which could be explored further

Different MT Systems

For almost 50 years, MT research focused on what is known as rule-based machine translation (RBMT). This is the classic system, represented by Systran and all its successors. It is the type of MT program that is commercially more affordable or more accessible

through the Internet. It makes use of bilingual dictionaries and a set of lexical, syntactical and semantic rules for each language pair. These MT systems are "black box" systems, and it is very costly and complex to develop them for every new language pair. Other older MT systems are laboratory projects linked to Artificial Intelligence (AI). These systems aim to introduce into an MT system enough knowledge of the world in order to make it "think" and interpret the way a human being does. They are usually university-based projects (KANT, UNITRAN, Carnegie Mellon).

The 1990s saw new alternatives being explored. After almost two decades of TM usage, a huge amount of aligned bilingual material was available. The new challenge was: could this corpus of aligned material be used to feed an MT system and, combined with good search engines, could it produce an MT program that was capable of learning through successive translations, and that could be easily expanded to new language pairs? That's where statistics-based (SBMT) and example-based (EBMT) systems entered the scene, with their probability-driven and pattern-driven approaches, respectively. On the commercial level, SBMT was initially offered by Language Weaver, and is now also offered by Asia Online.

There is even a project of context-based machine translation (CBMT) supported by a company called Meaningful Machines, which claims it uses bilingual dictionaries and monolingual extensive corpora in order to train its prototype MT system. The new automatization efforts are also directed at building hybrid systems by combining the best of all worlds: RBMT + SBMT + TM, etc.

The Limits of MT Systems

More than fifty years of research, different technologies applied, new investment, lots of previously aligned information fed into the

systems, and the MT systems still do not work that well; they are still criticized and frequently the object 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 does not just consist of the conventional meanings, but is also the result of reference allocations, disambiguation and the enrichment of some expressions—which takes us from the level of conventional meaning, to that of communication.

The result any MT program can produce is just a proposed target language equivalent, the result of rule application and/or matching efforts, not a translation in its proper sense. Everyone in the industry (and not only translators) should understand that the meaning of an expression does not exist beyond the usage it is given in a certain context, that there is no preexisting translation a program can just find, deduce or decode. On the contrary, a piece of translation needs to be figured out on the spot; it is not a mere transfer of meaning from one language to another. That is precisely why different translators can produce different translations for the same original text, and why the same original text can require different translations in different contexts. So retrieving an exact equivalent from a database is just not good enough. Such a process relies on extra-linguistic human knowledge such as culture, experience, beliefs, assumptions, and above all, interpretation skills and common sense, something machines do not have and will most probably never have.

New Models: The End of the Utopian Phase

So, at this point we might be tempted to think we can relax. Due to the very nature of human language, MT programs can't translate the way human beings do. If program developers do not admit this, their attitude can

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certainly be viewed as a form of voluntarism. This is not a question of time. It would not happen in another five years. The issue is that the industry has reached a very similar conclusion, and has decided to change its perspective to a more realistic one. It has concluded that the classic idea of "Fully Automatic High Quality Translation" (FAHQT) is yet to be developed, but that a form of "Fully Automatic Usable Translation" (FAUT) (as an alternative to zero translation) can already be achieved and leveraged. This 180° shift in perspective has revolutionized the translation industry at many levels.

For the last fifty 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 to date. However, the need to access translations in huge volumes and almost in real time is so great 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.

TAUS champions a new localization model in which the final users and the market are the ones that control the translation flow, not 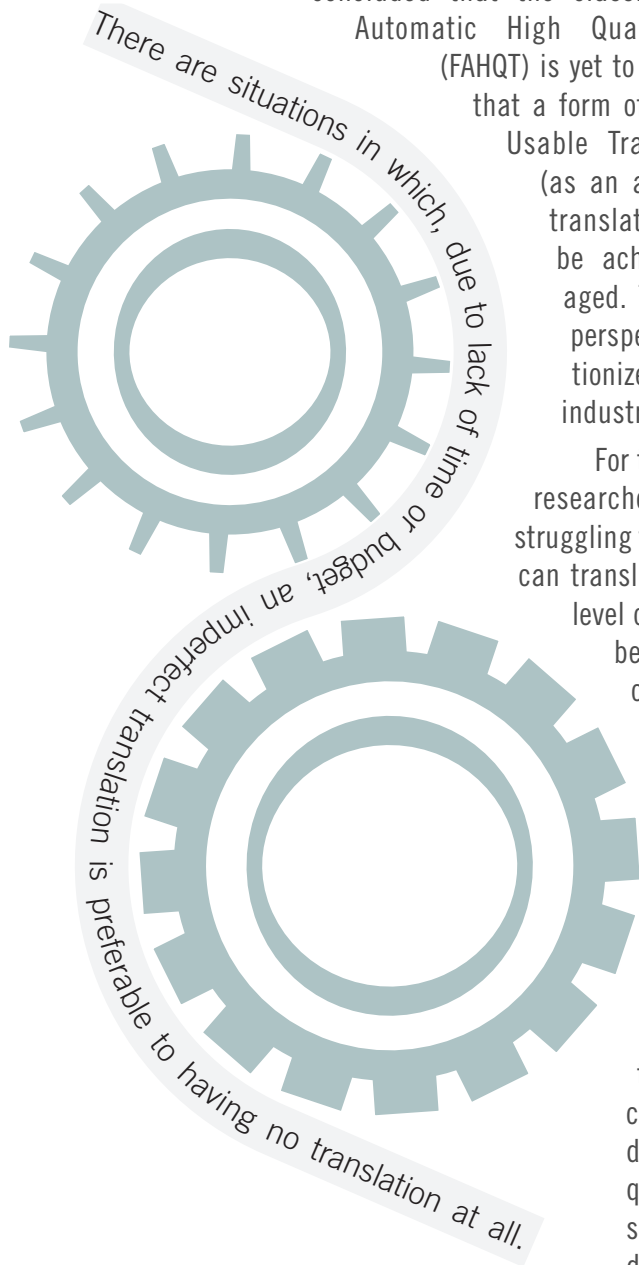the publishers. They are working on the "self-service" information model propagated by Google, and this is becoming a reality, so we should be aware of it and act ourselves with common sense, by accepting this new reality. TM sharing and the development of large TM repositories are under way: the TAUS Data Association was incorporated this year by 40 founding members, with the aim of selecting and pooling data to increase translation efficiency and improve translation quality.

Of course, that makes us wonder: Could a potentially larger TM repository, even if organized by industry domains, be effective in order to 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. Mr. Yves Champollion [2002] warns us in one of his articles against this making up for lack of relevance with size, with the use of "blind, random TMs."

MT in Practice

Notwithstanding all that was 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 with what purposes. I have read and heard stories in which MT is 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.

I will not discuss these examples due to lack of space, but they are out there, and we have all started to hear about them: MT applications 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 (like the one of the European Patent Office, based on the Japanese counterpart example); translation of extranets (like the case of movies distributors, as

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well as product catalogues); virus alerts (where instantaneity becomes a must); and so on.

Some Critical Points

Where are we 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. However, there are still plenty of concerns. For example, how can the quality of MT be measured? So far there is one predominant standard called BLUE (Bilingual Evaluation Understudy) by IBM, which identifies in MT output similarities to a reference human translation, and there is also a painstaking process metric carried out by humans. Another concern is: how can return-on-investment be justified without clear metrics? If a company has to assess the cost of controlled language + post editing + SBMT continuous training, is investment in MT still profitable?

On a different note, how are clients' expectations handled? Are translation companies conscious of what they sell when they offer MT? If they post-edit everything, there might merely be a risk of loss of profit. However, if they offer it directly to clients as a low cost option, 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. Couldn't MT become a business boomerang if the client is disappointed? Finally, how can the resistance of translators be handled? Are there new balanced options as regards productivity per hour which could entice professionals into working with MT?

Post-Editing: A New Job Opportunity?

It is clear that MT does not pose a risk of lack of work for translators, at least not at the moment. Its use is restricted to certain highly repetitive areas, integrated in the job workflow as just another tool. There will still be a need for translators for many other areas in which quality is non-negotiable, like marketing, law, literature, etc. So, well-seasoned translators will still find the way to go on working without using MT if they want. 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 [Schwalbach & Zearo, 2006]. There the authors explained 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, 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 feel when they have 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 are more open-minded and they need the work. This led me to some reflections.

A French anthropologist called Marc Auge [2000] points out that it is at the moment we develop our writing abilities, that we discover the subtleties of reading. We can all agree that this is certainly true. When we learn how to read, we do not get hung up on the differences between an "s," a "c," or a "z," between "v" and "b." We just go on reading. But it is when we intend to write, to produce, that we start to have doubts about "which is the correct letter to use here?", and we become aware of the subtleties of language.

I think there is a possible analogy with translation work here. We learn to translate by translating. It is by deciding creatively, each and every time, and by making mistakes time and again, that we become well-seasoned translators, and acquire that subtlety that makes us good translators. So, if a new translator enters the industry as an editor of material which has been preprocessed by an automatic program, will he really be able to

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acquire that subtlety? Isn't it possible that the first time he notices a strange expression he will change it, the second time he will think "this sounds familiar, I saw it somewhere else," and the third time he will already assume "this is the way it is usually said"? What kind of translators will be formed in such a process? What will the threshold of quality be in the future?

Is Creativity at Stake?

As another issue, this profession, which was born as an eminently creative and expressive one, is being somehow jeopardized nowadays by all this technological progress. The possibility of being creative in our everyday tasks is becoming 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 in the team… and now, we have to post-edit texts that have been automatically translated.

These new work modalities estrange us from the final result of our work. Many of us work in high-volume projects of which we only see a small part. We rarely get to know what the final destination of our work was. 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, dollars counting.

After learning and understanding better 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 work. So finally, I'd like to share with you a paraphrase of another text by Marc Auge [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, the maximum expression of the industrialization and automatization of our work:

Only by intensifying the relationship with the technological instruments, we'll be able to control them. If we understand how they work, we'll 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.

I think the bottom line is: a translator's attitude should not be one of rejecting progress or opposing technology—not at all. 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. ▢

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