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What technology does to translating

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Abstract: The relation between technology and translating is part of the wider question of what technology does to language. It is now a key question because new translation technologies such as translation memories, data-based machine translation, and collaborative translation management systems, far from being merely added tools, are altering the very nature of the translator's cognitive activity, social relations, and professional standing. Here we argue that technologies first affect memory capacity in such a way that the paradigmatic is imposed more frequently on the syntagmatic. It follows that the translating activity is enhanced in its generative moment, yet potentially retarded in the moment of selection, where the values of intuition and text flow become difficult to recuperate. The redeeming grace of new technologies may nevertheless lie in new modes of opening translation to thespace of volunteer translation, where humanizing dialogue can enter the internal dimension of translation decisions. The regime of the paradigmatic may thus be embedded in new modes of social exchange, where translation becomes one of the five basic language skills.

Keywords: translation; technology; machine translation; translation memory

1. Memory complicates decision-making

Technology should help us with whatever we are doing. The ape uses a stick to retrieve the banana – we reach further, so we can do more. Technology thus extends the ways we interact with the world: our arms, our sight, our capacity to hear, touch, to move over distance. Which of these extensions most vitally affect what we do with language?

The question allows for many suppositions. The technologies of transport and communication radically stretch the cross-cultural situations in which speech acts are carried out, ultimately altering the configuration of cultures, never more so than in a globalizing age. Those situations often call for translation, since they are cross-cultural, so we would not be wrong to see transport and communication technologies as constituting the major technological impact on the translation professions. So much for the question of how *far* we communicate, which is also the question of what kinds of groups we communicate between.

If, however, we restrict our question to what happens in the actual process of translating, to the cognitive movements between languages and between texts, what extension of our perception is most radically affected? The answer, I suggest, must be memory. What has most been extended, and keeps being extended, is the capacity to store and retrieve knowledge, and to do so externally to the mind. Memory is the process dimension most affected by technology, and never more so than in an age of electronic communication.

So what happens when memory is extended and externalized? Part of this particular answer must concern cognition in general (one supposes that more external memory means less internal retention, for example). So what part of the answer properly concerns translating?

Let us reduce the translation process to three simple parts: a problem is recognized (e.g. How do you say *malestar*?); alternative solutions are generated (*discomfort*, *unease*, *malaise*, etc.); one solution is selected (perhaps *malaise*, if it refers to the current feelings of academics in under-funded universities, for example). Now, which of those three parts is helped

by external memory? Not particularly recognition, which is peculiarly internalized – experience makes us feel when special attention is necessary. And not particularly selection – much as we now easily locate parallel texts to sense various frequencies, those resources rarely solve problems that concern translation rather than terminology. If external memory helps anywhere, it is surely in the quick production of alternative renditions, many of which may turn out to be viable. When I type *malestar* into Google Translate, I get: 1. *discomfort*, 2. *malaise*, 3. *unrest*, and 4. *ailment*, with the top solution actually being a particularly unhelpful *upset*. The external memory, in some circumstances, may simply complicate the decision-making process, and thus become an impediment to the process of selection.

Technology does not necessarily make things better or more efficient. Just as the internal combustion engine created traffic jams, if not global warming, so translation memories, along with machine translation engines and quick online documentation, can extend the list of alternatives only to impede efficiency in selection, undercutting intuition.

When we ask what translators really do with translation memories and machine translation, there is not an enormous amount of empirical research to speak of (e.g. Krings, 2001; O'Brien, 2005, 2006, 2007; Guerberof, 2008, 2009; Pym 2009; García 2010). But ask translators what happens when they work with extensive external memories (postediting machine translation or hopping through translation memories): they respond that they probably go faster, but not always; they probably get richer terminology, albeit at the expense of missing details like punctuation and cohesion markers; and they might confess, if working on a juicy text, that they spend proportionally longer mulling over the key translation problems.

Such is the simple doubt to be explored here: as with most technology, what you win on the swings, you lose on the roundabouts. The trick is to know what is worth winning.

2. Technology imposes the paradigmatic

Texts, as Aristotle proposed with respect to drama, have a beginning, a middle, and an end. This need not entail grand narrative: the text simply carries the implicit instruction that you start at a certain point, read in a certain direction, and ideally finish at an equally pre-determined point. Let is call that feature "linearity". It is the horizontal dimension of most of the texts we face; it is what Saussure called the syntagmatic axis of language. All texts have it, from novels to computer instructions to sentences and phrases. There is nothing new or exciting about linearity.

Technology, I propose, disrupts linearity by imposing what Saussure called the paradigmatic axis of language – the metaphorically vertical dimension from which items are selected. The paradigmatic is where language is systemic and things start to slow down. Of course, technology is not the only way the paradigmatic is projected on the syntagmatic: Roman Jakobson (1960) saw the same projection as producing the poetic function of language. We leave the poetry of technology for another day.

The imposition of the paradigmatic can be seen in what is perhaps the most basic language technology, writing. As soon as phonetic or semantic values are imperfectly categorized by script, the processing of language must stop and pay attention to the axis of selection. The more technology (the more letters, hieroglyphs, or characters), the more this can happen. The next major step in the imposition of the paradigmatic would be the book: as soon as papyrus scrolls became something like parchment pieces, it was easier to

compare one passage with another, thus producing indices and concordances, eventually adopting modes of text usage that lifted language out of context (cf. Olson, 1994). The sermon cites passages drawn from different places, as condoned by religions of the paradigmatic book.

That same process has continued. You can see it very visually if you look at the major technological advances affecting the way we write. One of the major steps forward, for orthographically challenged writers like me, has been automatic spell-checkers and thesauri – with one click the computer text opens a vertical dimension from which I can select the item I am seeking (granted, the dimension can be technically horizontal in Chinese, yet paradigmatic nevertheless). The same general principle holds when I click beyond the text, as when using a search engine: from reading in a linear fashion, suddenly my eyes are eliminating items in a vertical movement, searching the one option than might be of help. And if my search leads to a text with substantial linearity, my searching mentality is not likely to start reading from beginning to end: I will do a quick rummage for the key terms I am looking for, to locate just the passage that might be of use. That is, my *use* of electronic texts becomes profoundly paradigmatic.

Look, now, at what happens when we use workstations that integrate translation memories and machine translation. The first thing you find is that the text is segmented, broken into units that sit one on top of the other. That is, the text is broken into paradigmatic form; its linearity is repeatedly interrupted. The translating mind is thereby invited to work on one segment after the other, checking for terminological and phraseological consistency but not so easily checking, within this environment, for syntagmatic cohesion.

Same thing, basically, for the types of electronic text we now have to translate. No one reads a website from top-left to bottom-right – the normal reading patterns form a large T or F shape, as the eye scans across the top of the screen then moves down vertically (cf. Nielson, 2006), and then we start to navigate backwards (cf. Nielson, 2008). Similarly, no one reads product documentation or a handbook from beginning to end – you use the index, or search for key words, or retreat to an online search engine where someone, in some unofficial blog, is likely to give you a clear answer that actually works. Linearity is relegated to the apocryphal.

We find that, in the age of electronic language technologies, texts are increasingly used paradigmatically. And since they are used that way, they tend to be created that way. And it is perhaps only fitting that they are translated that way.

Here is a simple consequence for translation processes. Once upon a time, in a more innocent age of structuralist equivalence, we might have believed that the translation was determined by the source text. Then we moved into text linguistics, discourse analysis, pragmatics, and language as performing purposes, where translations were seen as being determined by cultural functions, negotiations with clients, or the general desire to perform an action. From the sentence, we moved to the text, and then to the project. All of those widening frames, however, required the syntagmatic. Not only was textual unfurling the key to relations between new and old information, the elaboration of sender and receiver positions, the leading of the reading mind through a learning process of some kind, but the text itself became an element in a narrative sequence, a drama where the beginning was in the start text, the middle was the translation process, and the end was the action ideally completed in accordance with purpose. Break into that syntagmatic axis, interrupt the stories and their character development, fragment the indicators of audience design, and you undercut the perception of function,

along with any residual humanism it might involve. Only in a non-technological utopia could one consider narrative to be ontological.

These days we more readily concede that our work is determined by internet searches, glossaries, spell checkers, grammar checkers, translation-memory and machine-translation databases, and anything else resembling a communication technology. This peculiarly technological movement is not especially away from the text as such, but away from linearity. The more technology, the less easy it is to make decisions in terms of linearity, and the less we tend to see translation as communicating between people.

3. Technology empowers new generations

Within most professions, and within many societies as systems, some social groups gain positions of power with the help of the technologies they master. IBM headphones and wires enabled conference interpreters to form a profession, to recruit their members from the circles close to the institutions able to pay for the technology (at the Nuremberg trials, most of the interpreters were from the social networks of the diplomats, judges and higher military personnel involved in the trials), and to thereby prolong the mystique of magical and masterly performance, such that the main difference between interpreting with and without the technology is still about $100 an hour. So what happens when the technology moves to the next level, in this case allowing for remote video-interpreting, for the greater financial well-being not just of carbon footprints but also of the stay-at-home interpreter, multitasking with the raising of children, for example. The established conference interpreters will swear until they are blue in the face that quality work only comes from their being in attendance at the conference, to witness the speaker's every gesture, to imbibe the atmosphere of the event, to hobnob with the eminences they are called upon to render. No matter the empirical evidence for or against, the professional group that gained its mystique with an old technology will resist the advance of the new technology, at least until it can turn the new to suit its own strategic purposes. Resistance to technological change is usually a defense of old accrued power, dressed in the guise of quality.

Similarly, in 2009 the "Ordre des traducteurs, terminologues et interprètes agréés du Québec" (OTTIAQ) sought to ensure that only its members could call themselves "translators" in Quebec:

> Since the professional title is inadequately restricted, anyone at all can call themselves a translator, terminologist, or interpreter, as long as they do not add the adjective "certified." Thus creates a system of double nomenclature, which is a source of ambiguity among the public at large and incurs particular risks. (OTTIAQ, 2009, p. 4; our uncertified translation)

The Ordre is officially responsible for protecting the public from risks and deceptions in its professional field, so it here logically requests that there no longer be any confusing distinction between "certified translator" and "translator." In future, the only distinction should be between "translators" (members of the Ordre) and "non-translators" (everyone else).

This would appear to be a simple discourse of exclusion, at least until we find it coupled with a warning about technology. Here we cite from the Ordre's homepage:

> *****Warning*****
> The automatic translation applications now available to the general public may seem useful, because they give readers a general understanding of something written in a foreign language. But text generated by such software can in no way be considered as the equivalent of a *true translation*, which means it should be *revised* by a *professional* translator. […]
> As part of its mandate to protect the public, OTTIAQ recommends prudence and suggests that you call on a *certified* translator for *all your translation needs.* (OTTIAQ, 2010, italics ours)

Cheap fun can be had with the ideological contortions: a "true translation" becomes one that is "revised by a professional translator", even though this seems not to be an association of "revisers." And then, having allowed that professional revision might make a translation "true," the Ordre retracts the concession and insists that a "certified translator" should really do it all. So is the technology in or out?

The technology, for better or for worse, is here to stay. Few societies are able to refuse the use of a technology once acquired (cf. Fromm, 1968). This gives a certain progression, though not fatality, to technological history. When new technologies open new areas of superiority, one must expect established power to be threatened. Professional translators and their organizations will concede market space to the volunteers and paraprofessionals able to postedit machine translation output and apply translation memories, often with considerable success thanks to their specific area expertise and engagement. Power thus shifts from those who know translation to those who know and control the technologies: project managers, product engineers, marketing experts, for instance. Niches will remain for language services that are more artisanal ("hand-made," even more erroneously dubbed "fully human"), where presumed quality can justify the price-tag of luxury. Nevertheless, despite the reactionary outcries about declining language standards and the death of all things good, the logics of quantity and democratic participation should be expected to win the day.

How does technology connect with the rise of the volunteer? It should suffice to look, for example, at the sharing options in something like Google Translator Toolkit – this is a tool built for translators who want to work with each other. Or again, in the same technology (in 2011), we find options for importing text from Wikipedia and Knol – this is a tool for people who want to donate their translations free, and for free public use. Less obviously perhaps, Google Translator Toolkit obliges translators to upload their texts to the euphemistic "cloud", floating unconstrained above the earth in a space that would be apparently unowned were it not owned by Google – since no private company would hopefully allow the confidentiality of its material to be compromised so liberally, this becomes a technology for translators with no professional secrets. García and Stevenson, in their early review of Google Translator Toolkit, remarked with considerable acumen that this is a technology for translators who do not work for big money:

> With growing online facilities and potential for global collaboration (think Wikipedia, or initiatives such as Facebook's user localization), there seems to be a multitude for whom day jobs are secondary to engaging with their global online fraternities from home. Strangely, for large sectors of 'WebWorld', fun is becoming more work than work. (García & Stevenson, 2009)

Technology might thus be driving us to a world of amateurish fun. This would be a world where translation is no longer a special task left for special people – translation becomes one of the basic things you do with language: you speak, you listen, you write, you read, and you translate (as foreseen in Campbell, 2002). Everyone could and probably should become proficient in the *five* basic skills.

There remains the obvious question that allows for no simple answer: Will this world be better or worse?

4. Technology and the space of dialogue

Technology, we have proposed, increasingly imposes the paradigmatic, thus diminishing dialogue. At the same time, it enables new social locations for translation, particularly in the non-professional sphere. We can now try to make those two aspects speak to each other.

Consider for a moment the user-based localization of Facebook into many languages (we resist the term "crowd-sourcing", swimming against the tide – the phenomenon is more serious than a cheap phonetic pun, cf. Pym, 2011a). All the features of technological non-linearity are present: texts become short segments, without narrative progression, and are presented and treated in isolation (example: "Can't find who you're looking for?"); alternatives are proposed similarly without co-text ("¿No encuentras a quién buscas?", "¿No encuentras a quién estás buscando?", "¿No encuentras a la persona que estás buscando?"); and then the technology allows for a vote – users themselves select the most appropriate version (in website world, most kudos usually goes to brevity). And all of this happens without any professional translator on the horizon, and without any payment for translations either. The Ordre des traducteurs would presumably not be amused.

Consider what has happened in this particular technological paradise. The paradigmatic is certainly imposed, and decontextualization is without doubt the prime result. Yet there can be no facile assumption that all this comes at the price of dehumanization and declining translation standards. On the contrary, because the users of Facebook are themselves involved in this process, they know better than anyone exactly where and how these phrases are required to operate, and they can judge better than any external expert the appropriate balance of brevity and familiarity for this particular social network. Even more important, those quick successions of recognition-generation-selection, those sequences and loops by which translation problems are solved in the cognitive space of the individual translator, have here been socialized, split open as it were, invaded by discussions between users working through the machinery of democratic decision. From the high productivity sought by the frontline translation technologies, we are brought to a mode of high sociability, remarkable not for speed but for human involvement. And this, it seems to me, can be a very good thing.

The expansion of electronic memory is in many respects an increase in the number of alternatives that can be maintained at the same time. Rather than decide between action A and action B, we can have both, in some circumstances. Nothing easier than arranging for translation memories and machine translation to work together, or for productivity tools to double as a mode of socialization, or for the paradigmatic to enter a new realm of functionality by simple virtue of user-based translation. Similarly, it makes sense to envisage workflow scenarios where the serious advantages of voluntary translators coexist with services by language professionals:

volunteer translators might postedit MT output, then have their work revised by professionals at various levels (cf. the models in Carson-Berndsen et al., 2010). There is no need to choose between one and the other; the electronic world becomes big enough for both. Of course, it is still necessary, as a defining feature of some modes of translation, to choose only one solution to each translation problem. But even that is changing, as alternative renditions can be made available via hyperlinks, and the very reception of translations can be brought into the fold of the creative act. In principle, the extension of memory allows us to have a multi-layered cake and eat it too.

True, the designers of technology are often not in the same communities as the users, and the risk of exploitation remains constant. Google, Facebook, dotSUB and the like are in the translation game in order to make profits (cf. Smolens, 2011). Then again, the social distance between design and use is not as extreme as it was in Taylorist production; the time gaps between user-feedback and technology redesign are vastly reduced; the more significant problem is the social distance and temporal delay of researchers like ourselves (cf. Pym, 2011b).

So is this some kind of electronic return to a more primitive, pre-technological environment? One might be reminded of the medieval pre-paper translation teams of Hispania, recognizing problems in Arabic, discussing them in Romance, writing down the consensus solution in Latin or Romance, on expensive parchment, then adding marginal glosses expressing the doubts raised in the course of the conversation: "the reviser and the translators agree that it should say 'fortune' there where it says 'misfortune'", "...el emendador e los trasladores se acuerdan que deve dezir fortuna alli o diz infortuna" (cit. d'Alverny, 1989, p. 200), so notes the gloss, as what appeared to be negative emerges in a new light.

An element of return, perhaps, but not simply so. We noted above that the technologies impose the paradigmatic on the syntagmatic, thus upsetting the fundamental linearity of text. That linearity does not return; the technologies do not lead us, for example, into a world of narrative construction, of beginnings, middles and ends linked by human characters. Instead, what we potentially find as the dominant mode of constructing knowledge is dialogue, or more simply discussion - interactive exchange between a multiplicity of agents. And this can happen before, after, or in the middle of solving translation problems. Dialogue, not narrative, may become part of a new humanization.

Without wishing to slip into panegyrics of a brave new world, I beg for hope. Arnaud Laygues (2007) posits that ethical translating asks the question "What do *you* mean?", rather than the object-based question "What does *this* mean?". That second question, framed in terms of interpersonal relationships and not information objects, may yet become possible with the help of new technologies, and not despite them.

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