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Table of Contents

Crowd, cloud and automation
in the translation education community

Christophe Declercq

Abstract

Following the global technological turn of the 1990s, translation education has increasingly begun to include technology from the late 1990s and the early 2000s onwards. Translation and technology has now become a dominant research topic in Translation Studies. However, academic analyses of translation technology concepts, processes and usages are on a knife's edge. Potential usages of the latest technology are being scrutinized on the one hand, but the uptake of that same technology in the classroom poses substantial problems on the other hand. Exposing aspiring translators at Masters level to contemporary language and translation technology trends endangers the sense of security students need in order to learn new concepts and develop new skills. Including concepts such as automation and crowd, as well as their underlying technology and working processes, is often seen by more traditional teaching staff as the opposite of risk aversion and in fact it could have several advantages for Masters level students. These technological trends therefore need to be addressed more clearly in the curricula of Translation Studies programmes.

1. Taken by storm?

"Our world is changing around us, the IT world is changing. The information world is changing and we need to follow the wave, we need to be part of this wave. It's happening in every industry and our industry needs to adapt to this wave and take advantage of what this wave of technological changes can bring to us." (Gervais 2010)

When in 1990 Susan Bassnett and André Lefevere coined their expression 'cultural turn', [1] it was the cultural context rather than words of a text that became the driving force in translation. The subsequent years saw Translation Studies (TS) become more interdisciplinary, a process that is still ongoing.[2] Including Cultural Studies in TS not only saw translation move away from its more linguistics-based peninsula, but the change in perspective, which now superseded the rather narrow 'source text/target text analysis', also built many bridges across fields of research and application, such as Postcolonial Studies. At the same time, the diverging scope of TS became increasingly affected on another level too, namely, the waves of technological change.

Not only did computers become faster and cheaper from the late 1990s onwards, and computer use more widespread, but the emergence of software applications, which supported the work processes of the translator and aimed to increase productivity and quality through consistent re-use of relevant segments and terms, also created a whole new dimension. Language and translation technology (LTT) have been around for many years. From fields such as machine translation technology projects such as METAL, ALPAC, Météo, Systran, Logos, MELTRAN and ATLAS emerged. From natural language processing came NLP projects like EAGLES and related corpus linguistics methods such as computer-assisted text analysis, annotation procedures, concordances and parsing in corpora. In 1990, the first proper computer-aided translation application was MultiTerm, a multilingual terminology manager for DOS, created by the German company TRADOS in 1990. By 1994, TRADOS had established both MultiTerm and the Translator's Workbench for Windows. This technological turn, a phrase first coined by Sin-wai Chan in 2004[3], coincided with the cultural turn mentioned earlier. The approach to translation as a multifaceted process embedded in a specific cultural context found itself encapsulated in a growing technological practice.

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[1] On how Translation Studies often turns to turns, see Michael Cronin (2010) 'The Translation Crowd', in: *Revista Tradumatica 8*. Available online via www.fti.uab.cat/tradumatica/revista/num8/articles/04/04central.htm (last accessed 30 October 2014).

[2] In their call for papers for a 2011 issue of the journal *Multidisciplinarity in Audiovisual Translation*, Rosa Agost, Elena Di Giovanni and Pilar Orero claimed that "multidisciplinarity is without any doubt a reality, although not always acknowledged. It has increasingly come to the fore in the last five or six years in Translation Studies".

[3] Sin-wai Chan, 2004. *A Dictionary of Translation Technology*. Chinese University Press, page viii.

Translation technology (TT), a loosely defined set of computer applications, which boost productivity and consistency in translation,[4] progressively gained ground in the curricula of translation Masters courses in the late 1990s and early to mid-2000s. The presence of translation technology had already been present in papers at conferences such as EAMT and LISA, followed by magazines such as *Language International* (discontinued) and *Multilingual Computing* first of all, *Translation Journal* and *Jostrans* next, but only became fully institutionalized with Sin-wai Chan's dictionaries of 2002 and 2004 on the topic and with formative publications, such as Frank Austermühl 2001, Bowker 2002 and Somers 2003. But those days are now gone. Gone as well are explaining to students regional settings in Windows and spending time on how to use the scanner and its OCR. Tools such IBM Translation Manager, SDLX or Trados Translation Workbench have also disappeared. However research into applied technology use in Translation Studies has expanded since the early 2000s, and translation technology in translation education is still a complicated matter today, and the ever increasing speed of new emergent technologies is not helping. How translation technology affects the role and position of the translator on the one hand and the translational act itself, on the other, is also an ongoing discussion in translator education. But as students need a sense of direction and security, a solid basis is needed in order to learn new concepts and develop new skills. In addition, the ever changing digital world, for aspiring translators in the form of technological resources at hand for the purpose of improved translation quality and productivity, have taken the more conceptual and theoretical considerations of implementing translation technology in Translation Studies programmes by storm.

Our era has become one of social media, microblogging and smartphones. Numerous apps rely on machine translation and crowd-sourced translation. Free and open source software tools (FOSS) such as the OmegaT translation memory and the Moses machine translation system now influence the profiles of both the professional translator and the translation student in equal measure.[5] Before FOSS translation tools

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[4] Tools for media accessibility (subtitling etc.) are not excluded, but are not specifically included in this text either. European co-funded projects such as EU-Bridge, QTLaunchPad and SUMAT cover multilinguality, accessibility and inclusion. The aims for Europe in these fields are contained in the Meta-Net Strategic Research Agenda for Multilingual Europe 2020, available from http://www.meta-net.eu/vision/reports/meta-net-sra-version_0.9.pdf (last accessed 30 October 2014)

[5] Due to the rapid speed of updates of application versions, no version numbers are provided this

were able to establish themselves fully in TS curricula and professional workflows, they were overtaken by a newer development: SaaS, *software as a service*. Online software such as Wordfast Anywhere first, and Memsource and XTM then saw many students and practitioners move to the cloud.[6] Online statistical machine translation systems are increasingly open to training on customised data. Meanwhile, students share that characteristic pan-21st century feature: social media, apps and the big data that are generated thereof.[7] These phenomena still form peninsulas of technology use that need plenty of bridges before an amalgamated translation technology teaching approach surfaces. Yet, providing an insight into these new technologies and related concepts relies on analogies with existing practices in translation education, thus potentially facilitating uptake among students and avoiding unnecessary risk aversion and uncertainty from educators. This uncertainty in the profession[8] needs to be addressed through translator training, associations and institutions, best practices, industry standards, quality control and quality assurance.

2. A utilitarian turn

A clear and increasingly typical convergence of recent language and translation technology concepts can be found at Geni.com. When this big American genealogical website launched its multilingual pages, it boasted that it had used crowdsourcing.[9] It had, however, used Google Translate output as a draft for its community-based and user-generated post-editing.[10] Although the scale of the translation projects could not be more

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paper.

[6] In the cloud, dynamically scalable and often virtualised resources are provided as a service. (He 2014: 3) This is considered more than a "silent revolution" by Muegge 2012.

[7] For an industry view on these issues, see Rex Martin (2013) 'Exploring the Intersection of Big Data and Machine Translation'. Available online via TAUS, www.taus.net/executive-forums/exploring-the-intersection-of-big-data-and-machine-translation (last accessed 30 October 2014).

[8] Through a questionnaire in 2012, David Katan sampled from 393 replies on the future of the job of translator. Most people agreed that no one knows, there might be a loss or there might be more jobs (Katan 2014).

[9] *Geni Brings Crowdsourced Translations to the Masses with Release of tr8n Translation Engine.* Available online at www.redorbit.com/news/science/1968700/geni_brings_crowdsourced_translations_to_the_masses_with_release_of/#eB8G8WC7ziDahO1M.99 (last accessed 30 October 2014).

[10] If translation becomes either user-driven or partly machine translated, a traditional theoretical dichotomy from Translation Studies needs a third dimension: besides Schleiermacher's translation/Dolmetschen dichotomy the computed or crowdsourced draft attains a new level.

different, the core workflow for the project at Geni is very similar to translation and language technology teaching and group projects in practice-oriented Translation Studies programmes at Masters level today, in which individual input benefits from peer support and community control. No surprise then that online machine translation and translation crowdsourcing, currently best represented by the crowd-sourced Facebook interface, Google Translate (GT) and the TED Open Translation Project,[11] can rightfully claim a growing share in translation teaching.

However, it has not always been easy to marry expectations of the wider translation community (students, educators, freelance translators and commercial parties) with the continuous development of applications and the potential they offer. Most Translation Studies programmes at Masters level did not incorporate translation memory (TM) tools into the curriculum until the mid and even late 2000s. Based on personal experience, one suspects that there are still many TS programmes today that do not thoroughly cover the applied use of technology as a means of support for translation work but only teach 'about' it so as to attract students or tick boxes for peer assessment such as EMT, the European Masters in Translation.[12] Although it is indicative only, many TS programmes include SDL Trados Studio in their teaching, but hardly any worry about certification. According to SDL Education only 91 courses from the 454 universities that are participating in the SDL University Partner Programme are actively putting their students through SDL Certification (SDL Education, personal communication 2014). One can only assume that reasons for not including this added feature to students CV's when they graduate is that the time spent on SDL Trados Studio is not sufficient to even reach a Certification level or that tutors are simply not interested. Hence, these classes will evolve around demos and the basic concepts.

Translation technology tools should be viewed as added ability for students and tutors alike, as facilitators for increased quality (through consistency) and productivity (through speed). This can only be done through practice and real-life hands-on exercises. *However*, the prevalent

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[11] TED Open Translation Project launched in 2009. "Today, more than 50,000 translations have been published in 104 languages, created by more than 15,000 volunteers." (TED online)

[12] More information from the website @DGT, http://ec.europa.eu/dgs/translation/programmes/emt/index_en.htm

descriptive urge of TS has often conflicted with that need for sustained productivity. Clearly defining ideas and concepts first before further elaboration or exercises is a well-established practice in education, but elaborating on concepts only sets theory and practice further apart, a point of view seconded by Risku (2004).

A scientific analysis of the use of technology in translation, for freelance use or aspiring translators, must adhere to the golden rule of usability research, namely that a valid assessment of the sense and purpose of a particular piece of technology is only possible if the researcher is aware of and understands the environment in which it is either used or to be used (Risku, 2004: 86). This approach goes beyond the functionalist approaches taken by translation in the 1970s and 1980s by Hans Vermeer and Christiane Nord and adds an even more utilitarian level to translation projects, whereby the validity of the purposeful use of translation technology is measured according to its useful consequences and results.[13] A scientific foundation for translation procedures and concepts might make a translation project sounder for a translation student (the purpose of a translation, source text analysis, target audience analysis...), but in real life situations there is no time to look for definitions or descriptions, and yet a utilitarian, and preferably critical, attitude is expected from graduates. This tension associated with how to implement translation technology in a translation education setting in a pedagogically sound manner is even more complicated. Translation technology is affected by the progress of its underlying base, the continuously updated tools and applications, and the data that they are fed (sentences, phrases, terms…). This becomes clear in the current trend in which language technology (LT) processes are applied to translation technology (TT) content or translation output, effectively creating a field of LTT, language and translation technology.

The most obvious overlap between TT and LT is the combined use of machine translation and translation memories as a platform for the freelance and/or amateur translators and the fact that statistical machine translation engines (SMT) are trained on translation memory data sets. However, the most obvious thing is also the most problematic: risk aversion and secure basics do not come close to a merged language and translation technology approach to teaching. Translation students need to be taught the difference between human translation aided by computer

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[13] Whether or not these results lead to Benthamian happiness is a different matter altogether.

applications and machine translation through the explanation that they are intrinsically related.[14]

In order to add a further dimension to a paradigm in which translators are "employed on programs that have cycles" and "work with databases, glossaries, and a set of electronic tools" rather than "on complete definitive source texts" (Biau Gil and Pym 2006: 6-8), three themes from LT and TT of relevance to translation students need to be expanded upon: 1) free and open source solutions, 2) the combined use of TM and MT, and 3) crowdsourcing platforms for freelance translators and in particular amateur translators. All these concepts form quite another field compared to more traditional Translation Studies research and more comparative literary or linguistics-based translation training, but the practical value of transferable skills that come with the three themes mentioned earlier is invaluable.

3. Free and open worlds

A highly appealing idea to people managing a Translation Studies department-- and to SMEs as well for that matter-- is the prospect of being able to use language and translation technology tools for free. As an important additional dimension to free software, open source software allows users to customise the source code of an application that is available as a free download. Support for free and open source software (FOSS) sees online forums being added to manuals, the community of users becoming pivotal to the specific tool. The most well-known FOSS program is Linux, a free operating system that is an alternative to Windows and Macintosh. For translators FOSS tools of renown are OmegaT and Anaphraseus.[15] The most enticing aspect of FOSS tools, more particularly free and open TM solutions, is that they ensure that translators are able to enjoy the same freedoms as those granted to software users by the FOSS initiatives. The main benefit of using a FOSS TM tool is of course the lower costs. By no longer staging a usually

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14 For a history of MT and how M features there, see John Hutchins (1995) 'Machine Translation: A Brief History'. In: *Concise history of the language sciences: from the Sumerians to the cognitivists* (E.F.K.Koerner and R.E.Asher, eds.). Oxford: Pergamon Press, pp.431-445. Also available at http://www.aymara.org/biblio/mtranslation.pdf (last accessed 30 October 2014).

15 Credit due to ForeignDesk, released in 2001 by LionBridge and now almost abandoned, owing to the fact that it was the first publicly available free and open translation tool. The FOSS release of OmegaT followed the next year.

expensive CAT tool platform and its subsequent updates, the translator is relieved of any direct costs made upfront. However, other expenses might be incurred. FOSS applications often have a very limited software version cycle time so that updates rapidly follow on from each other. Training and support are subsequently more fragmented than with proprietary software. Santoro (2010) argues that this total cost of ownership is an important factor in that it ensures company fidelity to proprietary software, whereas migrating to FOSS is not much of an issue for freelance translators (Santoro 2010:24). This leaves translation students somewhere in the middle. Open source solutions might well be added to existing proprietary applications installed in the respective computer labs to form part of translator training.[16] This is not necessary because of budgetary constraints alone, but also because it is "in response to student requests" (Bowker 2008:28).

With application customisation and fragmented support acting as major hindrances to FOSS, it should not come as a surprise that a subsequent development is more appealing. Keeping expenses as low as possible is also a driving philosophy behind SaaS, *software-as-a-service*, software that has moved from standalone to online, to the cloud. The selling proposition of SaaS has shaped a change in expenses, with a shift from the customisation of software, hardware, IT personnel and maintenance on the one hand, to implementation, training and subscription fees, on the other. Although subscription is often waived for translation students, a cloud environment for practical translation classes has a major advantage on standalone software: students can continue working on projects wherever they are; they only need a login and a wireless connection. In a contemporary translation Masters teaching environment, students get course material delivered through a cloud-based online learning platform (Blackboard, Moodle…but also MOOCs[17]), access online software for terminology management (Termwiki, TaaS…), use translation memory systems online (Wordfast Anywhere, XTM Cloud, MemSource…), often with a live link (through an Application Programming Interface) to an online machine translation engine (Google Translate, Microsoft Bing, SDL Language Cloud, Matecat, LetsMT!...) and acquire experience in translation management processes (MemSource, Lingotek…).

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[16] See also Rothwell and Shuttleworth 2001, Declercq 2006b, Bowker 2008 and Santoro 2010.

[17] Like Blackboard and Moodle, a MOOC (Massive Open Online Course) is an online platform also aimed at learning, but in a non-restrictive setting. MOOCs aim at unlimited participation through web access. They are data-driven and provide educational data and metadata to provide a better insight into how people learn.

However, changing proprietary standalone solutions for free, open or cloud-based systems means leaving a safe haven of support behind. For Translation Studies programmes, teaching lab support is usually a combined effort shared by the department's IT person responsible for the lab, the module convener or tutor teaching a particular tool and support by the software provider. Cloud-based systems take away a lot of the industry support and, as with FOSS tools, replace it with community support. This also means that the people who used to be involved are less prominent. Student expectations of the trainer gradually shift to the online community. These peers no longer come in the shape of students from the same Masters course alone, but in the form of complete strangers: user groups, forums, translation portals, topic-specific social media (such as the SDL group on Linkedin). Despite the multitude of new practices, a framework of pedagogical considerations can be put in place.

Whether Master courses in translation opt for a year by year approach or not, in which the inclusion of new (versions of) tools into the curriculum is stipulated well before the start of the new academic year so as to anticipate compatibility hiccups, or choose a more ad hoc uptake of new technology, the key drive in translator education and technology concerns transferable skills. Extending translation technology skills beyond one or two tools adds value to a respective student's profile. The "ability to engage in critical analysis and problem solving" (Bowker 2008:31) is extended by moving from one platform to another. This can be done through sharing a translation project across various TM tools, knowing how to export and import TM content, rightly gauging the issues of industry standards and potential noise in leveraging depending on the TM tool of choice. This is quite the point of view expressed by O'Brien and Kenny 2001, who position the choice of tools within a skills versus knowledge debate, in which "the ability to evaluate and to learn to use" (Bowker 2008:33) CAT tools is prior to use only. This is similar to the importance Rothwell and Shuttleworth (2001) give, not just to procedural exercises ("which buttons to press to accomplish a particular task"), but also to conceptual analysis ("how the product has been engineered to accomplish a particular task, and the advantages and disadvantages of doing it that way") (Rothwell and Shuttleworth 2001:17). CAT tool selection, evaluation and usage by students need to be based on a fit for purpose approach and should therefore be highly pragmatic, functionalist and utilitarian. One could hardly manage the industry requirements for professional skills during education any better.

Three work processes become clear. With recent trends in translation technology, such as light versions of proprietary tools, FOSS applications and cloud-based systems, a TS programme's lab range of software can be mirrored at a student's home pc or laptop. Traditional homework now extends to practical knowledge and experience of tools. Many subtasks can be transferred to a setting in which students can access 'subtasks' remotely. This then adds to the itemisation of translation projects, but also effectively creates a distance problem-based learning approach that leads to a more individual-based critical analysis of concepts and group-shaped transferable skills of procedures.[18] With increased technological capabilities, translation students find themselves part of a continuum that moves from individual work (mimicking freelance work) over small community (group projects) and larger community (peer support for a specific tool) to a crowd (the online forums and the like). Trending topics in the translation industry such as community and crowd, have been around in slightly different forms for a long time, so it should therefore be easy for Masters courses to incorporate them, making them even more closely aligned with the latest trends.

4. Crowd and community

> "In my 21 years working in localization, I have never ceased to be amazed at how inefficient the traditional desktop paradigm is for a highly collaborative environment such as translation." (Zydron 2012: 20)

Incorporating the concept of crowdsourcing into TS is straightforward. Whereas crowdsourcing is the outsourcing of a task (or several tasks at the same time) to an undefined, generally large, group of people or community,[19] mutually connected through an e-medium, the use of TT in

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[18] Critical analyses possibly run along the lines of the following questions: Are there any differences between standalone applications and cloud-based systems in an approach to the translation memory functionality and if so, why do you think this is? To what extent have XLIFF files replaced TMX compatibility, or not? And how do you view the position of SDLXLIFF files in this? Performing a quality assessment translation of crowdsourcing efforts such as Facebook Translation and Transifex, which evaluation metrics would be able to assist you in this? Is it possible to gauge whether or not any of the translation provided was based on MT output? How can you, as a trained translator, maintain an added value over MT output and crowd-sourced translations?

[19] In an ideological way, crowdsourcing falls well within the spirit of utilitarianism, the belief that the action is to the benefit of a large number of people.

TS programmes has already lowered the threshold for including that concept. Without exaggerating too much, sharing an SDL translation memory on a network drive, a Wordfast Anywhere TM online or working on a large translation project in a group, editing its contents and adding to it, are all examples of limited crowd-sourced efforts: sharing tasks in a small group of people or within a restricted community of a few dozen Masters students. In the end, a group of translation students working on the same file together at the same time involves a similar amount of peer assessment as, say, Facebook Translation does for one language.

For example, about 70 translators were active in the period mid-May to mid-June 2014 for Facebook translations into Dutch. However, the overall bulk of translations was covered by about two dozen people only. A handful of people provided more than 10,000 translations for free. Most of them voted for translations as well, increasing or decreasing the value of suggested translations of Facebook interface strings. In smaller groups of students, some translators feel more comfortable with specific tasks and domains than others, whereas others are more confident with post-editing and reviewing. The interaction between, and peer support among, Masters students certainly adds value to a translation in a way that moving up or down a suggested translation with the like/dislike button cannot; but the collaborative level of the smaller community in the classroom is not that different from the marginally larger community of Facebook Translation users. This is confirmed by Muzii (2009), who adheres to the view that when a collaborative translation project follows "a typical crowdsourcing approach only the best translators in the project subject field are engaged, to work on their most productive side" (Muzii 2009:3). As such, crowdsourcing as a concept and activity should be embraced by the translation education community as an additional asset in translator training. What is also clear from the Facebook translation model is that crowdsourcing approaches reach out to a target audience previously uncatered for.

The driving purpose behind crowdsourcing is to create demand and visibility: crowdsourcing is a method of production. Serving markets that were under-served previously increases the value of a corporation, a brand or an idea. With the odd exception, such as the CrowdFlower and Mission 4636 in Haiti after the earthquake struck there in 2010,[20] any crowd-

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[20] "Crowdsourced crisis response harnesses distributed networks of humans in combination with information and communication technology (ICT) to create scalable, flexible, and rapid communication systems that promote well-being, survival, and recovery during the acute phase of

sourced effort, which is generated by a company, has an eye to an increase in productivity and as a way to access a potential workforce. This allows the company to obtain a business result at virtually no cost other than the implementation of the crowdsourcing platform. However, the cost of creating a translation crowdsourcing platform and putting it in place might not compensate by what is saved on translation costs. A return on investment (ROI) needs to be in place in the long-term in order to justify the creation and/or presence of the crowdsourcing platform (Muzii 2009:3).[21] But the amateur-translator will hardly enter the world of the trained translator. Provided amateur translators aim to produce *fit for purpose* translations and that they don't behave like cowboys, these amateurs will only nibble at the edges of the ever-increasing pie of content waiting for translation. With their more in-depth background in the issues that come with translating, trained and professional translators will always retain their edge as better navigators across language divides.[22] However, crowdsourcing translation is not a trend that will fade. The main task of the TS community and its graduate students is then to repeat the mantra that the outcome of a (translation) crowdsourcing effort is not done by specialists or people who have been trained for the purpose of achieving a quality output.

An example of a collaborative platform is Transifex, an "open service allowing people to collaboratively translate software, documentation and other types of projects straight from the project's source" (Transifex 2011). Even though the initial idea might have been to set up a proper translation crowdsourcing effort, Transifex also offers a platform for people who can post translation jobs perfectly anonymously, hoping to get the work done for free by amateurs and professionals alike. The translation into Dutch by a user called *Siebrand* was verified by three native speakers and deemed to be good. Even Facebook Translation allows for more identity and interaction than Transifex, which aims for more varied and 'professional' translation.

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an emergency." A recent experience of such a response is one "in which CrowdFlower conducted crowdsourced translation, categorisation and geo-tagging for SMS-based reporting as part of Mission 4636 after a 7.0 magnitude earthquake struck Haiti on January 12, 2010". (Hester 2010: 1)

[21] To that extent it can be argued relatively easily that the Google Translator Toolkit offers a vehicle for stealth crowdsourcing, whereby user-verified data can be used to train systems.

[22] This is precisely the point often made by David Katan (2014) "…that translation *is*, in fact, intercultural communication".
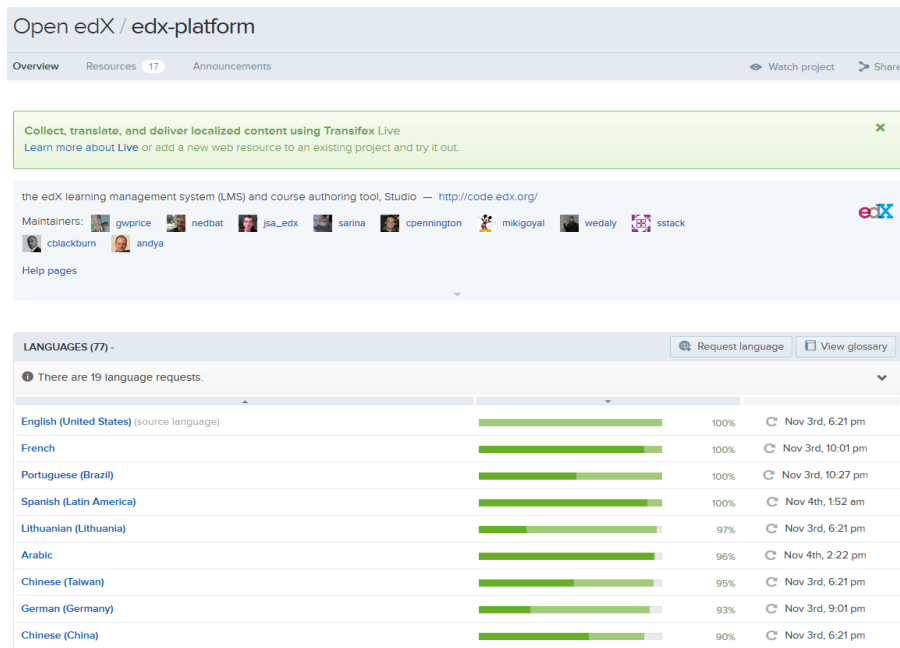
Figure 1 – Dashboard in Transifex for the Open edX platform, an open-source e-learning platform crowdsourced into 19 languages.

Although the identity of the maintainers of this Transifex project can be traced easily as they are related to the edX project, members of the Transifex community with similar IDs are less likely to be 'traceable'. The light green bar concerns translation, the darker green reviewing. French, 100% translated is nearly fully reviewed.

This lack of user verification is an advantage for translation students and the TS community at large as the Transifex model of translation crowdsourcing still leaves plenty of leeway for a combined 'training the client' and 'raising awareness' effort, not least for the likely need of proofreading and post-editing. However, not all members of a user community see contributing to crowdsourcing as an honourable thing to do and there are amateurs about who aim to earn kudos points quickly just by uploading machine translated strings. Luckily, Transifex allows for a review round to be included.

Figure 2 – Detail of one of the 17 resources in need of translation, into French here, for 1186 strings. Translation of strings like 'Discussion', 'Advanced' and 'Unit' easily allow for post-edited machine translation input. This also makes clear why 'cowboys' can be around too.

When the element of machine translation is added to translation crowdsourcing, the role and position of the more traditional translator (trained in a TS programme) in the chain initiator-crowd-MT is unclear, if not absent. Drupal, the successful free and open source content management system, for instance, offers a free Application Programming Interface (API) to what it calls a translation framework, a machine translation setting that "does not attempt to be a replacement … since machine translation is just not that good … The module is just there to provide a basic translation that people can then alter if they wish in order to make it correct". [23] TS programmes should act and move in on all this. Proofreading and post-editing will be needed for crowd-sourced efforts and not just for machine translation, but the addition of machine translation to crowdsourced efforts affects the range of future opportunities for human translators.

5. Free but not without human cost

"So we can all go home now?" (Katan 2010)

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[23] As per drupal.org (last accessed 24 June 2014), more machine translation plug-ins (Lingotek, SDL BeGlobal, TMGMT etc.) can be found through Drupal's 'Download & Extend' page, available from https://www.drupal.org/download (last accessed 30 October 2014).

Given the boost the world of automated translation received with both Moses and Google Translate from 2007 onwards, the image of translation, both as a process and an end product, has changed for the good. Yet, people in the field of TS have difficulty in acknowledging this. Machine translation is and remains a difficult topic for colleagues to discuss, let alone incorporate into the curriculum in a sound manner. It can even be argued that the period of what was euphemistically called 'gisting', using MT for basic communication purposes, is nearing its end for a limited number of language pairs (often language pairs that include English and a FIGS language - French, Italian, German or Spanish, but also Dutch). The quality of Google Translate can hardly be used in proper translation contexts, but the use of statistical machine translation like the customisable cloud-based KantanMT and MT uptake through apps clearly proves that, however much the quality of the output falls short of the acceptable, the output is deemed by millions of mobile phone and online users as fit for purpose. That is a paradigm.

This is a major concern for translation trainers. It would be better for the TS world to come to terms sooner rather than later with the fact that more and more translators and translation jobs will involve post-editing of amateur or MT output. Maintaining the quality of MT output is an aspect that is currently more or less absent from most Masters courses in translation. Understandably, the world of literary translation, cultural transfer and contrastive analysis is much more diverting from a humanistic perspective, visualising differences between near translations and raising critical awareness in students, but teaching it lacks weight in terms of transferable technology skills. In fact, in 2010, at a conference in Trieste on new pathways in translation, David Katan, who had been listening to the discussion regarding the increasing automated future for translators asked whether all the translator educators should go home now. At the time, the changing role and the competences required was not the focus of intention. Indeed, Terence Lewis, a member of the ITI who has been involved with the translation industry for 40 years, replied to a related blog post by stating that the merged TM-MT systems would be something every new translator had to take on board. He added that he had been claiming this since the 1990s and had been regarded as "nuts".[24]

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[24] Terence Lewis, a reply to "So we can all go home now?", CenTraS blog post, 24 June 2010, available from http://centrasucl.blogspot.be/2010/06/so-we-can-all-go-home-now.html (last accessed 16 November 2014)

Although the following figures are dated, the fear of and, as a consequence, the lack of automation is confirmed by statistics published by the Common Sense Advisory, who in May 2009 estimated that of the 300,000 professionals earning their living in translation, many used fewer automated processes than they could and should (Muzii 2009: 4). The focus on the future uptake of wider professional and educational classes has been confirmed in more recent reports, such as the Meta-Net Strategic Research Agenda for Multilingual Europe 2020 (2012) and the Translation Technology Landscape Report by LT-Innovate and TAUS (2013). The former stipulates that Language Technology is a key enabling technology for the next IT revolution that will help to overcome language barriers. The latter sees a convergence of cloud, crowd and big data take to the stage in front of the wider language technology audience.

We can ponder the pedagogical and practical considerations associated with the use and implementation of language and translation technology in Translation Studies programmes for a long time to come, but we should not overlook a hugely important element in all this: the students themselves. In line with online developments of user-driven data and community-based needs, the profile of the post-Google Translate and post-Facebook Translation era Masters students in translation has changed equally substantially in the past few years. Students have become dangerously tech savvy. Gone are the days of library shelves; the wired up generation of students spends an average of 5+ hours a day on a digital screen (online, mobile or other) and only a fraction of this is television. The incredible leap in virtual interaction through social media networks has moulded a generation with a profound sense of e-community, a prerequisite to susceptibility to crowdsourcing ideas in the first place. Additionally, they are members of a global community that accepts machine translated content for their apps or tweets as long as the quality fits their purpose.

Ideally, in a Translation Studies programme today, there will be an increased use of online learning, and tools will be interactive carriers of multilingual content (TM's go viral and infect MT training, for instance). Existing 2.0 technology is already being increasingly exploited, with collaborative technologies becoming ever more pervasive. One of the main trends is the increasing reliance on online usage-based subscription models, in which users go online to access language and translation technology for their translation needs. XTM Cloud, Lingotek and Geoworkz are among the prime software packages and service platforms,

embodying the next step in technology uptake by the wider professional community and providing a valid and qualitative alternative to translation crowdsourcing efforts.

All of this could be mirrored in TS by having community feedback on individual coursework, by sharing translation memories not only across institutions but also across national boundaries and by additional community building through the (re)distribution of communication content. Translation education must address the presence, use and implications of MT and consider a partial shift of the amalgamated transferable skills of the translation graduate and trained (amateur) translator towards a multilingual IT-skilled (post-)editor and supervisor.

Although papers like the current one should have a fitting conclusion, as with any academic text, the content presented here and the concerns that originate from the newer concepts in the broader language and translation technology, demand a more open-ended final paragraph. The conviction by Muzii (2009) that the "translation industry, and translators first, should rapidly adapt to freemium, offering basic services for free, while charging a premium for advanced or special features" certainly is not the most alluring prospect for a future translation student. But what is more worrying is that translation education does not properly address the issues accompanying current developments. Productivity skills might not be withheld from the curriculum, but with the web of user-generated content and social networking sites, translation has become a kind of reversed localisation. There a 'hive' translation, the outsourcing of web content translation to bilinguals within the community (Garcia 2009), sees the target users define the needs and desires of the target audience -- a very utilitarian approach.

Awareness must be critical if possible, but practical for sure. [25] A completely utilitarian or even just consequentialist approach should be included in 21st century technology-based translation education. In order to overcome risk aversion in education and include a better defined sense of direction towards future use of technology in translation, the functionalist approaches by Vermeer and Nord should be supplemented by the utilitarian ideologies of Jeremy Bentham and John Stuart Mill. There is a lot of work ahead still, challenging and incredibly interesting stuff. Clearly, we're not all going home just yet.

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[25] For more practical details, please see Muegge 2013.

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