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Chelo Vargas Sierra et Laura Ramírez Polo

The Translator's Workstations revisited: A new paradigm of translators, technology and translation.

Résumé

Thirty years after the publication of Martin Kay's classic paper about the proper place of men and machines in language translation, the relationship between translators and technology is changing dramatically. In this paper we explore the changes that have occurred during the past thirty years as well as the evolution of translation studies towards the inclusion of technology. Moreover, we analyse the new technologies that are changing the way translators work and we discuss the implications for training future translators. We finally propose a new learning model that aims at integrating these new technologies in a collaborative way to develop not only concrete skills, but rather a general computer savviness that helps students be ready for any future situation they might face.

Introduction

1 The idea of the translator's workstation has been present since the 1960s, when the availability of computers and their capacity were still scarce and limited. The ALPAC report published in 1966 (ALPAC, 1966) that analysed the state of the art on Machine Translation, criticised this technology harshly and recommended the development of tools intended to aid, not to substitute, the translator.

2 Other attempts in this direction have been made even previous to the 1960's and since then as Somers (2003:14) points out. The ALPAC report (*ibid.* 25-28) cites the examples of the German Federal Armed Forces Translation Agency (the Bundessprachenamt), that used computers to produce text-oriented glossaries, and the European coal and steel community in Luxembourg, which established a terminological bureau in 1950 that developed a system for automatic dictionary look-up with context included implemented as a sort of automatic term recognition, where not only terms, but also fragments and phrases were stored. Hutchins (1998: 293), who makes an excellent review on the origins of the translator's workstation, mentions the efforts made at the IBM Research Center at Yorktown Heights, where Erhard O. Lippmann did research into the possibilities of time-sharing and computer-aided translation.

3 Later on, during the 1970s, on-line multilingual term banks such as Eurodicautom (now IATE) and Termium as well as programs for individual terminology management came out. At the end of this decade, the first proposal of a translation memory was made by Peter Arthern (1978), in which previous translations of the European Commission were stored and could be retrieved afterwards as a function of their similarity to the current text to be translated.

The Translator's Amanuensis

4 One of the key moments in the development of the translator's workstation was the paper written by Martin Kay, in which he combined a critique to machine translation and the proposal of a new way of working for translation professionals. Although it was not until 1997 that Martin Kay's article was published in *Machine Translation*, this seminal paper was first published in 1980 as an internal report by Xerox (Kay 1980/1997).

5 As we have seen, many of the components that shaped Kay's translator's workstation can be traced back over 40 years. However, Kay's contribution consisted in making an integrationist proposal in which machines would gradually take over certain repetitive functions in the translation process.

6 The Translator's Amanuensis, as he called the device that would satisfy the translator's needs and that he thought would never exist, was a network of terminals linked to a mainframe computer, since there were no microprocessors or personal computers at that time. It was divided at various levels: first of all it included a special **text processing editor** where text was shown in a split window, the upper one for the original text and the bottom one for the translation. The translator could select the words, letters, sentences, lines or paragraphs. In addition, this editor allowed copying the original text in the bottom window to allow the translator to rewrite it with the version in a different language, suggesting an "alignment" between the original and the translated segments. There was also a replace command.

7 On a second level there were some ad-ons such as a **dictionary**, which the translator could consult if needed by selecting the word in doubt. The entries of this dictionary had different levels of information (syntactic, semantic) as well as different translations for the same source term. It had a memory function, so that when the term was consulted twice, the dictionary would "remember" the level of information that was last checked and the selected translation. The translator could edit entries and the dictionary was equipped with a stemming function, so that derived words could also be recognized. The dictionary was divided into a local store and a main part. In the local store the translator could save the words that might present some difficulties and retrieve them when needed. Besides, he could see all the units of text that contained that word or expression. This dictionary could also be used for consistency checking, to guarantee that the same term was always translated in the same way. He also devised a kind of **database** with present and past material that the translator could examine before he started his work to check the relevant fragments. A **mark-up system** was also suggested, in order to highlight difficult or unclear words that the translator would like to approach afterwards. If a change occurred in one of this marked words, the change was **propagated** in all other fragments where it appeared, adapting the morphology if needed.

8 Finally, on a third level, he envisaged the integration of **machine translation** (MT) in an interactive way, so that the translator was always able to decide how to intervene in the process at any point. Besides, the system was able to "learn" from corrections and the decisions of the translator, so that if something was changed or the user had to choose

between two alternative translations for a single term, the next time the same difficulty arose, the system would respond according to the modifications made.

9 Since the 1990s and to the present day, most commercial MT and Computer-Assisted Translation (CAT) tools have incorporated these ideas. Hutchins (1998:289) describes that a workstation intended for the professional translator includes the following set of integrated facilities: “multilingual word processing, OCR scanning, electronic transmission and receipt of documents, spelling and grammar checkers (and perhaps style checkers and drafting aids), publication software, terminology management systems, software for concordance and text analysis, access to local or remote termbanks (or other resources), translation memories (TM) (for access to individual or corporate translations), and access to automatic translation software”.

10 Somers (2003: 14-29) includes as part of the translator’s workstation the word processor with functionalities such as a word-count, a spell-checker or a thesaurus; lexical resources such as on-line dictionaries, term banks and encyclopaedias, as well as a translation memory and other corpus-based resources such as alignment functions and concordance search.

The new information society: changing paradigms

11 The development of the translator’s workstation, as it has been described, was due to three main factors: on the one hand, the parallel research on Machine Translation, that evidenced the necessity of special tools for translators that would assist them on their work. On the other hand, the changes caused by the introduction of the computer and the information revolution in all industrial areas implied an increase in the information volume as well as a speeding-up of the processes, which resulted in a need to automate translation tasks in order to cope with this huge amount of information, the high degree of specialization and the always pressing delivery times. Finally, there was a meteoric development in computer chips that made it possible to create more and more powerful computers in smaller sizes.

12 Indeed, this workstation model is still applicable and many translators work with a range of these tools, depending on their speciality and their computer literacy. It is also true, however, that the number of special tools for translators has been growing incrementally and that the 1990s brought a new technology that revolutionised and is continuously revolutionising our work processes and the way we interact with each other: the Internet.

13 During the first phase, the Internet implied an enormous advance in access to information and telecommunications. It was the time of the web 1.0, where only some content creators could publish and users were mere information consumers. There were mainly sites of big companies and public institutions. Besides, the introduction of e-mail meant a considerable step forward in telecommunications, allowing translators to communicate with other professionals and clients via the Internet. Gradually, more and more applications such as instant messaging and newsletters arose and were incorporated

to the translator's tools. The number of web sites grew exponentially and special resources were created for translators, especially term banks, glossaries and electronic dictionaries.

14 However, the big change of paradigm in the web came in 2004, with the beginning of what has been coined as 'web 2.0' (or social web), that is, a set of web applications that foster interactivity, interoperability and user-centred design. Suddenly, content creation stopped being the private reserve of a few and users took over the role of creators. The web 2.0 allowed them to interact, collaborate and share by means of social media in a virtual community where everybody could contribute. Examples of these types of applications include blogs, wikis, video sharing sites, social networks, web applications and web services, among others.

15 This new paradigm has radically changed the way the translator works. Indeed, we can distinguish at least three ways in which this change has materialized:

16 First, the information a user can access nowadays goes beyond anything one could imagine before the Internet era. Finding information is not a problem: everything is there, available to anyone that is able to discover it. However, this implies some problems: the ability and freedom that any user has to publish content has acted, not only on the detriment of the quality of information; but also, on the difficulty of discerning the appropriate information since it is often hidden under a mountain of rubbish or useless data. Therefore, it is essential for the future translator to learn how to discern the quality marks and to organize the accessible information. As Siemens & Tittenberger (2009) put it, learners should stop being mere content consumers and become, at least, content managers (if not content creators themselves).

17 Second, the new web applications have brought new ways of socialization for translators. The Jenner twins, freelance translators and bloggers, have published a book (J. Jenner & D. Jenner, 2010) in which they give useful advice to freelance translators. They dedicate a whole chapter to social media and the web 2.0 and speak about the opportunities these media can imply for translators. Generally, these media can provide benefits for two types of users: passive users and active users. Passive users are those who deploy these tools to be connected with other professionals and to be updated about the news on the field: they follow relevant people on Twitter, follow interesting pages in Facebook, have an important number of contacts in LinkedIn and are subscribed to mailing lists and blogs feeds to be up to date. Active users, contrarily, not only consume information, but also participate in creating content within these new social media: they author blogs and write comments in other's users blogs, tweet everyday and retweet any useful information they might find, enrich mailing list with their opinions and experiences, and some of them even write in specialized journals. All these activities render them enough visibility to be in the spotlight of the translation industry. As an example, in Spain some young translator bloggers¹ have made the most of these new opportunities offered by the web 2.0 and are gaining new job offers and chances to speak in conferences. This in turn makes them even more visible and their options to strengthen their professional position grow exponentially.

18 Lastly, the new paradigm has intensified the need to become more specialized and to offer distinctive services. García (2010) analyses the effect that machine translation and crowdsourcing on the amount of work available to translators. Some other areas such as journalism and photography have already gone through this phenomenon, and now professional translators can see themselves menaced by a group of volunteers that are ready to work for nothing. Besides, Machine Translation begins to represent a real threat to the professional status of the translator. According to García (*ibid.*) there seems to be on the one hand a move from machine aided human translation (MAHT) to human assisted machine translation (HAMT); on the other hand, the access to amateurs and outsiders is being facilitated by the increasingly usable design of machines used to translate as well as the design of special tools and platforms that support crowdsourcing as, for instance, <http://crowdin.net/>. As a result, translation is gradually seen more as a skill of highly educated bilinguals than as a profession, alongside speaking, listening, reading and writing (Campbell 2002 in García 2010). This disintermediation between information and users caused by machines can be approached in two distinctive ways: either avoiding them and specializing in areas where machine translation and crowdsourcing cannot (yet) seize the translator; or embracing them and learning new skills that complement the translator and lead them to new or mixed professional profiles. Examples of these new profiles include pre-editors and post-editors (reviewers of machine translation input and output), linguistic consultants, quality assurance experts, and machine experts, including the development of skills involved in designing, operating and maintaining natural language processing machines etc.

19 These three changes make it evident that the new paradigm has brought about a dramatic shift that needs to be reflected in the way we train translators if we want them to be competitive enough and to have an opportunity to survive as professionals in the future. Therefore, we need to cogitate what kind of technological skills a forthcoming graduate needs to develop and how these can be transferred in a workstation that covers all these new aspects.

Translation Studies and Translation Technology

20 The introduction of technology in translation studies has been present practically since their establishment and has gained ground with the time. A perusal of the first official syllabus of translation studies in Spain which dates back to 1991 shows that it already included an obligatory course called “Informática aplicada a la traducción” (Computing applied to Translation) for the third year with a dedication of 6 credits (around 60 hours).

21 Since then, many faculties have also included additional courses for training students in basic information technology skills to leave space to more specialized contents in the translation technologies course, including the use of corpora, terminology management tools and translation environment tools.

22 Nowadays, all modern degrees in translation and interpreting or intercultural communication in Spain include at least one course in technologies and many of them

include two: a general course on general information technologies in the first year and a more specialized course on CAT tools in the second or third year². Further, there is a number of Masters and Postgraduate degrees on translation technologies and localisation, which aim at training future professionals to work in the field of technical translation and to create new profiles in the translation industry.

23 We are aware that this situation is not the same in all countries where translation studies are established, such as Dal Dosso (2007) illustrates in his work on the introduction of technologies in the syllabus of the Universities in Argentina.

24 As Rico (2002) points out, the University should not be at the mercy of the labour market and become a factory of professionals tailored to the needs of every company. However, it must try to harmonize the requests of the professional world with the development of abilities that enable the student to reason and to adapt to a constantly changing technology, as well as skills that allow the development of their intellectual capacity.

New Technologies

25 During the last decade, the Information and Communication Technology (ICT) industry has experienced a continuous surge together with the worldwide web, which has gone a step further and is being improved with new and emerging applications, like evolving technology infrastructure as Web 2.0, as we mentioned above, in which the key features are its orientation towards users, collaboration, asynchronous processes, and remote operations. ICTs basic function is to make communication and information transmission and processing easy, but also to be used as a useful tool in social interaction and in shared knowledge construction. Among the services and applications the Web 2.0 offers are social networks, blogs, wikis and podcast; all of them promote collaboration and information exchange among the users..

Social Networks

26 As it is known, social networking sites (SNS), like Wikipedia, Facebook, Twitter, LinkedIn, have become a global phenomenon and are producing profound effects in many spheres of human activity, especially in the way interaction with others is conducted and how content is distributed across the internet.

27 Social interaction is a fundamental aspect in knowledge building in general, but also in translation, since the exchange of specific information and opinions may help translators solve translation-related problems, stay up-to-date in any professional issue and develop and build on their knowledge and expertise in the field. Once translators join a specific community, they have the possibility to build up relationships with colleagues, clients or vendors right across the globe, to publish content about their interests and concerns, collaborate with those who share these common interests and create new content actively, which may have more widespread repercussions. A community of translators using SNS to translate jobs has a significantly stronger relationship with much

more interaction and a common purpose. In both ordinary and professional contexts, social networking has become a way of facilitating communication, sharing experience and learning

28 According to Digizen³, an organisation which promotes safe activities on the web, SNS can be categorized in the following way:

- a) Profile-based, which are organised around members' profile pages. Examples are Bebo, Facebook and MySpace.
- b) Content-based, in which the posting of content plays the main role. YouTube, Shelfari, Scribid, SlideShare are good examples.
- c) White-label, which offer members the possibility to create their own social network for a particular topic or need, catering to specific membership bases, like Elgg, Spruz, Grou.ps, Ning, etc.
- d) Multi-user virtual environments, which allow a virtual representation of the user to interact with each other's avatars (sites such as Second Life).
- e) Mobile social networks; members interact with their personal networks via mobile phones.
- f) Micro-blogging/presence updates, such as Twitter and Jaiku. The users can publish short (140 characters, including spaces) messages publicly or within contact groups.
- g) Social search, like Wink and Spokeo, which allow the user to search across the public profiles of multiple social networking sites.
- h) Another category to add to the previous list will be business-oriented social networking site, mainly used, as its name suggests, for professional networking. This is the case of LinkedIn, Xing, Talkbiznow and the like.

29 Needless to say that translators can use all these types of SNS not only for professional activities, but also for their personal interests. The most common uses applied to business-like contexts are the following:

- a) Viewing content and/or finding information.
- b) Getting professional benefits and jobs.
- c) Promoting and monitoring their profession-related position, and creating and developing an online presence.
- d) Connecting with existing networks, making and developing contacts.

- e) Creating, sharing and publishing their own content.
- f) Keeping up to date with profession, research, tools and techniques.
- g) Collaborating with other translators by solving doubts, giving information, etc.
- h) Building and maintaining relationships.

Cloud Computing and Collaborative Translation

30 Another web concept is the ‘ubiquitous web’ (web 4.0), which pays particular attention to ‘technologies to enable Web access for anyone, anywhere, anytime, using any device’⁴. From this web concept, some new ones have developed, such as ‘cloud computing’ and ‘collaborative technology’. The first one refers to “both the applications delivered as services over the Internet and the hardware and systems software in the data centres that provide those services” (Armbrust et al. 2010). Collaborative technology enables concurrent users who may be geographically distributed to work on a common project. Therefore, it is possible for almost any task to be done via the computer and over the web. This technology has been adapted for translation processes as well. Cloud-based SaaS (software as a service) translation environments and collaborative workstations have already been made available on the market. These collaborative translation platforms offer a new vision of the working process, since they allow multiple translators and others (reviewers, proofreaders, experts) to work on a single document at the same time while keeping track of the whole process. Several well-known companies used this concept, like Google, Sun Microsystems and even Facebook, whose Spanish and German websites were voluntarily translated by its own members.

31 Along with the traditional translation and revision processes a community way of working has come out. As stated in a previous article (Vargas, 2011):

In collaborative translation, two or more people are working together on the translation of the same source text; both the construction of meaning and the production of the target texts emerge as a result of one’s own personal cognitive process, but supported by the constructive interaction among the team members that results in a case of optimized synergy.

32 Désilets (2011) specifies the possible uses of collaborative technologies in translation. From his classification, we have divided some of these technologies into two principal groups, according to translator’s role when interacting with them:

- Active, in which the translator has to collaborate in the creation or edition of texts or terminology records. In this category we include :
 - Collaborative translation workflow systems that allow all the parties involved in the project community (client, project manager, translators, subject-matter experts ...) work on translation projects at the

same time and improve or suggest better translations while keeping track of the whole process.

- Collaborative terminology management systems, a wiki platform and/or web-based database environment where terminology records can be created, edited and made available to the project community.
- A crowdsourcing Internet marketplace, like Amazon Mechanical Turk, in which every task is called a HIT (Human Intelligent Tasks). This site provides a way to pay people small amounts of money to perform tasks that are simple for humans but difficult for computers. Examples of these hits regarding translation range from evaluating machine translation quality to correcting or translating a few sentences.
- Passive, in which the translator receives a benefit or resource of different kind:
 - Translation memories repository: a web-based platform where translation memories coming from different sources are stored and shared.
 - Online marketplaces for translators: a web-based platform to connect clients with translators.
 - Any collection of electronic resources for translation.

Machine Translation

33 Machine translation is a technology with a long tradition and has surmounted many obstacles during its short but intensive life: from the initial enthusiasm at the dawn of its development in the 1950s, to the crisis triggered by the ALPAC report in 1966, and finally with many groups and initiatives in Europe, America and Asia devoted to its research and development during the past 50 years.

34 Though this technology has been and is still seen by some professional translators as a threat to their status, the truth is that it has stealthily conquered some areas in which human translation is not able to offer the competitive advantage that Machine Translation does: quick information *gisting* on the web in languages unknown to the user, chat and instant messaging translation and quick translation of short documents and web pages for internal use. Furthermore, machine translation is becoming a true alternative and an integral part of the (computer-assisted) translation process for many companies, as well as a true performance enhancer for big projects and settings where human translation is not practical. Without question, this increased acceptance is encouraged, among other factors, by new methods and resources as well as by its divulgation and easy access through the web.

35 Post-editors or machine translation engine managers are new professional profiles that a translator could undertake if properly trained. Therefore, its integration into a new learning model for translators seems to be necessary without doubt.

A new learning model: TWITT (Training Web Interaction and Translation Technologies)

36 Translator training programs around the world have acknowledged the place of new technologies in the profession by incorporating one or several subjects about technology for translation into the curriculum. The subject 'Translation and ICT' is considered as a new discipline by some authors (Fernández, 2003; Piqué, 2002, among others). Piqué (*ibid.*) defines it as a subject that includes the knowledge arising from information science, terminology and computing applied to translation. Therefore, as the author claims, we must include here the teaching-learning process of new technologies involved in the translation process.

37 The inclusion of translation technology in the curriculum implies that students have to deal with a new way of learning: on the one hand, they face multiple and diverse information sources they have to make sense of and, on the other, they are not only mere consumers of information, but also content creators or, at least, content organizers (Siemens & Tittenberger, 2009). Further, it is also necessary that translators develop the so called 'computer savviness' so that they can continuously adapt to the different technologies available now and in the future. This implies knowing:

- a) how to find, manage and store the necessary information in a quick and effective way and making sense of it even if it is often found in a fragmented and scattered way.
- b) the available and current translation technology to set up the ideal workstation.
- c) how to use both translation technology and ICT, making the most of them for the improvement of their routine professional activities.
- d) how to use social media to increase their job opportunities and access to information.

38 Basically, the translator's training in new technologies usually deals with the following items:

- Introduction to new technologies.
- Internet for communicating and finding specific information.
- Electronic dictionaries and terminology database management systems (online/offline).
- Corpora resources and exploitation for translation (online/offline).
- Computer Assisted Translation (Translation memory systems)

39 As we can see, some of the current issues related to collaborative translation and the social web are not on the previous list. We are referring to collaborative tools (wikis, blogs, project specific groups/forums/chats created by the server translation tool...), browser-based editing, content creation tools, online translation tools, and the like. Consequently, a new learning model has to be applied in order to allow students to deal effectively with technology in their work environment and to make it adaptable to the innovations that might arise. Even if we are only highlighting some social and practical skills, we think that the incorporation of new technologies for translation into the curriculum has made the creation of an ideal environment possible where students and

lecturers can do research in different pedagogical, translational, terminographical, intra-/inter-textual or discursive features with the aid of these tools, as well as to study or contrast their quality and/or their interaction with translators.

40 The possibilities that new technologies provide for teaching can favour the introduction of innovative features in methodological aspects related to the teaching and learning processes (Gros, 2000: 18). The reasons why this new scenario changes the learning models may lie, among others, in:

- An unlimited access to resources for learning on the Internet.
- The asynchrony of communications, which facilitates collaborative activities with no risk for individual autonomy.
- The possibility to create virtual learning environments, which allow bidirectional communication and provide synchronic or asynchronic socialization and interaction among the different learning and teaching actors (students, lecturers, group)
- The development of cooperative or collaborative group activities, which enrich individual or group work, and allow knowledge to be acquired in a constructive way and with a strong social interaction.

41 With the aim of integrating the advantages technology offers and the new applications, tools and workflows that the web has introduced, we suggest a new model, which is still under development, called 'Training Web Interaction and Translation Technologies' (TWITT). It is based on the development of several skills that are a result of the application of some factors into the class context, i.e., a collaborative attitude, a self-directed learning and an acceptable level of professional and technological skills useful for the different roles translators may play within the translation process. In this model, the students use different ICTs to collaborate with each other by sharing materials, information and knowledge with the aim to get pedagogical and social benefits during the course, which in turn fosters their motivation since they feel they are taking an active role in their own learning (Ramírez Polo and Ferrer Mora, 2010: 32).

42 This model has the form of a staircase (Figure 1). In every step, two types of skills are shown: on the left the skills related to technical understanding and management and, on the right, the skills concerning translation ability in an electronic and collaborative environment. It is divided in 5 phases, as the following figure shows:

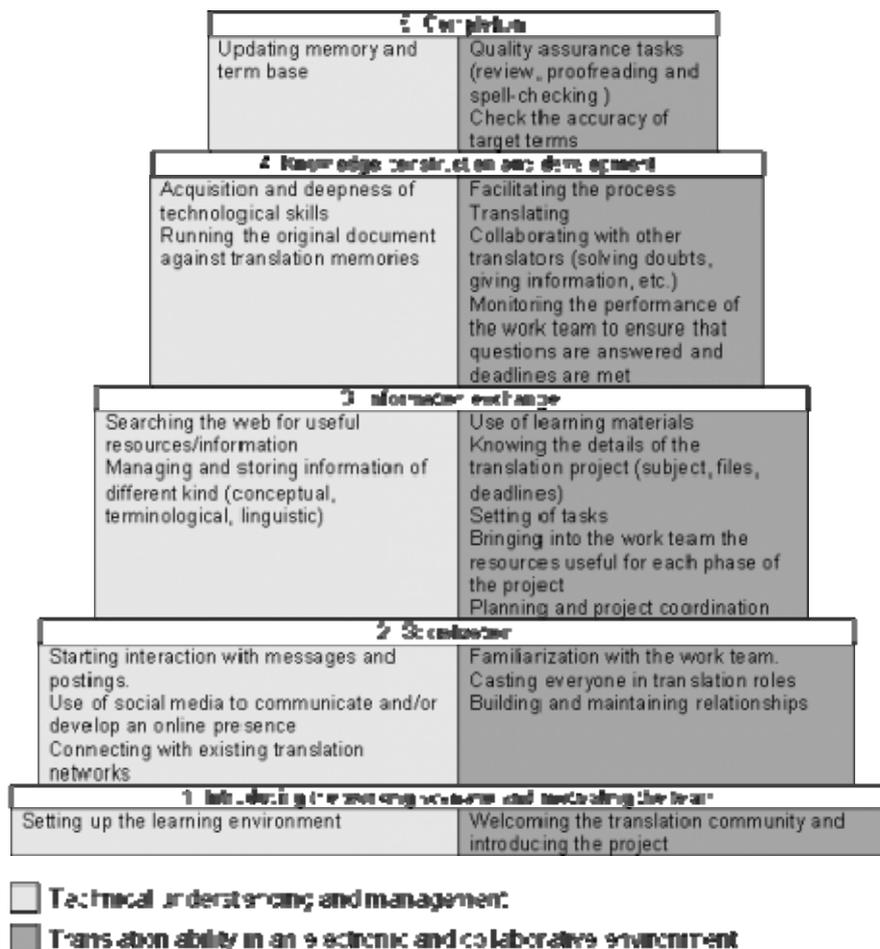


Figure 1 : TWITT Model

43 As it can be observed, this new model presents a hierarchical way of learning in which the new concepts introduced are based on general skills developed by the student in previous phases, so that at the end of the process the student is actively using all of them. The emphasis is put on the community, the socialization and the information exchange with their equals and with the lecturers and other experts as the basis of their education to acquire more specific and technical skills in later phases.

Conclusions and future prospects

44 The translation workstation as it was devised four decades ago is changing very rapidly due to the new technologies on the Internet that are being developed in every professional area. Not only have new tools and applications been developed, but processes are modified by new attitudes and skills towards the translation task: collaboration and information sharing seem to be the new paradigms. Consequently, translation training needs to reflect these new trends. We have introduced a new learning model that aims at integrating these new technologies into the education of future

translators, however, the goal is not to develop concrete knowledge about one tool or the other, but rather to encourage new attitudes and skills towards technology and computers based on the new trends that will enable them to adapt to every new situation in the future.

45 We aim at continuing to develop this learning framework and to suggest a new translation workstation that allows the integration of new technologies and that is open and flexible to any innovation. This might include not only new tools and workflows, but also new platforms, such as smartphones or tablets, devices that are slowly seeming to take over the place of laptops and home computers and that are also changing the translator's workstation.

Bibliography

ALPAC. (1966), « Language and Machines — Computers in Translation and Linguistics » (A report by the Automatic Language Processing Advisory Committee, Division of Behavioral Sciences). Washington, DC: National Academy of Sciences, National Research Council.

Arthern, P. J. (1978), « Machine translation and computerized terminology systems: a translator's viewpoint ». In B. N. Snell (Ed.), *Translating and the Computer: proceedings of a seminar* (pp. 77-108). London, UK: North-Holland Publishing Company.

Campbell, S. (2002), « Translation in the Context of EFL - The Fifth Macroskill? » *TEFLIN*, 13(1).

Dal Dosso, H. R. (2007), « La inclusión de las TIC en los programas universitarios de formación de traductores de la argentina » (Trabajo de investigación). Universidad de Granada, Granada.

Désilets, A. (2001), « Wanted: Best Practices for Collaborative Translation ». Available from: <http://www.translationautomation.com/images/stories/pdf/wanted-best-practices-for-collaborative-translation.pdf>

Fernández, M. (2003), « E-Tradumática. Fonaments pedagògics i didàctics per a l'ensenyament de la tradumàtica a distància ». Barcelona: Universidad Autónoma de Barcelona.

García, I. (2010), « The proper place of professionals (and non-professionals and machines) in web translation ». *Revista Tradumàtica*, 8.

Gros, B. (2000), « El ordenador invisible : hacia la apropiación del ordenador en la enseñanza ». Barcelona:Gedisa

Hutchins, J. (1998), « The Origins of the Translator's Workstation ». *Machine Translation*, 13(4), 287-307.

Jenner, J., & Jenner, D. (2010), « The Entrepreneurial linguist: The Business-School Approach to Freelance Translation ». El Press.

Kay, M. (1980/1997), « The proper place of men and machines in language translation ». *Machine Translation*, 12(1-2), 3-23.

Piqué i Huerta, R. (2002), « Apuntes para un modelo pedagógico de enseñanza a distancia de la tradumática ». Barcelona : Universidad Autónoma de Barcelona Available from http://www.fti.uab.es/tradumatica/papers/articles/80_esp.pdf

Ramírez Polo, L., & Ferrer Mora, H. (2010), « Aplicación de las TIC en Traducción e Interpretación en la Universidad de Valencia : experiencias y reflexiones ». *redit : Revista Electrónica de Didáctica de la Traducción y la Interpretación*, 4, 23-41.

Siemens, G., & Tittenberger, P. (2009), « Handbook of Emerging Technologies for Learning ». Manitoba: University of Manitoba ». Available from http://umanitoba.ca/learning_technologies/cetl/HETL.pdf

Somers, H. (Ed.) (2003), « Computers and translation. A translator's guide ». Benjamins Translation Library. Amsterdam/Philadelphia: John Benjamins Publishing Company.

Vargas-Sierra, C. (2011), « Translation-oriented terminology management and ICTs: present and future ». In Suau Jiménez, F. and Pennock, B. (eds.): *Interdisciplinarity and languages: Current Issues in Research, Teaching, Professional Applications and ICT*. Bern: Peter Lang Publishing

Notes

¹ A good example is Mr. Muñoz Sánchez, whose blog *Algo más que traducir* (<http://algomasquetraducir.com>) is one of the most visited translation blogs in Spanish. It is subscribed by 782 users (74 via mail and the rest via RSS) and receives an average of 15,000 visits per month, has 2,921 followers in Facebook and [736](#) users follow this author in Twitter.

² Examples of these syllabus can be found at Univesidad de Las Palmas (<http://www.boe.es/boe/dias/2009/12/24/pdfs/BOE-A-2009-20814.pdf>), Universidad Complutense de Madrid (<http://www.boe.es/boe/dias/2010/06/29/pdfs/BOE-A-2010-10386.pdf>), Universidad de Murcia (<http://www.boe.es/boe/dias/2010/07/15/pdfs/BOE-A-2010-11346.pdf>), Universidad de Vigo (http://webs.uvigo.es/victce/images/documentos/Grao/Traducion/boe_plan_est_trad_e_in terpret.pdf) etc.

³ Available at <http://www.digizen.org>

⁴ Taken from <http://www.w3.org/UbiWeb/>. Last accessed on 1 February 2011