Riccardo Moratto
Taipei (Taiwan)

Translation trends in the 21st century: the role of trainers and the future of trainees. A Taiwan perspective

ABSTRACT

Translation trends in the 21st century: the role of trainers and the future of trainees. A Taiwan perspective

This paper is based on a previous focus group study carried out in Taiwan and presented by the author at the fifteenth international symposium of Interpreting and Translation studies in Tainan, Taiwan. The focus group research was on the use and misuse of MT (Machine Translation) by second-year university students. The rationale at the base of the study was that the Machine Translation Era (MTE) in which we are living calls for new challenging perspectives to enrich existing translation curricula and to investigate students' (mis)use of MT. In this paper, I will further emphasize the importance of the so-called "reverse approach" in translation training. The first part of this paper will briefly analyze the literature review on MT. Secondly, I will describe the results of the afore-mentioned study and its implications in translation training and translators' self-perception. Finally, I will draw the conclusions regarding translation trainers' new role/s in the 21st century and trainees' future challenges and opportunities.

Introduction

Over the past several decades significant developments have taken place in translation curricula and in the way machine translation (MT) is perceived both by students and teachers. Translation studies have been recognized as an academic discipline, within which other sub-disciplines may be outlined, including translation pedagogy and machine translation, which is also a sub-discipline of computational linguistics, thus making translation studies an inter-disciplinary academic field. (Moratto 2010c:1)

In a digitalized world where everybody has potential access to any document on the planet anywhere s/he might be, translation scholars should re-think the role of translation trainers, thus providing insightful new approaches for the benefit of trainees. In this paper I will purposefully not use the terms students and teacher (apart from the study report section) because the pedagogical theoretical framework of this study is the Communicative Translation (CT) approach in which trainees become the active center of the interactional implementation of the translation curriculum design and in which experiences should be shared and the trainer should not "teach" or instruct students on translation's "best practices" but rather guide them and present them with all possible translation tools, including MT, without subtly engendering any form of taboo or prejudice. Indeed, the study was carried out in a constructivist theoretical framework. The Communicative Translation Teaching (CTT) approach[1] derived from the Communicative Language Teaching Approach (CLT) posits that „the act of teaching/learning will thus not be a one-way transmission process: instead it will be a mutually beneficial process of sharing perspectives" (Kiraly 2000: 35).

In other words,

it is from the views of other group members that alternative perspectives most often are to be realized. Thus, sharing a workload or coming to a consensus is not the goal of collaboration; rather it is to develop, compare, and understand multiple perspectives on an issue, (Bednar et al. 1992: 28, as cited in Kirally 2000: 35)

so that „by picking up learners' ideas, re-contextualizing them, and reinserting them into the classroom discourse, teachers can provide students with valuable alternative perspectives on knowledge they already had"(Kiraly 2000: 39, as cited in Moratto 2010c: 8)[2].

The research question of this paper, and of the original study on which it is based, lies in the attempt of "lifting the lid" on the descriptive reality concerning the (mis)use of MT tools by university students working with the linguistic combination Italian-Chinese (Moratto 2010c).

Literature review

To the best of my knowledge, few studies in the literature have reviewed and analyzed students' perspectives on the MT issue, the primary users of these devices[3].

1| For further recent insights see Kiraly (2000), Liao (2009).

2| For further insights on communicative translation see also the recent Colina (2003), and Liao (2007).

3| Students are defined as primary users in so far as the literature is full of instances in which professional translators tend to underline the negative aspects of these applications. Students, on the contrary, lured by the rapidity and apparently effortless problem-solving efficiency of these devices, tend to use MT on a daily basis, as shown by the results.

MT is a form of automatic translation between human languages. It is a long-term scientific dream of enormous social, political, and scientific importance (Arnold et al. 1994: iii) which would, in theoria, enable professional and non-professional translators to save time and energy and at the same time it would allow translation companies to stop recruiting translators to carry out a task they can complete with a simple click. De facto, "brainless" devices have not acquired a culture-related discerning ability. Yet, as I reported in Moratto (2010c) the historical excursus of the concept of MT can be traced back to 1629 when the philosopher René Descartes proposed a universal language, i.e a linguistic repository with equivalent ideas stemming from different languages and sharing common linguistic symbols. Two centuries later, in 1887, an international auxiliary language is indeed created: the Esperanto with all its pros and cons, that for reasons of space will not be discussed in this paper. Further comprehensive and exhaustive discussions on a detailed historical excursus of MT can be found in Arnold et al. (1994), Hutchins (1986), Warwick (1987), Buchmann (1987) and Nagao (1986), just to name a few. In translation practices, MT programs are used by many people overtly or "under the table". The European Commission, for instance, is one of the largest institutional users[4]. The EUROTRA project „was perhaps the largest, and certainly among the most ambitious research and development projects in Natural Language Processing. The aim was to produce a pre-industrial MT system of advanced design for [European] languages" (Arnold et al 1994: 16, as cited in Moratto 2010c: 4).

Apart from that, there was also another project, namely the MOLTO project which was coordinated by the University of Gothenburg and it received more than 2.375 million Euro project support from the EU to create a reliable translation tool that covers a majority of the EU languages.[5] For space constraints, the literature review section cannot be exhaustive. If the reader wants to have some insights on MT users' viewpoint, it is possible to consult the series of books titled Translating and the Computer, counting several editors and publishers amongst which Lawson (1982), Snell (1979, 1982), Picken (1985, 1986, 1987, 1988, 1990), and Mayorcas (1990). Moreover, one of the most important classical references in the literature for technical and scientific details about MT is Hutchins and Somers (1992), whereas the different technical and scientific approaches to MT which could be roughly divided into rule-based, example-based, statistical, or hybrid approach are exhaustively explained in Nagao (1981); Melby (1995); and Mügge, (2006); Chesterman & Wagner (2006), and Pym (2009, online version).

4| For a European Commission translator's (Emma Wagner) insights see the last section.

5| MOLTO has been running from 1 March 2010 to 28 February 2013. The first prototypes on the web have been available since June 2010. (http://www.molto-project.eu/, retrieved on 23/10/2010).

One of the most widely used transfer-based applications is the Systran system[6] which "has been available as Babel Fish since 1997 (operated by Alta Vista, now by Yahoo!), currently offering free automatic translations in nineteen pairs of language" (Pym 2009: 9). However, the translations are far from being perfect and, usually, are used only for gist-reading[7] purposes. Apart from transfer-based systems, there are also data-based systems, like Google Translate[8], "which currently caters for more than 50 languages[9]" (Pym 2009: 9). As I specified in Moratto (2010c), these data-based systems, ceteris paribus, seem to provide a better quality translation for most-language pairs because

> when users operate through the free web-base[d] translation-memory Google Translator Toolkit […] their modifications of the automated output feed back into the database by default, thus improving future automatic output […]. This should in [the future] change the nature of professional translation services, with many of today's translators becoming tomorrow's technical writers (pre-editors) or revisers of machine translations (post-editors). (Pym 2009: 10)

Study report

In this section, I will present a brief overview of the afore-mentioned focus group study carried out at the Department of Italian Language in Fu Jen Catholic University on the (mis)use and perceptions of MT tools by second-year students in the first semester of 2010 and fully described in Moratto (2010c). Here, I will focus on outlining the main characteristics of the participants, on the methodology and on the results. In primis, I should duly point out that the rationale behind choosing second-year students is that they present a level of language which enables them to start carrying out translation tasks of all sorts at home. However, since translation classes begin in the third year, the selected participants for this study had not been formally trained in translation theory and/or practice. Hence, I believed them to be "pure" from any subconsciously derived taboo or prejudice related with translation practices, including MT tools (Moratto 2010c). 52 students participated in this study, amongst which 49 (94.23%) were native speakers of Mandarin Chinese, 1 (1.92%) of Cantonese, one (1.92%) of Spanish and one (1.92%) Spanish-Chinese bilingual. As for the methodology, the data were collected in a focus

---

6| The Systran system is also used at the European Institutions. For a more in depth discussion, see the section "Discussion and Conclusion".

7| Gist reading is a strategy used to discard unnecessary and unimportant information and focus on what one perceives as being significant in a given instance to try to understand and remember it.

8| The resource more widely used by students as shown in "The Study" section.

9| More precisely 59, as of November 2010.

group discussion[10] carried out on October 12th 2010 in a classroom setting with 51 students/participants. After the focus group discussion, I asked the participants to write down on a piece of paper the comments they deemed most salient of the whole discussion and that they regarded as reflecting what they usually did back at home when carrying out translation tasks. I tried to enhance the internal validity of this study by using multiple sources of data, the focus group discussions, the transcriptions[11], and the retrospective interviews, to triangulate the emerging findings in the study. Further comments made by students during the retrospective interviews were matched up with their interventions within the focus group discussion. Also, I presented the transcriptions and my tentative analysis to some selected students, according to their linguistic skills, for comments throughout the whole study. Some retrospective interviews were carried out face to face, whilst others, due to the impossibility of students to show up in person, were carried out on social networks chat and forum sessions, like Facebook to increase the interest of students in the issue being debated (Moratto 2010c). Finally, the students' written statements along with annotations made by the author constituted the basis of subsequent emerging categories and patterns (LeCompte & Schensul 1999), which can be grouped in six macro-categories, i.e. 'students' use of MT', 'principal MT tools used by students', 'what do students think of Google Translator Toolkit', 'pros and cons of MT', 'how do students use MT tools', and 'traditional teachers' standpoint and attitude towards MT'". As for the first category[12], the main recurring patterns concerning students' use of MT were translation support, homework surrogate (which can be perceived as a form of task "passivization"), self-monitoring strategy or back-translation, semantic gist extraction (which proves the existence of strategies in some students, albeit only 5), spelling checker, grammar tutor and face saver. As far as the second category is concerned, the most used MT applications by untrained students undertaking translation tasks are Google and Yahoo. Only one person declared using Systran[13]. No one reported using Asia online, even though it has Chinese. Furthermore, according to the data, no student uses Yahoo! without first consulting

---

10| Focus groups are used in qualitative research to generate a group discussion among a small group of individuals selected because they have some knowledge about the research question. (Goebert & Rosenthal 2001; Greenbaum 1993; Krueger & Casey 1988; Mason 1996; Morgan 1997; Stewart & Shamdasani 1990, as cited in Angelelli, 2006:179).

11| No particular convention was followed for the transcriptions in so far as my attention was not to focus on prosodic aspects delivered by the speech but only on the semantic content of the focus group discussions.

12| For a complete overview of the quantitative analysis of the results, see Moratto (2010c).

13| As can be read on the official website, SYSTRAN's latest innovation, a hybrid approach to machine translation, outperformed Google Translation, academic statistical machine translation (MT) systems and several rule-based systems in the category of English to French News Translation. Making smart use of a reasonable size training corpus SYSTRAN delivered more accurate translation than very large systems like Google, which

Google. As for Google Translator, I would like to briefly add that it seems to be one of the most reliable systems for "rare" language pairs in so far as "in 2007, Google improved this engine's translation capabilities by inputting [a data cross-checking system] of approximately 200 billion words from United Nations materials". (Baker & Saldanha 2008:67). This category pushed me to further investigate students' opinions on the Google Translator Toolkit. Two major problems came out: the issue of accuracy[14], and the need for segmentation which is perceived, and rightly so, as a necessary editing of the source text (ST) for the MT to do a more accurate job. As for the "pros and cons of MT", most students seem to appreciate its rapidity, simplicity of usage, vast language choice and gratuitous nature. As for the cons, students mainly emphasized the lack of accuracy, the default solutions issue (all in English) and the cold-heartedness of the translation (as underlined by two students). As for the strategies in using MT, nine main strategies emerged from the data. I will list them here in decreasing order: translation through English (English is perceived as a MT interlingua), 'mere text insertion' (potentially dangerous and acritical way), 'gist reading[15]' strategy, single-word translator (dictionary surrogate), as a pre-editor or post-editor[16] and segmentation (segment a text to make the translation viable). Finally, as for the last category students perceive traditional teachers, in decreasing order, as disapproving[17] of MT, as trying to limit its use as much as possible or as playing the part of the detective (the teacher says s/he would realize it anyway) The traditional teacher-trainer is perceived as having a prejudiced stance against MT, as harboring taboos which will inevitably be instilled in student-trainees' subconscious perception of MT. I think it is imperative for translation trainers in the inflatedly digitalized new millennium society to guide students and help them understand how to make the best use of all possible resources they have, including MT, by underlining the limits which are intrinsic in brainless computer-generated systems. This is exactly what "the reverse approach" outlined in the next section aims at.

The reverse approach

The "reverse approach" in translation training derives its name from the fact that it reverses the usual order of translation "taught" in traditional translation curricula. In this new approach, trainees will start "studying" translation from what traditional

---

rely on a gigantic language model that is based on a Web index. SYSTRAN's hybrid MT engine was officially released in Enterprise Server 7 on June 3rd, 2009.

14| The students did not further define what they meant by accuracy, hence different students may have had different opinions about these issues. However, in focal and retrospective interviews, I discussed with students their definition of accuracy in this context and they all agreed on a grammatical definition of this issue.

15| What Wagner (2006: 123) calls 'information scanning'.

16| The issue of post-editing is further discussed in the 'discussion' section.

17| A student even talked about 邪魔歪道 (heresy).

curricula considered as their ultimate goal, namely highly specialized translation like legal reports which are what can be best translated by properly using MT[18], because of their fixed language patterns. Consequently, translation of newspaper articles (which in the traditional approach is often done at the beginning of translation training), literary texts and editorials, in virtue of their cultural significance, will be "studied" at the end of the curriculum when trainees are fully aware of language intrinsic cultural aspects which cannot be and never will be conveyed by any "brainless" MT software. Translation may be considered successful when cultural aspects are "trans-lated", in the Latin sense of the word, that is to say transposed from one language-culture system to another. In this new approach, students will be made aware that cultural aspects are the most challenging ones to master and that they are conveyed by every layer of language, including apparently semantically void grammatical particles, in an ethno-syntactic paradigm (cf. Moratto 2010a,b). Moreover, in this approach trainers will not believe that

> [they have] the knowledge needed to produce the 'correct' translation, […] identifying and then filling in the gaps in the students' knowledge so that they too can come up with 'correct' translations, meaning the same ones that the omniscient teacher would have come up with him- or herself (Kiraly 2000: 23),

because there will be no such thing as a "correct" translation but only a functional and adequate translation to the skopos[19].

Discussion and Conclusion

Translating in the new millennium entails some challenges and opportunities both for trainers and for trainees. Trainers will undoubtedly have to "abdicate the throne" of knowledge distributors and in a CTT approach will have to put trainees at the center of the discussion attempting to raise their awareness on translation deontological, professional, practical and theoretical issues. In other words, trainees should be the center of the multi-dynamic and active teaching/sharing experience in a constructive, communicative teaching approach (for further insights cf. Kiraly 2000; Liao 2007; 2009). As far as the future of trainees is concerned, some may specialize in becoming MT editors: pre or post-editors. Pre-editing implies adjusting the text according to the standards of MT[20] whereas

---

18| MT works best for texts with a restricted domain: not general language texts, and certainly not literature, but very specialized ones, where it is much easier to predict the use of vocabulary and grammatical structures" (Melby 1995 as cited in Chesterman & Wagner 2006:122).

19| For an insightful discussion on the *Skopos* theory see Nord (1997).

20| This is known as the controlled-language input. "The authors [are] instructed to avoid certain terms and constructions that [are] known to cause problems for the MT system, and to formulate the text in a more acceptable way" (Chesterman & Wagner 2006:126).

post-editing means carrying out a revision in a post-editing phase once the MT is completed. (For further insightful discussions on this issue cf. Chesterman/Wagner 2006: 125; Moratto 2010c). Both trainers and trainees will be able to use MT for a plethora of purposes, including translation aid, raw translation for information scanning, a drafting aid, a rapid post-editing and as pre-editing. The aforementioned purposes are all used inside the European Commission and four out of five (not including the drafting aid) are also used by the trainees presented in this study) (Chesterman &Wagner 2006: 125). In a classroom setting, MT could be used in a contrastive approach as a comparative analysis between the source text (ST) and the final product or target text (TT). At home, instead, translation trainees should regard MT as a highly technical and specialized dictionary or as a tool to translate specialized texts. As previously mentioned, trainees should also learn how to segment sentences, so that they can be efficiently translated with MT. The link with future research lies with implications for translation curricula design (TCD) in which the problem of semantic or grammar disambiguation is still to be carried out by the translator in a post-editing phase, as previously mentioned. As I stated in Moratto (2010c), the late Claude Piron a long-time translator for the UN and the WHO wrote that MT, at its best, automates the easier part of a translator's job; the harder and more time-consuming part usually involves doing extensive research to resolve ambiguities in the ST (source text), which the grammatical and semantic exigencies of the TL (target language) require to be resolved:

> Why does a translator need a whole workday to translate five pages, and not an hour or two? […] About 90% of an average text corresponds to these simple conditions. But unfortunately, there's the other 10%. It's that part that requires six [more] hours of work. There are ambiguities one has to resolve. For instance, the author of the source text, an Australian physician, cited the example of an epidemic which was declared during World War II in a „Japanese prisoner of war camp". Was he talking about an American camp with Japanese prisoners or a Japanese camp with American prisoners? The English has two senses. It's necessary therefore to do research, maybe to the extent of a phone call to Australia. (Piron 1994 on http://muhtawa.org/index.php/ ترجم_آلية, retrieved on 2010/11/01, as cited in Moratto 2010c: 24)

Trainers and trainees should also join their efforts in respecting the professional deontology. On the one hand, trainers should guide students and raise their awareness on the potential dangers intrinsic in uncontrolled MT. On the other hand, trainees should always be very careful if they do not want to incur in potentially harmful (for their career) mistakes. To give the reader an idea of the mistakes' nature, I would like to report here a classical mistake described by the translation manager at the European Commission in Luxembourg Emma Wagner, as cited in Moratto (2010c). It is the

classic mistranslation […] of the [French] phrase 'les agriculteurs vis-à-vis de la politique agricole commune[21]' that Systran somehow managed to translate as 'farmers live to SCREW the common agricultural policy'. (Chesterman/Wagner 2006: 1 19, my emphasis)

No need to further explain this example which speaks for itself. To conclude, scientific and technical progress has given us many new challenging tools which can be integrated in translators' activities. As Andrew Chesterman (2006: 115, as cited in Moratto 2010c: 25) puts it „compare the progress of MT with that of chess-playing computers: a couple of decades ago, I could sometimes beat my computer at chess. Now, a program has defeated the world champion".

It is enough to think that „the Japanese have developed a system that you can talk to on the phone. It [simultaneously and automatically] translates what you say into Chinese and translates the other speaker's replies into English" (Arnold et al. 1994: 7).

Will we see the same progress in MT? This is up to future research to establish.

Future research

Future research will further "explicitate" the respective roles of translation trainers and trainees. It will also focus on the relationship between students' expectancies and translation curricula design, how to implement MT within not only translation departments but also in foreign languages departments, thus considering translation as the fifth ability to develop in foreign language learning (cf. Liao 2007; 2009). The relationship between language pair and MT[22] also merits further investigation in future research because as Emma Wagner says (2006: 116) "MT quality is not uniform; it is variable, even within the same language pair", let alone between different language pairs. Finally, future research will try and implement translation curricula in which students are first guided in the exploration of all the possible resources the web offers them in a descriptive, non-prescriptive way. Trainees should not have taboos instilled in their minds but a clear awareness on the range of possibilities and of devices they have. At the same time, trainers should raise trainees' awareness on the intrinsic faults and limits of these tools and learn how to handle them effectively, from a professional, deontological and academic point of view.

21| It literally means "farmers facing the CAP" (My translation).

22| Many students realized the fact that all too often they had to go through English because the language pair English-Chinese appeared to be working better than, say, Italian-Chinese.

References

Angelelli, Claudia (2006*). Validating professional standards and codes, challenges and opportunities*. Amsterdam/Philadelphia.

Arnold, Douglas/Balkan, Lorna/Lee Humphreys/Meijer, Siety/Sadler, Louisa (1994). *Machine Translation*. Cambridge.

Baker, Mona/Saldanha, Gabriela (Hg.) (2008). „Routledge Encyclopedia of Translation Studies". Routledge.

Bednar, Anne/Cunningham, Donald/Duffy, Thomas/Perry, David (1992). "Theory into Practice: How Do We Link?" In: Duffy, T./Jonasse, D. (Hg.) *Contructivism and the Technology of Instruction: A Conversation*. London. 17-34.

Buchmann, Beat (1987). "Early History of Machine Translation". In: King, M. (Hg.) *Machine Translation Today: The State of the Art, Proceedings of the Third Lugano Tutorial*. 1984. Edinburgh. 3-21.

Chesterman, Andrew/Wagner, Emma (2006). *Can theory help translators? A Dialogue Between the Ivory Tower and the Wordface*. Beijing.

Goebert, Bonnie/Rosenthel, Herma (2001). *Beyond listening: learning the secret language of focus groups.* New York.

Greenbaum, Thomas (1993). *The handbook of focus group research.* New York.

Hutchins, John/Somers, Harold (1992). *An Introduction to Machine Translation*. London.

Hutchins, John (1986). *Machine Translation: Past, Present, Future*. New York.

Kiraly, Don (2000). *A Social Constructivist Approach to Translator Education. Empowerment From Theory to Practice*. Manchester.

Lawson, Veronica (Hg.) (1982). *Practical Experience of Machine Translation.* Amsterdam.

LeCompte/Margaret Diane/Shensul, Jean (1999). *Analyzing and interpreting ethnographic data*. Altamira.

Liao, Posen (2007). "College Students' Translation Strategy Use". In: *Studies in English Language and Literature* 19. 77-88.

Liao, Posen (2009). "溝通式翻譯教學法之意涵與實施" (The Implications and Implementation of Communicative Translation Teaching), Compilation and Translation Review. Vol. 2, No. 2. 65-91.

Mason, Jennifer (1996). "Qualitative researching". Thousand Oaks, CA: Sage Publications.

Mayorcas, Pamela (Hg.) (1990). *Translating and the Computer 10 The Translation Environment 10 Years on*. London.

Melby, Alan (1995). *The Possibility of Language. Amsterdam*. 27-41.

Moratto, Riccardo/Chen, Sheng.-Jie „The Bologna university Model of Conference Interpreter Training". Paper presented at the 2010 年跨文化研究國際學術研討會. (forthcoming).

Moratto, Riccardo/Tulli, Antonella. „Riflessioni pedagogico-didattiche sul Dipartimento di Lingua e Cultura Italiana di Fujen. Pro e contro di un corpo docente a forte maggioranza di madrelingua italiani." Paper presented at the 2010 第七屆海峽兩岸外語教學研討會第七屆海峽兩岸外語教學研討會. (forthcoming).

Moratto, Riccardo. (2010c). „Designing Translation Curricula in the Machine Translation Era (MTE): Challenges of a New Approach". In: Li Gong-Wei/ Li Hui-Rong (eds.) *Student Perspectives* in 回顧與前瞻, proceedings of 2010 第15 屆口筆譯教學研討會. 69-89.

Morgan, David L. (1997). *Focus groups as qualitative research*. Thousand Oaks, CA.

Mügge, Uwe (2006). „Fully Automatic High Quality Machine Translation of Restricted Text: A Case Study." In: *Translating and the computer 28. Proceedings of the twenty-eighth international conference on translating and the computer*, 16–17 November 2006, London. 16–17

Nagao, Makoto (1986). *Machine Translation: How Far Can it Go?* Oxford.

Nagao, Makoto (1981). "A Framework of a Mechanical Translation between Japanese and English by Analogy Principle." In: Elithorn, A./Banerji, R. (eds.) *Artificial and Human Intelligence*. Amsterdam. 173-180.

Nord, Christiane (1997). *Translating as a Purposeful Activity. Functionalist Approaches Explained*. Shanghai.

Picken, Catriona (ed.) (1985). *Translating and the Computer 6: Translation and Communication*. London.

Picken, Catriona (ed.) (1986). *Translating and the Computer 7*. London.

Picken, Catriona (ed.) (1987). *Translating and the Computer 8: A Profession on the Move*. London.

Picken, Catriona (ed.) (1988). *Translating and the Computer 9: Potential and Practice*. London.

Picken, Catriona (ed.) (1990). *Translating and the Computer 11: Preparing for the Next Decade*. London.

Piron, Claude (1994). *Le défi des langues — Du gâchis au bon sens* (The Language Challenge: From Chaos to Common Sense). Paris.

Snell, Barbara (ed.) (1979). *Machine Aids for Translators: Translating and the Computer 2*. Amsterdam.

Snell, Barbara (ed.) (1982). *Term Banks for Tomorrow's World: Translating and the Computer 4*. London.

Stewart, David/Shamdasani, Prem (1990). *Focus groups: theory and practice*. Newbury Parl, CA.

Warwick, Susan (1987). "An overview of post-ALPAC developments". In: King, M. (ed.) *Machine Translation Today: The State of the Art, Proceedings of the Third Lugano Tutorial* 1984. Edinburgh. 22-37.

Internet sources

Pym, Anthony. (2009). Website Localization. Online versione at (http://www.
     tinet.cat/~apym/publications/publications.html [Zugriff am 23.10.2010]
MOLTO project (2010) http://www.molto-project.eu/ [Zugriff am 23.10.2010]
Systran,http://www.systransoft.com/systran/news-and-events/press-release/first-
     place-ranking-for-translation-quality-at-WMT [Zugriff am 23.10.2010]
http://muhtawa.org/index.php/ ترجمة_الآلية, [Zugriff am 1.11.2010]