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# Teletranslation Revisited: Futurama for Screen Translators?

## Contents

## Abstract

The progressive expansion of broadband links and the wealth of information accessible on the Internet have significantly influenced the way the translator works today. Similarly, the dynamic development of digital content and rapid changes in people's communication and entertainment habits are creating a new type of translation content. The shift from print to electronic media is challenging the established translation procedure and provoking new ways of translating, in turn calling for new theoretical frameworks and new research methodologies in translation studies (TS). Given the increasingly indispensable role played by technology in the modern translation practice, the need for technology-oriented translation research has never been greater. Using the concept of teletranslation (O'Hagan 1996) as a starting point, this paper explores the consequences of technology for the translation profession and argues that audiovisual translation will become an essential part of future translation in response to the increasing range of multimedia elements incorporated in new types of content.

## 1 Background to Teletranslation

The advent of the Internet and the more recent penetration of mobile networks are now something most translators take for granted. Only a decade ago Internet connections were still patchy, with most translators operating with a mixture of telephone (land line), physical mail system, fax machines and the emergent form of Internet services, with slow and costly connections for far less information available. This contrasts with the instant link to a huge variety of information readily accessible to the translator today at a very low cost, albeit with variable quality. Translators are now able to operate at almost any distance from their clients or agencies, as long as they have access to a PC connected to the Internet. The affinity of translation and teleworking has been well recognized, as translation is primarily a location-independent asynchronous practice where the translator does not have to be physically present - apart from certain cases such as sight translation where translation is orally conducted in synchronous mode for the recipient. And yet a comprehensive teleworking mode was not ready for translation 10 years ago, in the absence of backbone technologies. Throughout the 80s, the telecommunications environment for translators left much to be desired, in that there was no speedy and affordable access to information in various specialized subject domains in different languages. There were also limitations to the availability of information in machine-readable form. In the 80s and through to the late 90s, the issue of information accessibility was particularly problematic for translators operating in isolation, away from the target

language country. Today, while out-of-country translators can readily access country-specific information, electronic connectivity has also made it possible to readily organize 'in-country translation' whereby translation commissioned elsewhere is specifically undertaken in the target language country, and thus used as a 'quality label'. In this way, while physical boundaries have become porous, at the same time attention to locality is in some ways highlighted, as in the case of 'in-country' translation.

The concept of teletranslation (O'Hagan 1996; O'Hagan & Ashworth 2002) was put forward as more than an extension of the teleworking mode, referring rather to entirely new ways of dealing with translation. As such, it meant a new paradigm of translation. It entailed translation operation based on a global network linking text and translators, as well as translation tools, on the one hand, and the service to the customer on the other. Such changes were seen as affecting the entire process of translation work in the way the text is processed, stored and transmitted, as well as the way in which knowledge is shared among translators and with customers. Today the basic building blocks needed for teletranslation are almost in place; the translator can readily be linked electronically to the customer and to fellow translators, and text in electronic form can be transmitted with relative ease. However, there are still some obstacles to achieving fully-fledged teletranslation. For example, the source text is still not always in machine-readable form, even in large organizations that are high volume translation users (Lommel 2004: 6), which in turn hampers the seamless application of translation tools such as Translation Memory (TM ) and Machine Translation (MT) at the translator's end. While CAT (computer-aided translation) is now generally accepted in the translation industry, the degree of implementation and sophistication in its use varies, as elaborated later. Similarly, the use of MT among translators remains limited. However, an increasing volume of text is being translated using MT directly by the end user, largely because of the availability of free online MT tools such as *Babelfish*. At the beginning of the 90s the translation output ratio between Human Translation and Machine Translation was estimated at 300M pages: 2.5M pages in Europe and the US combined (Loffler-Laurian 1996), but a decade later *Babelfish* reportedly receives over a million hits daily (McKinsay 2001) for various amounts of translation, overtaking the human translation supply purely on the basis of the quantity of text being processed. In this way, the Internet has created a niche for MT as a gisting tool to help the user wade through a vast amount of information. While MT dominance does not mean that all online translation demand is fully met by MT, it has highlighted a specific translation need emerging from the online world. This in turn illustrated how the new communications environment is driving a new translation demand.

With the broad aim of exploring how technological advancement will likely affect translation further, this paper first looks into developments pertinent to teletranslation since 2000 and examines the impact and implications of dealing with new translation text which is primarily in electronic, as opposed to print, form. The paper addresses the need for a new theoretical framework and approach in translation studies (TS) to accommodate the new translation content, taking videogames and DVD film titles as case examples. In view of the increasing use of multimedia in the new form of translation content, the author argues that audiovisual translation will become an integral part of teletranslation practice.

# 2   Localization

## 2.1   Rise of Localization

The translation sector that has enjoyed the benefits, and also borne the consequences, of dealing with electronic text read on screen is software localization. As such, it provides a good model for teletranslation. The practice of localization emerged during the 80s in response to the globalization of the personal computer market (Esselink 2000). Software localization entails producing a given language/regional version called a "locale". Over and above the requirements for translations of packaging and manuals in print form, it requires the body of software itself to be translated, requiring translated text (referred to as "strings") to be incorporated into the software by means of software engineering. While localization strategies may differ from product to product, the industry has established the core objective of localized products as being to retain the "look and feel" of a locally available equivalent product (Fry 2003), which involves both linguistic and cultural adjustments to the product (Esselink 1998: 2). This clearly indicates the general orientation of the translation to be that of domestication in the Venutian sense, where the text is brought closer to the reader rather than the other way around. The early experience of localizing Microsoft's multimedia encyclopedia *Encarta* into Spanish and German in 1995 illustrated how extensive the adaptation process had to be to enable the content for the target market (Kohlmeier 2000). After its initial beginnings as a sector closely associated with the computer industry, localization has since come to make a widespread impact on the rest of the translation industry (O'Hagan 2004). The localization sector remains dynamic and continues to expand to accommodate new requirements arising from new types of content, primarily in electronic form, that has to be enabled for a target market. From mainly dealing with computer software, localization practices have now extended to include an increasing range of products[1], including videogames, that provide good examples of how this new type of content affects translation. These are discussed below.

## 2.2   Videogames and Films on DVDs

Since their humble beginnings in the 1960s, videogames have come to form a dynamic digital entertainment industry, and are also gathering momentum as an area of independent academic research after a long period of prejudice (Wolf & Perron 2003). However, despite their global status, due in no small part to localization efforts, videogames have largely been ignored in TS (O'Hagan 2006). Videogames localization shares similar elements with software localization, and also incorporate screen translation techniques for their in-game movie elements called cut-scenes, i.e. scenes used to advance the plot or inserted as a reward for reaching a certain level with the game. In relation to conventional translation text typology, games form a special text type in their own right, calling for technical and literary translation as well as audiovisual translation. This combines a process that is similar to software localization, since the game medium is primarily a piece of software, thus requiring the software functionality to be retained in the user environment, with a different kind of translation for the text in the games, which needs to be translated so as to convey the pleasure of the game. The skopos of games localization is to transfer as closely as possible the overall

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[1] Esselink's (1998) first book *A Practical Guide to Software Localization* was renamed for its revised edition to *A Practical Guide to Localization* (Esselink 2000), reflecting the fact that the world of localization extended beyond software products alone.

game play experience as derived in the original game. This makes it imperative that the translator is familiar with the genre of new digital interactive entertainment and understands the nature of the pleasure involved. The overall goal of the game dictates translation strategies whereby the translator is often granted extensive freedom in rendering the text, to the extent that it is described as transcreation (Mangiron & O'Hagan 2006).

Another example of a new type of content requiring translation is films on DVD. When films are released on DVD, they acquire certain features similar to computer software, mainly because of the added interactivity in comparison with films in the cinema. Making a DVD film title available for different markets involves additional translations for packaging, menu system and any other text included in the film's bonus materials. Furthermore, the fact that a single DVD disk can hold up to 32 sets of subtitles led many DVD releases to include subtitled versions in multiple languages. As a solution to cope with the time pressure, and also to counter piracy, a new translation workflow was developed for the simultaneous production of these subtitles in the required languages, using a master file. This so-called "genesis file" contains the intralingual subtitles in the source language with fixed time codes to which all language versions have to conform. A template-based approach such as this is familiar in the localization industry, where a list of source language strings extracted from different parts of software is replaced by their equivalents in the target language. On a master file, the time codes are fixed across different language subtitles despite the normally varying length of subtitles according to language. The tendency towards standardization such as this is another frequently observed characteristic of localization practice. In this way, the emergence of DVD as a medium for the distribution of audiovisual material seems to have placed screen translation in the broad realm of localization. Anecdotal evidence suggests that some DVD subtitles are produced with the subtitlers having to translate on a master file even without seeing the film. This is also reminiscent of the situation which arises when videogames are localized in the mode of simship (simultaneous shipment) where various locales need to be released at the same time as the original. These new practices are creating concerns for subtitlers, who argue that the new workflow is being devised at the expense of quality. What is needed is an empirical study to investigate the correlation between the new commercial approach and its impact on the translation outcome. Only with such efforts can we gain insight into new forms of translation, and come up with an optimum approach which still meets the commercial demand, while minimizing the degree of compromise in the quality of translation.

Both videogames and DVD film titles raise new translation issues, as they both present new characteristics. For example, videogames localization, which seeks to retain the pleasure derived from playing the original game, requires closer attention to the medium-specific characteristics pertinent to digital interactive games. A functionalist approach to translation will need much more concrete elaboration to specifically address the unique nature of games, such as the ludological dimensions of game play, as they need to be reflected in the translation. This makes it necessary to seek inspiration from games research itself. Games research is gathering pace, incorporating a number of different perspectives such as games design and reception (Raessens & Goldstein 2005: xii). These two dimensions appear to be particularly relevant in the context of translation, for an understanding of the designer's intention on the one hand, and the individual player's reception on the game on the other. This in turn has implications for a theoretical framework on which TS scholars can make sense of the translation issues involved in the task. In a similar way, films on DVD create a new form of translation content as a result of the media mix where the elements of multimedia software (e.g. navigation menu) and cinema plus the concept of various bonus features come together to demand a new translation approach. This raises the question of how the new characteristics of translation content can be adequately explained for the purpose of translation. The last section of the paper will return to the issue from a theoretical point of view. In the meantime,

the next section addresses another element in teletranslation: the use of specialized translation tools which are often justified by the new type of content.

# 3  CAT and Translation Research using Technology

## 3.1  Actual Use of CAT Tools in the Translation Industry

Localization is the most technology-driven and technology-dependent sector of the translation industry, as it deals with electronic content which is not "translatable" without using technology because of the very nature of the medium (O'Hagan & Ashworth 2002). Technology plays a central role across the entire workflow of localization, ranging from project management to billing. The actual translation process itself is also heavily reliant on the use of computer-based tools to deal with various document tags, for example, and also to leverage previously translated strings through the use of Translation Memory (TM) and terminology management systems. The LISA 2004 Translation Memory Survey (Lommel 2004) conducted by the Localization Industry Standards Association (LISA) showed that 74% of 274 respondents used TM for most of their translation work[2]. The survey also noted that while there were respondents who had only recently implemented TM, there were also some highly experienced users who are making sophisticated use of the technology. This includes further automation of the translation process where Machine Translation (MT) and TM are integrated into the daily translation production process. The influence of translation technology in the translation process seems irrefutable in this sector. However, it has to be said that use of translation technology tools appears to be negligible in the case of videogames localization, and similarly in audiovisual translation (O'Hagan 2003).

While CAT is a widespread presence in most localization areas, the situation is not necessarily the same in the wider sphere of the translation industry, supported by a large contingent of freelance translators. For example, the 2004 survey by Fulford and Granell-Zafra (2004: 7) conducted with nearly 400 freelance translators in the UK revealed a relatively low use of CAT tools, at 28%, with nearly one half of the respondents stating no familiarity with these tools. Similarly, only 24% of the surveyed translators were using a dedicated terminology management system. The use of MT and localization tools was 5% and 2% respectively. This suggests that the majority of the surveyed translators were unlikely to be engaged in localization work. In terms of Internet usage, 68% relied on dial-up connections with 26% using broadband. The area of concentrated use was e-mail (93%), search engines (85%), online dictionaries (79%) and text/document archives (51%), with one third (33%) using translation portals for activities relating to marketing and work procurement. The survey confirmed the widespread use of the Internet as an essential communication tool for translation work via e-mail and also as the most prevalent research source, including specialized sources such as online dictionaries and archive sites. It also showed that the Internet is providing a source of work and also a marketing tool for one third of the surveyed population. By the same token, the survey indicated a relatively low uptake of CAT tools and a very low use of MT among the freelance translators, suggesting that translation is carried out mainly without the aid of any specialized tools beyond basic text processing software (the survey indicated that 99% of the translators use such software). The latter findings are also in keeping with the lack of interest by translators in the use of specialized corpus tools such as

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[2] Given that this survey was conducted on the LISA website, it can be assumed that the majority of the respondents have been engaged in localization work in one way or another, although the profiles of the respondents classified according to job titles do not make this explicit.

Wordsmith tools (Bowker and Barlow 2004) which are useful in understanding the frequency of certain key words, their collocations, etc. In comparison with mostly positive attitudes to ICT (Information and Communication Technology) in general, the study detected much less conviction in the surveyed group about the value of CAT tools (Fulford & Granell-Zafra ibid).

These results suggest that the use of CAT tools prior to 2004 was not widespread among the examined freelance translators, at least those working in the UK[3]. This survey suggests that while the benefit of connectivity by telecommunications is widely exploited, that of specific translation technology applications is limited, perhaps indicating the need for further improvements to the tools to make them directly applicable to translators' work. Translation tools are considered to be an integral part of teletranslation, and yet the current situation suggests that CAT is far from ubiquitous. This calls for further study into what technology is needed by the translator, where the current technology is failing and how it can be improved. This line of investigation, in turn, requires technology-focused research, as discussed in the following section.

## 3.2 Technology-focused Research and Translation Research Using Technology

While both industry and academia have come to recognize the increasing influence of technology in the modern commercial translation practice, there has been a paucity of research within TS to systematically address the impact and implications of technology. A few exceptions include the work done earlier by Sager (1994) who examined the significant change in the entire process of translation production as a consequence of technology applications from a language engineering perspective. More recently, Austermühl (2001) examined how individual CAT technologies work in the context of translation tasks, and Bowker (2002) highlighted the advantages and the disadvantages of these applications in various translation scenarios. Empirical research on TM, such as in Bowker and Barlow (2004) and Bowker (2005), provides a further insight into the characteristics of the technology, but publications in this area are few and far between. Somers (ed.) (2003) provides a comprehensive examination of translation technology applications in the translator's workplace and also in language teaching. It is interesting to note that Somers is a computational linguist, and by definition located outside the TS discipline. Somers' work is a response to the plea by Gentzler (2003) for interdisciplinary research in TS. However, the prevailing picture is that mainstream TS research has not sought insights directly from computational linguistics or engineering disciplines as a way of shedding light on the shortcomings of the current generation of translation tools as perceived by translators. This lack is also evidenced in the fact that the mainstream translation theories still lack a specific technology orientation facilitating the systematic analysis of the application and impact of technology in the translation process and the profession as a whole. This sentiment is echoed in the recent work by Quah (2006), highlighting the increasingly close relationship developing between translation and technology, with a particular emphasis on MT and its theoretical background. One of the early criticisms of MT research by the TS community included its lack of interest in the translator's contribution (Quah ibid) and yet the initiative needs to come from the TS community itself, which is best placed to provide the feedback on translation technology as actually used in the day-to-day operation by the translator.

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[3] The 2005 survey (JTF, 2006: 18) conducted by the Japan Translation Federation found that 67 (49%) out of 137 Japan-based translation companies indicated the use of TM or MT. This figure sits somewhere between the freelance survey and the LISA survey.

The other side of the coin in technology-focused translation research is to conduct research using technology which in turn enables new approaches and methodologies to be formulated. The mid-90s saw the advent of corpus-based TS research (Baker 1995), which led to the development and enhancement of a cluster of corpus tools such as Wordsmith Tools, ParaConc, MultiConc etc, which are now widely used by TS researchers (Olohan 2004: 184). Another area of TS which promotes technology-based research methodologies is process-oriented translation studies (Alves 2003). The latter borrows heavily from approaches used in psycholinguistics and cognitive science, often involving actual experimentation using instruments. One early example in this area of research in TS is the use of the keyboard logging device *Translog* first developed in 1995 by Arnt Jocobsen, which is specifically designed for translation tasks. Other more general-purpose multimodal monitoring products are now becoming available on the market, that can be employed to log the entire process of translation production to obtain empirical data. Another relevant area of development is a new generation of less obtrusive eye-tracking tools which can be used to gather data on eye movements during the human translation process. For example, O'Brien (2006) is exploring the potential of such a tool for analyzing the strategies used by the translator while translating with TM by tracing the translator's scan path, fixations and pupil dilations in dealing with different types of TM matches. The new EU supported project Eye-to-IT[4] combines *Translog* with an eye tracker and EEG (electroencephalograph) to develop a human-computer monitoring and feedback system to study cognition and translation. Similar to the area of corpus-based studies in TS, the increasing interest in the area of technology-focused research using technology may see new tools being developed.

Internet-mediated research (IMR) is a technique now widely recognized by researchers working in different disciplines (Hewson et al. 2003) hoping to take advantage of a plethora of tools becoming available on the Internet, which could also be promising as a source of translation research tools. For example, the web-based collaborative authoring environment *Wiki,* made well-known by *Wikipedia,* can be used as a platform to study the mode of collaborative translation, as the software allows the researcher to keep track of the history of all changes ever made on a given text by different individuals. This will be useful for studying the nature of collaboration among networked translators working together at a distance, thus contributing to the study of knowledge sharing in teletranslation. The use of new tools and methodologies combined with new theoretical bases will further advance TS research in providing insight into the changing nature of a profession for which technology is becoming an indispensable factor. The next section discusses a theoretical framework for analyzing the role played by technology in the translation process.

# 4   Theoretical Considerations for the Impact of Technology

In an attempt to provide a framework for analyzing the role of technology in the context of teletranslation, the model of Translation-mediated Communication (TMC) has been proposed (O'Hagan & Ashworth 2002). On the basis of a communication model, TMC treats translation as communication between the sender and the receiver of a given translation, in terms of the message and how it is processed, stored and transmitted. Further, it makes it possible to examine the relationship between the translator on the one side, and the sender and the receiver of the translation on the other, in sharing knowledge in a communication link. TMC was so named by analogy with Computer-mediated Communication (CMC), and therefore focuses on the message primarily in electronic form. For example, the translation

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[4] http://www.dpmi.tu-graz.ac.at/eye2it.html

process via *Babelfish* can be analyzed in terms of TMC as follows: the sender of the message creates some given content, often a website, and the receiver types in the URL of the website in *Babelfish* to obtain a translation. After a few seconds the translated website is returned to the receiver. In this case, the whole translation process takes place through activating the MT site, which automatically transmits the source text on the Internet to the MT engine, and transmitting the target text back to the receiver, all in one seamless session. The translation can be stored by the receiver or discarded soon after, depending on its purpose. In this way, the analysis of how the text is processed, transmitted and stored can highlight the role played by technology. This is just one approach to elicit how the message moves between the sender and the receiver mediated by technology.

The area of TS study covering technology aids belongs to the applied branch within the system of TS theories as mapped by Holms (1899/2000). While this map has been useful in presenting the whole spectrum of TS, it may need to allow for the fact that some fundamental premises of translation are changing because of technology, as the concept of teletranslation attempts to illustrate. The impact of technological developments is multi-fold, affecting not only the tools employed for translation and background research, but also the nature of the content for translation. When the situation is considered from this perspective, the changing environments are likely to cause a drastic shift on basic assumptions about translation which were primarily made based on print form. This in turn supports the argument that the treatment of technological impact on translation should not be of a secondary nature. Current translation theories and associated theoretical frameworks do not seem to provide a useful approach to make sense of the changes taking place in the new paradigm of translation due mainly to technological changes. Munday (2001: 190) briefly discusses the significant impact of technology on translation but stops short of suggesting a new approach to account for this new factor. Such shortcomings are reflected in the lack of theorization of practices such as localization, and the time lag between theory and practice is worsened by the continuous development of new products, in turn introducing new translation practices into the industry. This clearly points to the need for translation research to allow for a technology-focus.

In the search for a new approach to translation research, one theoretical tool which looks promising in the area of games localization is affordance theory, originally proposed by Gibson (1979) in the field of human perception, which is now largely applied to examine the nature of human-machine interface and interactivity. The theory focuses on human perception, which recognizes the affordance properties of different objects in the environment which induce an action by a human actor. For example, a door knob affords opening by the human who sees the object, perceives the function of the knob and turns it. Games design builds on such properties to get the player to take certain actions which the game designer wants him/her to perform. Top-selling Japanese videogames are considered to be particularly superior in terms of affordance (Masuyama 2001: 132), providing superior interactive features between the game and the player. Affordance theory can be used to analyze the relationship between the game and the player in different linguistic and cultural contexts. This line of investigation may be useful in examining specific dimensions of translation imposed when localizing Japanese videogames. Theories such as this help to address the significant new characteristic of the three-dimensional game world, which differs from the linear textual world for which the translation practice has traditionally been designed.

As discussed earlier, the overall objective for games localization lies in conveying a sense of the pleasure to be gained from the game. To this end, games localization sometimes involves extensive transformations. Adaptation may involve not only textual elements, such as names of characters, but also non-textual aspects, such as facial features of characters, objects, settings, etc. Affordance theories can then be applied to the overall localization and translation strategies to make the player perform certain intended actions. For example, certain actions on the part of the player can be induced more readily by applying the concept

of affordance which may differ from culture to culture, affecting both the design of the object and textual components. These concepts in turn can be tested to explore how strategies guided by affordance considerations as reflected in translation and localization may impact on the intended user of the localized game. Such experiments may benefit from the use of tools such as an eye tracker to detect the scan path, fixations etc in relation to the object in question. In this way, an approach to games localization from the design and the reception perspectives can be combined with affordance theory considerations. The affordance theory can also be applied to efforts to understand the relationship between the translation tool and the translator such as TM or MT whereby eliciting the role of the tool as an object in the translation process and its outcome. Given the increasing degree of multitasking promoted by certain translation tools such as TM, such a research direction may prove fruitful into identifying shortcomings and advantages of these tools employed in translation tasks.

The emergence of new types of content to be translated, involving new translation tools gives rise to an interdisciplinary approach. The discipline of translation has traditionally borrowed concepts from other fields such as linguistics. Although the recent trend in TS has been to move away from linguistics, the theoretical framework that seems productive in the area of audiovisual translation is Fillmore's (1977) scenes-and-frames semantics, previously explored in the context of translation by Vermeer (1992). This framework was more recently discussed in O'Hagan & Ashworth (2002: 151) and also in connection with visualization in translation by Kussmaul (2004). It allows consideration of the proximity between the image (scenes) evoked by the translator upon reading the source text and that intended by the originator of the source on the one hand, and how that the difference affects the resultant translation (frames) on the other. The closer the scenes evoked by the originator and the translator, the better the translation outcome can be, although the translator can still get the wrong frame based on the right scenes. In the case of audiovisual translation, the presence of actual scenes on screen fills in the gap between the scenes evoked by the translator and that by the originator, and in fact the scenes and frames could work in a reverse direction for the translator. In a standard workflow, a subtitler will get the visual and audio (textual) cues together, so the scenes can be taken as given. However, with the flexibility provided by the new media such as videogames, unlike screen translation, games localization sometimes involves the manipulation of scenes in the form of screen representations to adapt the images on screen to suit the target market (O'Hagan & Mangiron 2004); in such instances translators' mental images (scenes) may be used to manipulate the original scenes provided. However, these decisions will be influenced further by the consideration of the game play and the design of the game as a whole. In addressing cases such as above, the application of the scenes-and-frames semantics could facilitate an understanding of the translation decision and an explanation of translation strategies. This approach also may be useful in analyzing the subtitles translated without the film being seen by the translator, as happens in actual practice. Such research may be able to provide useful guidelines in suggesting optimal work procedures when working with new computer tools and under new market conditions. These are just a few preliminary suggestions which require further exploration to determine which line of investigation will point to the fruitful direction in to order to address a range of newly emerging translation content types.

## 5   Conclusion: Futurama

This paper set out to argue that the discipline of TS needs to recognize the significant impact of technology in translation, using the concept of teletranslation as a starting point. The paper presented videogames and film titles on DVDs as instances of emerging translation content. These relatively new practices are in turn introducing new ways of translating and new

translation issues. There are clear signs that the previously separate domains of localization and audiovisual translation are intersecting in the emergence of new types of translation content. In this way, the futurama of translation may see audiovisual translation taking the centre stage on the basis of its expertise in dealing with the multimodal world which evolves on screen. However, the target continues to move and today's audiovisual translation will be most definitely be different in the future. The underlying developments in ICT, new types of translation content and changing conditions for translation work are driving new modes and models of translation, clearly challenging conventional ways of dealing with and thinking about translation. Teletranslation is still in the making, as seen above, pending the development of more ubiquitous translation tools which are fully integrated into the translator's daily work routine in the same way as wordprocessing programs are today.

While the industry is leading academia in the practice of many of these new areas, there is a role to be played by academia in preparing the translation profession for the next stage through the innovative use of research tools, and by seeking new theoretical frameworks in an attempt to shed light on these new, and rapidly unfolding, phenomena. The exploration of these areas will enter the territory of what "could be possible", which according to Edward de Bono is a question not asked enough in research environments today, and yet is vital to breaking new ground (Fahy 2005: 24). The next step forward for TS is to keep pursuing such questions. The continued impact of technology on translation means that exploration of the translation world will in future require a technology-oriented approach, which will make collaboration with other disciplines essential.

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