Sabine Braun (Surrey)

Multimedia communication technologies and their impact on interpreting

Contents

Abstract

In line with the aim of the MuTra conference to address "he multiple (multilingual, multimedia, multimodal and polysemiotic) dimensions of modern translation scenarios" and to raise questions as to the impact of new technologies on the form, content, structure and modes of translated products (Gerzymisch-Arbogast: 2007: 7), this paper will investigate the impact of multimedia communication technologies on interpreting. The use of these technologies has led to new forms of interpreting in which interpreting takes place from a distance, aided by technical mediation. After reviewing the major new and emerging forms, I will outline a set of research questions that need to be addressed and, by way of example, discuss the results of research on interpreter adaptation in videoconference interpreting.

1   Introduction

Traditionally, interpreting – both interpreting spoken language as well as sign language – has been associated with synchronous communicative interaction in which all participants (i.e. interlocutors as well as interpreters) share the same physical environment. However, the ongoing spread of information and communication technologies along with growing multilingualism and efforts of social inclusion (access to the media for all) has led to changes in communication practices, which have also had repercussions on the practice of interpreting at the beginning of the 21st century. The following technological developments are of particular relevance here.

Firstly, teleconferencing technologies, linking communicative partners at two or more locations, have created new opportunities for real-time interaction without the need for physical co-presence (distance communication). On the one hand, *audioconferencing* technologies have become more versatile than their old-fashioned precursor, the telephone, enabling participants at more than two locations – and even mobile participants with changing locations – to interact in spoken mode. On the other hand, *live chat* via the Internet has provided a tool for synchronous interaction in written mode. But what has given a boost to the spread of teleconferencing technologies is that they have become multimedial and can therefore better support the different modes of communication. Thus, teleconferencing today can rely on audio and video delivery channels (*videoconferencing*) to support the spoken

verbal mode as well as the visual mode, and on *document sharing* and *whiteboarding* facilities to support the written verbal and/or an additional graphical mode.

Secondly, information and communication technologies have also been exploited to make communicative events more multidimensional. International conferences, for example, are often accompanied by 'virtual strands' (e.g. by live chat sessions or web discussion forums), and Annual General Meetings are sometimes broadcast live on the Internet *(webcasting)* – both with the aim to reach those who cannot participate in the main event itself. Similarly, TV talk shows are sometimes 'continued' on the Internet in live chats with the expert talk show guests. Many politicians, among them the German chancellor, use the new technologies to add another dimension to their political discourse, by making pre-recorded audio or video clips (so-called *podcasts*) available at their websites to reach the public more 'directly'.

The spread of new technologies has not replaced face-to-face communication. Rather, it has created additional communication opportunities, and this is in line with the communication needs in increasingly complex international and interdisciplinary projects requiring frequent, regular, fast and cheap communication contacts between the parties involved. It furthermore coincides with an unprecedented mobility of labor and migration movements, with the EU enlargement and the EU's language policy, all of which have promoted multilingualism (despite the use of English as a *lingua franca* in many communicative situations).

These interwoven lines of development have had a twofold impact on inter*lingual* interpreting (including sign language interpreting): On the one hand, interpreting support is required in distance communication such as bilingual teleconferences. This has already been practiced in the form of telephone interpreting, but due to the emergence of new teleconferencing technologies, the requirements for interpreting have diversified. On the other hand, the new technologies themselves have come to be used to make interpreters available from a distance: it is not infrequent for interpreting agencies today to promise interpreting services 'at the push of a button' through the use of audio or video links between a remote interpreter and those in need of the service. This form of interpreting has, for example, is being used in medical and court room contexts.

Apart from this, the spread of audiovisual communication media has also created a need for inter*modal* interpreting in order to provide access to these media for members of society with disabilities. The increase in live broadcasting on TV and on the web, for instance, has created a need for live subtitling of audiovisual contents for the deaf and hard-of-hearing, i.e. a 'transfer' of spoken language and sound into written subtitles. Theaters and museums increasingly acknowledge that blind and partially sighted people can access visual contents through live audio description provided by 'visual interpreters' who 'translate' images into verbal language.

All of the developments outlined above have resulted in some relatively new forms of interpreting and have created additional and/or novel tasks for interpreters. This raises questions with regard to interpreting techniques and strategies, training and quality standards, but first and foremost it calls for research into the new forms of interpreting to create a better understanding of the conditions (and constraints) that apply in each case. It also raises the question of the interpreters' adaptation and adaptability, since continuously changing working conditions make it increasingly difficult for interpreters to work under the same or very similar conditions for a long period of time. In the forms of what I have called intermodal interpreting we even find cases in which the traditionally separate activities of translating and interpreting intermingle (cf. also Gambier 2003).

In this paper I will focus on recent forms of interlingual interpreting. In section 2 I will discuss the types of communication which are relevant for interpreting 'at a distance' and the different motivations which are driving the demand for new forms of interpreting. In section

3, I will review (prototypical) new forms of interpreting which have emerged or are currently emerging in practice, paying particular attention to the challenges for the interpreter. This will lead me to outlining a set of research questions which can be identified from observing current and emerging practice (section 4). In addressing one key area, interpreter adaptation, I will conclude this paper by reporting the results of a case study on interpreting in videoconference conversations, which focussed on adaptation processes (section 5).

2   Interpreter-mediated communication and new technologies

Many of the new forms of interpreting are characterized by the geographical separation of some or all of those who participate in the interpreted communicative event. To describe these forms effectively and to gain a better understanding of the challenges for the interpreter, it is first of all necessary to define relevant types of communication and participant roles. Furthermore, the different motivations for using communication technologies in connection with interpreting need to be considered since they have an impact on the working conditions of interpreters.

With regard to participant roles, I will distinguish between primary participants and interpreters. Primary participants are all those who produce the source text (ST) and/or receive the target text (TT). As for relevant types of communication, interpreter mediation can take place in interpersonal and mass communication:

Interpersonal communication is characterized by a direct relationship between the participants. While traditionally face-to-face communication, recent technological developments have provided a variety of solutions for its technical mediation over distances, as outlined in section 1. Interpersonal communication can be either dyadic or (more or less) monologic, with the corresponding forms of interpreting being bilateral interpreting (usually involving one language pair) and conference interpreting (usually involving a number of language pairs) respectively.

In *dyadic* communication, such as a conversation between two people or a small-group discussion, the primary participants are the interlocutors who interact with each other and continuously find themselves in alternate roles (switching between speaker/ST producer and listener/TT recipient). In bilingual dyadic communication the interpreter normally works in both language directions and in consecutive or (whispered) simultaneous mode. In *monologic* communication the primary participants are the speakers and their audience. This concerns conference situations, formalized meetings or debates (e.g. in international institutions) with a multilingual team of interpreters, usually working into their A-language (mother tongue or first language) and most frequently in simultaneous mode (in a booth).

In the traditional face-to-face setting, both forms of interpersonal communication are characterized by *interactivity* and by the availability of non-verbal and visual clues. While interactivity is obvious in dyadic communication, monologic face-to-face communication is also interactive to some degree, as speakers are able to monitor the reactions, receive feedback or take questions from the audience. By the same token, the interpreters usually share the same physical space as the primary participants (even when working in an interpreting booth) and are able to receive visual information from the primary participants, including non-verbal clues from the speakers as well as reactions and feedback from the listeners/audience.

In technically mediated interpersonal communication, there are no established practices for the integration of an interpreter as yet (with the exception of telephone interpreting). Whatever way it is done, it is likely that the interpreter's access to visual information about the primary participants is technically restricted in one way or another (e.g. the lack of visual clues in telephone interpreting). This has been one major point of criticism of some of the

more recent forms of interpreting. I will return to this in section 3. It should be noted though that technical restrictions do not necessarily result in restricted communication, as was suggested e.g. by Short et al. (1976). The interesting question is in fact whether and to what extent their individual communicative competence enables primary participants as well as interpreters to adapt to new communicative situations.

Mass communication mainly refers to broadcast communication, where the audience is 'anonymous'. In contrast to interpersonal communication, mass communication has involved technical mediation for many decades through radio and TV. Irrespective of the nature of a broadcast event (a monologic event such as a speech or a dyadic event such as a talk show or a press conference), broadcast communication is *unidirectional* in the sense that the (remote and 'invisible') audience cannot interact with the onsite participants in the same way as a speaker can interact with a co-present audience or as the interlocutors of a debate can interact with each other. With regard to interpreter mediation and participant roles, both the on-site participants and the remote audience are primary participants insofar as they either produce the ST or receive the TT.

Spoken-language interpreting for TV has established itself as a separate form of interpreting (cf. Kurz 1997). The interpreters usually work in a booth or 'off-room' (often without direct view of the speakers) and in simultaneous mode. Moreover, sign-language interpreting has traditionally played an important role on TV. As live broadcasting is becoming technically easier and networking among TV stations worldwide is becoming more frequent (e.g. caused by broadcast network monopolies), the proportion of live footage on TV both in the country's language and in foreign languages is increasing. In addition, broadcasting technology is spilling out into the web (webcasting). Broadcast communication is therefore likely to become more relevant for the interpreting profession and has already boosted new forms of interlingual interpreting (interpreting in webcasts) and intermodal interpreting (especially live subtitling for the deaf and hard-of-hearing (cf. Eugeni 2007).

So far, I have looked at various types of technically mediated communication and at their impact on interpreting. The increasing use of distance communication technologies by the primary participants is, however, only one reason for the emergence of new forms of interpreting. A fundamentally different motivation is underlying the use of (the same) communication technologies to link an interpreter from a remote site to a group of primary participants who share the same physical space. When discussing the use of communication technologies in connection with interpreting, we, therefore, have to make a basic but crucial distinction between:

1. interpreting in communicative events in which the primary participants themselves are distributed over different locations (i.e. interpreting in a teleconference, TV broadcast, webcast),
2. interpreting in communicative events in which the primary participants are together on site and only the interpreter works from a different location (i.e. remote interpreting).

This distinction cuts across the different types of interpreter-mediated communication (mass, interpersonal, dyadic and monologic communication). In the first category, the various forms of teleconferencing, for example, are primarily – but not exclusively – used for dyadic interpersonal communication (e.g. small-group discussions); by contrast, broadcast technologies are associated with unidirectional communication (e.g. speeches or press conferences). The second category, remote interpreting, is required for both forms of interpersonal communication. The following section provides an overview of the major new forms of interpreting which have emerged in practice.

3   New forms of interlingual interpreting – an overview

Interpreting in a teleconference

Teleconferencing includes all types of synchronous, real-time interpersonal communication with the primary participants at different locations, i.e. audioconference, videoconference and chat. The most basic form of an audioconference is a telephone conversation, and indeed the most well-known form of interpreting in a teleconference situation is *telephone interpreting*. Here an interpreter is integrated into a telephone conversation, usually working from a third location and working in consecutive mode (cf. Oviatt & Cohen 1992, Wadensjö 1999). Telephone interpreting is mostly used to support dyadic communication between interlocutors at two sites (only). While more complex audioconferences involving more than two interlocutor sites are frequent in professional monolingual communication, Wadensjö's (1999) analysis of the complexities of turn-taking in telephone interpreting makes it clear that a bilingual (let alone multilingual) interpreter-mediated audioconference with more than two sites is more difficult to manage.

Interpreting in a videoconference can be seen as an extension of telephone interpreting. In the simplest form of a videoconference, a so-called peer-to-peer videoconference, two sites are linked via sound and video channels (using satellite links, the ISDN telephone network or more recently the web), allowing for (relatively natural) synchronous interaction among a small, distributed group of interlocutors. As was pointed out in section 2, there is no standard practice for interpreter integration here as yet. In my own research into interpreting in bilingual videoconference conversations (German<>English and German<>French), an interpreter was integrated into an ISDN-based peer-to-peer videoconference from a third location, using videoconference equipment that gave the interpreter access to the sound and video images from both interlocutor sites and enabled him/her to switch the language direction as appropriate. The conversations were found to run more smoothly when the interpreter worked in simultaneous mode than in consecutive mode. Whilst there were problems with the sound quality and with a delay in the transmission of sound and images, the interpreters stressed the usefulness of visual clues, and the interpreting task on the whole was positively received (cf. Braun 2004, 2007 and section 5).

Apart from the use of videoconference technology for dyadic communication, it has also been used to enable monologic communication over a distance, e.g. conferences with distributed speakers and audiences or with individual remote speakers (cf. Daly 1985 and Kurz 2000 respectively). According to Kurz (2000: 101), simultaneous interpreting between the on-site German-speaking and remote English-speaking primary participants of the conference on which she reports did not present any major problems as long as the sound quality was sufficient and the contributions by remote speakers were of a relatively short duration. However, she also points to a number of avoidable technical problems. In one case, for instance, no technical trial run was carried out with the interpreters, and the organizers forgot to provide an additional sound channel between the main conference room and the remote site, so that the English interpretation of the German contributions made in the conference room could not be received by English-speaking remote participants.

Due to being perceived as more natural in comparison to audioconferencing, videoconference technology seems, in principle, better suited for interpreter-mediated communication involving more than two primary participant sites than audioconferencing. However, research has to date only focused on peer-to-peer videoconferences.

Yet other requirements for interpreting have been created in multilingual *chat sessions*, which are, for example, used in the European Commission to enable EU citizens to 'talk' to EU politicians (European Commission 2003). In a chat between the public and an expert, for instance, the interpreters would be at the expert's location. The written contributions from the public can be interpreted by way of sight translation, or they can be read out and interpreted

(simultaneously), whereas the spoken expert's answers are interpreted and typed (manually or with the help of speech recognition software). Whatever the practical realization, the crucial point is that chat interpreting is difficult, because in contrast to the other teleconference interpreting settings the interpreters are deprived of all visual and paralinguistic clues from the remote contributors. Therefore, the remote interlocutors remain a largely anonymous group of primary participants for the interpreter, in spite of the fact that chat is a form of interpersonal dyadic communication. They also form a potentially more heterogeneous group than the interlocutors in other types of dyadic communication. This further complicates the situation for the interpreter.

Interpreting in a webcast

The use of webcasting technology to deliver communicative events live to an audience via the Internet is a more recent development. Webcasting follows the same principle as live radio and TV broadcasting: audio or audio and video are recorded at the speaker's site and immediately sent out to the audience. Interpreting in a webcast shares some features with interpreting in a videoconference, but many more with TV interpreting. The speaker and the interpreter are in the same location. This enables the interpreter to work from a booth or 'off-room' and interpret simultaneously. Ideally the interpreter will be able to see the speaker (at least on a monitor). The major challenge of this scenario is that the audience is not only remote (as in videoconference interpreting) and invisible (as telephone and chat interpreting), but also 'passive' since webcast communication/interpreting is a form of unidirectional communication. In other words, the interpreter has no access to the audience at all and is therefore deprived of perceiving any reaction or feedback.[1] This is further exacerbated by the fact the audience is potentially larger and more heterogeneous than in most other forms of interpreting and less predictable than even the audience of a TV program.

In an effort to introduce some interactivity into webcast communication, the EU has started to combine live webcasting and live chat. This is, for example, used by EU officials to explain a call for tender to interested members of the public. The explanation is delivered via webcast and is interpreted. Members of the audience can then ask questions via a chat line. The (written) questions are interpreted for the EU officials and subsequently answered by the officials, again via the webcast connection (European Commission 2004).

Remote interpreting

I will now turn to the second of the two categories of interpreting in connection with technical mediation outlined at the end of section 2. Audio- and videoconferencing technologies are used to enable what has come to be called 'remote interpreting'. The primary participants are all at the same site, while the interpreter is at a separate location and is linked to the primary participants via audio or audio and video connection.[2]

International institutions have been interested in *remote conference interpreting* via video link for some 20 years. A major driving force for experimenting with remote interpreting in EU institutions, for example, has been the EU enlargement and the anticipated (or temporary) shortfall of interpreting booths in the EU meeting rooms (cf. Mouzourakis 2003). A number of studies was carried out to explore the conditions of interpreting in this setting (cf. Böcker & Anderson 1993, Moser-Mercer 2003, 2005, Mouzourakis 1996, 2003, 2006). In principle, the interpreters worked from a separate room and used monitors to view the primary

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[1] There may, of course, also be a combination of a co-present audience and a remote Internet-based audience.
[2] These forms have also been called telephone interpreting and video(conference) interpreting respectively. However, in this paper the terms telephone interpreting and video(conference) interpreting are reserved for the two forms of interpreting in a teleconference described above.

participants (overview of the meeting room, detailed view of the speaker or a combination of both).

According to Mouzourakis (2006: 52) the studies of remote conference interpreting, which were conducted in a variety of technical conditions, revealed "a number of physiological (sore eyes, back and neck pain, headaches, nausea) and psychological complaints (loss of concentration and motivation, feeling of alienation)". In her comparative study, Moser-Mercer (2003) furthermore observed an earlier onset of fatigue in remote interpreting compared to traditional conference interpreting. Mouzourakis (2006: 52) concludes that it would be "difficult to attribute [these problems] solely to a particular technical setup or even to the working conditions provided by a particular organization". Rather, they seem to be caused by the condition of remoteness.

More recently there has been a growing need for *remote bilateral interpreting*, especially in the area of public service interpreting (or community interpreting). In an early study of remote bilateral interpreting in medical encounters, Hornberger et al. (1996) compared remote simultaneous interpreting using an audio connection with onsite consecutive interpreting. In the remote condition the doctor and patients were equipped with microphones and headsets, and the interpreters worked from a separate room to interpret simultaneously. The remote mode was preferred by the primary participants. The interpreters, while preferring to work on site, stated that they thought the primary participants would benefit from the simultaneous mode. The interpreters' performance in the remote simultaneous mode was found to be more complete and accurate than the performance in the onsite consecutive mode.

Results from other, smaller surveys of remote interpreting using audio connections (cf. Fagan et al. 2003, Jones et al. 2003, Kuo & Fagan 1999, Lee et al. 2002) and video connections (cf. Jones et al. 2003, Paras et al. 2002) – all in medical encounters – are difficult to compare because of a great variance in the conditions under which they were conducted.[3] In a review of these studies, Azarmina & Wallace (2005: 144) conclude, perhaps somewhat optimistically, that "the findings of the selected studies suggest that remote interpretation is at least as acceptable as physically present interpretation to patients, doctors and (to a lesser extent) interpreters themselves" and that "[r]emote interpretation appears to be associated with levels of accuracy at least as good as those found in physically present interpretation". Informal reports by interpreters also exist from the use of remote interpreting (both video and audio) in other settings, e.g. at the police, in court rooms and in pharmacies. Furthermore, video links have been used to provide sign-language interpreting at a distance. The general claim seems to be that remote bilateral interpreting is feasible on the whole. However, with an increasing demand for this form of interpreting, there is a need for further research into the various settings.

4   Implications for research

New and emerging forms of bilingual or multilingual communication in which interpreting takes place under the conditions of technical mediation may currently or perhaps even in the future only represent a relatively small share of the interpreting market. However, they are perceived as particularly difficult forms of interpreting, and as yet there are no established standard practices for most of them. Research will help to gain a better understanding of the difficulties involved and will therefore support the shaping of future working conditions of interpreters from an interpreter's perspective rather than leaving the decisions solely to the

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[3] In contrast to the study by Hornberger et al, for example, most other studies involving audio connections used the telephone (the telephone receiver was passed on between doctor and patient), and consequently the interpretation was consecutive.

institutions that have an interest in remote interpreting services. Moreover, research into new forms of interpreting is likely to reveal additional insights into the conditions and processes of interpreting in general. In this section I will describe some of the major questions that need to be addressed.

A whole set of questions arises from one of the most prominent characteristics of these forms: the suspension of physical co-presence of some or all participants. *Remoteness* has wide-ranging implications, which researchers have only begun to investigate. Three dimensions can be distinguished here:

Firstly, the remoteness of the interpreters and how it affects their performance has been analyzed in remote conference interpreting scenarios (cf. section 3) but needs to be explored further and needs to include other forms of interpreting. In videoconference interpreting, for example, the remoteness was also found to affect the work of the interpreters, but unlike the results from remote conference interpreting, it did not lead to a loss of motivation (cf. Braun 2004). By the same token, the more favorable reception that remote bilateral interpreting has so far received in comparison to remote conference interpreting also suggests differences in the impact of remoteness in the various settings.

Secondly, not much is known about the impact of the physical/geographical separation of the primary participants (from each other, where relevant, and from the interpreter) on their communicative behavior and about possible knock-on effects on the interpreter's task and performance (cf. Braun 2004). This question is particularly relevant for bilateral interpreting (in a teleconference, but also remote bilateral interpreting), since a bilateral interpreter is traditionally a member of the group of communicators and is highly 'visible' for the primary participants.

Thirdly, the remoteness and invisibility of the audience in broadcast/webcast scenarios has to date only been analyzed from the perspective of TV interpreting (cf. Elsagir 2000). As web-based broadcast technologies are beginning to emerge, the impact that a potentially wider, more heterogeneous and less predictable web audience as well as the easier distribution and reusability of webcasts in comparison to TV programs will have on interpreting performance are research questions for the future.

A related area of research is that of *communication management* in the new forms of interpreting. Some questions of communication management, in particular turn-taking, have been addressed by Wadensjö (1999) and Braun (2004) for telephone and videoconference interpreting respectively. In a wider sense, research is, for example, required into the impact of the roles, status and geographical/physical distribution of primary participants and interpreters on communication management under the conditions of technically mediated interpreting. Another aspect that requires examination is the impact of technical issues such as control over equipment (e.g. control over camera movement in video-based interpreting) and possibilities of intervention by the interpreter (before and during an interpreting assignment) on communication management. A closely related question concerns the new and/or additional communication management skills required from the interpreters. Finally, the impact of (effective) communication management on the quality of the interpreting service in the new forms of interpreting should be investigated.

Yet another relevant area of research, which has not received much attention in connection with the new forms of interpreting, is the vast area of *socio-cultural implications* of these forms of interpreting. On the one hand, the increasing use of English as a *lingua franca* and the generally increased mobility of labor have created a situation in which people who use the same language may no longer share the same or a similar cultural background. The effects of this on interpreting under the various conditions of technical mediation have yet to be explored. On the other hand, the reactions of primary participants from different cultural and social backgrounds, different age groups, of people with medical conditions or under stress (in a medical or court room or police context) to the new forms of interpreting are

largely unknown (but cf. Lee et al. 2002) and could potentially have important implications on the usability of these forms of interpreting. At the same time, the cultural and social backgrounds of speakers and their related linguistic behavior (e.g. strong regional dialects) may affect the performance of interpreters. This raises questions with regard to the feasibility of remote interpreting especially in public service interpreting, where primary participants are often less used to speaking 'in public' and to working with interpreters.

One aspect of communication that has recently received increasing attention in discourse analysis and related fields is the *contribution of different modes of communication* to discourse comprehension and production (cf. e.g. Kress & van Leuuwen 2001). This area of research is potentially relevant for both intermodal and interlingual interpreting. I will, however, continue to focus on interlingual interpreting here. Interlingual interpreting is known to rely heavily on non-verbal clues such as mimic, gesture, posture (cf. Bühler 1985, Poyatos 1997) and on the interpreters' general visual perception of the communicative situation. One major problem of the technical mediation of communication is that it imposes constraints on the perception of non-verbal clues and general visual perception. Not unexpectedly therefore telephone interpreting and remote interpreting via an audio link are regarded to be among the most difficult forms of interpreting. Having said that, even videoconference interpreting and video-based remote interpreting were found to be more difficult than face-to-face interpreting. Interesting clues come from research into visual perception in monolingual video-mediated communication here, which has revealed that the video channel, even when providing high quality video images, supports the perception of visual clues less efficiently than face-to-face communication (Finn et al. 1997, Whittacker 1995). Moser-Mercer (2005), reflecting upon the role of visual perception in remote interpreting, concludes that a better understanding of the functions of visual information and of the interpreters' needs in its perception is required.

The current diversification of the forms of interpreting requires interpreters to adapt to new working conditions faster these days than perhaps ever before. In a fast-changing world it is not possible to work under the same or very similar conditions for a long period of time. Therefore, one final research area to be mentioned here (although more could certainly be added) concerns the *adaptation of interpreters to new forms of interpreting*. In Braun (2004, 2007), I have shown that interpreters who worked in bilingual videoconference conversations were able to develop adapted strategies to cope with the novel tasks in the videoconference setting. By way of example, the main results of this research will be outlined in the final section of this paper. Further research into the interpreters' potential to adapt to new forms of interpreting will provide much more than short-term answers to questions of what is feasible and what is not. If adaptation processes can be modelled appropriately, this can provide long-term arguments to feed into the ongoing and future debates about interpreters' working conditions and workplaces as well as a useful starting point for interpreter training.

5   A case study: adaptation

In this section I will briefly outline a case study on interpreter adaptation in bilingual videoconference conversations. The starting point of this research was the assumption that interpreting is a process of discourse comprehension and production under specific conditions (Kohn & Kalina 1996), characterized by the immediacy of the 'transfer' (cf. Kade 1968) and therefore requiring a number of specific linguistic and cognitive skills (including memorization and retrieval skills, cf. Gile 1991) as well as specific comprehension and production strategies (cf. Kalina 1998). The investigation of adaptation processes was furthermore based on the hypothesis that the interpreters' ability to monitor their ST comprehension and TT production and to act upon the results of their monitoring processes

plays a crucial role in the optimization of their performance and in the development of adapted strategies (cf. Braun 2004).

Adaptation is understood here as the interpreters' ability to select strategies which they consider to be appropriate for the situation; this involves 'novel' strategies which develop in connection with a new interpreting task and which have not occurred before because the need did not arise; it also involves strategies which are known from other scenarios, and which may be applied very frequently in a particular scenario.

The study relied on a small corpus of recordings and transcripts of a) 11 simultaneously interpreted bilingual VC sessions (English<>German and French<>German) of an average length of 30 minutes and b) retrospective think-aloud protocols with the interpreters and some of the interlocutors. The VC sessions consisted of role play peer-to-peer and small group conversations of two types. Half of them were job interviews where the interviewers came from Human Resources departments of various companies, and the candidates were freelance language trainers who were asked to apply for a job as language trainer. The other half were information-gathering sessions in which German university students talked to informants from foreign universities in preparation for their term abroad.

For the videoconference connections, PC-based ISDN videoconference systems were used. The systems worked on the basis of the H.320 standard for audio and video encoding (G.722 and H.261 respectively; a frequency rate of 7 kHz was used for audio transmission; a bandwidth of 128 and 384 kBit/s for video transmission). The primary participants used commercially available systems. The interpreters worked from a dedicated PC-based videoconference interpreting station which allowed them to see and hear both interlocutor sites at all times and to switch the language direction as appropriate. The interlocutors saw each other but did not see the interpreter.

The interpreters were trained (conference) interpreters who – with one exception – had many years of experience of all forms of interpreting. One interpreter per session was used. Two major difficulties reported by the interpreters related to the sound quality and a feeling of reduced social presence, which made it more difficult to relate to the interlocutors and led to an earlier onset of fatigue. Other difficulties for the interpreters arose from the interlocutors' communicative behavior: the interlocutors also had problems relating to their remote counterparts, and as a result of this their utterances were sometimes incoherent. This had knock-on effects on the interpreters' performance. Finally, a data transmission delay (approx. 0.5 seconds) caused a number of interaction problems (for a discussion of these, cf. Braun, Kohn & Mikasa 1999, Braun 2004). The interpreters were often required to adopt the role of a moderator, which posed a number of ethical and other problems.

In spite of these problems, however, the interpreters believed that interpreting in this setting was in principle feasible, especially if the sound quality could be improved. The overall positive impression can largely be traced back to the interpreters' ability to adapt to the interpreting conditions in the videoconference setting. Two of the interpreters were involved in a whole series of videoconference sessions over several months. What is particularly interesting in their performance is that the adaptation proceeded in stages, along with a shift in the type of strategies that were mainly used. Broadly speaking the following three qualitatively different stages could be distinguished. To a lesser extent this could also be observed in the performance of those interpreters who participated in one videoconference only.

The first stage was one of problem discovery and awareness raising. The interpreters realized that familiar interpreting strategies sometimes failed in the videoconference situation. This was mainly due to listening comprehension problems created by problems with the sound quality and the above-described knock-on effects of the interlocutor's problems with the production of coherent (ST) utterances. Furthermore, problems with conversation management due to the transmission delay and the interpreter's time lag caused disruption in

the early phases of many videoconferences. At this stage, performance reduction and the use of *ad hoc and local problem-solving strategies* predominated:

Listening comprehension problems were often spontaneously dealt with by generalizing in the TT, activating additional background knowledge to cope with the situation. Furthermore, the interpreters increased their time lag to exploit additional ST segments for comprehension. This strategy is familiar from other difficult interpreting situations. However, in the dyadic communication scenario of the videoconferences the effectiveness of this strategy was limited. In combination with the transmission delay in the videoconference, the interpreter's time lag frequently created long pauses between turns. This sometimes provoked overlapping speech, e.g. when an interlocutor who was waiting for a reply became uncertain and started to restate his/her question or added something to a previously completed turn just as the interpretation of the reply from the remote site arrived.[4] The treatment of the ensuing turn-taking problems is another example of initial attempts at adaptation which were of only limited success: many attempts to *repair* turn-taking problems which had already occurred led to new turn-taking problems because of the transmission delay and the ensuing asynchronous perception of utterances at the producer's site and the receiver's site.

From this, a second stage can be distinguished which was characterized by an intense reflection on how to deal with the problems encountered (manifest in the retrospective think-aloud protocols) and by experimenting with 'new' strategies (manifest in the VC sessions themselves). As a result, more *global problem-solving strategies* were used. While this stage constituted an important milestone in the adaptation process, these strategies still mainly served to *repair* problems which had already occurred. Whilst they did not necessarily cause disruption, they often created less elegant solutions:

It was, for example, not infrequent for the interpreters to choose the second-best solution in the TT in order to save resources for ST comprehension. Some other aspects of TT production (accentuation and fluency) were also generally neglected in favor of focusing on ST comprehension. Once the problems with an increased time lag became clear, the interpreters tried instead to reduce the simultaneity of ST comprehension and TT production in a more systematic way, using short pauses in the ST to deliver TT segments. This in turn required condensation in the TT, which usually worked well. On the negative side, however, the reduced simultaneity led to a number of pauses in the TT which (falsely) indicated the completion of the interpreter's turn. Any attempt by a listener to take the floor in such situations yet again created overlapping speech with all its rather drastic consequences in the videoconference setting. After repeated difficulties with repairing turn-taking problems one interpreter adopted a policy of strict 'non-interference' in the interlocutors' turn-taking problems. However, this was not helpful for the interlocutors because they were usually not able to solve interactional problems themselves.

A breakthrough in the adaptation process was achieved with the introduction of *global avoidance and preventive strategies*, fine-tuned to the situation. Thus, the third stage was the stage where adapted strategies began to emerge. At this stage there was a stronger tendency of decision-making as to what information to omit or at least to withhold until it was possible to assess whether or not it was important in a particular context. Moreover, the reduction of simultaneity of ST comprehension and TT production was further refined: the interpreters started to use fillers and their intonation to signal turn continuation and to prevent listeners from taking the floor during short pauses in the TT. Alternatively, the places selected for pauses in the TT were places where it was clear from the syntactic structure that the TT would continue. In general, signalling the status of the conversation came to play a key role in the coordination of the conversation: As a result of prevailing interactional problems, for

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[4] A (partial) solution might have been for the interlocutors to actually see the interpreter. However, this was not an option in our technical setup.

example, the interpreters decided to finally adopt a very active and consistent role in conversation management. It seems that the increased cognitive workload which this implied was offset by a better overall flow of the conversation, fewer comprehension problems through overlapping speech and, consequently also fewer production problems.

On the whole the findings with regard to adaptation in this interpreting scenario create (moderate) optimism with regard to new and emerging tasks for interpreters. It became clear that two types of adaptation played a significant role. A spontaneous reduction of some aspects of their performance (e.g. TT presentation) helped the interpreters to cope spontaneously with difficult situations and to focus attention on aspects of the performance which were considered more important at (ST comprehension). The repeated encounter of the same or similar problem led them to develop and/or activate adapted strategies, i.e. to resort to other, more elegant ways of adapting. However, when performance reduction remains the predominant pattern, this inevitably leads to a loss of quality.

This, in turn, raises the question to what extent the quality of interpreting in its new forms can differ from that of traditional interpreting. On the one hand, new forms of technically mediated communication and interpreting do not necessarily replace face-to-face communication. Rather, they serve to meet additional communication needs, as pointed out in section 1. With this in mind it would seem fruitful to consider and investigate the various new forms of interpreting as forms of communication in their own right. On the other hand, the users of interpreting services are usually not aware of the difficulties arising in these new forms of interpreting and/or are not normally willing to accept lower quality arising from difficulties with a new interpreting situation. Awareness of these points among interpreters contributes to the fact that new forms of interpreting are greeted with a certain amount of scepticism in the interpreting profession.

It would be unrealistic, however, to believe that industrial, governmental or other institutions will abandon their intentions to use what they perceive to be the most appropriate type of communication technologies to pursue their communicative goals. Globally operating institutions in particular are increasingly pushing towards the use of information and communication technologies, and this also sets the pace for the work of future interpreters.

What would be useful is a definition of working conditions for the emerging forms of interpreting. The AIIC has defined minimum standards for new forms of conference interpreting (cf. AIIC 2000). However, working environments change fast, and may be ahead of defined standards. In such cases it will be a question of individual negotiation between an interpreter and a client of what is feasible in a particular scenario to avoid false expectations and frustration. Awareness of potential problems, i.e. a basic familiarity with the new forms of interpreting and their 'pitfalls', will be of enormous help in the negotiation process. This is where training of future generations of interpreters comes in. Apart from that, what is always required from practicing interpreters is a degree of adaptation or, to use a catchphrase of the 21st century, some kind of 'life-long learning'.

After all, as long as the conditions are right, new working scenarios may bring more flexibility for interpreters, e.g. the choice of travelling or working from home. Riccardi (2000) argues that remote interpreting could also lead to an interpreter's isolation. However, if new technologies could be used to help interpreters to stay out of crisis regions, their use should certainly be considered. In the end it may be disputed whether or not the new communication technologies as such bring advantages for an interpreter; familiarity with them certainly does.

6 Conclusion

In this paper I have discussed various recent forms of bilingual or multilingual communication in which interpreting takes place under the conditions of technical mediation. Based on the assumption that interpreting is cognitively complex process of discourse comprehension and production which needs to rely on specific strategies and techniques, I have outlined potential and known challenges for interpreting in the different scenarios and have defined a set of research questions which need to be addressed. These concern the condition of remoteness, questions of communication management and socio-cultural implications as well as the effectiveness of the different modes of communication in audio/video-mediated communication and interpreter adaptation. In addressing one of these questions, the final chapter reported on findings of interpreter adaptation in bilingual videoconference conversations.

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