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Positioning Translation in Technical Communication Studies
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ABSTRACT

In the life cycle of technical documents, translation, the object of translation studies, is only one of three major stages. A detailed analysis of the external translation process shows that many of the decisions made by a technical translator depend on a number of 'controlling influences'. Many of these influences originate from the other two main stages, namely technical writing and documentation management. The purpose of this paper is to suggest a discipline which accounts for the entire document life cycle and to call it Technical Communication Studies.

KEYWORDS

Technical translation, external vs. internal translation process, four dimensions of technical communication, controlling influences, Technical Communication Studies.

1.   Beyond Translation Studies?

When translation is to be modelled in a scholarly discipline, that discipline must be Translation Studies. Or must it? The present study looks into technical translation and raises the question as to whether translation studies really covers all which is required to describe this object. As a possible complement I discuss the option of conceiving a discipline which accounts for technical communication at large, including the production, the translation and the organisation of documents and document components. I tentatively call this discipline Technical Communication Studies.

Is it really necessary to propose yet another new discipline, only six short decades after the inception of Translation Studies? Or is this just one of those strange ideas which Germans need for their professional status, as Chesterman notes with a slightly mocking undertone? (Chesterman 1997: 31 – but see also 1997: 170 where the undertone is gone.) My answer is twofold. Firstly, Technical Communication Studies is not my invention. It is already there. Disciplines in our field of study emerge in three stages, namely (1) the stage of emerging scholarly interest, (2) the stage of an interdiscipline and (3) the stage of an integrative discipline (Schubert 2007: 347). In my analysis, Technical Communication Studies is already well underway somewhere between the second and the third stages. Secondly and more importantly, the main reason for deliberating the possible emergence of Technical Communication Studies lies in the object of study itself. As far as technical translation is concerned, Translation Studies investigates a professional activity which underlies a series of external influences. Some of the strongest among them derive from the

source document and, at a closer look, from the process in which it was created, typically by a technical writer. Other influences in kind originate from the process which in technical communication frequently follows the translation work, that is, documentation management.

The present article sets out to investigate the controlling influences from within and from outside the translation process proper.

2. Translation as a process

To address the question of how to model technical translation, it is worthwhile recalling how our branch of learning began. Translation Studies came into being as a discipline in its own right through a new challenge, new methods and a new object. The challenge was machine translation. Tangible efforts at setting up research and development with the objective of developing computer systems capable of translating texts began around 1947 (Hutchins 1997; Schubert 2007: 163-166) and became the initial impulse for translation studies (Fedorov 1953/1968: 6; Kade 1968: 7, Wilss 1988a: 2, 1996: 2; Gerzymisch-Arbogast 2002: 18). A useful metaphor to may be to call machine translation a catalyst of Translation Studies, because as in chemistry, it was the initiating entity which started the development but it played virtually no further role in it.

The new methods were those of structural linguistics. Translated texts had previously been a major preoccupation of theological exegesis and a sideline of Literary Studies, each of which applied its specific methods of text analysis. The new discipline adopted a linguistic approach and was in the beginning seen as a branch of Applied Linguistics (Baker 1998/2001: 279). The challenge and the methods are often mentioned – in contrast, accounts of the history of Translation Studies focus less frequently on the object of study which in the 1950's was new, too. With machine translation the genre for which these systems were developed entered the frame: technical texts (Schubert 2007: 175-176).

It would be inaccurate, however, to say that the previous extradisciplinary research interest in translated religious and literary texts was merely complemented by an additional but essentially similar interest in technical texts. The change may have started in this way, but soon it went deeper, firstly by applying the new linguistic methods and secondly by adopting a shifted perspective on its new object. The early Translation Studies no longer looked at translated texts as static products, but began to focus on the process of translating. It is likely that this change of perspective was catalysed by machine translation and its (in those years) genuinely procedural approach as well. The transformational turn in structural linguistics at that time may owe its initial impulse to the same source. In Translation Studies, another impulse to the same effect came somewhat later from Literary Translation Studies. Levý (1967) forwarded the idea of

looking at translation as a decision process. This idea was echoed in Translation Studies (e.g. Reiß 1976/1993, 1981/2000; Kußmaul 1986/1994; Wilss 1988a: 92-107, 1988b; 1996: 174, 1998/2001; Gerzymisch-Arbogast 1996: 260-263, 269-272, 1997; cf. Shuttleworth/Cowie 1997/1999: s.v. *Decision Making, Translation as*) and found an interesting continuation in the elaborate Methods approach by Gerzymisch-Arbogast and Mudersbach (1998).

3.   A two-sided process

The procedural perspective has, for a relatively long time, been a basic feature of the approaches taken by many scholars in translation studies. Reviewing the research in this field, one finds that the translation process is investigated in two different ways which complement each other (Schubert 2007: 157; Göpferich 2008: 1). One line of research looks into the internal and the other into the external process. The internal translation process is the mental activity involved in carrying out the translation work with all its steps and decisions. The external process is everything in the translation process which can be observed by another person. In other words, the external process is the translation workflow. The translator's mental activity is not open to direct observation. Therefore, the research strand focusing on the internal process makes extensive use of psychological and psycholinguistic techniques and methods which include introspective and retrospective methods such as think-aloud protocols and reverbalisation (Krings 1986; Lörscher 1991; Jääskeläinen 1998/2001; Hansen 2005, 2006; Kußmaul 2005), keyboard and mouse activity logging, eye-tracking and even some medical methods are applied.

Comprehensive recent overviews of the methods and findings of research into the internal translation process are given by Krings (2005) and Göpferich (2008). In new and very promising work undertaken by Heine (2008) these techniques and methods are transferred to research in technical writing. The present article is primarily concerned with the external process. Earlier stages of my analysis were previously published for a German-speaking audience (Schubert 2003a, 2007).

3.1. The external process: preliminaries

The external process is the translation workflow within which the translation process takes place. A workflow is a chain or sequence of activities which can be described in terms of agents carrying out individual activities and influences controlling the activities. Whilst the internal process cannot be directly monitored, the external process is the directly observable part of the translator's work.

To focus our view on the object our discipline is interested in and can reasonably claim to be in a position to theorise about, it is necessary to thoroughly delimit the object of study and to define some categories for its description. The more simply and clearly a model is formulated, the greater its ability to explain and represent an activity. For this reason it is first necessary to introduce a number of simplifications.

The first simplification is to separate the translation work proper from the general business process and to disregard the latter. That is, to leave to business administration and related disciplines the theoretical coverage of the contractual relation between the customer and the translator and to exclude from our observation all activities and influences which are concerned with this. Obviously a single phone call or e-mail message may touch upon both the contractual stipulations and for example specifications for the translation job. But in such a case only the job specifications would be part of our object of study.

The second simplification I choose to introduce is a producer-orientation (Schubert 2007: 254-255). This means that although a complex set of factors and persons is under scrutiny, the description should view the activities and influences from a single agent's vantage point and thus account for these activities and influences as they are experienced or carried out by this one person. The agent from whose angle the translation work can best be described is the producer of texts, that is, the translator.

What is so remarkable about the decision to describe the translation process focusing on the translator? The justification for this approach lies in the fact that the translation process is realised through communication and interaction between several (or even many) agents and that the analysis might, therefore, branch out into descriptions of each of these agents' activities. By choosing a producer-oriented view, one cuts down the amount of activities to be described to those carried out or experienced by a single, central agent. Since it is the translator who produces the target text and thereby carries out the translation work proper and creates the workpiece which the activity is all about, the producer-oriented perspective implies that all communication or influences from the other agents' side are considered in the form in which they take an effect on the translation work.

A third simplification is the distinction between primary and secondary activities and processes. As the translator as text producer was chosen as the central agent, the process in which the target text is created and edited is selected as the primary process. Activities in which other workpieces are made or changed are then called secondary. This distinction is purely based on the workpiece of each activity. It should not be misunderstood as implying a judgement of status. A secondary activity is no less important than the primary – it simply has a different workpiece. If the primary process is translating, then for example the

creation and maintenance of a terminology database is a secondary process (workpiece: termbase), as is the extraction of translatable source text from untranslatable data in which it is embedded as in software localisation (workpiece: text files or table or database plus codes for the reintegration of the target text components in the embedding data). Note that this is a relative distinction. While in this example, terminology work is secondary to translating, the entire translation process may in turn be secondary to a documentation process which again may be seen as secondary to a manufacturing process.

3.2. The external process: agents, activities and influences

Having established these basic assumptions, the primary translation process can now be analysed. The factors which play a role are those activities which are carried out by the translator, the agents from whom these activities originate or to whom they are addressed, and the influences which control the activities.

Agents
The translator communicates with various other agents in the process. These include the initiator, informants, co-producers and the recipients. I take the term *initiator* to cover all agents who order a document to be translated. In the case of a free-lance translator this can be a customer in the common sense of the word. It may also be a translation agency which mediates a job in turn received from their customer. In a similar way a translator employed with a service-providing company such as a translation bureau is in contact with a customer. In this case, however, the communication may be mediated by a group leader or some other manager within the translation bureau. For translators employed in a translation or communication department or a language service in a larger company, the initiator may also be a person in another department.

Technical translators very often need to research information. The persons from whom they obtain it are called informants. This includes experts with whom the translator communicates in person, on the phone, by e-mail or in some other way as well as the authors of documents from archives, libraries, the Internet and other repositories.

Technical translators often work in teams. From the perspective of the one text-producing translator we are looking at, there thus are one or more co-producers or team colleagues who work on the same job.

The next group of agents is the recipients. I mention them last not because of less importance, but to reflect the order in which they appear in the workflow. The recipients are nearly always a group.

Activities
To the extent that they are not disregarded as part of the business process, the translator's main activities comprise
  - receiving the source document,
  - receiving the job specifications,
  - researching information,
  - planning the workpiece,
  - translating,
  - formatting,
  - revising
  - finalising.

I use the term *receiving* to include both receiving or downloading the source document, opening the file and reading it. (Reading is part of the external process, understanding falls within the internal process.) Source documents received in hardcopy or by fax rather than as a computer file are rare in technical translation but they are covered by this term as well. In a similar way, the job specifications are received. This activity includes receiving and reading the job specifications, the style guide, the reference documentation and the like and, if provided by the initiator. It also comprises receiving and opening resources provided by the initiator such as term lists or terminology databases, translation memories and, less commonly, parameter files for a machine translation system. The initiator may also provide the translator with an entire software system. Some of the current translation memory systems, which are too complex and often too costly for free-lance translators or small bureaus to purchase, include a function whereby the full version of the software can be used to create a project file consisting of the system software, the source document and any available resources. This project file, which provides most of the key functionality of the full software, can then be sent to a free-lancer who can translate the text using the translation memory tool. The two receiving activities are carried out by the translator in communication with the initiator.

Research is carried out through communication with informants who may include the initiator or some other person at the initiator's organisation. Normally, however, the translator will, in addition, use other sources of information in the corporate or the public realm, such as archives, libraries and the Internet. For the purposes of modelling the process it is worth noting that in both cases the activity can be seen as communicative. In the first type of activities, the translator is in direct bidirectional communication with the informants. In the second type of activities, the research in libraries etc., the translator reads documents and views and listens to other materials and is thereby in indirect monodirectional communication with the authors of these materials. The content of these communicative activities is normally concerned with the content of the documents and with the language.

Planning the workpiece is an activity which is required in most technical-translation jobs. In this preparatory activity, which precedes translating proper, the translator makes decisions about coherent term usage, coherent syntax, coherent formatting and the like. This may be needed to meet the requirements contained in the job specifications and may often involve more than what was explicitly required by the initiator in order to achieve a high level of quality with regard to the coherence of content, language and appearance. In many cases it is useful to include a planning activity even for a single translator, but it is inevitable as soon as co-producers are involved.

Translating is of course the centrepiece of the entire process. Whilst each of the other activities may in a specific case be omitted, this one is compulsory for it is during the translating activity that the target text is written. The term *formatting* is used here to incorporate all efforts invested in arranging the typography, the lay-out, the web design, the import of illustrations and other aspects of the appearance of the target document.

Revising comprises both the monolingual and the translation correction, the verification of compliance with the job specifications and with other controlling influences as described below. It also includes the verification of formatting requirements.

The activity of finalising includes the printing, collating, binding etc. of print documents and applying any finishing touches to the appearance of electronic documents. Normally this is not done by translators. They may, however, have to order, control, supervise and approve this work. I deliberately avoid the term *release* in the sense of the initiator accepting the target document as proper fulfilment of the order, since that is part of the business process.

This description lists the activities in an approximate sequential order. However, it is obvious that the translational workflow is much more intricate. Firstly, the activities need not be carried out in this particular order. It can be advantageous to carry out a specific act as early as possible in the workflow to make sure it is sustainable, i.e. that it has as lasting an impact as possible. This means that for example the formatting quite often is not carried out after the target text has been written, but it is catered for in advance. This can for instance be done by using a preset document template or by overwriting the source file in order to fill in the target words and keep the formatting as it is, to the extent that this is possible.

Controlling influences
Since a translator works in communication and co-operation with other agents, the activities of these agents have an effect on what the translator

does. To some extent, the other agents' activities thus control the translator's work and thereby have an impact on the workpiece.

The strongest controlling influence of this kind originates from the initiator. This is the source document and it determines the content of the workpiece, to some extent its linguistic form and in many cases its appearance. Another set of strong influences is contained in the initiator's job specifications and resources. They can control the content, the linguistic form, the appearance and the work process. The researched information is another controlling influence. It has an impact both on the contents and on the linguistic form of the workpiece. Controlling influences also come from the co-producers, especially in the form of coherence requirements.

An important group of agents – and quite possibly the most important group at that – is, of course, the recipients. They are often overlooked, both because it is simply assumed that they equal the source document's target group in everything but the language they understand and also for the more practical reason that translators rarely have contact with their recipients, let alone receive any form of feedback from them which is a lamentable fact. The recipients exert a controlling influence mainly by their level of knowledge and their command of the target language. The translator has to adapt the target document to both of these prerequisites for comprehension. From the point of view of modelling the process, an interesting question arises with regard to exactly how the translator is made aware of these prerequisites. If, as in most cases, there is no direct contact, the relevant information must be obtained from the initiator. Very frequently, the controlling influence will originate not from the recipients themselves, but from the translator's or at best the initiator's assumptions about their prerequisites.

The controlling influences discussed so far come from the agents mentioned earlier, that is, from persons closely involved in the translation workflow. As for the informants, however, the possibility of monodirectional, indirect communication with the translator was also mentioned. There are more controlling influences in the translation workflow which take their effect in this indirect way. They come from best practice in the industry or community in question, from the translator's professional education, from standardisation bodies and from legislation (see Byrne 2007 for references and specific examples). All these are societal influences, since they take an effect by virtue of the translator (or the initiator and the recipients) being part of some specific subgroup of the society and following the habits of that group.

The controlling influences are not all of the same kind. They can be classified according to their originator, the nature of their effect, their sustainability and their degree of bindingness. Each of the influences and their effects have been outlined already in preceding paragraphs. The

categories used in those very brief descriptions derive from the approach in which technical communication is conceived in four dimensions, namely the dimension of the technical content, the dimension of the linguistic form, the dimension of the technical medium and the dimension of the work processes (Schubert 2007: 248).

Two other characteristics are suited for describing the controlling influences. These are their sustainability and their degree of bindingness. By sustainability I mean the scope of the effect which the influence has (Schubert 2007: 334). It can be observed that the effect of some influences reaches farther than that of others. In linguistic work processes such as technical translation it appears to be useful to distinguish three degrees of sustainability which I call the workpiece stage, the process stage and the system stage. A controlling influence such as revising or correcting a target document has an effect only on that workpiece. It is therefore an influence at the workpiece stage. Revising a target document and cleaning it back into a translation memory has an effect on all subsequent documents translated with that translation memory. This effect reaches farther than revision without a translation memory. A style guide will reach yet another step farther. It has an effect on all target documents written in a specific work process for which it was made compulsory so that this type of controlling influence is an influence at the process stage. A controlled language, which may be enforced by a purpose-built software system, provides the translators with an entire language system, though reductively defined (Schubert 2008: 210). Thus it is an influence at the system level.

Various controlling influences have different degrees of bindingness. Some of the influences are compulsory, such as legal prescriptions and everything agreed upon in the contract with the initiator. Other influences have an advisory nature, such as standards. Standards are often believed to be of a legal nature whereas they are, in fact, recommendations issued by private associations. However, a standard can acquire compulsory power by being referred to either in a law or in the contract. Controlling influences of a weaker advisory nature are the rules learned in the translator's academic or professional education and the tips and hints contained in handbooks and best-practice guides. However, these too may also be made compulsory through laws or contracts.

4.   The document life cycle

When analysing the external technical translation process in the way outlined in 3.1. and 3.2., one finds that there is a specific set of controlling influences which may in some special cases affect a translation process but which are much more likely to have an impact on the processes which precede and follow the translation work. A style guide, for example, is used in some translation jobs but most often translators

will make do without it since they simply emulate the content, linguistic form and appearance of the source document. An explicit style guide is not very urgently needed for the translation process, unless the initiator wishes to depart from the general assumption of equivalence and instead chooses to prescribe elements of content or some linguistic features or an appearance clearly different from the source document. This example shows that the technical-translation process and its workpieces quite often are steered by controlling influences which were not active in the translation process itself, but in the preceding technical-writing process.
This is the point where I suggest to widen the scope of our investigation. Like other industrial products, the workpieces of technical translators have a life cycle and it makes sense to model this lifecycle as a whole. The document life cycle consists of three major stages which are production, translation and organisation (Schubert 2005). The production stage is the field of technical writers, the translation stage that of technical translators and the organisation field that of a profession which has not yet taken a consolidated shape and which I for the time being call documentation manager (more details below).

First, consider the production stage. This is the realm of technical writing. In this stage documents are created. The setting with agents, activities and controlling influences is quite similar to that of technical translation but the factors have different weights in the overall picture. The strongest controlling influence in translation is the source document. It steers the translator's work by means of linguistically expressed content. In technical writing, the strongest controlling influence is the definition as to which content is to be expressed. This definition is scattered over the job specifications, the researched information and various other influences including best practice, academic education, standards and legislation. In translation many of these influences are tacitly implied in the equivalence rule and become visible only when an initiator's request or an apparent difference in culture, knowledge or linguistic skills between the original and the target audience make it inevitable to deviate from the general equivalence guideline. By contrast, technical writers in every job face the genuine task of designing their workpiece to comply with all of these influences. The solutions they opt for will later on become controlling influences for the translators' work.

The technical writer creates everything from scratch and the translator keeps everything equivalent – obviously this is an overly simplified picture and there are many reasons to modify it. One of them, which affects the translator's work, has already been mentioned: it can be a requirement in translation to give the target document an audience design which differs from the source document. To use the words of the oversimplified picture: Not everything can be kept equivalent.

One of the strongest reasons which affect the technical writer's work has to do with the opposite phenomenon: Not everything needs to be created

anew. At least two controlling influences in the production stage of the document life cycle contribute to this fact. These are emulation and re-use. By emulation I mean those cases in which the initiator provides the technical writers with reference documentation specifying that the new workpiece should 'be like' the reference documents. A controlling influence of this kind can concern the content, the linguistic form and the appearance of the documents and it is quite common that the initiator does not detail which. Re-use is a very wide-spread technique in technical documentation. It is particularly supported by the relatively new technologies of content management and single-source publishing. Essentially this technique is based on writing small, by content and language self-sufficient text blocks (so-called *contents*), storing them in a content management system and re-using them in many documents and in many versions of the same document. This is where the third stage, organisation, plays its role. This stage is the realm of documentation management. I use this, which is not identical with document management, to denote the field of work in which content management and information management are applied to documents or contents (Schubert 2007: 109). A consolidated professional profile with a widely accepted name does not yet exist, but it is my assumption that such a profile may emerge in the decade ahead. These professionals do not create documents themselves but they store, manage and maintain collections of documents and contents along with the information needed for formatting and assembling them.

5.   Decision-making

The activities and processes in the three stages of production, translation and organisation are so closely connected and do so directly steer each other that I find it meaningful to take the entire document life cycle as the object of an integrated discipline of Technical Communication Studies. This means that the analysis of the internal and the external process should be widened to include technical writing, technical translation and documentation management.

This takes us back to the theories which describe this kind of professional work as a decision process. At first sight it may seem as though decision-making must fall fully within the realm of the internal process, since it is a mental activity. I have, however, suggested a model of decision processes which shows that in decision-making there are both internal and external factors (Schubert 2003b: 637-638, 2007: 244-245). The basic idea of this model is conceiving of the deciding as the process of selecting one out of a given number of possible options. Depending on the task, the number of possible options may be smaller or larger, including the infinite. The set of possible options is called the decision space. Each option has a number of features. It is then assumed that there is a (mental or automated) decision mechanism which consists of rules that comprise criteria. The

mechanism will then match the features of the options against the criteria of the rules. If the criteria and the features are sufficiently distinctive, a single option will be selected. If not, arbitrary criteria will be resorted to, such as (in a mental mechanism) the nicest option or (in an automated mechanism) the first-encountered option.

This model may appear more deterministic than one would like to imagine the human mind. Although it thus certainly strongly oversimplifies, it has the virtue of a model in that it gives a clearer understanding of a highly complex subject matter.

For my present line of argumentation the main point in this model is the insight that it is not sufficient to look into how a person arrives at a decision but that before one can assess the process in which a person selects a particular option one needs to know which options there are to choose from. On the background of this model of decision-making it appears to be a reasonable conclusion (and a hypothesis for further research) to say that the study of the external communication process covers the factors which make up the decision space, that the study of the internal process describes the rules and criteria and that the traditional linguistic approach provides for the features.

References

- **Baker, Mona** (1998). "Translation Studies." Mona Baker & Kirsten Malmkjær (eds). *Routledge Encyclopedia of Translation Studies*. Second ed. 2001. London/New York: Routledge, 277-280 and bibliography, 583-638.

- **Byrne, Jody** (2007) "Caveat Translator: Understanding the Legal Consequences of Errors in Professional Translation." *The Journal of Specialised Translation*, 7, 2-24.

- **Chesterman, Andrew** (1997). *Memes of Translation*. Amsterdam/Philadelphia: Benjamins.

- **Fedorov, Andrej Venediktovič** (1953). *Vvedenie v teoriju perevoda*. Moskva: Izdatel'stvo literatury na inostrannych jazykach.

- **—** (1968). *Osnovy obščej teorii perevoda*. 3rd revised issue of Fedorov 1953. Moskva: Vysšaja škola.

- **Gerzymisch-Arbogast, Heidrun** (1996). *Termini im Kontext*. Tübingen: Narr.

- **—** (1997). "Translating Cultural Specifics: Macro- and Microstructural Decisions." Christa Hauenschild & Susanne Heizmann (eds): *Machine Translation and Translation Theory*. Berlin/New York: Mouton de Gruyter, 51-67.

- **—** (2002). "Ansätze der neueren Übersetzungsforschung." Joanna Best & Sylvia Kalina (eds): *Übersetzen und Dolmetschen. Eine Orientierungshilfe*. Tübingen/Basel: Francke, 17-29.

- **—** & Klaus Mudersbach (1998). *Methoden des wissenschaftlichen Übersetzens*. [online] Tübingen/Basel: Francke. Also available at: http://www.translationconcepts.org/pdf/methoden_uebersetzen.pdf (Consulted 16.06.2008)

- **Göpferich, Susanne** (2008). *Translationsprozessforschung*. Tübingen: Narr.

- **Hansen, Gyde** (2005). "Experience and Emotion in Empirical Translation Research with Think-Aloud and Retrospection." *Meta* 50(2), 511-521.

- **—** (2006). "Entscheidungsprozesse, Anstöße und Aktivierungsreize bei Introspektion in Übersetzungsprozesse." Carmen Heine & Klaus Schubert & Heidrun Gerzymisch-Arbogast (eds): *Text and Translation: Theory and Methodology of Translation*. Tübingen: Narr, 3-16.

- **Heine, Carmen** (2008). Modell zur Produktion von Online-Hilfen. Unpublished PhD thesis. Århus: Aarhus School of Business, Aarhus University.

- **Hutchins, W. John** (1997). "From First Conception to First Demonstration: the Nascent Years of Machine Translation, 1947-1954. A Chronology." *Machine Translation* 12, 195-252.

- **Jääskeläinen, Riitta** (1998). "Think-Aloud Protocols." Mona Baker & Kirsten Malmkjær (eds): *Routledge Encyclopedia of Translation Studies*. New ed. 2001. London/New York: Routledge, 265-269.

- **Kade, Otto** (1968). *Zufall und Gesetzmäßigkeit in der Übersetzung*. Leipzig: Enzyklopädie.

- **Krings, Hans Peter** (1986). *Was in den Köpfen von Übersetzern vorgeht*. Tübingen: Narr.

- **—** (2005). "Wege ins Labyrinth – Fragestellungen und Methoden der Übersetzungsprozessforschung im Überblick." *Meta* 50(2), 342-358.

- **Kußmaul, Paul** (1986). "Übersetzen als Entscheidungsprozeß." Mary Snell-Hornby (ed.): *Übersetzungswissenschaft – eine Neuorientierung*. 2nd ed. 1994. Tübingen/Basel: Francke, 206-229.

- **—** (2005). "Translation through Visualization." Meta 50 (2), 378-391.

- **Levý, Jiří** (1967). "Translation as a Decision Process." *To Honor Roman Jakobson*. The Hague: Mouton, 1171-1182.

- **Lörscher, Wolfgang** (1991). *Translation Performance, Translation Process, and Translation Strategies*. Tübingen: Narr.

- **Reiß, Katharina** (1976). *Texttyp und Übersetzungsmethode*. 3rd ed. 1993. Heidelberg: Groos.

- **—** (1981). "Type, Kind and Individuality of Text. Decision Making in Translation." *Poetics Today* 2(4), pp.121-131. – reprinted: Katharina Reiß (2000). "Type, Kind and Individuality of Text. Decision Making in Translation." Lawrence Venuti (ed.): *The Translation Studies Reader*. London/New York: Routledge, 160-171.

- **Schubert, Klaus** (2003a). "Integrative Fachkommunikation." Klaus Schubert (ed.): *Übersetzen und Dolmetschen: Modelle, Methoden, Technologie*. Tübingen: Narr, 225-256.

- — (2003b): "Metataxe: ein Dependenzmodell für die computerlinguistische Praxis." Vilmos Ágel & Ludwig M. Eichinger & Hans-Werner Eroms & Peter Hellwig & Hans Jürgen Heringer & Henning Lobin (eds): *Dependenz und Valenz / Dependency and Valency*. Vol. 1. Berlin/New York: de Gruyter, 636-660.
- — (2005). "Translation Studies: Broaden or Deepen the Perspective?" Helle V. Dam & Jan Engberg & Heidrun Gerzymisch-Arbogast (eds): *Knowledge Systems and Translation*. Berlin/New York: Mouton de Gruyter, 125-145.

- — (2007). *Wissen, Sprache, Medium, Arbeit. Ein integratives Modell der ein- und mehrsprachigen Fachkommunikation*. Tübingen: Narr.

- — (2008). "Konstruktion und Reduktion." Hans P. Krings & Felix Mayer (eds): *Sprachenvielfalt im Kontext von Fachkommunikation, Übersetzung und Fremdsprachenunterricht*. Berlin: Frank & Timme, 209-219.

- **Shuttleworth, Mark** & Moira Cowie (1997). *Dictionary of Translation Studies*. New ed. 1999. Manchester: St. Jerome.

- **Wilss, Wolfram** (1988a). *Kognition und Übersetzen. Zu Theorie und Praxis der menschlichen und der maschinellen Übersetzung*. Tübingen: Niemeyer.

- — (1988b). "Übersetzen als Entscheidungsprozeß." Reiner Arntz (ed.): *Textlinguistik und Fachsprache*. Hildesheim/Zürich/New York: Olms, 7-20.

- —— (1996). *Knowledge and Skills in Translator Behavior*. Amsterdam/ Philadelphia: Benjamins.

- **Wilss, Wolfram** (1998). "Decision Making in Translation." Mona Baker & Kirsten Malmkjær (eds). *Routledge Encyclopedia of Translation Studies*. New ed. 2001. London/New York: Routledge, 57-60 and bibliography 583-638.

Biography

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