# LSP Translation Scenarios

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Edited by Heidrun Gerzymisch-Arbogast,
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Gertrud Hofer (Zurich)

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# Introduction

The present volume highlights a selection of contributions to the topic of *LSP Translation Scenarios* within the Marie Curie Conference Series *MuTra: Multidimensional Translation* held between 2005 and 2007 at Saarbrücken, Copenhagen and Vienna. In Part I and II, it discusses fundamental theoretical concepts in LSP translation from text terminology to intercultural discourse, including the interrelationship of knowledge and text with reference to translation and simultaneous interpreting. In Part III and IV, it portrays the technological support offered by computerized applications and offers an authentic example of how LSP translation is taught at post-graduate level today.

While the initial editor's article focuses on general LSP translation problems as seen from different text perspectives and suggests a methodological framework for solving such problems, Martin Will's article relates the constitution of knowledge (systems) to different phases in the process of simultaneous interpretation. Both these articles are written from an acting translator's/ interpreter's perspective and suggest methodologies for existing problems. From a more detached theoretical perspective, Margaret Rogers discusses the textual dimension of terminological equivalence and Juliane House emphasizes the intercultural aspect of discourse preferences in translation by exemplifying the functional-pragmatics approach and showing the influence of global English on translation.

Klaus Schubert and Lisa Link introduce basic translation tools as the technological support available in LSP translators and describe the data formats commonly encountered in LSP ('technical') translation and the software tools used to create, edit, and translate technical documents. Peter Sandrini in his 'Localization and Translation' article extends the technological perspective to differentiating between software and website localization from a translator's point of view. Annely Rothkegel's article on Multilingual Text Production relates the concept of 'text states' in multilingual text production and machine translation to different stages of repair work in the process of translation.

The concluding article 'Teaching LSP Translation' by Gertrud Hofer, exemplifies the integration of LSP translation aspects into didactics by portraying the postgraduate LSP translation curriculum as it is practiced at the Zürcher Hochschule der Angewandten Wissenschaften today.

All of the contributions are written in (British or American) English although most of the authors are not English native speakers: the reason is partly the specific wish of the contributors and partly the requirement of the publishers to ensure maximum readership. We have endeavored to respect the variations now accepted for English as an international language with examples translated from German in an effort to keep the reference language homogenous. We have also accepted that different authors use different terms for LSP texts, e.g. specialized texts or technical texts, and have not endeavored to homogenize terminology.

We would like to thank the contributors for their cooperation and patience in preparing the manuscript for publication and we hope that the book is useful to all those who work as translators and trainers of translators of LSP texts.

Saarbrücken, January 2008                                                                *The editors*

Heidrun Gerzymisch-Arbogast (Saarbrücken)

# Fundamentals of LSP Translation

**Abstract** – Against the background of general translation principles, the present article discusses critical problems when translating technical or LSP texts and suggests some general solutions to the acting translator when making decisions regarding the variation (contamination) of terms, the interculturality of discourse structures and the identification of background knowledge implied in LSP texts.

## 1 Introduction

Translating LSP texts involves choices and decisions on many levels: the level of terms when choosing between possible terminological and other lexical variants, the level of text and discourse when choosing between different discourse patterns such as a more reader- or fact-oriented 'style' and the level of background knowledge when choosing between source or target (knowledge) systems implied in LSP texts in terms of conventions or other systematic formats (e.g. English or German legal systems or balance sheet formats).

While it has long been recognized that such translation decisions cannot be made 'objectively' but that they are determined by a mix of individual and situational factors – among them the target text's purpose, norms, readership type as well as the translator's individual perspective, knowledge and judgment – little is known about the interplay of such factors in a practical translation scenario.

The following article discusses critical problems when translating technical or LSP[1] texts and suggests some general solutions to the acting translator when decisions need to be made regarding variations (contaminations) of terms, the interculturality of discourse structures and the identification of background knowledge implied in LSP texts. The guidelines offered are general in nature and abstract enough to avoid the restrictions of language-specificity. When it seemed helpful, illustrative examples were given using German as a reference language but the suggested principles apply to all languages.

Chapter 2 discusses general translation concepts and suggests three different text levels on which LSP translation strategies can be formulated: (1) the micro-level of (contaminated) terms in context (2) the macro-level of background knowledge and how it shows up in texts, and (3) a medio-level of structuring information in LSP texts. Chapter 3 focuses on the micro level: on the problem of terms in LSP translation, their constitution, contaminated usage and intercultural variation. Chapter 4 discusses the medio-level of (interculturally varying) discourse in terms of information structuring and isotopic levels as indicators of coherence. Chapter 5 discusses how implied domain knowledge in LSP texts can be identified and made transparent by coherence-establishing hypotheses. Chapter 6 illustrates the interplay of these different intercultural LSP dimensions with a translated passage from Samuelson's *Economics* textbook[2].

## 2    General Translation Principles

### 2.1 Intersubjective Verifiability

There is general consensus that translation decisions and solutions are not 're-peatable' in all situative contexts, but are influenced by individual translator's decisions with respect to the individual text to be translated in a given transla-

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[1]    While many authors use 'technical' and 'specialized' for languages of special purposes to denote domain-specific texts (cf. other contributions to this volume), the acronym LSP (languages for special purposes) is used here for reasons of simplicity, unambiguity and flexibility of use.

[2]    The Samuelson textbook example was chosen for two reasons: (1) the author of this article experienced the problems discussed below first hand when translating parts of the textbook into German and (2) the *Economics* has been translated into 40 languages so that interested readers are able to apply and compare the principles and solutions suggested to their specific language combination.

tion scenario. Translation is, therefore, an individual activity and is not measurable by 'objectivity'. On the other hand, it must be possible to make translation decisions and the reasoning behind them 'transparent' to others if they are to be systematically produced, investigated, discussed and taught. This is why the traditional criterion of 'objectivity' in the natural sciences needs to be replaced by another less rigid but realistic and similarly valuable criterion for translation purposes. It is suggested here that this criterion is *intersubjective verifiability* which means that the interplay of individual situational and decision-making factors in translation are identifiable by others, i.e. are 'transparent'.

## 2.2 Weighted Decision-Making

There is also a general consensus that not all, but only a selection of source text features (identified by text analysis) can be transferred to the target text, depending – among other things – on such factors as the translation purpose, the target text type, target culture or assumed readership type. Translation therefore always involves choices among alternatives and thus generally requires decisions on the part of the translator. If translation decisions are to be made in a reasonable and consistent manner, such decision-making needs to be transparent. On a general level, making decisions among alternatives involves a ranking of alternatives according to an individual's set of priorities. For translation purposes, the translator needs to weigh the features identified in text analysis with respect to their priority. The priority ranking of text features for target text production is influenced by a set of translation parameters including the individual perspective of the translator as it manifests itself in *weighted decision-making*. When (re)formulating a target text, therefore, such weighted decisions need to be made transparent in their interplay, i.e. it must be verifiable to which extent translator's decisions are governed by at least the parameters of assumed 'purpose', 'recipient type' and 'norms/conventions' in the target culture and which choices were made by the individual translator for a translation to be *intersubjectively verifiable*.

The principles of *intersubjective verifiability* and *weighted decision-making* help to make consistent and reasonable translation decisions which are repeatable and yield comparable results. At the same time these principles leave room for different target text versions which may all be 'correct' but reflect different weighted decisions relative to a translation's purpose, discourse 'style' or simply different translators' preferences.

## 2.3 Text Perspectives

There are several ways to look at texts. On different levels, the focus may be (1) on words and terms (2) on text structure, e.g. what information is presented in which (more or less understandable) manner or (3) even extend to such overall implications in texts as cultural backgrounds, norms or values.

In text linguistics such different dimensions are often referred to as the micro- and macro-levels of texts with hermeneutic interpretations offered by philosophers and philologists. The problem for translators, however, comes from the fact that a text needs to be translated to make sense as a whole, often interrelating micro- and/or macro-level categories. The interplay of parameters on different levels which governs how sense as a whole is established, is little known. Only considering text features on a micro-level, e.g. terms or words, may result in garbeled texts as many machine translation examples show. Considering text features only on a macro-level, on the other hand, involves marco-structural categories (such as information sequencing or coherence) which are often not specific enough for application purposes, i.e. are not *operationalizable* in practice. The problem for the translator is, therefore, at least twofold (1) the macrostructural and hermeneutic categories are not *operationalized* for translation purposes and (2) it is unclear how they relate to and interact with categories on the micro-structural level.

If, for example, the terms 'assets' in an LSP text needs to be translated into German (microstructural-level), the translator needs to know the purpose of the translation (macro-structural level), which may be the translation of a balance sheet. This will probably determine the rendering of 'assets' with 'Anlagen'. With other translation purposes it may be 'Vermögenswerte' or simply 'Kapital'. In addition to the translation purpose, the translator needs to be aware of the interculturally differing balance sheet classifications implied by the translation purpose in order to properly position 'assets' or 'Anlagen' in the balance sheet layout of the target text. It can easily be seen that micro- and macro-structural categories interrelate and that a general category like the 'translation purpose' needs specification or 'operationalization' with respect to what it means for making decisions on the micro- and macro-levels of target texts (cf. Sunwoo 2008).

We therefore suggest that texts and translations may be generally seen from three different perspectives which are interrelated and complement each other and must all be considered when translating LSP texts:

– a micro-structural *atomistic* level, on which *atomistic* (smallest micro-structural features, e.g. terms or terminologcal units, *contaminations*, set phrases) are identified. It includes all phenomena that cannot be 'broken down' into smaller units and does not consider their potential development into more complex textual dimensions as the text progresses. *Atomistic* features are identified and listed as aspects which can show different values when correlated with different text segments. The resulting *aspective matrix* allows for transparency of an individual reading and interpretation in terms of explicitly answering the question of which *aspects* are relevant in the (source and target) text. *Weighted decisions* based on such *aspective matrices* reflect a target text production in its atomistic dimension (for an example cf. Appendix).

– a macro-structural *holistic* level on which (implicit) world or LSP knowledge in texts is made transparent as underlying *holistic systems* (*holons*). It is widely accepted that understanding texts is not a passive reception process but an active effort on the part of the reader (and translator) to make sense of a text, i.e. to make a text *coherent*. This activity involves integrating world or domain knowledge into the text comprehension process (e.g. de Beaugrande/Dressler 1983). Domain knowledge can be structured as *holistic systems* (*holons*) which manifest themselves (are '*concretized*') in text elements. They make *coherence*-establishing processes transparent in that they show how individual domain knowledge interacts with what is actually written in a text by 'inferences' (Bellert 1970), 'implications' (Dressler 1973), 'implicatures' (Grice 1975) or 'individual hypotheses' (Gerzymisch-Mudersbach 1998). Analyses on the holistic level of texts result in the identification of structured knowledge systems which make underlying background knowledge in texts transparent (cf. Will 2008). They are represented and visualized by thesaurus structures or semantic networks (for an example cf. Appendix).

– A medio-*hol-atomistic* level which 'mediates' between the *atomistic* and *holistic* levels. Analysis and description on a *hol-atomistic* level identifies features that extend from an explicit *atomistic* unit to a more complex dimension as the text progresses. Examples are contextual patterns of terms (or other LSP characteristics) and their theme-rheme progression or isotopy. Representation and visualization is possible by semantic networks (cf. Appendix).

While this differentiation may initially seem (and is) complex – after all, translation is a complex activity –, it allows practicing translators to focus on trans-

lation problems from varying perspectives, e.g. from the perspectives of terms (*atomistic* level), from the perspective of information sequencing (*hol-atomistic* level) and/or from the perspective of background knowledge (*holistic* level), and at the same time integrate these complemenatry perspectives into a consistent methodology to produce a coherent target text.

## 2.4 Translation Phases

As with general translation, translating LSP texts can be viewed methodologically as involving three phases: analysis, transfer and restructuring (Nida/Taber 1969:33), adapted here to partially interrelated reception, transfer and (re)production phases (cf. Fig. 1).

Although these phases are actually interrelated, their distinction is methodologically useful for the same reasons as the distinction of different text perspectives: (1) it allows translators to concentrate on individual phases of the translation process, depending on where relevant problems are assumed to develop and (2) integrate problems in different phases into an integrated whole of the translation process. For LSP translation and interpreting, for instance, it allows for judgements that the reception phase may not present much difficulty for a domain expert while it may be of particular relevance to a translator
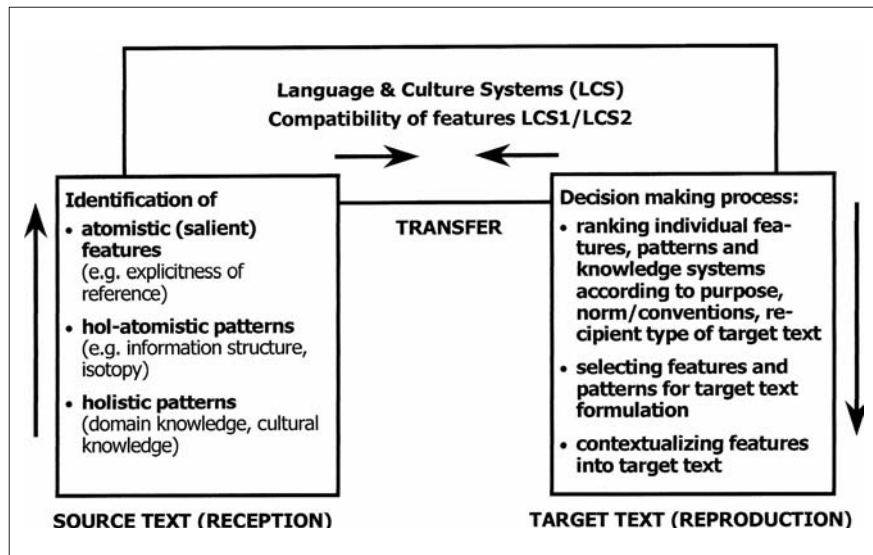


**Fig. 1**  Three-Phase Translation Process (LCS = Language and Cultural Systems)

when constituting the necessary domain knowledge systems. And while the contrastive transfer phase may be relatively 'easy' to render for a trained linguist, it takes the trained skill of a translator to accomplish the reformulation task according to target text purpose and recipient type parameters.

## 2.5 Translation Methodology: A Step-by-Step Sequence

Based on the three text perspectives and the three-phase translation process, the following sequence of steps is suggested for LSP translation[3]:

- **a bottom-up text analysis** with text-individual 'salient' LSP features in the reception phase (identifiable on an atomistic, hol-atomistic and holistic level), i.e. a phase in which the LSP source text is 'understood' and its comprehension is secured and controlled.
- **a contrastive analysis phase** in which language and cultural LSP features, patterns and/or knowledge systems are compared for translation purposes (transfer phase) and which includes a comparative compatibility analysis of source and potential target text features from all three text perspectives: atomistic, holistic, and hol-atomistic.
- **a reformulation phase** in the target language and culture, in which the individual target text is produced ((re)production phase) against the language and cultural resources identified in the transfer phase. The reformulation process is governed by at least the target text purpose, applicable norms and assumed recipient or text type and interrelates atomistic, hol-atomistic and holistic levels or text perspectives.

Following this step-by-step sequence presupposes an operationalizeable translation purpose (as suggested by Sunwoo 2008), involves weighted decision-making on all levels of text and offers transparency and intersubjective verifiability as proposed by the methodological translation triad *Aspectra*, *Relatra* and *Holontra*[4] (Gerzymisch-Arbogast/Mudersbach 1998).

   Before discussing these aspects in more detail, we need to position the dimension of interculturality in LSP translation and see how it reflects itself in relevant

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[3]   The phases are human translation-specific and presuppose source text analysis and transfer activities in contrast to multilingual text production (cf. Annely Rothkegel's contribution in this volume).

[4]   The methodology has been formulated as a coherent step-by-step translation methodology in Gerzymisch-Arbogast/Mudersbach 1998 and is extensively exemplified in later publications. It is, therefore, not repeated here in detail.

LSP features, e.g. on terms and their contaminations in context and on discourse in terms of information sequencing, coherence and other textual phenomena.

## 2.6 Interculturality and LSP Translation

Considering culture in (LSP) texts raises many conceptual and methodological questions which cannot – in this context – be adequately dealt with (for a more specific discussion cf. House in this volume). This is not only true for the debate as to which function a 'culture' has in a society, e.g. as a means of coping with death (e.g. Assmann 2000), giving a sense of life (e.g. Mudersbach 2002) or providing a set of rules and regulations governing the behavior of people in a society (e.g. Witte 2000). It is also true with respect to the perspectives underlying different concepts of culture as different disciplines (e.g. anthropology, 'cultural science' and intercultural communication) have defined culture in different ways with the legitimate concern that the concept fits their own discipline's explanatory needs[5]. In addition, culture itself has several dimensions depending on the individual(s) or groups it relates to and is even considered with reference to just one individual (ideo-culture, cf. Floros 2006). In the translation literature the societal and community dimensions of culture have been most prominent. For LSP translation purposes it may be helpful to be aware of 'scientific communities' sharing certain values and beliefs which may vary interculturally and which can therefore be said to reflect specific 'cultures'.

We will here assume with Mudersbach (2002) that 'culture' exists because it provides a sense for living which may take different forms reflecting themselves in different life domains as 'systems'. We also assume that the awareness of culture 'necessitates translation' in the sense that it presupposes another culture to become aware of one's own belonging to a culture.[6]

In the translation literature, in line with the lexical orientation in linguistics, 'culture' in texts was for a long time restricted to its lexical dimension. With respect to the text perspectives discussed above we can say that it was widely only discussed on an *atomistic* level. 'Cultural specifics' were defined as lexical elements for political, institutional, socio-cultural and geographical facts which were specific to certain nationalities and countries, e.g. Koller

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[5]  For an overview of definitions of culture cf. Kroeber & Kluckhohn (1952) and Hansen (1994). Their value for translation purposes is discussed in Floros (2003).

[6]  For reasons of space we need to restrict our discussions here to the interlingual dimension of culture between languages, although the intralingual dimension (as intralingual translation) is certainly of great interest to LSP research, too.

(7/2004:232). Following the pragmatic turn in linguistics, the behavioral concept of culture was borrowed from cultural anthropology (Vermeer 1986:178, referring to Göhring 1978:10 referring to Goodenough 1964:36) to serve as a framework for discussing translation as 'cultural transfer' (Vermeer 1986/ 1994) in its function of 'regulating' the behavior of members in a society. With this broader perspective, cultural manifestations in text and translation were embedded into Fillmore's scenes and frames concept (Vannerem/Snell-Hornby 1986/1994, Witte 2000). It required Juliane House's distinction between 'covert' and 'overt' translation (1977, 1997, cf. her contribution in this volume) to raise and explain functional differences in the translation of culture in texts. Using a 'cultural filter', she distinguishes translations in terms of whether they reflect the source or target text culture, which manifests itself e.g. in interculturally varying discourse preferences in English and German LSP texts (House 1999). Schmid is the first to call for structuring the concept of 'culture' for translation purposes (2000) – a claim which is realized by Mudersbach's definition of culture as the aggregate of all 'cultural systems' in a society. Cultural systems are here structured as interrelated *holons* which manifest themselves (or are *concretized*) in texts (Gerzymisch-Arbogast/ Mudersbach 1998). Floros (2003) takes this idea further to establish 'cultural constellations' in texts as the actual random concretizations of cultural systems which contribute to the coherence of texts (cf. Floros 2004, 2006) and offer a methodology for their translation (Floros 2003, 2007).

To make the 'cultural transfer' transparent as part of translation processes, we assume that 'culture' provides a sense for living which may take different 'forms', e.g. values, beliefs, conventions, habits etc. These 'forms' may be conceived as holistic entities (*holons*) and structured as systems with sub-systems on different hierarchical levels. All cultural systems together make up the 'culture' of a society or 'scientific' or other community. They are interrelated by their common function of perpetuating an established form of living and manifest themselves on the text level via (cultural or other, e.g. domain knowledge) constellations (cf. Floros 2003, Will 2008).

Interculturality may manifest itself explicitly or implicitly in LSP texts and translations on all of the above text levels:

– on the *atomistic* micro-structural level of terms which may differ conceptually across cultures (cf. the term 'money' and M 1[7] in the example below),

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[7]    'M' in economics is generally accepted as the abbreviation for the 'money stock' of a country.

–   on the *hol-atomistic* medio-structural text level of collocations and syn-
    tactic structures when functional and pragmatic relationships of terms (in
    context) are identified with the help of theme-rheme-progression and
    isotopy which make up interculturally varying discourse patterns (as in
    the short sample 'Asset Demand', cf. section 3.2.2) and
–   on the *holistic* macro-structural level as implicit and explicit 'constella-
    tions' identified when establishing text coherence by making background
    domain knowledge systems transparent for translation purposes.

On all these levels, intercultural variations occur and need to be 'transferred'
or rather 'mediated' in LSP translation.

## 3   The Micro-Structural Level: Terms & Terminology in LSP Translation

### 3.1 Individual Terms: Some General Observations from a Translator's Point of View

With the objective to facilitate the international knowledge transfer in science
and technology, languages for special purposes are said to essentially differ
from general language by their specialized vocabulary, i.e. their terms and ter-
minology[8]. Using terms in LSP communication is thought to render texts
more precise and systematic, aesthetically neutral and economical in expres-
sion (although sometimes more monotonous). The avoidance of lexical varia-
tion such as synonymy and homonymy (cf. section 3.2) is thought to facilitate
the understanding of texts as part of the translation process.

Terms and terminologies are characteristic of a particular (scientific or
technical) domain like economics, medicine and/or translation and interpret-
ing and are the object of the 'science of terminology' established by Eugen
Wüster (1931/1979). Its objective is to list, define, systematize and ideally
standardize the *technical terms* of a particular domain in the interest of facili-
tating the transfer of knowledge across cultures by using internationally
agreed-upon designations for facts and processes in a specific domain or disci-

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[8]   The term 'terminology' is in itself a homonym and can refer to 1) the interdisciplinary
      field of knowledge dealing with concepts and their representations (i.e. terms), 2) the
      terms which represent the system of concepts of an individual subject field and 3) the
      publication in which the system of concepts of a subject field is represented by terms.

pline. It is due to Wüster and his terminology school that standardization attracted world-wide interest and became institutionalized in national and international standardizing institutions (e.g. DIN and ISO).

LSP texts show about 20–25% specialized vocabulary in a text. The most frequent component in the vast majority of LSP texts are terminological units expressed in the nominal group, followed by adjectives and only then by verbs which are considered to be of relatively minor importance although they are of great interest for translation within the framework of LSP-specific collocations, e.g. 'to levy taxes', 'to file a patent' or 'to balance a budget'. LSP produces its specialized vocabulary by a number of procedures which are well-documented in the LSP literature (e.g. Sager/Dungworth 1980). Examples are **compounding** (i.e. word compositions such as 'sight width', 'railway tunnel', 'oxygen-bonded', 'L-shaped'), **conversion** (i.e. shifting from one word class to the other such as 'to shift' – 'a shift' – 'a frameshift'), **derivation** (i.e. creating new words by adding new affixes or suffixes such as 'up-stream', 'shrink-age', 'load-ing') or **neologization** (i.e. creating new terms often by inter-lingual borrowing from Greek or Latin such as 'parapraxis', 'diameter', 'circular').

Of all these procedures **terminologization**, i.e. loaning words from general language use and reducing their conceptual content to a narrower meaning, e.g. 'noise' (for German 'Rauschen') or 'interest' (for German 'Zins'), or 'arm', 'eye' and many others is the most problematic for translation because both types of meaning, the general and terminological concept, may occur in the same LSP text, in which case the translator needs to identify the polysemic nature of the term before translating it.

It is clear from the above that translation involves both dimensions: terms in their theoretical make-up and constitution (systems level) and terms as they appear in texts (text level)[9]. Most of the LSP literature so far has been concerned with the systems level of terminology. We will here clearly differentiate both dimensions and focus on the text level of terms because this is where translation problems as a rule occur.

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[9]  The theoretical basis for the differentiation in a systems and text level and the practical implications for terminology are discussed in detail elsewhere (Gerzymisch-Arbogast 1996 with an English summary in Gerzymisch-Arbogast 1994) and are therefore not repeated here.

## 3.2 Terms on a Systems and Text Level

### 3.2.1 The Systems Level of Term Description

The description of terms and their formation (on a systems level of description) was the main interest of LSP and early translation research in the fifties and sixties. Interest then shifted to syntactic characteristics (e.g. Beier 1980) and in the eighties to textual phenomena (e.g. Schmitt 1986/1994, Gerzymisch-Arbogast 1987b). Terms at that time were still described solely on a systems level, i.e. as single units (individual terms) and in their systematic interrelationship with other terms (term systems). Some basic characteristics of these approaches are relevant for translation:

(1) the lacking differentiation between 'terms' and 'words' on a systems level may lead to potential contaminations of terms on a text level and may cause identification problems for the non-expert translator,

(2) the organization of individual terms in term systems offers a systematic range of synonymic variations for the translator in the text production process.

### Individual Terms vs. Words

Like words, terms consist of two parts: a concept (meaning, 'Bedeutung', signifié) and a designation (name, 'Zeichen', signifiant):

Wüster still uses the general de Saussurean terms when explaining that the two upper fields represent the world of concepts ("langue"), the two lower fields the world of individual elements ("parole"). Concepts are later defined as "units of thought, generally expressed by a term, a letter symbol or by any other symbol." (ISO 639, 704, 860, and 1087) and – according to Wüster's word model[10] – con-
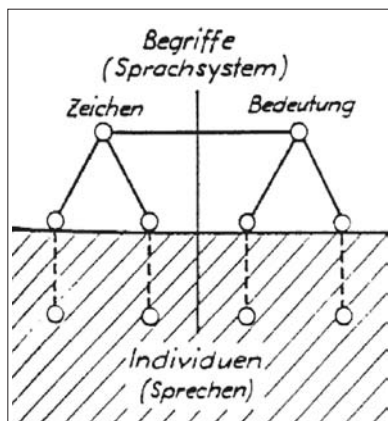


**Fig. 2** Wüster's word model (Wüster 1959/60:188)

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[10] According to Wüster (1974a), the field of terminology is a 'science' equivalent to linguistics or informatics. His dissertation was reprinted in 1979 and became the basis of many subsequent publications on terminology like Felber (1984), Felber/Budin (1989) and Wright/Budin (1997).

sists of the two 'langue' entities, i.e. 'meaning' (= concept) and 'sign' (= designation) which both unite to form a 'term'.

In contrast to linguistics, however, where the two entities are inseparable (cf. de Saussure's bilateral sign concept) and form the unit of 'word', in terminology "the 'world of concepts' is independent of the 'world of designations'" (Wüster 1979:1). This is the pioneering contribution of Wüster's 'terminology science' which unfortunately has been little recognized in the technological context of today's terminography. Wüster created a new word or rather, term model, which – differing from all other more sophisticated word models in linguistics – attempts to explicitly account for the level of langage use for terminological purposes.[11]

The separability of the two units is a necessary pre-requisite for standardization by the national (e.g. DIN Deutsches Institut für Normung e.V.) and international standardizing organizations (ISO) (cf. Wright/Budin 1997:197ff). International standardization may lead to designation changes, e.g. before European harmonization, German money units were designated 'DM' and US dollars were represented by "$". International standardization led to the international designation of DEM for Deutsche Mark and USD for US dollar. Such harmonization – involving a systematic change of names/designations – is theoretically only possible by considering a 'designation' to be separate and independent of its concept and is not possible according to the de Saussurean bilaterality of sign concept applicable to general language.

Considering terms – in contrast to de Saussure – as being made up of two independent units, the 'denomination' on the one hand side and the 'concept' on the other is the most characteristic theoretical feature of Wüster's terminology. It allows for expressions to be used as terms and as general words and causes the translator problems (in the reception phase) when determining whether an expression is used as a term in its technical sense or as a general word (e.g. the problem of identifying terminologizations as in the example of 'interest' below).

Term Systems

On a systems level of description, terms – just as words (cf. Weisgerber's and Trier's world field theory) – exist in conjunction with other terms. They are interrelated by 'sense relations' such as super- and subordination (hyponomy) or opposition (cf. Lyons 1977:270ff, for an LSP application cf. Gerzymisch-

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[11]    For the problems implied in Wüster's concept cf. Gerzymisch-Arbogast 1996:6ff.
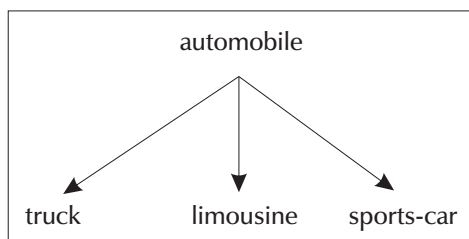
**Example:** Hyponymy relationships

Arbogast 1987b). The interrelationship of terms is systematized in conceptual hierarchies by abstraction, part-whole or other relationships.

For example, a superordinated term (e.g. automobile) includes subordinated terms (e.g. limousine and others). A superordinated term is also called hyperonym or superonym, the subordinated term is called hyponym. The relationship between a superordinated term and a subordinated term is called a hyponymy relationship and is relative. It can be paraphrased as 'is a type of' as in "a truck is a type of automobile". Two subordinated terms are called co-hyponyms.

Another important sense relation is the part-whole relationship as in the example of 'car' ('whole') and 'motor' ('part'). It can be paraphrased by 'is part of', e.g. a motor 'is part of a car'.

The terms of a domain in an individual language and culture are interrelated by abstraction or part-whole (or other) relationships to make up conceptual term systems which are accessible in standardized terminologies, dictionaries and/or monolingual, bi-lingual or multi-lingual dictionaries or glossaries. They are of help to the



**Example:** Part-whole relationships

translator when producing LSP target texts because – depending on the context and other parameters of translation – it may be possible to render a subordinated term by a superordinated term or vice versa. Their usefulness, however, – like any general language dictionary – is limited to represent the 'langue' or 'norm' level of language and not the individual actual text level. They cannot, therefore, account for ad hoc context-specific meanings or conceptual overlaps (contaminations) as they frequently appear in LSP texts.

Being aware of systematic sense relations between terms is important for translation because the concepts on different hierarchical levels may appear as synonymic contaminations in LSP texts[12] and need to be identified in LSP translation.

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[12]    For more details and examples cf. Gerzymisch-Arbogast 1987b, 1994, 1996:103ff.

### 3.2.2 The Text Level of Term Description: Contaminations

One of Wüster's postulates was that the relationship between a concept and its name or designation be 'eineindeutig' (unambiguous), i.e. that there is only one designation for one concept and vice versa (principle of one-to-one name-concept relationship). On a text level, this means that once a term has been introduced, its name and reference should be kept the same throughout the text. Paraphrases and synonymous expressions for terms were to be excluded in the interest of economy of expression and limitation of possible misunderstandings. While following this ideal postulate would greatly facilitate LSP communication and translation, practice has shown that a one-to-one relationship between concepts and designations is by no means realistic in actual LSP texts. There are numerous examples – even on a systems, 'langue' level of language – for terms that are not at all 'eineindeutig', such as '$H_2O$' and 'water'. Moreover, synonymous expressions are often welcome in their function of avoiding monotony or in the function of clarifying a concept by paraphrasing it with its known or more general variants as in the example below where 'portfolio' is paraphrased by 'combination of assets' and M 1 is paraphrased by 'currency or checking deposits':

Wüster's word model (cf. Fig. 2) establishes terms on a 'systems' level and does not allow for variations of terms in context. The lower 'parole' field (on the left) only 'reactivates' (or reproduces) the terms established on the 'langue' level (upper left field). In reality, however, terms in actual texts are by no means only token reproductions of their systems level type but appear con-
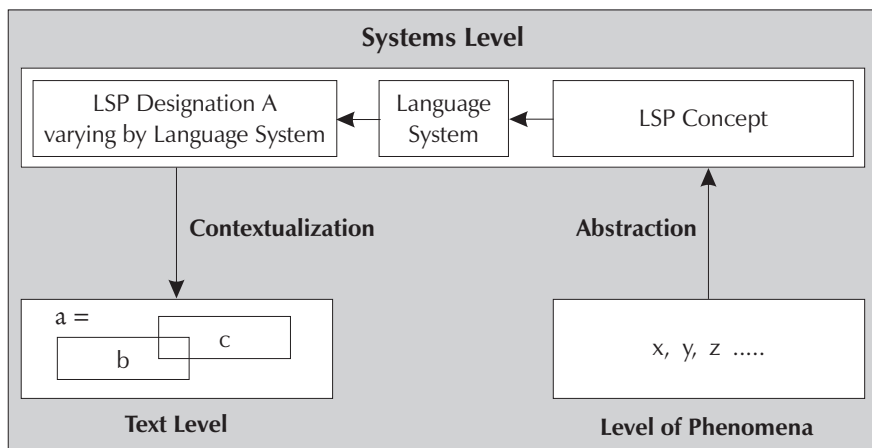


**Fig. 3** Context-specific Model of Terms (Gerzymisch-Arbogast 1996:36)

ceptually 'mixed', i.e. contaminated as superordinated terms for subordinated or overlapping concepts or vice-versa. In order to explain such contaminations, therefore, Wüster's model was reworked theoretically to accommodate term contaminations[13] and provide more flexibility on a text level (Fig. 3).

Against this theoretical background it is possible to classify synonymic and homonymic contaminations in LSP contexts.

*Synonyms* (in general language) are realized when two designations are used for one concept.
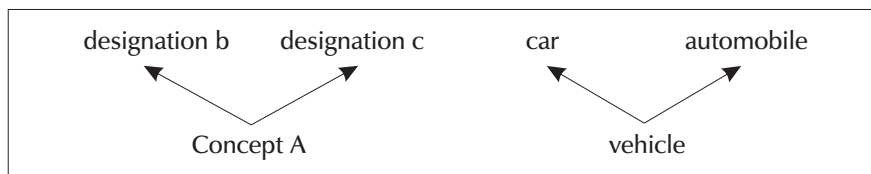


**Example**

*Synonymic contaminations* in LSP texts complicate the picture:
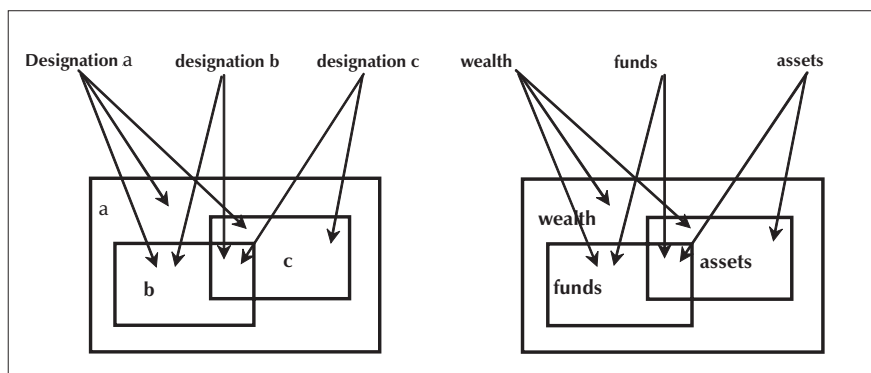


**Fig. 4** Synonymic Contamination with conceptual super- or subordination and overlap

For example, the term 'money' may appear as the expression 'M 1' or as 'financial means', 'currency', 'wealth', 'funds' or 'assets' in expert communication

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[13]    The theoretical basis for this model is the IKS differentiation developed by Mudersbach as is shown in Gerzymisch-Arbogast 1996:22–35. For an English summary cf. Gerzymisch-Arbogast 2003a:53ff.

scenarios or as 'cash' or 'nickels' or 'dollar bills' in non-expert, everyday communication or as 'money balance' or 'checking account' in didactic texts, when the concept is explained to students (as in Samuelson/Nordhaus 2005: 513f):

Example

> **Asset Demand**
> In addition to its use for transactions needs, money is sometimes a store of value. The role of money as an investment is addressed by financial economics, which analyzes how investors should invest their funds to attain their objectives in the best possible manner.
> In general, a well-constructed portfolio (or combination of assets) will contain low-risk investments as well as riskier ventures. But it is not generally advisable to hold M1 (currency or checking deposits) as one of these nest eggs. The reason is that other assets (such as government securities) are just as safe as M1 and have higher interest rates.
> …
> (Samuelson/Nordhaus 2005:514)

Synonymic contaminations are frequent phenomena in LSP texts although they contradict the principle of economy in LSP communication. Identification of their functional and pragmatic relationships in different communication scenarios may cause problems for an inexperienced LSP translator.

*Homonymic Contaminations* reflect the opposite relationship of the synonymic contamination, i.e. cases where the designation is identical but the concept varies.
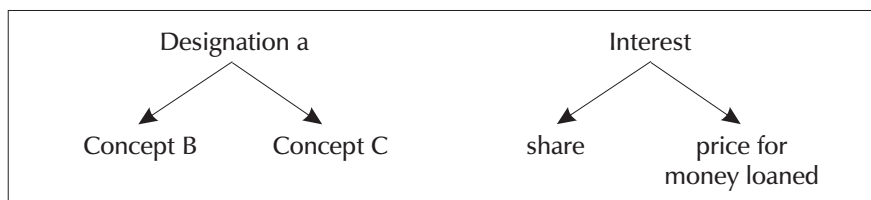


**Example**

The term 'money' – in addition to its synonymic contamination 'money balances' – may in the same text also appear as a homonymic contamination representing M 1 as in the following example:

Example

**Transactions Demand for Money**

...

For example, suppose that a family that earns $ 3000 per month, keeps it in **money**, and spends it evenly during the month. Calculation will show that the family holds $ 1500 on average in money balances.

...

(Samuelson/Nordhaus 2005:514)

We have shown elsewhere (Gerzymisch-Arbogast 1996:184ff) that the expression 'interest' may – in the same text – represent:

– the general meaning of 'concern'
– the term concept of 'price for money loaned' (= terminologization)
– the term concept of 'share or participation in something' (terminological homonym)

Think of the additional problems that arise when a term (due to a lack of contextual data) remains ambiguous in context (e.g. with respect to its terminologization) and add to the homonymous contamination another synonymic contamination for one of its meanings, e.g. 'stake' for 'interest' (in its meaning of 'minority interest') in a text where interest 'means' four different things. It can easily be seen that translating LSP texts is far from being 'eindeutig', let alone 'eineindeutig'.

It can easily be seen from these examples that translating terms as isolated units using dictionaries or glossary lists as reference material (as may be necessary in certain localization tasks, see Peter Sandrini's contribution in this volume) may be problematic. Terms need to be translated 'in context', i.e. in consideration of how they may overlap with other terms or other lexical units in the pragmatic scenario in which the translation is rendered. This pragmatic scenario, the authentic LSP text, is a one-time, singular and individual event and while it may have certain features in common with other individual texts, needs to be treated individually as shown in Will's article in this volume. This is why automatic translation tools, including the automatic extraction of terms, can only yield partial results which may not fit all contexts. They are, therefore, only of limited help for a translator.

Making translation decisions for cases of synonymic and homonymic contaminations may cause translation questions on at least three levels:

– **Identification**
Does designation b refer to the same concept as designation c or is concept

C used in a different designation? While the identification problem may not exist for an expert in the field (he/she can establish coherence between the two concepts through 'world' or rather 'LSP' knowledge), the translator may not have this special (LSP) knowledge at his/her disposal and needs special text analysis skills to identify contaminations in LSP texts.

– **Transfer**
   Can the synonymic or homonymic contamination be virtually realized in the target language or culture? This question relates to the linguistic resources of the target language.

– **(Re)Production**
   Should the (identified) synonymic or homonymic contamination be rendered invariantly in the target text? This decision depends at least on the source text's profile (an anonymous article allows for different strategies than a text written by a Nobel prize winner) and the target text's purpose and reader type.[14]

Large-scale empirical analyses are needed to make contextual data on contaminations in LSP texts, e.g. their frequency by text type or their pragmatic and functional relationships accessible as a support standard for translators of LSP texts. Term descriptions on a systems level (as terminology in Wüster's sense) need to be complemented by contextual data of their possible and likely contaminations or frequency of 'constellations' and would then be of great practical help for LSP translators in all phases of the translation process (cf. Will 2008).

### 3.2.3 The Interculturality of Terms

It is widely assumed that while term designations vary by language, their concepts in science and technology are largely universal – a hypothesis formed and fueled by the machine translation euphoria in the 1950s. While this may to some extent be true in the case of natural sciences such as medicine or physics (e.g. 'AIDS' is probably a universal concept), it is controversial for the social sciences like psychology, literature and/or translation. For example, in economics, the term M 1 (money supply) differs in concept between US English and German as can be seen from the following definitions[15]:

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[14]  A decision tree for rendering contaminated terms in translation is suggested in Gerzymisch-Arbogast 1996:270, 271, 272.

[15]  Concepts may also change over time and/or with technological progress, of course, but we will not deal with diachronic aspects here.

M1: currency held by the public, plus travelers' checks, demand deposits, negotiable order of withdrawal (NOW) accounts, super NOW accounts, automatic transfer (ATS) accounts, and credit union share drafts (…)[16]

M1: umfasst das laufende Bargeld (ohne Kassenbestände der Banken) und die Sichteinlagen inländischer Nichtbanken bei den Kreditinstituten (…)[17]

This causes culture-specific LSP translation problems in that the translator must

(1)  identify the cultural difference and
(2)  decide whether or not to make the conceptual difference explicit (cf. chapter 5 for an example).

But not only terms vary interculturally. Term systems and most importantly, knowledge systems may be differently structured interculturally, i.e. their 'set-up' may vary by language and culture. Compare the structure of a balance sheet in English and German for example: The German balance sheet is organized by the principle of 'Fristigkeit', i.e. according to the time financial means that can be put to use, therefore the balance sheet usually figures 'Anlagevermögen' (fixed assets) first. An English balance sheet is structured according to the degree of liquidity. Therefore, while 'Fixed assets' appear first on a German balance sheet, the first item on an English balance sheet is 'Cash'. How then is 'Anlagevermögen' to be translated into English? Such a question can only be answered by referring to the individual translation scenario and is dependent upon translation parameters like the translation purpose and assumed reader type and thus involves individual judgements and decisions by the translator.

When making translation decisions with respect to interculturally varying terminological and knowledge systems, the translator needs to determine which purpose or function the target text has in the individual scenario. If, for instance, in the above example, the target text is produced to be applied as a financial software for businesses, then 'functional equivalence' would require adaptation to target text norms as 'covert translation', meaning that in this case the US or English 'system' would be used in translation (e.g. starting the balance sheet with 'Cash' instead of 'Fixed Assets'). If, however, the target text is produced for a Business German classroom situation where English students are to become familiar with the German 'system' of a balance-sheet set-up, then the function of the target text would need to reflect the German system

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[16]  Dictionary of Banking Terms: Ed. by Thomas Fitch. Consulting eds: Neller, Irving et.al. New York – London: Barron's Guide (= educational series). 1990. s.v. 'M 1'.
[17]  Gabler – Wirtschaftslexikon. Wiesbaden: Gabler. 1990. s.v. 'M 1'.

and 'denotative' equivalence as 'overt translation' would be called for. Beyond that, the translator may – in some scenarios – be faced with the necessity of having to make explicit and explain the differences in the underlying conceptual set up which may require explanatory footnotes and/or paraphrases. Again, these decisions are governed by parameters such as the profile of the source text, the purpose of the target text, the text type and/or the anticipated target readership type.

## 4   The Medio-Structural Level in LSP Translation

### 4.1 The Hol-Atomistic Level: LSP Text Features within the Sentence

LSP texts differ from general language texts not only by terms but by many other features which involve other levels of text within and beyond a sentence. In the literature these levels of text are often referred to as micro-, medio- and macrostructural text levels. We refer to them here as atomistic, hol-atomistic and holistic text perspectives with the hol-atomistic perspective encompassing LSP phenomena within and beyond the sentence level as described below. Intercultural differences on these levels are not of a distinctive but of a gradual nature, e.g. in English LSP texts, the tendency for use of the passive voice or nominalization is less pronounced than in German LSP texts and reader-orientation is more appreciated in English LSP texts than in German texts (although this tendency may be changing). The translator needs to be aware of these gradual intercultural differences when structuring a target text to fit differing reader expectations and profiles.

### 4.1.1  Syntactic LSP characteristics

In contrast to the lexical dimension with its main characteristic of terms and terminology, LSP syntax does not offer any specific traits of its own but borrows syntactic devices from general language, which may occur more or less frequently in LSP texts. It is this phenomenon, i.e. that LSP does not offer a syntax of its own, that has lead experts to avoid speaking of 'languages' for special purposes, because for a language to constitute itself, it would need both a lexical and a syntactic system of its own[18].

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[18]   Instead of 'LSP', the terms 'specialized' or 'technical' texts may therefore be preferred alternatives (cf. Klaus Schubert's explanation in this volume). For simplicity reasons and because it is flexible in usage, we will here, however, continue to use the acronym LSP.

Selecting LSP-specific syntactic devices is largely motivated by the objective of facilitating communication by being particularly precise, economical and 'objective', i.e. neutral in expression. Among the most frequently used syntactic devices to achieve this aim are:

– **Length and complexity of sentences:** In accordance with the strong informative function of LSP communication, the majority of sentences are declarative in nature and it is sometimes maintained that in order to achieve maximum economy, LSP texts generally show a high frequency of long complex sentences. This, however, is not supported by research and may vary by language and domain (e.g. German tends to offer longer and more complex structures than English, sentences in math may be shorter than those in philosophy, English with its reader-oriented 'style' seems to allow more rhetorical questions than German).

– **Infinite verb forms:** The use of infinite verb forms (infinitive, perfect participle, "-ing"-forms in English) makes it possible to condense information for reasons of stylistic economy. They are typical characteristics of English LSP texts. Technical writers utilize a variety of devices to shorten or avoid finite clauses.

– **Nominalization**: With the noun being the most frequently used word class in LSP texts, there is general consensus that a tendency to nominalize is characteristic for LSP texts, mainly for reasons of economy: It is said that LSP English is characterized by its frequent use of outstandingly long noun groups such as 'retail money market mutual funds'.

– **Pre- and Post-modification**: For reasons of economy of expression in LSP communication relative clauses are often reduced to pre- or post-modifications, i.e. the insertion of one or more elements in front of or after the head word. An example is the word group before and after 'investment' in 'bookvalue of US direct private investment abroad by petroleum industry'. While contributing to the economy of information in texts, combinations of pre- and post-modifications increase the complexity of nominal groups and thus decrease readability.

– **Passivization**: Using the passive voice makes it possible to leave the agent of an action unexpressed and – by shifting from personal-oriented to factual information – increases neutrality and 'efficiency' of information transfer among specialists. Extensive use of the passive voice is one of the most characteristic syntactic features of LSP communication.

– **Desemantization of verbs**: The minor role of the verb in LSP communication in conjunction with the strong nominalization tendency has led to

functional compound constructions of the verb+noun type, where the meaning of the general language verb is shifted to the noun and a semantically poor verb is retained. The result is a high frequency verb+noun construction of the type 'to pose a question' instead of 'to question'. It is easy to see that such devices tend to make texts more 'distant'.

These are important LSP characteristics for the translator because their gradual language-specific variation in texts can be used to upgrade reader orientation and/or tone down 'distance' and formality in discourse according to intercultural norms and assumed reader expectations.

## 4.1.2  Lexical LSP Characteristics

Hol-atomistic lexical LSP characteristics involve terminological units above the word and below the sentence level. They are highly language- and culture-specific and include:

–   **Multiword Terms**: Depending on language-specific conventions, terms may occur as compound or multiword terms. In some cases a single (compound) word exists in one language and a multiword term is needed in the other, e.g. 'fixed assets' in English and 'Anlagevermögen' in German. A multiword term can also include components which are single-word terms, then all these items can be viewed as a terminological unit as 'retail money market mutual funds' in our nominalization example above.
–   **Set Phrases and Free-formed Combinations**: Set phrases and free-formed combinations refer to multiple concepts like 'night and day' or 'black and white', which may not have corresponding equivalents in the target language or culture and are, therefore, difficult to translate. Some combinations are free-formed such as 'stocks and bonds' or 'business and industry' but occur so frequently together that they may be considered set phrases. For LSP translation purposes it is important to document such phrases because a single term in one language may be a complex set phrase in the other.
–   **Collocations**: While terms – even long strings – designate individual concepts, collocations identify situations, actions and propositions that are made up of several concepts that 'co-locate', i.e. co-occur syntagmatically or in combination with each other. These may be verb+noun or adjective+noun combinations like 'to file a patent', or 'to file a document' but not to 'file an application' or a 'high official' or a 'high tone' but not a 'high age'. Again, collocations are language-specific and therefore constitute potential translation problems.

These are important LSP characteristics for the translator because of their lan-
guage-specific set up and usage in texts. It is the whole unit of such lexical ex-
pressions that the translator has to identify and transport to another textual
environment, not the elements of the unit and that may be difficult to distin-
guish from the syntactic devices such as pre- and post-modification.

## 4.2 The Hol-Atomistic Level Beyond the Sentence: Information Structure (Theme-Rheme) and Isotopy

While the above discussed characteristics of LSP texts refer to smaller units be-
low the sentence level, the hol-atomistic level also includes LSP phenomena
that form patterns beyond the sentence level such as the way information is
structured in LSP texts (theme-rheme progression) and the semantic layers
that constitute a text and make up its specific meaning profile (isotopy). They
are differentiated from coherence, which includes assumed or implied back-
ground knowledge needed to establish the overall principle of 'continuity of
sense'. Coherence governs all (LSP) texts and theme-rheme progression and
isotopy contribute to coherence as coherence indicators. They are important
for LSP translation because they contribute to text comprehension, mono-
semization and influence discourse 'styles'.

The linguistic description of these parameters is difficult. In the text lin-
guistic literature the concepts of coherence, theme-rheme progression and iso-
topy are often defined by one another: theme-rheme is invariably used synony-
mously with coherence (e.g. Brinker 1993), coherence is identified with isotopy
(e.g. Greimas 1966/1986:69), isotopy is equaled with theme-rheme (e.g. Rastier
1995:224, 2002:151). The lacking theoretical clarity and the ensuing method-
ological diffusion has not only prevented larger-scale empirical studies into
the value of these categories for text constitution, but also prevented the trans-
parency needed for their systematic application (in the sense of an 'opera-
tionalization') for translation and interpreting purposes. Only recently have
exemplary studies been offered that suggest their complementarity and inter-
play in text constitution and translation (Rothfuß-Bastian 2004, Floros 2004).

While it is not possible to enter into a detailed theoretical discussion on
these important categories for the translator, the concepts of theme-rheme and
isotopy are briefly discussed below in their relevance for translation. It may be
useful to first distinguish the three concepts conceptually[19]:

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[19]    The theoretical status of the theme-rheme distinction and isotopy has been widely dis-
        cussed in previous publications (most recently in English with respect to isotopy in

– Theme-rheme progression describes how 'old' and 'new' information is structured between speakers/authors and hearers/readers in a given situation/scenario and is as such a pragmatic phenomenon designating the informational status of an utterance segment in a particular scenario. As a pragmatic phenomenon it needs to described by pragmatic parameters;
– Isotopy depicts meaning levels in texts and is as such a semantic phenomenon. As a semantic phenomenon, it needs to be described by semantic parameters;
– Coherence denotes the 'continuity of sense' in a text and involves world and LSP knowledge made transparent by text-external hypotheses. As a knowledge phenomenon, it needs to be described by knowledge parameters.

The relevance of these three categories for translation is seen in their

– contributing to the understanding of complex texts (reception phase) by portraying interdependent functional relationships between text segments
– supporting contextual meaning disambiguation and
– distinguishing interculturally varying value systems and norms (transfer phase) which may influence translation decisions ((re)production phase).

## 4.2.1 Theme-Rheme Progression

Theme-rheme analysis refers to the way information is structured in texts in terms of 'old' and 'new' information. Generally speaking, that which is known or 'given' in an utterances is called 'Theme' (T) and that which is not known, the 'new' element(s), is called 'Rheme' (R). In English, a synonymous expression for 'theme' is 'topic', for 'rheme' 'comment' or 'focus' are also used and often the more general terms 'information sequencing' or 'information structuring' refer to theme-rheme analysis leaving it open how these categories are defined (for an overview cf. Dejica 2008). Theme-rheme patterns may vary by text type, language and culture, depending on discourse preferences such as tendencies of reader-orientation, directness, implicitness and/or informational redundancy and may pose translation problems in LSP texts.

Theme-rheme is theoretically and methodologically a highly complex concept. Existing theoretical approaches have used syntactic (word order, ac-

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Gerzymisch-Arbogast 2004) and therefore is not repeated here. For a more detailed description of the interrelationship of these concepts and their methodology cf. Gerzymisch-Arbogast/Rothfuß-Bastian/Kunold (2006).

tive passive transformation), semantic (actor/verb/goal), textual (previously mentioned or co(n)textually bound), situative (on-stage/off stage) or psychological ((logical) subject vs. (logical) predicate, presupposition) criteria to identify the informational units (T) and (R) in texts Methodologically, such phenomena as passivization, the distribution of stress, word order, case regularities, definiteness and reference expressions, presupposition, negation, and question-answer-relationships are used to identify themes and rhemes in an utterance or a string of utterances in a text. Most popularly, post-factum constructed question tests are used to isolate the theme or rheme in question with the inherent fallacy of involving artificial, i.e. non-authentic, scenarios. The conceptual and methodological complexity of the concept has so far prevented larger contrastive analyses of information sequencing phenomena in (translated) texts (cf. Rothfuß-Bastian 2004:175ff).

Theme-rheme progression is, however, an important factor when making intercultural translation decisions and is therefore useful if accessible to intersubjectively verifiable description. With this objective in mind, we use the pragmatic parameters of (1) (overlapping) knowledge profiles of interlocutors, (2) their individual perspectives towards each other and (3) a shared attention focus in a given situation as indicators for themes and rhemes in texts and (4) assumed meanings and describe their interdependence and simultaneity in a given communicative scenario (as shown in Gerzymisch-Arbogast/Will 2005). The pragmatic T/R model and the identification of informational T/R units in LSP texts is extensively discussed in previous works[20] and is therefore not repeated here in favor of showing its translation relevance with an (extended) example in which the themes (T) identified according to this model are **underlined,** the remainder of the sentences is considered to be rhematic (R). The titles and subtitles are considered thematic units in the sense of a hypertheme.

Example

> **Asset Demand**
> In addition to its use for transactions needs, **money** is sometimes a store of value. **The role of money** as an investment is addressed by financial economics, which analyzes how investors should invest their funds to attain their objectives in the best possible manner.
>
> In general, **a well-constructed portfolio (or combination of assets)** will contain low-risk investments as well as riskier ventures. But it is not generally advis-

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[20]   E.g. in Gerzymisch-Arbogast (1985, 1987a, 1996, 2003b, 2004b).

able to hold **M 1 (currency or checking deposits)** as one of these nest eggs.

…

(Samuelson/Nordhaus 2005:514)

Following the title ('Asset Demand'), the text begins by resuming 'old' information, i.e. by referring to the previous section which dealt with money's 'use for transactions needs' (= paraphrase for transactions money) as a reader-oriented theme-indicator[21], and by topicalizing 'money' (T), presenting it as a store of value (R). Under informational considerations this does not present a translation problem. The concept of 'money' is included in the following topic, i.e. in 'the role of money' (T) which is qualified 'as an investment' and contaminated by 'funds' in subsidiary rheme function (R)[22]. This may present translation problems in that the contaminated 'funds' – if not related to its pragmatic use as a more general reference to 'investments'(above) and 'assets' (below) – may be considered a terminological problem. The following paragraph break indicates a new thought by changing the topic from 'money' to 'portfolio' (T) of which 'money' (in its M 1 sense) is (but is not advised to be) a part of, the necessary presupposed knowledge hypothesis being made explicit by its explanation in parentheses ('or combination of assets'). 'Assets' (T) here may cause similar translation problems as 'funds' (for the overlapping interrelationship with assets and funds cf. our example above) if not recognized in its pragmatic relationship as a reference to 'investments' (now specified as 'low risk' in rhematic function) which is in turn paraphrased with the general expression 'ventures'. The next sentence topicalizes M 1 (T) as part of M which includes assets – again making its meaning in context explicit by '(currency and checking deposits)' – and recommends in its rheme not to include M1 in a portfolio, its components being paraphrased metonymically as 'nest eggs'.

The interrelationship of the topic structure (from 'money', 'the role of money as an investment', 'portfolio (as a combination of assets)', along with the additional isotopic instances 'M 1 (currency and checking deposits)' and the term contaminations ('assets', 'funds', 'investments') shows how relevant it is for a translator to be aware of these pragmatic relationships in which terms may appear in LSP texts (reception phase) and how complex LSP translation decision-making is (in the ((re)production phase) when considering these

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[21]  For the differentiation between theme-indicators and themes cf. Gerzymisch-Arbogast/ Will 2005.

[22]  Subsidiary rhemes are previously mentioned information components that are used to establish 'new' information as 'rhemes', cf. Gerzymisch-Arbogast/Will (2005).

pragmatic relationships in the light of such factors as the original author's pro-
file and translation purpose, culture-specific norms and anticipated readership
type. Theme-rheme progression may raise translation problems on all text lev-
els (atomistic, hol-atomistic and holistic) and within all phases of LSP transla-
tion (reception, transfer and (re)production).

### 4.2.2  Isotopy[23]

Isotopies are of value for LSP translation as an indicator for source and target
text coherence and as a translation unit that extends beyond the sentence. As
isotopic levels may be (in)variant in translation, they are subject to translation
equivalence considerations (Arbogast 1999).

The concept of isotopy was first introduced into linguistics by Greimas
(1966/1986) to denote text coherence and has been modified and expanded in
numerous ways by the Greimas school, notably by Rastier (e.g. 1995, 2002).
Greimas' isotopy is a semantic concept based on a relational meaning concept
made up by the categories of semes, classemes and sememes. The minimal iso-
topic unit as iterativity along a syntagmatic chain of classemes is between two
lexemes but is not limited to the syntagma or sentence level and is as such a
potentially transphrastic or textual phenomenon. Rastier expands the concept
of isotopy and identifies the dominant isotopy of a text with its *thème*: '...le
mot thème est employé pour désigner le ‹sujet› d'un texte, c'est-à-dire son
isotopie générique dominante, ordinairement un domaine sémantique.'
(Rastier 1995:224).

Isotopy is today firmly established as a concept in text linguistics, e.g. as
an indicator of text coherence. It is from this discipline, specifically from text
analysis, that it found its way into the field of translation – mostly as an instru-
ment to ensure the full comprehension of the source text. Language specificity,
a problematic notion of context along with its unclear conceptual status and
the ensuing methodological deficits have prevented the concept from gaining
full ground in (LSP) translation. As an important textual parameter that may
vary interculturally and by text type, it is a useful tool for translators but its
use for translation purposes requires a 'tertium comparationis' a non-lan-
guage-specific meaning standard and notion of context that allows for the de-

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[23]    It will here only be briefly discussed and positioned for the purposes of this article. For
        a more detailed discussion of Greimas' concept of isotopy cf. Mudersbach/Gerzy-
        misch-Arbogast 1989. For a discussion of the relationship between isotopy and transla-
        tion cf. Gerzymisch-Arbogast 2004a.

scription of individual ad hoc contexts. With these preconditions, isotopy can be considered as a transphrastic (transcending beyond the sentence) translation unit (cf. Gerzymisch-Arbogast 2004a).

In the above 'Asset Demand' example, the dominant isotopy is constituted by the concepts of 'money' – irrespective of its informational status as theme (T) or rheme (R) but including the hypotheses necessary for establishing coherence between the concepts of funds, assets and investment. The dominant isotopy in this case would include the topicalizations of 'money' ('money', 'the role of money as an investment', 'portfolio (as a combination of assets') in addition to M 1 (currency and checking deposits),' funds' and 'ventures'.

Example

> …
> Why are these [savings accounts, added by HGA] not narrow money? Because they cannot be used as means of exchange for all purchases. **You** cannot go into a store and pay with funds from your savings account.
> …
> (Samuelson/Nordhaus 2005:513)

The culture-specific metacommunication of 'you' in the above example or 'us' and 'we' in the example in Chapter 4 would be excluded from a 'money' isotopy – this 'author's presence' would represent a separate independent isotopic level, which could present culture-specific translation problems on all text levels (atomistic, hol-atomistic and holistic) and within all phases of LSP translation (reception, transfer and (re)production).

## 5   The holistic Level of LSP Texts: Coherence and Knowledge Systems

### 5.1 Coherence

Coherence is considered an important standard in judging whether a message or text makes sense or not and has been defined in a number of ways depending on whether the reader's world knowledge is a factor in establishing coherence (e.g. de Beaugrande/Dressler 1983) or whether it is not considered in the description of 'cohesion' (e.g. Halliday and Hasan 1976). Introduced into linguistics by Bellert (1970), the concept implies inferences on the part of the reader and – in its most commonly accepted definition – depicts the 'sense continuity' in a text, involving the active participation of the reader when

integrating his/her 'world' or LSP knowledge as 'inferences' (Bellert 1970), 'implications' (Dressler 1973), implicatures (Grice 1975) or 'hypotheses' (Gerzymisch-Arbogast/Mudersbach 1998, Gerzymisch-Arbogast 1999). Hypotheses are assumed mental operations on the part of the reader in an effort to make sense of a text, i.e. to make a text coherent.

Establishing coherence involves world and possibly domain knowledge and is facilitated by a variety of text-internal (coherence) signals: links between sentences, paragraphs or other parts of a text (title, table of contents, ending etc.). These coherence signals enhance the (standard) reading process when a text is read and understood in a linear fashion from title, overview/table of contents, sub-title, first sentence/utterance, first paragraph/section to the last paragraph/section and the last sentence/utterance.

The result is that a reader perceives a text to be either 'coherent', 'incoherent' or 'a-coherent' (Mudersbach 2004: 250), depending on whether its segments are explicitly or implicitly connected with each other ('coherent'), incompatible with one another ('incoherent') or appear unconnected with one another ('a-coherent'). In the case of (seemingly) a-coherent utterance sequences, the reader may be able to bridge the unconnected utterances by individual world or domain knowledge hypotheses The following example illustrates the important role hypotheses play when understanding (and translating) LSP texts as coherent wholes.

Example

> **Money's Functions**
> …
> **Money** is sometimes used as a store of value. In comparison with risky assets like stocks or real estate or gold, **money** is relatively riskless. In earlier days, people held **currency** as a safe form of **wealth**. Today, when people seek a safe haven for their wealth, the vast preponderance of their wealth is held in **non-monetary assets**, such as savings accounts, stocks, bonds and real estate.
> (Samuelson/Nordhaus 2005:513f)

In this short text sample, the three expressions of 'money' do not represent the same concept. In the title and in its first appearance, the term encompasses the money supply variables M 1 and M 2 (LSP knowledge hypothesis 1), while in the third instance it only refers to M 1 (LSP knowledge hypothesis 2 'money' = M 1) which is inferred by resuming 'money' with 'currency' in the following sentence (LSP hypothesis 3 'currency' = M 1). The store of value aspect of the concept of 'money' is then resumed by the superordinated term 'wealth' (LSP

hypothesis 3, 'money is a kind of wealth' (cf. the examples in 'Terms and Term Systems' above) which is varied by 'assets' (LSP hypothesis 4, 'wealth' includes 'assets' and assets include monetary and 'non-monetary assets').

We can see that even this very short LSP text excerpt requires four LSP knowledge hypotheses in order to be properly perceived as 'coherent'. While this may not constitute a problem at all for an expert reader and does not qualify the text as incoherent or a-coherent, a translator, who cannot usually make these hypotheses easily, may have problems understanding the text for translation purposes. The use of 'currency' for M 1 may in addition result in transfer and (re)formulation difficulties as it may not be lexicalized in the same way between languages (as e.g. in German) and may require synonymic contamination on a target text level. The translation problem is even more complex in that a translation into German 1) will have to take into account that the contaminated English 'money' (as M 1), is interculturally different from its M 1 counterpart in German, and – against the background of the target language resources established in the transfer phase – 2) raises the question of whether to make the implied hypotheses explicit in the translation by 'correcting' the original.

## 5.2 Knowledge Systems

As already indicated it is widely accepted that understanding texts is not a passive 'reception' but a reader's active effort to make a text coherent by integrating his/her world knowledge into what is written in the text. These coherence establishing processes are of particular relevance for LSP texts and their translation. It was shown in the 'Money Functions' example above how individual LSP knowledge interacts with what is written in a text when establishing coherence by means of knowledge-based hypotheses. It can therefore be said that understanding an LSP text as a coherent whole requires knowledge hypotheses which depend to a considerable degree on a person's world and domain knowledge and while this knowledge may be readily available to a domain expert, it is not generally accessible to a translator and therefore needs to be made transparent for translation purposes.

When this is accepted, we need to ask how the knowledge needed to understand LSP texts can be put into a systematic and flexible form so that it is accessible when needed for translation purposes. This question is answered by attempts to systematize knowledge as interrelated knowledge holons (Gerzymisch-Arbogast/Mudersbach 1998:63ff, Floros 2003, Will 2008). Holons depict the interrelationship of chunks of knowledge associated with events, per-

sons, domains, or 'areas of life' under the umbrella of a shared function within a larger superordinated framework. In contrast to 'frames', 'scenarios' or 'schemata'[24], knowledge systems are constructed from texts and their parts (holemes and subholemes) and are interrelated and governed by a shared function. This secures authenticity and limitation of scope. They are thus accessible structured knowledge 'systems' (e.g. available in a hierarchical thesaurus form as depicted in Fig. 5 and are 'concretized' on the text level as random holistic knowledge 'constellations' (cf. Floros 2003, Kim 2005, Will 2008). Knowledge systems are never represented as a whole in texts (just as the entire grammar is never present in one text) but they are randomly evoked ('*concretized*') in texts. *Concretizations* of knowledge systems in texts form knowledge *constellations* analogous to the 'cultural' constellations developed by Floros (2003) and depicted in Fig. 5 as the *constellation* made up of the elements x, y and z.
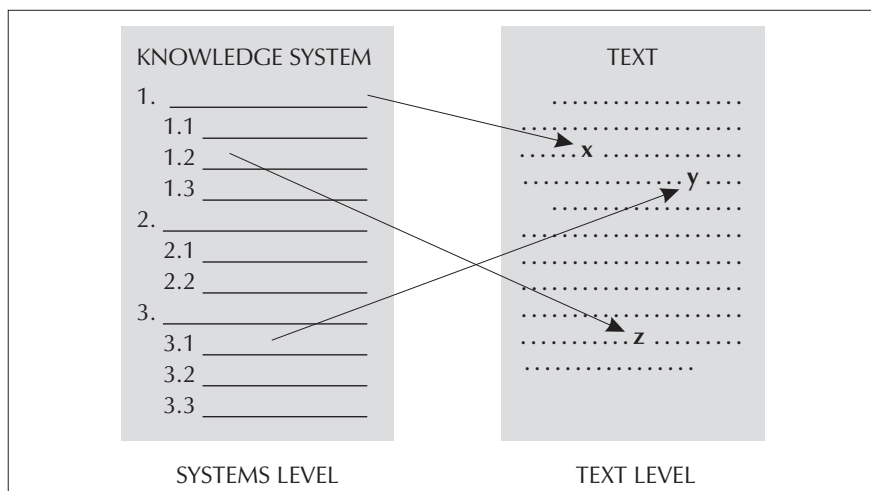


**Fig. 5** Concretizations

When several knowledge systems are underlying a text, several types of *constellations* are distinguishable, e.g. *cultural constellations*, *domain knowledge constellations*, *reader-orientation constellations* etc. For instance, in the above example the domain knowledge system 'MONEY' is *concretized* by 'money', assets, funds, 'M1' etc. and the READER ORIENTATION system is *concretized* by 'you' (above) or by 'us' and 'we' (cf. the example in chapter 4 be-

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24      For an overview cf. Brown/Yule 1983.

low). Depending on the quantity and quality of holistic *constellations* in texts, different groups and types of texts can be distinguished, e.g. more or less domain language-specific (cf. Will in this volume) or more or less culturally bound or more or less reader-oriented texts.

### 5.2.1 Explicit and Implicit *Constellations*

*Knowledge system constellations* are reflected explicitly or implicitly in texts. Explicit *constellations* refer to knowledge systems that are explicitly introduced by an author through a definition or explication, e.g. 'portfolio (or combination of assets)' or M 1 (currency or checking deposits)' in the above example 'Asset Demand'. Their identification in texts is usually not problematic. Implicit *knowledge constellations*, on the other hand, do not introduce concepts openly, but presuppose the knowledge systems underlying the text. They need to be 'actualized' by hypotheses, as in the case of 'assets' or 'investments' or 'funds' in the above examples (cf. Will in this volume).

Implicit *knowledge system constellations* in texts usually present translation problems from all text perspectives (atomistic, hol-atomistic and holistic) and within all phases of LSP translation (reception, transfer and (re)production). They may cause serious translation problems with respect to their identification (reception phase): When translated 'out of context' without the necessary knowledge hypotheses and independently of each other on the atomistic level – as they are accessible in glossaries or by automatic term extraction –, terms only reflect part of their 'sense' in texts because the interrelationship on the hol-atomistic and other holistic text levels is excluded. A prominent knowledge system that is most often actualized implicitly and without denoting its functional context is that of READER ORIENTATION which will be exemplified for illustration purposes in the following section.

### 5.2.2 The Knowledge System of 'Reader Orientation' in Discourse: An example

Differences in 'discourse patterns' have been much discussed in intercultural communication and pragmatics (e.g. Kaplan 1966, Galtung 1985, Clyne 1994, Luchtenberg 1994, House 1996)[25] and House's suggestion of scalar differences between English and German communicative preferences along five dimensions

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[25]   With reference to translation cf. also Gerzymisch-Arbogast (1993, 1997a, 2005, for a discussion see also Buhl 1999).

has been widely accepted for written LSP texts (House 1999, see also Juliane House's contribution in this volume )[26] to reflect different author-reader relationships, e.g. "formal" or "distant" versus more "informal" or "personal".

The translation dimension of such varying communicative preferences can be made transparent by constituting READER ORIENTATION as a knowledge system (cf. Fig. 6). It is established by abstracting reader and author-oriented manifestations from authentic texts to form interrelated (holemes) on a systems level which may show different values of reader- or author relationships in different languages and cultures. It here includes metacommunicative devices as the use of 'we' and 'us' in the example below and account for a more formal or informal language usage as in 'ventures' and 'nest egg'. For translation purposes such differences raise questions as to whether the 'nest eggs' of a portfolio are to be kept invariant in German, Spanish or French or whether they need to be adapted to the varying degree of formality depending on language and cultural norms, because failure to (scale down or) upgrade the formality level may result in unacceptable translations.

The knowledge system presented in Fig. 6 depicts READER ORIENTATION as an example of a knowledge system concretized in LSP texts. It was developed from Freud's psychoanalytical texts and their English translations to serve as a reference frame for a more or less pronounced reader orientation in LSP texts[27]. It uses the categories of theme-rheme progression and distinguishes (1) 'information structu-

| READER ORIENTATION |
| --- |
| 1. INFORMATION STRUCTURING |
|    1.1 Title |
|    1.2 Beginning of Text |
|    1.3 Ending of a Text |
|    1.4 Introduction of Concepts |
|    1.5 Thematic Progression |
|    1.6 Metacommunication |
| 2. INFORMATION PACKAGING |
|    2.1 Redundancies |
|    2.2 Terminological Variations |
|    2.3 Concretizations |
|    2.4 Transphrastic Theme-Rheme Indicators |
|    2.5 Use of Examples |
|    2.6 Informality |

**Fig. 6**   Knowledge System 'READER ORIENTATION'

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[26]   The five dimensions along which differences in discourse patterns can be identified and described are (according to House e.g. 1999): German directness, self-orientation, content-orientation, explicitness, ad hoc formulations vs. Englisch indirectness, orientation towards the other, addressee orientation, implicitness and the use of routine formulas (House 1999:49 u.a.).

[27]   These categories are described in detail in Gerzymisch-Arbogast 1993 (in English) and 1997a (in German) and are, therefore, not repeated here.

ring', indicating which information (as 'old' or 'new') is provided in which place in the text and (2) 'information packaging' indicating how (in which form) information is presented in a particular text segment (e.g. as 'ventures' for 'assets' or 'nest eggs' for parts of a portfolio). The information structuring categories relate to the title, the beginning and ending of a text and also include the direct or indirect introduction of concepts (such as in the example in chapter 4 where the concept of 'transactions demand for money' is indirectly introduced by relating it to the need for money by people in general). These categories have different values, i.e. they reflect reader- or content-oriented functional variables in a text. Important categories are, of course, theme-rheme parameters or metacommunication which are powerful variables reflecting underlying author-reader relationships. Information packaging, on the other hand, includes parameters like redundancy, which is so much more frequent in reader-oriented texts, as is terminological variation, the use of examples, (in)formality of expressions and (explicit) cohesive ties (e.g. transphrastic theme-rheme indicators).

The *concretization* of the knowledge system READER ORIENTATION with reference to the example below is shown in the English original and its German translation in Appendix III to this article.

## 6   Translating LSP Texts

Translations may be rendered intuitively or according to a rule-governed procedure. Intuitive decision-making cannot be standardized or repeated to yield comparable results and resists linguistic description. Translation decision-making as a rule-governed activity may follow a general procedure of translation methodology[28], which is condensed here for space and simplicity reasons to the following sequence of steps, methodologically implying that the result of one step is the point of departure for the next step.

The following LSP translation example illustrates some of the translation problems discussed above in their functional interplay. It is taken from Samuelson/Nordhaus' textbook *Economics*, an introductory English economic text book which was partly translated into German by the author of this article. It was chosen among other reasons for its widely publicized nature involving

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[28]   A rule-governed sequence of steps is suggested in Gerzymisch-Arbogast/Mudersbach 1998:38–77, 80–83).

translations into more than 40 languages. This allows readers who are interested in how the examples are dealt with in languages other than German to research the sample passages in her/his own language combination.[29]

## 6.1 Understanding the Source Text (Reception Phase)

### 6.1.1  Step 1: Source Text Analysis

In the text linguistics literature, understanding a text is commonly equaled with establishing coherence in a (source) text which may be appproached from different text perspectives as outlined above. If so, it involves a source text analysis on the atomistic, hol-atomistic and holistic levels.

Applied to the text sample, the **atomistic analysis** reveals that everyday vocabulary is frequently used, sometimes in its terminologized form: the term 'money' explicitly appears in all text segments with the exception of the title in which it is implied. The aspective matrix in the Appendix visualizes this individual understanding on the atomistic level of the text[30].

The **hol-atomistic analysis** shows that the syntactic picture is dominated by verbal constructions, that 'money' is not realized in subject position (i.e. it is not thematized) and that there are (three) metacommunicative instances in the text ('us', 'we', 'clearly'). The analysis also shows that the text is structured around 'money' which may be considered as the sample's 'text topic' and which in all cases is not in an actor position but referred to 'indirectly'. The dominant isotopy shows money (in its function as a transactions medium) which is established by all the instances (tokens) of money regardless of their informational status as themes or rhemes but including the implied references (hypotheses). The metacommunicative instances in the sample text (not all included in the graph in the Appendix) constitute a lower level isotopy with the inclusive 'us' (in 'Let's examine…'), 'we' (in 'We can illustrate…'), and 'clearly'

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[29]   While with all other examples in this article the latest version of Samuelson/Nordhaus (2005) was used as a reference, the following text example uses the older edition which the author partly translated (Samuelson/Nordhaus 1985, dt.1987) so as to reflect an authentic translation scenario with authentic purpose and individual decision-making processes. Although the text has changed on the surface level, the underlying translation problems have remained the same as can be seen from the above examples. Samuelson/Nordhaus' Economics is available at <http://www.mhhe.com/economics/samuelson17/book/index.mhtml>.

[30]   For reasons of space only the second paragraph of the sample text is shown in its visualized analysis.

(Clearly, the family holds…). These results (topic structure as a synchronoptic network, isotopy as a linear representation) are visualized in the Appendix.

The **holistic analysis** reveals that knowledge hypotheses are necessary to establish coherence e.g. by implying 'money' in the title 'Transactions Demand' and by identifying 'money' as M 1 in the segment where '…a family that earns $ 1000 per month, keeps it in **money** …'). Hypotheses are therefore necessary to interpret contaminations: If we look at the introductory passage in the text sample, we can see that the two references to 'money' do not represent the same concept. In the first instance, in the title 'Demand for money', the term encompasses the concept of the entire money supply, i.e. currency and 'near-money', (LSP knowledge hypothesis 1), while in the second instance it only refers to currency which is explicitly indicated by equating 'money' with M 1 in parenthesis (LSP hypothesis 2: money = currency). The currency aspect of the concept is then resumed in the subtitle 'Transactions Demand', which is used as an alternative variant (= synonymous contamination) to) 'demand for transactions money' (LSP knowledge hypothesis 3). 'Transactions money' in turn is a variant for 'money' in the sense of M 1 (hypothesis 4).

## 6.1.2  Transparent Analysis Results

The results of the source text analysis from all text perspectives are visualized in the Appendix to this article as

- a **matrix of aspects** (atomistic level) showing the text aspects that were identified to be relevant text features correlated with individual text segments)
- **a linear and synchronous semantic network** (hol-atomistic level) which shows the topic structure identified in the source text and
- **the knowledge system** (holistic level) of READER ORIENTATION which is underlying the text, forming the third level isotopy: For space and simplicity reasons we show READER ORIENTATION as it is *concretized* in both the English original and the German translation in the same figure.

## 6.2 Setting Up a Translation Program (Transfer Phase)

### 6.2.1  Step 2: Clarifying the Translation Purpose

The 'purpose' for this translation was clearly specified by the publishing company *Bund Verlag*/Cologne: With the original author's eminent profile as Nobel prize winner and with the enormous success of the book on the US market,

it was requested that 'the style' of the author was to be preserved as closely as possible.

As a consequence, the range of possible translation variants and the translator's scope of making individual decisions was considerably restricted.

### 6.2.2  Step 3: Establishing an Individual Translation Objective

Within this general translation purpose the translator's individual objective was to render an acceptable text for German academic readers despite some of the violations to the German norm of academic writing.

It is easy to see that this resulted in a continuing conflict between conforming to the German norm of a more 'formal' style on the one hand and rendering a translation that kept the original author's more reader-oriented English style on the other hand.

### 6.2.3  Steps 4/5/6: Compatibility analysis on the atomistic, hol-atomistic and holistic levels

The translation 'program' projects the features identified in text analysis against the German language system and norms[31].

On the **atomistic level**, the contaminated use of 'money' presents a problem, especially the alternations between 'money' as M and 'money' as M 1. The problem does not extend to the **hol-atomistic level** though where 'money' as M 1 can be seen to constitute the text topic and the dominant isotopy regardless of whether it is referred to in its more general sense of M. On the **holistic level** problems arise from the intercultural difference in the concepts of M 1 which is aggravated by the contaminated usage of the term. In addition, the English reader-oriented 'style' concretized by the constellation 'us', 'we' and 'clearly' along with other indicators of READER ORIENTATION such as explicit coherence signals as transphrastic thematic indicators ('it is clear from the above…'), the use of everyday language and examples (the family which earns, holds and spends 'money'), the redundant verbalizations ('need money') and indirect topicalizations of 'money' when introducing the concept of 'transactions demand', the simplicity of the rhematic information, mostly containing only one, commonly known information (rheme) is perceived to be partially in contrast to the German more content-oriented academic writing norms.

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[31]    With respect to the classification of 'norm' as a system cf. Gerzymisch-Arbogast 2003a.

## 6.3 (Re)Formulating a target text

### 6.3.1 Step 6/7/8: Establishing Textual (In)Variance from three text perspectives

The translation purpose (requiring (near) invariance) reflects itself in the target text on the atomistic, hol-atomistic and holistic levels. On the **atomistic level** all the values of the aspects identified (use of terminology, syntactic set-up, implications, metacommunicative elements) and especially the term contaminations are largely maintained. On the **hol-atomistic level**, the topic structure, with its indirect thematizations of 'money' is maintained as is the dominant isotopy of 'money' and the subsidiary isotopy of metacommunication. On the **holistic level**, the hypotheses necessary to establish coherence were preserved as well as the reader-orientation. It is on this level, however, that individual decisions were made that reflect the compromise between the declared translation purpose of maintaining the English 'style' and the individual objective of rendering a translation conforming – to some extent – to the German academic writing norms.

These decisions are reflected on the atomistic, hol-atomistic and holistic levels by the German translation's aspective matrix, topic structure and concretizations of READER ORIENTATION as shown in the Appendix to this article.

### 6.3.2 Step 9/10: Target Text Consolidation (with coherence control)

In these last two steps the translated (in)variant realizations are consolidated into a target text which is then controlled in its coherence on all text levels.

The end result of this sequence of steps is a translation which fits the general purpose given by the publisher in remaining close to the original and at the same time being acceptable or at least tolerable by German academic writing norms (cf. the translated example in the Appendix).

### 6.3.3 Step 10: Final Translation Commentary

It is suggested that LSP translations should include a translator's commentary which gives the translator an opportunity to make the reasoning for certain translation decisions transparent to target text readers. While this opportunity is sometimes granted when translating renowned authors such as in the German translation of Austin's famous *How to Do Things With Words or* in the English translations of Freud's works, this strategy is unfortunately not common. The following section contains factors that could be included in a possible commentary for the translation of the *Samuelson* example.

## 6.4 Translation Commentary: Transparency and Intersubjective Verifiability[32]

### 6.4.1 The Translation Problem

Due to the author's eminent status and the success of the book in the US, the German translation was required to remain as close as possible to the English original. This posed translation problems when the 'closeness to the English original' was perceived to be in conflict with the German norm of academic writing. Translation decisions therefore had to weigh the 'English style' against 'German norm' in many cases. Also, confusion arose when – on the one hand – the strongly verbalized, almost simplistic sentence structures and the non-technical vocabulary with examples from everyday life suggested a simple text which would be easy to translate, and – on the other hand – many domain knowledge hypotheses were required to make general sense of the text. The implicit domain knowledge hypotheses and the frequent cultural differences and implications rendered the translation a difficult task e.g. as to whether the implicity should be kept invariant or made explicit.

### 6.4.2 The influence of the Translation Purpose

As it was not possible to 'change' the text by explicating cultural differences, the target text had to be written with the understanding that the German readers would imply that the text was originally written for the US market and therefore accept US-specific terms and discourse. This applies to necessary hypotheses and implicit concepts (as for example M1) as well as to explicit culture-specific denominations like dollars ($).

   The conflict between the English 'style' and the German norm was largely resolved by assuming (!) that the German target reader type, the academic student, would either be aware of the cultural differences or would have the competence of researching its implications. It can easily be seen that – aside from the language difficulties – the demands on the German student are thus much higher than on the average US student who does not need to be equipped with the cultural awareness and sensitivity expected from non-native readers of the book which necessarily contradicts the book's purpose of being easy to understand for students.

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[32]   This is a highly simplified description of the process for the purposes of this article, for a more detailed LSP translation decision-making tree cf. Gerzymisch-Arbogast 1996: 230ff and Gerzymisch-Arbogast/Mudersbach 1998 for general ranking and weighted decision-making in translation.

### 6.4.3  The Interrelationship of Text Perspectives

To establish coherence in the text for translation purposes, terms had to be understood in their pragmatic (contaminated) relationships and seen in the functional context of a general reader-oriented style manifesting itself on all text levels, i.e. on the use everyday vocabulary (atomistic level) and simple syntax, indirect topicalizations and metacommunication isotopies (hol-atomistic level) and implicitness of reference which necessitated frequent hypotheses to assumed knowledge systems (holistic level).

The varied and contaminated use of terms and the everyday vocabulary identified on the **atomistic level** were seen in the functional interrelationship of reader orientation on the **holistic level** interrelating with metacommunicative manifestations, implicit references and frequent hypotheses. These manifestations in turn were seen to interact with manifestations on the **hol-atomistic level,** i.e. the verbal structure of phrases, the use of thematic indicators as explicit coherence signals, indirect thematizations and contaminated term isotopies.

While the English reader-orientation (holistic perspective) was considered the most problematic underlying (knowledge) system in the translation process, decisions on the atomistic level allowed for toning down their effect by using more domain-specific formulations and formal structures. Examples are: the use of nominalizations for the redundant verbalizations and everyday language (e.g. 'need money to pay for' vs. 'benötigen Geld zum Einkauf…zur Begleichung…zur Finanzierung von…' ), toning down metacommunicative elements (e.g. 'Clearly' vs. 'Es läßt sich leicht nachweisen…'), by substituting anaphoric proform references with lexical paraphrases (e.g. 'it' vs. 'diesen Aspekt'), relative clauses with condensed postmodifications (e.g. '..a family that earns…' vs. 'eine Familie mit einem monatlichen Einkommen'), postmodifications by premodifications (e.g. '…transactions needed at each level of income' vs. '…der entsprechend dem jeweiligen Einkommensniveau üblichen Transaktionen'). However, despite these modifications in 'information packaging', the 'information structuring' in the form of the everyday examples such as the family earning, holding and spending money were maintained within the given general purpose of the translation.

In line with the required closeness to the English original, the realization of the text topic and isotopic lines (hol-atomistic level) were maintained in the German text, which meant 1) that 'money' was left in its M and M1 contaminated versions in favor of keeping the quality of the topic structure and isotopy intact, 2) the indirect introduction of the 'transactions demand for money'

via the indirect thematizations of 'money' was also maintained. The explicit coherence signaled by the transphrastic thematic indicator ('it is clear from the above…') was not a problem on the German systems or norm level anyway and was, therefore, kept without any problem.

On the holistic level the coherence-establishing hypotheses were generally kept implicit. They were, however, made explicit in the title ('Transactions demand' vs. 'Die Nachfrage nach Transaktionsgeld') and with the homonymic contamination of 'money' which was made explicit as 'Kassenbestand' ('…keeps it in money' vs. …'diesen Betrag als Bargeld bzw. Kassenbestand hält…).

## 7    Summary

All of the LSP characteristics discussed in the previous chapters of this article are culture-sensitive and therefore raise questions as to their relative invariance in translation. It was easily seen in the translation sample that different text perspectives yield different results and how they interrelate in a concrete LSP translation scenario. Individual solutions were sought and made transparent in an attempt to offset the problematic reader-oriented manifestations on the holistic (e.g. metacommunication), hol-atomistic (thematic structure and verbalized syntactic structures) and atomistic (everyday vocabulary) levels.

Theme-rheme progression and isotopy are powerful, highly culture-sensitive indicators of textuality as they develop with the linear progression of the LSP text sequence. The most prominent intercultural indicator of LSP textuality is, however, coherence which requires holistic standards for description and translation which were here suggested by the concepts of *knowledge constellations* and individual hypotheses and their structurization as (domain) knowledge systems.

Decision-making on the (in)variance of these parameters in LSP translation is highly complex and involves all text perspectives (atomistic, hol-atomistic and holistic) in all phases of LSP translation (reception, transfer and (re)production) in addition to external knowledge about the individual LSP text: among other factors the domain and cultural knowledge presupposed by the source text, the translation purpose (although its operationalization is still outstanding, cf. however Sunwoo 2008) and assumed reader type. It is hoped that the sequence of steps in the decision-making process introduced above will enhance further studies into the complementarity of these parameters to shed more light on the complex task of intercultural LSP translation.

# 8   References

Arbogast, Alfred (1999): "Isotopy and Translation". In: Buhl, Silke & Gerzymisch-Arbogast, Heidrun (eds): *Fach-Text-Übersetzen*: *Theorie Praxis Didaktik*. St. Ingbert: Röhrig. 3–20.

Assmann, Jan (2000): *Der Tod als Thema der Kulturtheorie*. Frankfurt: Suhrkamp.

Beaugrande, Robert Alain de & Dressler Wolfgang U. (1983): *Introduction into Text Linguistics*. Tübingen: Niemeyer.

Beier, Rudolf (1980): *Englische Fachsprache*. Stuttgart: Kohlhammer, Chapters on Lexical and Syntactic Characteristics of LSP, 30–86, esp. 53ff Ellert, Irina (1970): "On a condition of the coherence of texts". In: *Semiotica* 2. 335–363.

Brinker, Klaus (1993): *Textlinguistik.* Studienbibliographien Sprachwissenschaft Band 7. Heidelberg: Groos.

Brown, G. & Yule, G. (1983): *Discourse analysis*. Cambridge: University Press.

Buhl, Silke (1999): "Gestaltungsprinzipien wissenschaftlicher Texte im Sprachenpaarvergleich Deutsch-Englisch am Beispiel von Texten Einsteins und Russels zur Relativitätstheorie". In: Gerzymisch-Arbogast, Heidrun & Gile, Daniel & House, Juliane & Rothkegel, Annely: *Wege der Übersetzungs- und Dolmetschforschung.* DGÜD Jahrbuch Übersetzen und Dolmetschen, Bd III. Tübingen: Narr. 117–158.

Clyne, Michael (1994). *Intercultural Communication at Work. Cultural Values in Discourse*, Cambridge: Cambridge University Press.

Daneš, Frantisek (1970): "Zur linguistischen Analyse der Textstruktur". In: *Folia Lingusitics 4.* 72–78.

Dejica, Daniel (2008): "Discourse and Text Perspectives". In: Gerzymisch-Arbogast/Budin/Hofer (forthcoming): *Universals in Translation*. Mutra-Journal 01 (2008). Saarbrücken: ATRC Group.

Dictionary of Banking Terms. Ed. by Thomas Fitch. Consulting eds.: Neller, Irving, Simson, Donald, Weberman, Ben. New York, London: Barron's Guide (= educational series). 1990.

DIN 2331 (1980): *Begriffssysteme und ihre Darstellung.* Berlin – Köln: Beuth.

Dressler, Wolfgang-Ulrich. (1973): *Einführung in die Textlinguistik*. Tübingen: Niemeyer.

Engberg, Jan & Van Dam, Helle & Gerzymisch-Arbogast, Heidrun (eds) (2005): *Knowledge Systems and Translation.* TTCP Series. Berlin: Mouton de Gruyter.

Felber, Helmut & Budin, Gerhard (1989) *Terminologie in Theorie und Praxis*. Tübingen: Narr (= Forum für Fachsprachen. 9).

Floros, Georgios (2003): *Kulturelle Konstellationen in Texten. Zur Beschreibung und Übersetzung von Kultur in Texten.* DGÜD Jahrbuch Übersetzen und Dolmetschen, Bd III. Tübingen: Narr.

Floros, Georgios (2004): "Cultural constellations and coherence". In: House, Juliane & Koller, Werner & Schubert, Klaus (eds) (2004): *Neue Perspektiven in der Übersetzungs- und Dolmetschwissenschaft.* Bochum: AKS-Verlag. 289–300.

Floros, Georgios (2006): "Towards establishing the Notion of Ideoculture in Texts". In: Heine, Carmen/Schubert, Klaus/Gerzymisch-Arbogast, Heidrun (eds): *Text and Translation: Theory and Methodology.* Jahrbuch Übersetzen und Dolmetschen Band 6 2005/06. Tübingen: Narr. 335–347.

Floros, Georgios (2008): "Cultural Constellations and Translation". In: Gerzymisch-Arbogast/Budin/Hofer (forthcoming): *Universals in Translation*. Selected Articles presented at the MuTra 2007 Conference *LSP Translation Scenarios*. 30 April – 4 May 2007. Mutra-Journal 01 (2008). Saarbrücken: ATRC Group.

Gabler – Wirtschaftslexikon. 3., vollst. überarb. u. aktualisierte Auflage. Wiesbaden: Gabler 1990.

Galtung, Johan (1985): "Struktur, Kultur und intellektueller Stil. Ein vergleichender Essay über sachsonische, teutonische, gallische und nipponische Wissenschaft". In: Wierlacher, Alois (ed) (1985): *Das Fremde und das Eigene.* München: iudicium Verlag. 151–193.

Gerzymisch-Arbogast, Heidrun (1985): "Zur Thema-Rhema-Gliederung im Sachbuchtext". In: *Fachsprache.* Internationale Zeitschrift für Fachsprachenforschung, -didaktik und Terminologie 1.2. 18–32.

Gerzymisch-Arbogast, Heidrun (1987a): *Zur Thema-Rhema-Gliederung in amerikanischen Wirtschaftsfachtexten. Eine exemplarische Analyse*. Tübingen: Narr.

Gerzymisch-Arbogast, Heidrun: (1987b): "Passepartoutwörter als fachsprachliches Übersetzungsproblem". In: *TEXTconTEXT* 1/2 (1987). 23–31.

Gerzymisch-Arbogast, Heidrun (1989): "The Role of Sense Relations in Translating Vague Business and Economic Texts". In: Bennani, B. & Snell-Hornby, Mary (eds) (1989): *Translation and Lexicography.* John Benjamins B.V./Paintbrush/EURALEX. 187–210.

Gerzymisch-Arbogast, Heidrun (1993): "Contrastive Scientific and Technical Register as a Translation Problem". In: Leland & Sue Ellen Wright (eds) (1993): *Scientific and Technical Translation.* New York: SUNY. (American Translators Association Scholarly Monograph Series. Vol. VI). 21–51.

Gerzymisch-Arbogast, Heidrun (1994): "Identifying term variants in context: The SYSTEXT approach". In: Snell-Hornby, Mary & Pöchhacker, Franz & Kaindl, Klaus (eds) (1994): *Translation Studies: An Interdiscipline*. Amsterdam – Philadelphia: Benjamins (Benjamins Translation Library.Vol. 2). 279–290.

Gerzymisch-Arbogast, Heidrun (1996): *Termini im Kontext. Verfahren zur Erschließung und Übersetzung der textspezifischen Bedeutung von fachlichen Ausdrücken*. Tübingen: Narr (= Forum für Fachsprachen. 31).

Gerzymisch-Arbogast, Heidrun (1997a): "Der Leserbezug in Sigmund Freuds psychoanalytischen Schriften im Spiegel der englischen Übersetzungen". In: Wotjak, Gerd & Schmidt, Heide (eds) (1997): *Modelle der Translation – Models of Translation. Festschrift für Albrecht Neubert.* Frankfurt/Main: Vervuert. 213–233.

Gerzymisch-Arbogast, Heidrun (1997b): "Interculturally Varying Text Norms as a Problem of Translating LSP Texts". In: Klaudy, Kinga & Kohn, János (eds) (1997):

*Transferre Necesse Est:* Proceedings of the 2nd International Conference on Current Trends in Studies of Translation and Interpreting. 5–7 September, 1996, Budapest, Hungary. Budapest: Scholastica. 146–153.

Gerzymisch-Arbogast, Heidrun (1999): *Kohärenz und Übersetzung: Wissenssysteme, ihre Repräsentation und Konkretisierung in Original und Übersetzung.* Jahrbuch Übersetzen und Dolmetschen Bd. 4/I. Tübingen: Narr. 77–106.

Gerzymisch-Arbogast, Heidrun (2003a): "Norm and Translation Theory. Some Reflections on its Status, Methodology and Implications". In: Schubert, Klaus (ed) (2003): *Übersetzen und Dolmetschen: Modelle, Methoden, Technologie.* DGÜD Jahrbuch Übersetzen und Dolmetschen Band 4/I. Tübingen: Narr. 47–68.

Gerzymisch-Arbogast, Heidrun (2003b): "Die Thema-Rhema-Gliederung in fachlichen Texten". In: Jung, Udo OH & Kolesnikova, Angelina (eds) (2003): *Fachsprachen und Hochschule. Forschung – Didaktik – Methodik.* Frankfurt a. M. – Berlin – Bern – Brüssel – New York – Oxford – Wien: Lang. 43–65.

Gerzymisch-Arbogast, Heidrun (2004a): "Isotopies as Translation Units". In: Antin, Fougner & Koller, Werner (eds): *Les limites du traduisible.* In: FORUM. Paris: *Presses de la Sorbonne Nouvelle.* 177–197.

Gerzymisch-Arbogast, Heidrun (2004b): "Theme-Rheme Organization (TRO) and Translation". In: Frank, A. & Greiner, N. & Hermans, T. & Kittel, H. & Koller, Werner & Lambert, J. & Paul, F. (eds) (2004): *Übersetzung – Translation – Traduction. Ein internationales Handbuch zur Übersetzungsforschung.* Berlin – New York: de Gruyter (Handbücher zur Sprach- und Kommunikationswissenschaft (HSK). 593–600.

Gerzymisch-Arbogast (2005): "Text und Translation". In: Zybatow, Lew (ed): *Translationswissenschaft im interdisziplinären Dialog. Innsbrucker Ringvorlesungen zur Translationswissenschaft. Band 3.* Frankfurt u.a.: Lang. 35–54.

Gerzymisch-Arbogast, Heidrun (2007): 'Text Perspectives and Translation', available at <http://www.est-translationstudies.org/Research%20issues/061028%20Heidi%20ESTResearchIssuesPublicationsHGAedit.htm> [January 1, 2007]

Gerzymisch-Arbogast (2008): "Universals in Translation". In: Gerzymisch-Arbogast/Budin/Hofer (forthcoming): *Universals in Translation.* Selected Articles presented at the MuTra 2007 Conference *LSP Translation Scenarios.* 30 April – 4 May 2008. Mutra-Journal 01. Saarbrücken: ATRC Group.

Gerzymisch-Arbogast, Heidrun & Mudersbach, Klaus (1998). *Methoden des wissenschaftlichen Übersetzens.* Tübingen: Francke.

Gerzymisch-Arbogast, Heidrun, Rothfuß-Bastian, Dorothee, Kunold, Jan (2006): *Coherence, Isotopy and Translation*: "Coherence, Theme/Rheme, Isotopy: Complementary Concepts in Text and Translation". In: Heine, Carmen/Schubert, Klaus/ Gerzymisch-Arbogast, Heidrun (eds): *Text and Translation: Theory and Methodology.* Jahrbuch Übersetzen und Dolmetschen, Band 6 2006. Tübingen: Narr. 349–370.

Gerzymisch-Arbogast, Heidrun & Will, Martin (2005): "Kulturtransfer oder Voice Over: Informationsstrukturen im gedolmetschten Diskurs". In: Braun, Sabine &

Kohn, Kurt (eds) (2005): *Sprache(n) in der Wissensgesellschaft. Proceedings der 34. Jahrestagung der Gesellschaft für Angewandte Linguistik.* Frankfurt: Lang. 171–193.

Göhring. Heinz (1978): "Interkulturelle Kommunikation: Die Überwindung der Trennung von Fremdsprachen- und Landeskundeunterricht durch einen integrierten Fremdsprachenunterricht". In: *Kongressberichte der 8. Jahrestagung der GAL.* Stuttgart. 9–14.

Goodenough, Ward (1964): "Cultural Anthropology and Linguistics". In: Hymes, D. (ed) (1964): *Language in Culture and Society. A Reader in Linguistics and Anthropolgy.* New York: Harper and Row. 36–40.

Greimas, Algirdas J. (1966/1986): *Sémantique structurale. Recherche de méthode.* Nouvelle ed. Paris: Presses Universitaires de France. Zuerst erschienen 1966.

Grice, H. P. (1975): "Logic and Conversation". In: Cole. Peter & Morgan, Jerry L. (eds): *Syntax and Semantics.* New York: Academic Press. Vol. I. 41–58.

Halliday, Michael A. K. & Hasan, Ruqaiya ([1]1976/1980): *Cohesion in English.* 4th impression. London: Longman.

Hansen, Klaus P. (1995): *Kultur und Kulturwissenschaft.* Tübingen – Basel: Francke. (= UTB. 1846)

Hofer, Gertrud (2008) "Teaching a post graduate course in LSP translation – Curriculum and Experiences." (in this volume)

House, Juliane (1977): *A Model for Translation Quality Assessment.* Tübingen: Narr.

House, Juliane (1996): "Contrastive Discourse Analysis and Misunderstanding: the Case of German and English". In: Hellinger, Marlis & Ammon, Ulrich (eds) (1996): *Contrastive Sociolinguistics.* Berlin: Mouton de Gruyter. 345–361.

House, Juliane (1997): *Translation Quality Assessment: A Model Revisited.* Tübingen: Narr.

House, Juliane (1999): "Zur Relevanz kontrastiv-prgmatischer und interkultureller Diskursanalysen für das Fachübersetzen". In: Gerzymisch-Arbogast, Heidrun & Gile, Daniel & House, Juliane & Rothkegel, Annely (eds) (1999): *Wege der Übersetzungs- und Dolmetschforschung.* DGÜD Jahrbuch Übersetzen und Dolmetschen, Bd. I. Tübingen: Narr. 43–54.

House, Juliane (2008): "Intercultural Discourse and Translation". (in this volume)

Kaplan, Robert B. (1966): "Cultural Thought Patterns in Inter-Cultural Education". In: *Language Learning.* Vol XVI, Nr. 1, 2. Michigan: Ann Arbor. 1–20. Ebenfalls erschienen in Croft, Kenneth (1980). *Readings on English as a Second Language.* Boston – Toronto: Little, Brown and Company. 399–418.

Kim (2005): "Cultural Constellations in Text and Translation". In: Dam, Helle V. & Engberg, Jan & Gerzymisch-Arbogast, Heidrun (eds): *Knowledge Systems and Translation.* Mouton de Gruyter. Berlin: New York. 255–273.

Koller, Werner ([7]2004): *Einführung in die Übersetzungswissenschaft.* Wiebelsheim: Quelle & Meyer. First published in 1979.

Kroeber, Alfred & Kluckhohn, Clyde (1952): *Culture. A critical review of concepts and definitions.* With the assistance of Wayne Untereiner and appendices by Alfred G.

Meyer. Cambridge: The Museum. (= Papers of the Peabody Museum of American Archaeology and Ethnology. Harvard University XLVII/1).

Luchtenberg, Sigrid (1994): "A friendly voice to help you vs working through your manual. Pragmatic differences between American and German software manuals". *Journal of Pragmatics*, 21. 315–319.

Lyons, John (1977): *Semantics.* Vol. I und Vol. II. Cambridge (u.a.): Cambridge University Press.

Mudersbach, Klaus (2001): "Kultur braucht Übersetzung. Übersetzung braucht Kultur (Modell und Methode)". In: Thome, Gisela & Giehl, Claudia & Gerzymisch-Arbogast, Heidrun (eds) (2001): *Kultur und Übersetzung. Methodologische Probleme des Kulturtransfers*. DGÜD Jahrbuch Übersetzen und Dolmetschen, Bd II. Tübingen: Narr. 169–226.

Mudersbach, Klaus (2004): "Kohärenz und Textverstehen in der Lesersicht. Oder: Wie prüft man die Stimmigkeit von Texten beim Lesen?". In: House, Juliane & Koller, Werner & Schubert, Klaus (eds) (2004): *Neue Perspektiven in der Übersetzungs- und Dolmetschwissenschaft. Festschrift für Heidrun Gerzymisch-Arbogast zum 60. Geburtstag*. Bochum: AKS-Verlag. 249–272.

Mudersbach, Klaus & Gerzymisch-Arbogast, Heidrun (1989): "Isotopy and Translation". In: Krawutschke, Peter (ed): *Translator and Interpreter Training* (= American Translators Association Scholarly Monograph Series. III). New York: SUNY. 147–170.

Ndeffo Tene, Alexandre (2004): *(Bi-)kulturelle Texte und ihre Übersetzung. Romane afrikanischer Schriftsteller in französischer Sprache und die Problematik ihrer Übersetzung ins Deutsche.* Würzburg: Königshausen & Neumann.

Nida, E.A. & Taber, A. (1969): *The Theory and Practice of Translation*. Leiden: Brill.

Rastier, François (ed) (1995*): L'analyse thématique des données textuelles*. Paris: Didier.

Rastier, Francois & Cavazza, Marc & Abeillé, Anne (eds) (2002): *Semantics for descriptions.* Translated by Lawrence Marks. CSLI Publications. Stanford University Press.

Rogers, Margaret (2004): "Terminologies Are Dead – Long Live Terminologies!". In: Klaus Schubert (ed) (2004): *Übersetzen und Dolmetschen. Modelle. Methodologie*. Jahrbuch Übersetzen und Dolmetschen, Bd. 4/I, 2003.

Rothfuß-Bastian, Dorothee (2004): "Das Zusammenspiel von Vertextungsmitteln in Original und Übersetzung". In: House, Juliane & Koller, Werner & Schubert, Klaus (eds) (2004): *Neue Perspektiven in der Übersetzungs- und Dolmetschwissenschaft.* Bochum: AKS-Verlag. 273–288.

Rothkegel, Annely (1999): *Technische Kommunikation (TK): Fragen zum Thema.* In: Gerzymisch-Arbogast et. al (1999): *Wege der Übersetzungs- und Dolmetschwissenschaft.* Jahrbuch Übersetzen und Dolmetschen, Bd. 1. Tübingen: Narr. 3–12.

Rothkegel, Annely (2003): "Text Tasks and Multilingual Text Production". In: Gerzymisch-Arbogast et al. (2003): *Textologie und Translation*. Jahrbuch Übersetzen und Dolmetschen, Bd. 4/II. Tübingen: Narr.

Rothkegel (2008) : "Multilingual Text Production". (in this volume)

Sager, Juan C. & Dungworth, David & McDonald, Peter F. & (1980): *English Special Languages. Wiesbaden: Brandstetter.* Chapter 9.

Samuelson, Paul A. & Nordhaus, William D. (1985): *Economics.* 12th edition. New York: MacGraw-Hill.

Samuelson, Paul A. & Nordhaus, William D. (1987): *Volkwirtschaschaftslehre.* Bd.1. Aus d. Amerikan. übertr. von Johanna Frenzel und Heidrun Gerzymisch-Arbogast, überarb. dt. Neuaufl. 1987. Köln: Bund-Verlag.

Samuelson, Paul A. & Nordhaus, William D. (2005): *Economics.* 18th edition. New York: MacGraw-Hill.

Samuelson, Paul A. & Nordhaus, William D. (2001): *Economics.* 17th edition. New York: MacGraw-Hill. http://www.mhhe.com/economics/samuelson17/book/index.mhtml

Sandrini, Peter (2008): "Localization and Translation". (in this volume)

Schmid, Annemarie (2000):"'Systematische Kulturtheorie' – relevant für die Translation?". In: Kadric, M. & Kaindl, K. & Pöchhacker, F. (eds) (2000): *Translationswissenschaft, Festschrift für Mary Snell-Hornby zum 60. Geburtstag.* Tübingen: Stauffenburg. 51–65.

Schmitt, Peter A. (1986/1994): "Die Eindeutigkeit von Fachtexten. Bemerkungen zu einer Fiktion". In: Snell-Hornby, Mary (ed) (1986/1994): *Übersetzungswissenschaft – eine Neuorientierung. Zur Integrierung von Theorie und Praxis.* Tübingen: Francke. 252–282.

Schubert, Klaus (2003): "Jigsaw Translation". In: Gerzymisch-Arbogast et al. (eds) (2003): *Textologie und Translation.* Jahrbuch Übersetzen und Dolmetschen, Bd. 4/ II. Tübingen: Narr. 295–304.

Schubert, Klaus & Link, Lisa (2008): "Translation Tools". (in this volume)

Snell-Hornby, Mary (1986/1994). *Übersetzungswissenschaft. Eine Neuorientierung.* Tübingen: Francke.

Sunwoo, Min (2008): "Operationalizing the Translation Purpose". In: Gerzymisch-Arbogast/Budin/Hofer (forthcoming): *Universals in Translation.* Selected Articles presented at the MuTra 2007 Conference *LSP Translation Scenarios.* 30 April – 4 May 2007. Mutra-Journal 01. Saarbrücken: ATRC Group.

Vannerem, Mia & Snell-Hornby, Mary (1986): "Die Szene hinter dem Text: 'scenes-and-frames semantics' in der Übersetzung". In: Snell-Hornby, Mary (ed) (1986): *Übersetzungswissenschaft – eine Neuorientierung.* Tübingen: UTB Francke Verlag. 184–205.

Vermeer, Hans J. (1986): "Übersetzen als kultureller Transfer". In: Snell-Hornby, Mary (ed) (1986)*: Übersetzungswissenschaft – eine Neuorientierung. Zur Integrierung von Theorie und Praxis.* Tübingen – Basel. 30–53.

Will, Martin (2008): "Knowledge Management for Simultaneous Interpreters in LSP conferences". (in this volume)

Witte, Heidrun (2000): *Die Kulturkompetenz des Translators: begriffliche Grundlegung und Didaktisierung.* Tübingen: Stauffenburg-Verlag.

Wright, Sue Ellen & Budin, Gerhard (eds) (1997): *Handbook of Terminology Management.* Vol. 1: Basic Aspects of Terminology Management. Amsterdam – Philadelphia: Benjamins.

Wüster, Eugen (1959/1960): "Das Worten der Welt, schaubildlich und terminologisch dargestellt". In: *Sprachform* 3/3–4. 183–204.

Wüster, Eugen (1974): "Die allgemeine Terminologielehre – Ein Grenzgebiet zwischen Sprachwissenschaft, Logik, Ontologie, Informatik und den Sachwissenschaften". In: *Linguistics* Nr.119. 61–106.

Wüster, Eugen (1979): *Einführung in die Allgemeine Terminologielehre und terminologische Lexikographie.* Wien – New York: Springer.

# Appendices

## Appendix I

### I.A.  Original Text

<div style="border:1px solid">

DEMAND FOR MONEY

It is clear from the above that the main motive for holding money (as $M_1$) is the convenience of ordinary *transactions* as needed at each level of income. Let's examine it in more detail.

Transactions Demand

People and firms need money as a transactions medium. Households need money to buy groceries and to pay for electricity and fuel bills as well as occasional large consumer durables. Firms need money to pay for materials and labor. These elements constitute the *transactions demand for money*.

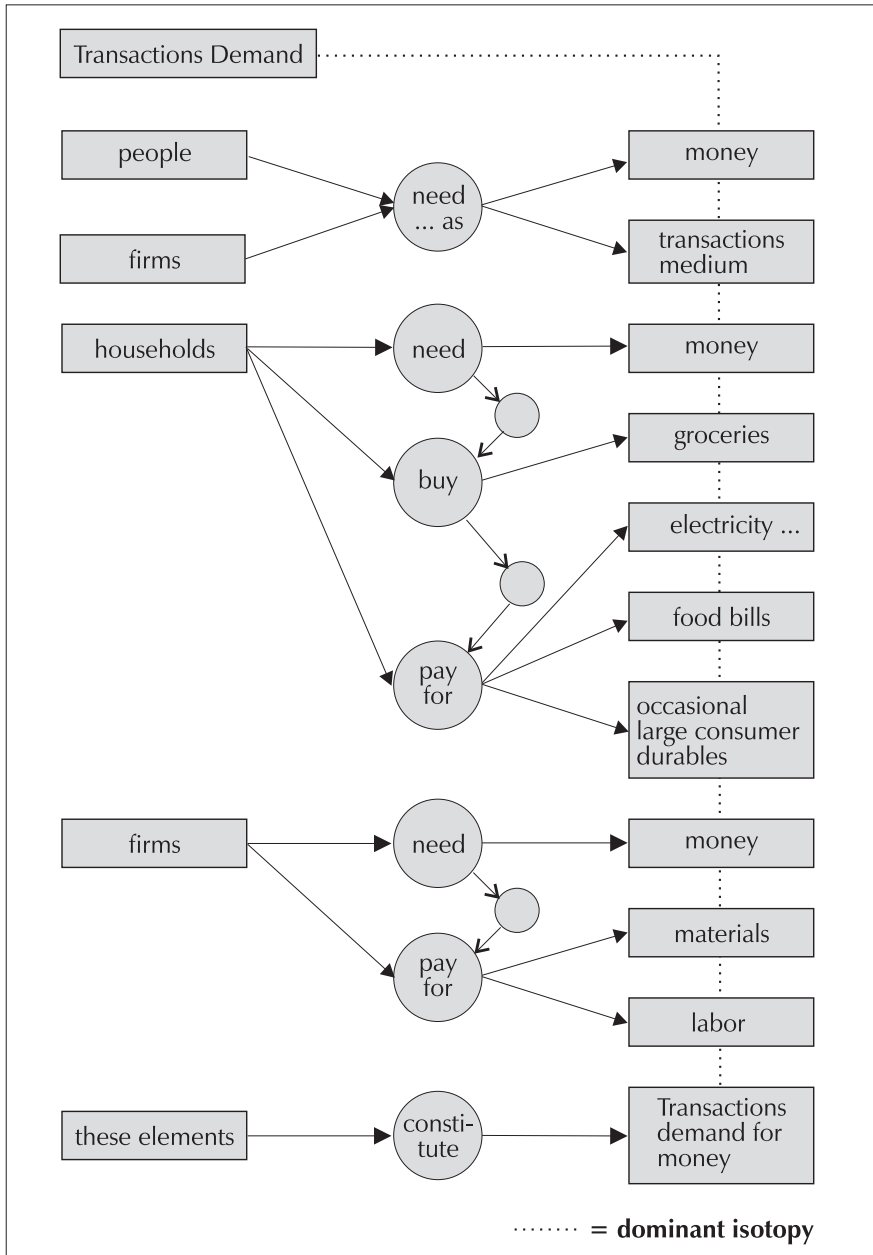We can illustrate the mechanics of the transactions demand for money in Figure 16-2. This figure shows the average money holdings of a family that earns $1000 per month, keeps it in money, and spends it all evenly over the month. Clearly, the family holds $500 on average in money balances.

Samuelson, Paul A./Nordhaus, William D. (1985:315): *Economics*. 12th edition. New York: McGraw-Hill.

</div>

## I.B. Aspective Matrix – Original Text

| Aspects / Text Segments | 1. Terms 1.1 existent 1.2 non-existent | 2. Syntax 2.1 nominalization 2.2 verbal constructions | 3. References 3.1 implicit 3.2 explicit | 4. New Concepts 4.1 directly introduced 4.2 indirectly introduced | 5. Lexis 5.1 everyday 5.2 LSP usage | 6. Meta-communication 6.1 existent 6.2 non-existent |
|---|---|---|---|---|---|---|
| 0. Transactions Demand | 1.1 | – | 3.1 | – | 5.2 | 6.2 |
| 1. People and firms need money as a transactions medium | 1.1 | 2.1 | 3.1 | – | 5.2 | 6.2 |
| 2. Households need money to buy groceries and to pay for electricity and fuel bills as well as occasional large consumer durables. | 1.1 | 2.2 | 3.2 | – | 5.2 | 6.2 |
| 3. Firms need money to pay for materials and labor. | 1.2 | 2.2 | 3.2 | – | 5.1 | 6.2 |
| 4. These elements constitute the *transactions demand for money.* | 1.1 | – | 3.2 | 4.2 | 5.2 | 6.2 |
| 5. We can illustrate the mechanics of the transactions demand for money in Fig.16-2 | 1.1 | 2.1 | 3.2 | – | 5.2 | 6.1 |
| 6. This figure shows the average money holdings of a family that earns $ 1000 per month, keeps it in money, and spends it all evenly over the month. | 1.1 | 2.2 | 3.1 | – | 5.1 | 6.2 |
| 7. Clearly, the family holds $ 500 on average in money balances. | 1.1 | – | 3.2 | – | 5.2 | 6.1 |

## I.C.  Linear Structure – Original Text

## I.D. Topic Structure – Original Text

## Appendix II

### II.A.  Translation

---

GELDNACHFRAGE

Aus den obigen Ausführungen geht klar hervor, daß das Hauptmotiv für die Geldhaltung die bequemere Abwicklung der entsprechend dem jeweiligen Einkommensniveau übliche *Transaktionen* ist. Wir wollen diesen Aspekt näher betrachten

Die Nachfrage nach Transaktionsgeld

Die privaten Haushalte und die Unternehmen brauchen Geld zur Abwicklung von Transaktionen: Die Haushalte zum Einkauf von Lebensmitteln, zur Begleichung von Elektrizitäts- und Benzinrechnungen ebenso wie gelegentlich zum Kauf von langlebigen Konsumgütern. Die Unternehmen brauchen Geld zur Finanzierung von Material und Arbeitskräften. Aus diesen Komponenten setzt sich die *Nachfrage nach Transaktionsgeld zusammen*.

Wir können uns den Mechanismus der Nachfrage in Abbildung 16.2 verdeutlichen. Die Abbildung zeigt die durchschnittliche Geldhaltung einer Familie mit einem monatlichen Einkommen von 1000 Dollar, die diesen Betrag als Bargeld bzw. Kassenbestand hält und nach und nach über den Monat hinweg ausgibt. Es läßt sich leicht nachweisen, daß diese Familie über einen durchschnittlichen Kassenbestand von 500 Dollar verfügt.

Samuelson, Paul A./William D. Nordhaus, *Volkwirtschaftslehre.* Bd.1. Aus d. Amerikan. übertr. von Johanna Frenzel und Heidrun Gerzymisch-Arbogast, überarb. dt. Neuaufl. 1987. Köln: Bund-Verlag. 488.

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## II.B. Aspective Matrix – Translation

| Aspects / Text Segments | 1. Terms 1.1 existent / 1.2 non-existent | 2. Syntax 2.1 nominalization / 2.2 verbal constructions | 3. References 3.1 implicit / 3.2 explicit | 4. New Concepts 4.1 directly introduced / 4.2 indirectly introduced | 5. Lexis 5.1 everyday / 5.2 LSP usage | 6. Metacommunication 6.1 existent / 6.2 non-existent |
|---|---|---|---|---|---|---|
| 0. Die Nachfrage nach Transaktionsgeld | 1.1 | – | 3.1 | – | 5.2 | 6.2 |
| 1. Die privaten Haushalte und die Unternehmen brauchen Geld zur Abwicklung von Transaktionen. | 1.1 | 2.1 | 3.1 | – | 5.2 | 6.2 |
| 2. Die Haushalte zum Einkauf von Lebensmitteln, zur Begleichung von Elektrizitäts- und Benzinrechnungen ebenso wie gelegentlich zum Kauf von langlebigen Konsumgütern. | 1.1 | 2.1 | 3.2 | – | 5.2 | 6.2 |
| 3. Die Unternehmen brauchen Geld zur Finanzierung von Material und Arbeitskräften. | 1.2 | 2.1 | 3.2 | – | 5.2 | 6.2 |
| 4. Aus diesen Komponenten setzt sich die *Nachfrage nach Transaktionsgeld* zusammen. | 1.1 | – | 3.1 | 4.2 | 5.2 | 6.2 |
| 5. Wir können uns den Mechanismus der Nachfrage in Abb. 16.2 verdeutlichen. | 1.1 | 2.1 | 3.2 | – | 5.2 | 6.1 |
| 6. Die Abbildung zeigt die durchschnittliche Geldhaltung einer Familie mit einem monatlichen Einkommen von 1000 Dollar, die diesen Betrag als Bargeld bzw. Kassenbestand hält und nach und nach über den Monat hinweg ausgibt. | 1.1 | 2.1 | 3.2 | – | 5.2 | 6.2 |
| 7. Es läßt sich leicht nachweisen, daß diese Familie über einen durchschnittlichen Kassenbestand von 500 Dollar verfügt | 1.1 | – | 3.2 | – | 5.2 | 6.1 |

## II.C.  Linear Structure – Translation
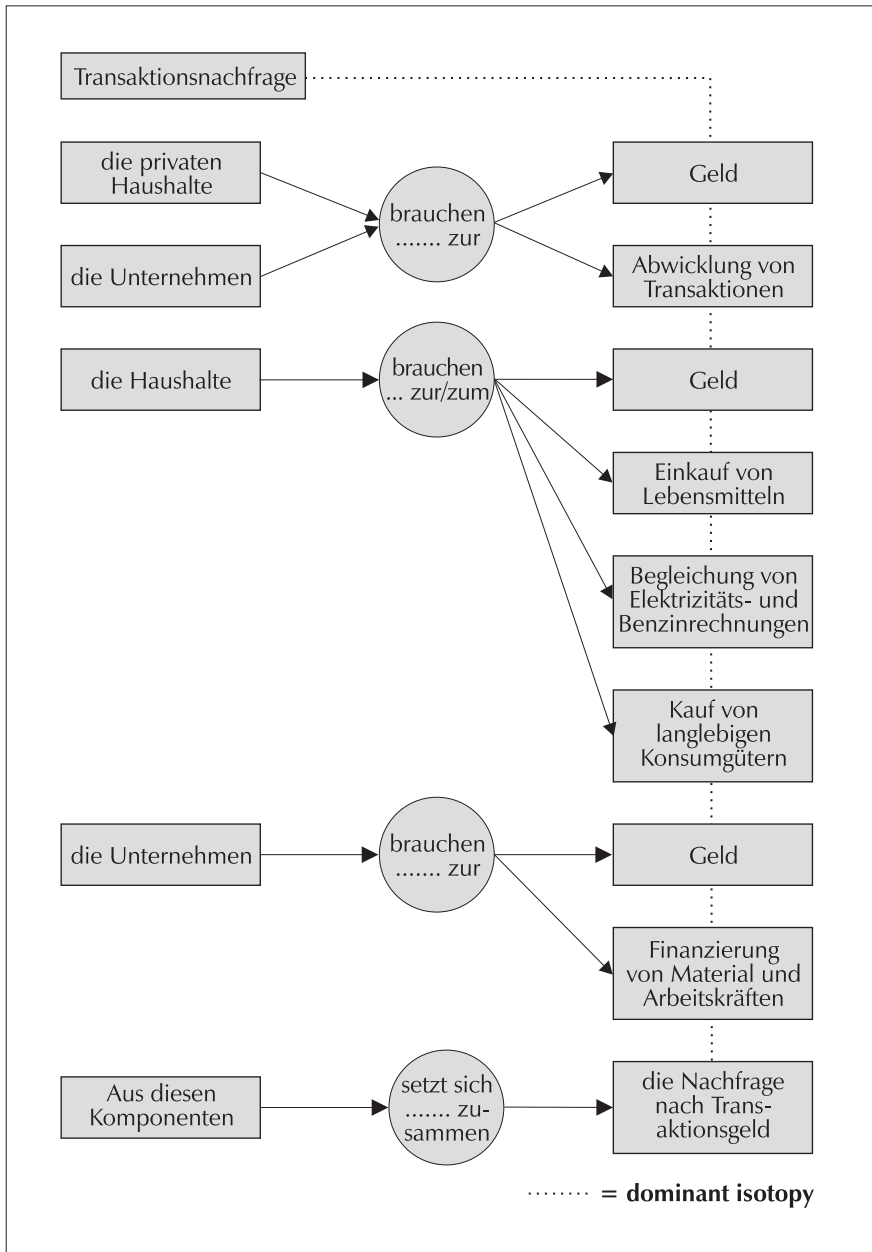
## II.D.  Topic Structure – Translation

# Appendix III

## Reader Orientation in Original and Translation

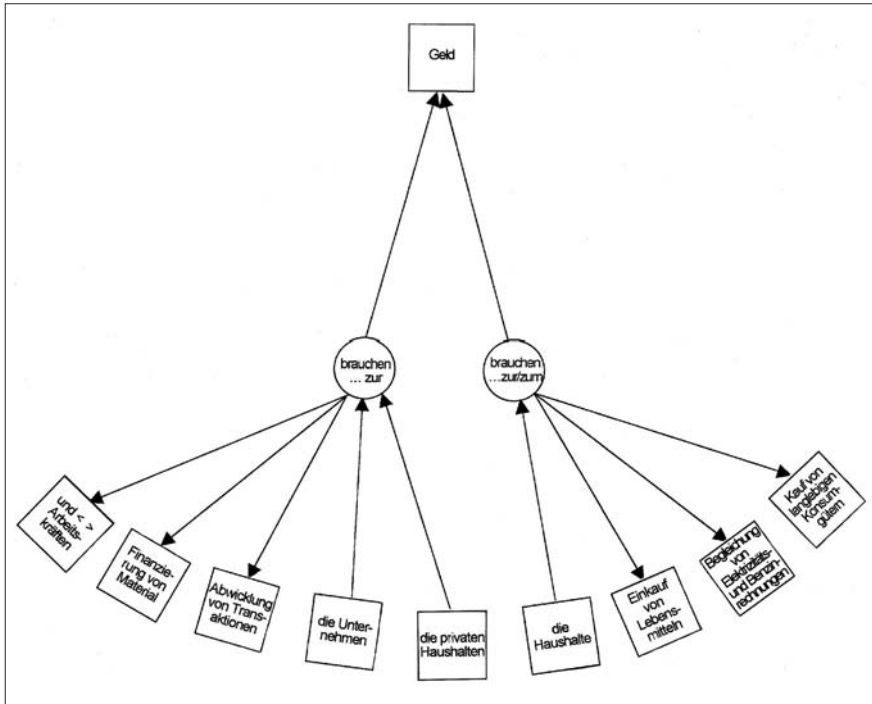| Translation | Reader Orientation | Original |
|---|---|---|
| **GELDNACHFRAGE**<br><br>Aus den obigen Ausführungen geht klar hervor, daß das Hauptmotiv für die Geldhaltung die bequemere Abwicklung der entsprechend dem jeweiligen Einkommensniveau übliche *Transaktionen* ist. Wir wollen diesen Aspekt näher betrachten<br><br>**Die Nachfrage nach Transaktionsgeld**<br>Die privaten Haushalte und die Unternehmen brauchen Geld zur Abwicklung von Transaktionen: Die Haushalte zum Einkauf von Lebensmitteln, zur Begleichung von Elektrizitäts- und Benzinrechnungen ebenso wie gelegentlich zum Kauf von langlebigen Konsumgütern. Die Unternehmen brauchen Geld zur Finanzierung von Material und Arbeitskräften. Aus diesen Komponenten setzt sich die *Nachfrage nach Transaktionsgeld* zusammen.<br><br>Wir können uns den Mechanismus der Nachfrage in Abbildung 16.2 verdeutlichen. Die Abbildung zeigt die durchschnittliche Geldhaltung einer Familie mit einem monatlichen Einkommen von 1000 Dollar, die diesen Betrag als Bargeld bzw. Kassenbestand hält und nach und nach über den Monat hinweg ausgibt. Es läßt sich leicht nachweisen, daß diese Familie über einen durchschnittlichen Kassenbestand von 500 Dollar verfügt.<br><br>Samuelson, Paul A./William D. Nordhaus: *Volkswirtschaftslehre*. Bd. 1. Aus d. Amerikan. übertr. von Johanna Frenzel und Heidrun Gerzymisch-Arbogast, überarb. dt. Neuaufl. 1987. Köln: Bund-Verlag. | 1. InformationStructering<br>1.1 Title<br>1.2 Beginning of text<br>1.3 Introduction of concepts<br>1.4 Theme-Rheme progression<br>1.5 Metacommunication<br>2. Information Packaging<br>2.1 Redundancies<br>2.2 Terminological variation<br>2.3 Transphrastische T/R-indicators<br>2.4 Use of examples | **DEMAND FOR MONEY**<br>It is clear from the above that the main motive for holding money (as $M_1$) is the convenience of ordinary *transactions* as needed at each level of income. Let's examine it in more detail.<br><br>**Transactions Demand**<br>People and firms need money as a transactions medium. Households need money to buy groceries and to pay for electricity and fuel bills as well as occasional large consumer durables. Firms need money to pay for materials and labour. These elements constitute the *transactions demand for money*.<br><br>We can illustrate the mechanics of the transactions demand for money in Figure 16-2. This figure shows the average money holdings of a family that earns $1000 per month, keeps it in money, and spends it all evenly over the month. Clearly, the family holds $500 on average in money balances.<br><br>Samuelson, Paul A./Nordhaus, William D. (1985): *Economics*. 12th edition. New York: McGraw-Hill. |

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# Knowledge Management for Simultaneous Interpreters in LSP Conferences

**Abstract –** Professional conference interpreters typically work for many different clients and in a variety of settings often of a specialized LSP nature. In this situation they are called upon to work for specialists who share expert knowledge that is totally or partially unknown to laypersons and/or outsiders. As it would be impossible to acquire an amount of knowledge comparable to their expert listeners, conference interpreters need to be able to identify and constitute relevant specialized knowledge in a very systematic, economical and effective way to be quickly available and put to use during a conference interpreting assignment. But so far, research is unclear about how this should be done. The present study suggests a solution along two lines: (1) through the concept of *Terminological Knowledge Entity* (TKE) it systematically describes WHAT knowledge interpreters need for an individual CI assignment involving LSP conferences. (2) by relating TKEs to six stages of the interpreting process it is shown HOW LSP knowledge is identified, constituted and put to use during simultaneous interpretation. The knowledge management process is illustrated with authentic examples.

# 1 Introduction

LSP (or 'technical') conferences form an important part of the workload of most professional conference interpreters. These assignments are highly problematic for the following reasons:

LSP conferences are geared towards the communicative needs of specialists who share knowledge that is totally or partially unknown to laypersons and/or outsiders, including non-expert interpreters, who are thus exposed to similar problems as technical translators (see the contribution of Gerzymisch-Arbogast in this volume).

Simultaneous interpretation puts conference interpreters in a very delicate 'textual situation'[1]: They have to produce their (oral) target texts "simulta neously", i.e. at once, and mostly so on the basis of a previously unknown original while the source text is still in the process of being delivered by a speaker.

It is therefore generally acknowledged that conference interpreters need to prepare themselves for such conferences to acquire the necessary LSP knowledge and that they have to do so before they tackle a given source text, i.e. prior to the interpretation during which pre-constituted knowledge is used. It is also generally accepted that preparation occurs in various 'settings'[2], involving written and oral conference texts and appropriate reference material (dictionaries, handbooks, databases etc.) and leading to glossary lists in which the acquired knowledge is stored.

This means that conference interpreters need to constitute and use LSP knowledge in a very specific and effective way since it would be impossible to acquire a comparable amount of expertise assumed in the LSP conference participants, especially in the light of varying topics of LSP assignments. But despite clear user expectations for correct LSP usage by the interpreters[3], there is no consensus today how this can be achieved. It is therefore still questionable as to

1) WHAT knowledge interpreters need to perform adequately in technical conferences – an aspect that relates to the structural content (knowledge structures) of the necessary knowledge management and

2) HOW this knowledge can be constituted and put into practice during simultaneous interpretation – an aspect that relates to the process of constituting and using the relevant knowledge structures within an interpreting assignment.

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1   "text" is here used in its widest sense and includes what is usually termed 'discourse'.
2   *advanced preparation* with written texts several days before the beginning of the conference, *last minute preparation* on the conference premises and *in conference preparation* while listening to the audience (Gile 1995:147); see also Kalina 2005:257.
3   e.g. Moser-Mercer (1992), Moser (1996).

The following article discusses possible solutions for the above mentioned problems.

As for (1) it is assumed that LSP knowledge appears in terms within a (set of) given conference text(s) and that it can be described at micro-(term-specific) and at macro level, i. e. in relation to a reference frame or 'organizational structure' which relates terms to other terms.

As for (2), the different working parameters and settings typical for the textual situation(s) of simultaneous interpretation need to be specified and related to (1). It is according to these parameters that the relevant knowledge structures are established and used in a strategic way in order to allow for correctly rendering the LSP component in the production of adequate target texts.

To achieve this purpose, a model and method for the constitution and use of LSP knowledge in simultaneous interpretation is proposed (Will forthcoming), which is here briefly outlined. Chapter 2 "Theoretical Background" discusses the theoretical basis of the constitution of knowledge structures at micro and at macro level as well as how they are put to use during an interpreting assignment. Chapter 3 describes the components of the model and chapter 4 develops the method for constituting and using the model during an interpreting assignment. Chapter 5 illustrates the application of the model and method by applying it to authentic conference texts. The article concludes with a summary and suggestions for implementation (chapter 6).

## 2   Theoretical background

Following what was said above, knowledge management in simultaneous interpretation appears as a function of three different 'aspects': Terms, texts and the way in which these are handled by the (non-expert) conference interpreter. In the following, these aspects will be developed in relation to the importance and the consequences they have for Translation[4] and more specifically for simultaneous interpreters.

### 2.1 Terms and Terminology

It is generally assumed that for the purposes of LSP Translation the underlying knowledge is described in the form of concept systems and terminologies.

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[4]    'Translation' and 'Translator' with a capitalized 'T' here is used in the concept of the Leipzig School to include translators AND interpreters.

According to the groundbreaking work of Eugen Wüster (1931/1979), terminologies consist of a clearly defined and uniformly structured set of interrelated objects. Every object is represented by a term that consists itself of a denomination (word form) and a concept (content or meaning). The meaning of a term depends on its definition and relation with other terms within the framework of a conceptual system.

An individual (defined) term and its position within a specifically structured conceptual system can be regarded as a central element for the knowledge management work of technical Translators. Indeed, it is a core element in most data entry models used for terminology work and a must for the systematic representation of terminologies according to the principles of terminography (Mayer 1998, Arntz/Picht/Mayer 2004:186).

## 2.2 The importance of (con)texts

Wüster's main goal was to ensure unequivocal meaning in technical communication. His objective is reflected in terms only being considered at system level, having only one specific (ideally standardized) meaning (principle of "Eineindeutigkeit"/monosemy), and being part of rigidly structured (standardized) concept systems as authoritative representations of a specific subject field[5].

Wüster's model did not take into consideration the role of context and the fact that terms are used differently by different authors. This is especially problematic when a specific terminology or 'jargon' is used by a group of persons (for instance experts affiliated to a specific organization or company). Translation specific knowledge management needs to take this into consideration and proceed from individual (con)texts rather than terminological entries (e.g. in glossaries) at systems level, which are abstracted from whether and how they appear in individual texts.

The importance of context was raised after Wüster's death by translation theorists (Schmitt 1986, Gerzymisch-Arbogast 1987) as well as by the translating profession (e. g. Hohnhold 1982, Horn-Helf 1990), who underscored the importance of text-oriented terminology work based at least partially on parallel texts (e.g. Wright 2001).

Putting the focus on contexts allowed for a tailor-made knowledge management in so far as all actual terms which occurred in the underlying source

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[5]   In fact, many of Wüster's recommendations were formulated as international and national norms (see DIN 2330 or DIN 2331).

texts could be identified and subsequently lead to the development of many computer-based applications involving the individual text level[6].

Nevertheless, several important problems remained unsolved: Firstly, it remained unclear how an individual context affects the meaning of a term within a given text and secondly how the meaning of an individual term in a text can be constituted with the help of terms as they appear in other texts (e.g. reference books, entries in dictionaries or through topic-related parallel texts). This is especially important if the original text contains much implicit (presupposed) LSP knowledge and thus may not be sufficiently clear for the (non expert) recipient – be it at micro- or at macrostructural level.

## 2.2.1 Terms and related microstructures

This lacking consideration of the actual context in which terms are used, led to the development of a context-specific term-model (Gerzymisch-Arbogast 1996), by which the context-specific micro-structure of terms (concepts) was made transparent and became comparable to other terms in context.

Gerzymisch-Arbogast assumed that the meaning of a term can be represented as a network of relations between expressions, whereby a relation consists of at least one argument (nominal concept – i. e. the subject, object or an adverbial complement) and one relator (verb). The meaning of a concept is described to have several levels and its description may depend on the size of the analyzed context (the number of relations). At the first level, the meaning of an expression is identical to its denomination, on the second level, the meaning of a term includes all arguments that are related to that term (in the textual 'vicinity'); on the subsequent levels, all relations are included that proceed from arguments on the first level and so on (cf. Gerzymisch-Arbogast 1994).

On the basis of this context-specific term description, the conceptual meaning of an individual term can be compared to the conceptual meaning of other terms in the same or other contexts. By the so-called *systext analysis*, a non-expert reader can find out whether a given *texterm*[7] at an individual text level (for instance a term used – implicitly – in a specific way by an individual author in a given source text) is compatible with a given (explicitly used) *systerm*[8] at systems level (for instance a term concept as an entry in a dictionary

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6    e.g. as translation memories or detailed terminological entry models within computer aided translation (CAT) tools.
7    Gerzymisch-Arbogast 1996:54.
8    Gerzymisch-Arbogast 1996:54.

or a database) or not[9]. This way, an implicit term concept structure in an individual text can be associated with relevant explicit term structures in another text (e.g. in a handbook at systems level).

### 2.2.2 Terms and related macrostructures

For LSP Translation, the existence of two different levels of knowledge (i. e. at systems and at individual text level) is not only relevant for the description of individual terms but also of importance when it comes to macrostructural relationships – in other words when it comes to the question of what (background) knowledge is necessary to establish connections *between* individual terms (to know "what they have to do with each other") and to secure understanding of the texts of which they are part.

While an expert reader intuitively understands LSP texts because the necessary background knowledge is readily mentally available, the non-expert Translator must constitute the relevant macrostructures when understanding the source text and interrelate the individual terms identified with other structures contained in the source text or not.

This is possible by relating the contextually established meaning of the term to an assumed superordinated structure, i.e. a knowledge system. By way of the general holistic thought principle (Mudersbach 1991, 1999 and 2008) an individual term in an individual text can be related to a superordinated assumed element of a knowledge system, which then requires further research and structurization to reflect an LSP component in a text. It does not only include other explicit terms or other units, but also hypothetically related terms not present in the original text (implicit knowledge entities) to form a functionally and hierarchically organized knowledge system. The knowledge system can be represented by a thesaurus-like structure or a semantic network (Gerzymisch-Arbogast/Mudersbach 1998). The more relations ("concretizations") can be identified between an assumed knowledge system and the text in which it is activated, the more explicitly domain-specific is a text with respect to that knowledge system.

Thus, the content and structure of an LSP knowledge system is determined by

– LSP components in an individual source text and

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[9]   A difference between the systerm (type) and texterm (token) results in a "contamination" (Gerzymisch-Arbogast 1996:101).

– the pre-supposed LSP knowledge of the recipient and his or her ability to recognize potential relationships to a superordinated LSP macrostructure.

It is obvious that this ability depends largely on the analysis of the existing microstructures of a term in a given context and their comparison with adequate microstructures at systems level (definitions etc.) from which associations with a specific knowledge system can be made.

### 2.2.3 Characteristics of term-specific macrostructures in texts

Knowledge systems represent the background knowledge necessary to understand the texts to which they relate. Knowledge systems can be analyzed through their concretizations with their 'visible' (explicit) parts or elements in a source text – an aspect originally developed by Floros (2003) for the identification and weighting of cultural elements in texts.

According to his model, a text may be analyzed to identify not only one but several (or all) underlying knowledge systems it contains. In the case of several knowledge systems being activated in a text, the number of concretizations of different knowledge systems can be counted and validated in comparison to the knowledge systems they represent ("quantity"). How 'easy' it is to relate a concretization to a specific knowledge system depends on the degree of explicitness in the text ("quality") and on how many times a knowledge systems is evoked ("valence"). As a result, it is possible to judge the importance of a specific knowledge system for the comprehension of a text in comparison to other knowledge systems and their importance – within one text (as is shown by Floros 2003) or in relation to several different texts in which the same knowledge systems are evoked.

The latter case is particularly important for the knowledge management in simultaneous interpreting, as this permits to constitute relevant superordinated structures relative to a number of texts as necessary when preparing for an interpreting assignment. This is possible in a very detailed and comprehensive way prior to the assignment when it is assumed that the knowledge system will be important while other less important knowledge systems would be treated in less detail (provided the underlying texts are representative for the assignment as a whole and are available long enough before interpretation takes place)[10].

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[10]    This is normally the case for the documentation provided to the participants prior to a conference. All professional associations insist in their standard contract clauses on the provision of such a material (see AIIC 1997 and 2004).

On the basis of the three models presented (Gerzymisch-Arbogast 1996, Mudersbach 1991/1999 and Floros 2003), the following problems related to knowledge management in LSP conference interpretation are solved:

1) The context-specific description of terms in individual texts allows to relate texterms to systerms. This means that implicit term structures in texts become 'visible' and can be coordinated with explicit external term structures at systems level (dictionaries, handbooks etc.).
2) The constitution of knowledge systems and their more or less explicit structurization provide the necessary background knowledge to put individual terms into an assumed common reference frame.
3) The weighting of the knowledge systems (and thus the background knowledge they represent) in relation to their quantity and quality in given text material makes it possible to anticipate the importance of a knowledge system for a given text.

## 2.3 Handling terms and texts in simultaneous interpretation

The models and aspects described above have so far only been applied to written translation and therefore static textual environments where fixed source texts are known in advance and can be analyzed and translated without external constraints.

When dealing with simultaneous interpreting, it is necessary to describe the differing dynamics of the textual "situations" relevant for simultaneous interpretation.

This can be done on the basis of a model (Will 2000) which relates the working conditions of simultaneous interpreters to different textual situations and factors. In order to do so, the interpreter:

– is related to a conference interaction, consisting of a large number of interrelated texts which the interpreter follows from a simultaneous booth (factor 'place'),
– depends on the text production by the speakers (factor 'time' and 'linearity of text progression') and the interpreter
– has to begin the interpretation without knowing or having heard the original *in toto* (factor 'spontaneity').

In weighting the importance of the different factors for a complete interpreting assignment, several "stages" of knowledge management can be distinguished:

- The preparation of the assignment (Stage I) which takes place between the moment an assignment is accepted and the arrival of the interpreter on the conference premises. The working conditions are comparable to written translation so that the factors 'place', 'time' and 'spontaneity' do not play a particular role. The underlying text material for preparation is written (conference) texts, no interpretation is required yet.
- The conference itself (Stage II), where a dynamic textual environment (mostly discourse) is predominant and
- The revision of the assignment (Stage III), which takes place following the end of the conference and which can be compared to Stage I. The underlying text material is constituted by written (conference) texts, but also notes or memorized elements of the past conference. Again, no interpretation is required.

Interpretation takes only place during a conference and is subdivided into the preparation of a specific interpretation (Stage IIa), the interpretation itself (Stage IIb) and the revision of that interpretation (Stage IIc).

In Stage IIa, an interpretation still does not take place; however, the above mentioned factors play a relative important role, as interpretation may start anytime and the interpreter has to follow discourse. The underlying texts are oral or written ('last minute') conference texts.

In Stage IIb, the interpretation of discourse takes place. During this period, all factors play a decisive role so that knowledge – as in all other stages – cannot be constituted, but only be retrieved (if available). The underlying texts are the oral source texts produced by the conference speakers.

Stage IIc can be compared to Stage IIa.


## 3  A Model of Knowledge Management for LSP Conference Interpretation

The following structural model of knowledge management for simultaneous interpreters in LSP conferences proceeds from the integration of the aspects discussed above.

It considers a term to be a concretization of a superordinated structure that contains the necessary information for the production and understanding of the source text of which it is a part: This idea is reflected in the concept of the structured Terminological Entity (TKE) which assigns texterms or systerms to a specific segment of a hierarchically organized knowledge system.

Structured TKEs are considered the smallest complete knowledge unit for understanding and producing LSP or specialized texts. They consist of:

– An individual term within an individual conference text (texterm) as a representation (concretization) of a specific knowledge system. It consists of a denomination (e. g. a "word" at the superficial level of a given conference text) and a concept (= "relational inventory") comprising the sum of other relations (verbs and nouns) forming its meaning content which may however be not sufficiently clear (explicit) to the non-expert Translator.
– A corresponding reference term (*systerm*), as an 'authoritative' concretisation of a specific knowledge system consisting of a denomination (e.g. a lemma within a specialized dictionary) and a concept (definition) which has to be compared to the individual term in order to establish compatibility (systext analysis) or possible differences (contaminations) at the level of the texterm. It can be considered as a 'bridge' between an individual term and the underlying knowledge system as it contains very often information that is not 'visible' in an individual text (implicit knowledge).
– A knowledge system representing the holistic information about an individual and/or reference term. It consists of functionally interrelated and hierarchically organized holemes and subholemes which form different functional subdivisions to which conceptual contents (texterms and/or systerms) are attributed. Every attached conceptual content is related to the top level of a knowledge system consisting of holemes/subholems. In the following example, for instance, the texterm "v" is associated to the position 2.1.1 and is related to the top level (0) of the knowledge system (holon) via grade 2.1 and 2.

The different elements in Fig. 3a can thus be regarded as the different minimum 'ingredients' of a terminological entry model dedicated for Translators (see also Figure 5.1.1g).

However, a TKE represents only one single aspect of a given knowledge system. In order to gain a coherent overview over the relevant knowledge for a specific assignment and thus to be better prepared, these individual entities are grouped together as clusters similar to Floros' cultural constellations (2003; see also 2.3 above). Such complex structures are called Terminological Knowledge Constellations (TKC). They comprise all concretizations of a given knowledge system within a text or a group of texts (which may be used by the interpreter for preparation of a conference). TKCs can either be constituted for the purpose of finding out the relevance (and the distribution of concretizations) of a
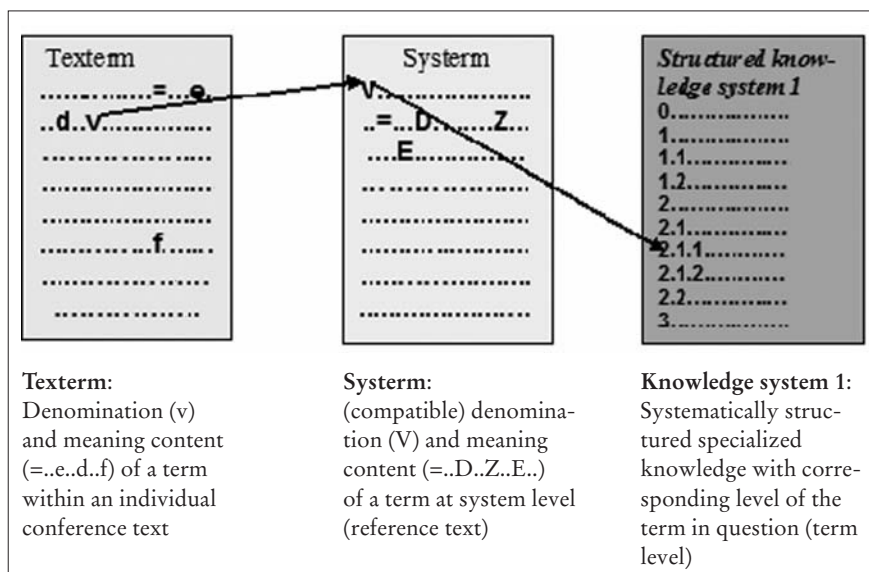
**Fig. 3a**  Structured TKE

specific knowledge system for a given text body (for instance the conference documentation available beforehand) or in order to describe exactly the explicit and detailed LSP knowledge contained in it.

In the first case, the focus is on individual terms related to a specific (unstructured) knowledge system. To this effect, unstructured TKCs are established and analyzed in relation to specific parameters: quantity (how many different knowledge systems they represent), quality (how much external/systematic knowledge is necessary in order to constitute them), and valence (how often a specific knowledge system appears in the considered text basis). Moreover – as an additional criterion not reflected by Floros – TKCs show density (i.e. the number of different explicit holemes they represent within a knowledge system). The result of this evaluation and its distribution within the considered texts is counted and then weighted in form of a hierarchy to result in a specific evaluation of the quantity and quality of the LSP knowledge underlying an individual text.

As a result, the interpreter may decide to elaborate the assumingly most important knowledge systems in a very detailed way, whereas the less important ones are set up in a more 'economical' way, allowing for an effective and yet relevant terminological management for the preparation of a conference. This point is of special importance for interpreters, as they are often con-

fronted with an original only during the interpreting process (Stage IIb). Therefore, a transparent way of constituting relevant knowledge prior to the interpreting stage may be decisive in delivering an adequate end product.

In the second case, the focus is on individual terms related to specific holemes/subholemes of structured knowledge systems. To this effect, structured TKC are formed. They represent the explicit holistic knowledge represented in a given text or group of texts:
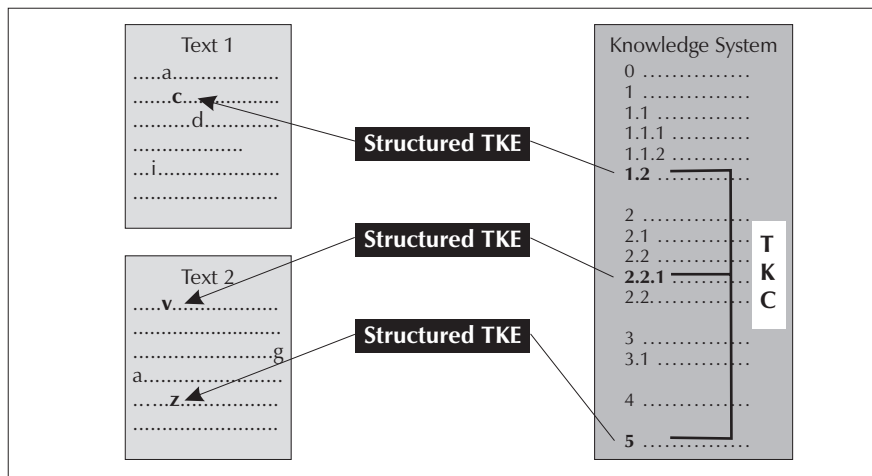


**Fig. 3b**   Structured TKE &TKC (related structures). Bold letters: Terms with fully constituted meaning

TKEs and TKCs provide the answer to the first part of the initial problem statement, namely WHAT knowledge structures are to be considered for the knowledge management of conference interpreters.

The second part of the problem statement affects the way in which TKEs and TKCs are constituted and used during an interpreting assignment. It is therefore necessary to describe the aim and content of the different stages of knowledge management presented in chapter 2.3:

– Conference preparation (Stage I) is associated with a systematic and holistic knowledge acquisition geared towards the anticipated needs of the ensuing conference phase involving all relevant (representative) *and* problematic (unclear/implicit) terms in the conference documentation. The related knowledge systems are constituted and specifically differentiated according to their relative weight (unstructured TKCs) in the provided material and then related back to the underlying texts (structured TKEs

grouped together as structured TKCs). As these operations are demanding as far as time and material resources (availability of reference material etc.) are concerned, they can only be performed outside the conference stage.

– During the conference (Stage II), the constituted knowledge is recalled while the interpreter tries (Stage IIa) to integrate previously unidentified knowledge into existing or new knowledge structures. This happens under worsening working conditions which may even deteriorate with the approaching interpretation. During Stage II, new structures can only be constituted outside of the interpretation Stage IIb (i.e. in Stage IIa & IIc) and only on the level of individual terms (TKEs). As a consequence, only problematic terms anticipated to be of importance for the forthcoming interpretation are considered and it is quite possible that the resulting TKEs may only be partially constituted (consisting in the worst case only in a source and a target denomination and the name of the corresponding *holon*)[11].

– During the interpreting process (Stage IIb), knowledge can only be retrieved. As this operation is cognitively very demanding, it must be achieved in the fastest and 'easiest' way possible. Therefore, it is based on a semasiological correspondence between occurring texterms and previously constituted TKEs which are selected according to their correspondence with the holistic structures in the source text. It is assumed that the more elements of the relational inventory of the occurring texterms correspond to the holistic structure (holeme and subholeme classification) of a retrieved TKE in the entry model, the more likely the possible match is – for instance in the case of several corresponding semasiological entries. If the interpreter can constitute a compatible correspondence between constituted TKEs and problematic structures in the source text, there is automatically a preconstituted target TKE which can be used for the production of the interpretation.

In case no (compatible) correspondence can be established, an emergency strategy[12] has to be used. In this case it becomes clear that the previous knowledge management was not sufficient, especially if an emergency strategy has to be used repeatedly.

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[11]  The missing structures (concepts, holemes/subholemes etc.) need to be added as soon as possible, e.g. during a conference break or in Stage III.

[12]  e.g. using a more general term or leaving it out – see Gile 1995:192ff.

–   Stage IIc is positioned between two *turns* of interpretation and can thus
    also be considered as part of Stage IIa. However, it refers only to those
    terms that were problematic during the previous interpretation and that
    therefore have to be recalled from memory. The underlying knowledge
    management strategy is comparable to the one of Stage IIa.
–   During the conference revision (Stage III), the individual (and sometimes
    partial) TKEs assembled during the conference stage are completed and
    integrated into TKEs/TKCs which are now constituted in the same way
    and under the same conditions as during Stage I. The knowledge thus
    constituted can be summarized through structured TKCs which – taken
    together – constitute the individual explicit knowledge for the past confer-
    ence (= occurring relevant/problematic texterms integrated into struc-
    tured knowledge systems):

    Another important aspect relates to the weighting of all constituted knowl-
    edge systems[13] in order to assess the accomplished conference and to draw
    conclusions for similar forthcoming assignments.

The overall solution to the problem stated above can therefore be understood
as the strategic, stage-wise constitution and application of Terminological
Knowledge Entities and Terminological Knowledge Constellations according
to the different constraints/aims of knowledge management within an inter-
preting assignment.


## 4   A Method of Knowledge Management for LSP Conference Interpretation

So far, the basic knowledge structures (TKE & TKC) as well as the different
textual 'settings' and working conditions under which they can be used in si-
multaneous interpretation have been described.

To provide a systematic description of the knowledge management activi-
ties in LSP conferences, these aspects are now integrated into a methodologi-
cal sequence. It is subdivided into ten steps or basic actions that are to be per-
formed within an interpreting assignment. Every step consists of a specific
starting point and an aim of the action, as well as an indication of the process to

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[13]   This includes unstructured TKCs as in Stage I which are now based on all TKEs en-
       countered during Stages I–III.

be performed in order to achieve the specified aim. The result of each step is the starting point for the next step[14].

The steps are structured according to the stages of knowledge management within an interpreting assignment specified in chapter 3, which, in turn, are subdivided into the three phases of Translation[15] – reception, transfer and production. The ten different steps are here presented in their general content and not in their chronological order as they do not appear and/or are not executed in the same way in every stage. For instance step 10 – the interpreting process – takes place only in Stage IIb. Another example is step 5 – the constitution of knowledge systems. As this step is very time consuming, it may only be performed during Stage I or Stage III (see also Figure 4).

The ten basic actions/steps related to the phases of reception, transfer and (re)production are:

A) Reception
1) Identification of a specific denomination of a term in an individual text.
2) Identification of its concept. This marks the end of the term specific terminology work during reception.
3) Relating the texterm to a hypothetical knowledge system (holistic interpretation) to form a TKE.
4) Grouping of all TKEs into unstructured TKCs. Analysis of the corresponding TKCs according to the above mentioned parameters 'quantity', 'quality', 'density' and 'valence' and weighting the related knowledge systems according to their importance for the underlying texts.
5) Weighted constitution of the resulting knowledge systems.
6) Referring the different holemes and subholemes back to the corresponding texterms in order to secure "understanding" them. This constitutes the end of the reception phase.

B) Transfer
7) Constitution of corresponding knowledge systems in the target language (TL).
8) Functional and conceptual comparison of the different holemes and subholemes of the knowledge systems in the source and the target language

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[14]  The underlying methodological process corresponds to the approach of Gerzymisch-Arbogast/Mudersbach 1998, see also Hauenschild/Schubert 2004.
[15]  See Nida/Taber 1969.

9) Transfer into the target language, making adaptations if necessary (e.g. in the case of differences or lexical gaps between the two languages). This marks the end of the transfer phase.

C) (Re)Production
10) The interpreting process itself (stage IIb).

In applying the above mentioned 10 basic steps or actions to the 3 different stages described in chapter 2.3, a method for the knowledge management for LSP conferences in simultaneous interpretation is obtained as shown in the following Figure:

| Translation Phase | Step | Stage I | Stage II | | | Stage III |
|---|---|---|---|---|---|---|
| | | | Stage IIa | Stage IIb | Stage IIc | |
| Reception | 1 | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 2 | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 3 | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 4 | ✓ | – | – | – | ✓ |
| | 5 | ✓ | – | – | – | ✓ |
| | 6 | ✓ | ✓ | ✓ | ✓ | ✓ |
| Transfer | 7 | ✓ | ✓ | – | ✓ | ✓ |
| | 8 | ✓ | ✓ | – | ✓ | ✓ |
| | 9 | ✓ | ✓ | ✓ | ✓ | ✓ |
| Production | 10 | – | – | ✓ | – | – |

**Fig. 4**  Stage-wise repartition of the 10 steps of the method

The above shown repartition of steps is explained in the following way:

– Conference preparation (Stage I) is associated with a systematic and holistic knowledge acquisition geared towards the anticipated needs of the ensuing conference phase. Therefore all the steps (except interpretation) are fully executed.
– During the conference stage (Stage II), the constituted knowledge is recalled and previously unidentified knowledge newly established (Stage IIa & IIc), but due to worsening working conditions, only on the level of individual terms (TKEs). Therefore steps 4 & 5 have to be omitted – see Figure 4.

- During the interpreting process (Stage IIb), knowledge can only be retrieved[16]. Therefore, the reception phase is of particular importance, while transfer consists merely of one step (memorizing adequate pre-constituted knowledge structures or finalizing an emergency strategy) needed for the interpretation (step 10).
- During the conference revision (Stage III), the same aims and conditions apply as in Stage I. Therefore, all steps are carried out except for step 10.

## 5    Application of Model and Method on LSP Texts

The model and method is now illustrated by applying them to authentic conference texts as contained in the corpus of Pöchhacker (1992)[17,18] which was put together in relation to a conference on small and medium-sized businesses which took place in Vienna in 1991. For space reasons, the method will be applied to two knowledge management stages only – conference preparation (Stage I) and interpretation (Stage IIb).

### 5.1 Stage I – conference preparation

The main objective of stage I consists in the effective constitution of relevant knowledge systems in the applicable source and target languages in order to understand the conference texts and building up relevant LSP knowledge to support the knowledge management during the conference stage.

### 5.1.1  Reception

**Step 1:**
In this step the available conference documentation (consisting here only of text 1, page 1) is read and relevant and/or problematic term denominations are marked as they appear in the text. As a result, 19 term-occurrences are highlighted.

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[16]    Therefore steps 4, 5, 7 & 8 have to be omitted – see Figure 4.
[17]    For a description of the corpus see Pöchhacker 1994.
[18]    The text used to illustrate the conference preparation (Stage I) is unpublished but was kindly provided by Franz Pöchhacker. It is the *call for papers* announcing the venue in Vienna and is fully contained in the annex of this article. For space reasons, only page one of the two-page document is used.

ICSB 36th Annual World Conference
Vienna, June 24-26, 1991

**CALL FOR PAPERS**

Deadline for the **Receipt** of Submissions: January 31, 1991

**PROGRAM THEME: SMALL BUSINESS & PARTNERSHIP**

**GENERAL INFORMATION**

The thirty-sixth World Conference of the International Council for Small Business will be held in Vienna, Austria, from June 24-26, 1991. The program of the conference will include: competitive papers, panels, workshops, and evening events.

**THE CONFERENCE HOTEL**

The Inter-Continental Vienna is within walking distance from the city center, enabling you to discover the glorious sights in the heart of Vienna while taking a leisurely stroll. The hotel (****•) offers you all kinds of services and recreational facilities, and is particularly apt for conferences.

**THE CONFERENCE THEME –**
**GENERAL CALL FOR PAPERS**

Partnership and competition are complementary phenomena in the world of small business. The existence of small business secures competition. Competition strengthens the economy. Partnership strengthens small business.

Partnership can be of different intensities: it ranges from the exchange of ideas between independent partners to co-ownership. The intensity and characteristics of partnership may, for example, be explained by the transaction costs approach and psychological approaches.

Partnership is the answer of small business to the growth strategies of big business. Partnership can be used to prepare mergers and acquisitions as well as to avoid them. Partnership is an incubator for the unfolding of entrepreneurship.

Partnership opens global markets to small business via Strategic Alliances. It gives access to new markets, to services used for reaching these markets, and to resources which small business would otherwise not be able to employ.

Partnership means hope for less developed regions in the world. Partnership can produce wealth for all partners. Partnership is an expression of old as well as new humanism.

Competition is a fact for every entrepreneur. Partnership is possible for each of them all over the world, in all socio-economic environments.

It is impossible to list all aspects of partnership. It is open to your creativity to show us what partnership can mean and achieve in the world of entrepreneurship and small business. Here are some aspects which you may deal with in your paper and thus enrich our conference:

networks, interfirm cooperation, joint ventures, subcontracting, consulting, education and training, incubators, services, franchising, suppliers, wholesalers, customers, sources of funds, banks, venture capitalists, stockholders, leasing, factoring, insurance, social security, family relations, unions, trade associations, East-West trade organizations, auditors, lawyers, universities and business schools, political and socio-economic climate, EEC-conditions, small business organizations and institutes, neighborhood, environmental protection, etc. etc.

**PAPER SUBMISSIONS**

Rules for the acceptance of papers:

1. Please submit 5 typed, double spaced, single column copies of your paper and a diskette with your textfile either written with MS-WORD (Ver. 4.0 or higher), WORD PERFECT (Ver. 5.0 or higher) or WORD STAR (Ver. 3.3, 3.45 or 4.0). Papers must not be longer than 20 pages, including references, tables, diagrams, and other materials.

2. Competitive papers must be original work and must not have been previously published or presented at other meetings. Only fully developed papers will be considered.

3. Each submission has to include a separate title page (on each copy) listing: (1) author(s); (2) organizational affiliation(s); (3) complete address(es); (4) phone and FAX number(s); (5) title of the paper; and (6) an abstract of the paper of no longer than 100 words.

4. All papers will be blind refereed. The main body of your paper should have the title and abstract, but it must not include your name(s).

5. Deadline for paper submission is January 31,1991.

6. Significant deviations from these rules will result in the return of the submissions without review.

**Fig. 5.1.1a**   Step 1 of the method. Relevant , problematic denominations

## Step 2:

During this step, the concepts of the problematic term denominations are verified. To this end, the term-specific microstructures in the text are compared to their corresponding term structures at systems level (systext-approach), especially if their meaning is presupposed (used implicitly) in the text. As an example, the texterm "factoring" is analyzed in relation to its relational context:

> "…Here are only some aspects (of partnership) which you may deal with in your paper and thus enrich our conference: ….factoring…etc."

This context can be condensed into the following minimal microstructural relation:

> "factoring …is an aspect of partnership…."

Subsequently, a systerm for 'factoring' is looked for, for instance:

> **Factoring:** "A type of business finance in which financial specialists called factors take responsibility for collection and the credit of their clients. [..] Factoring differs from other types of accounts receivables financing in two essential respects. First, the factor assumes the seller's credit functions, including credit, investigation and record keeping. Second, he buys the receivables outright, that is, without recourse to the seller for the credit loss. [..][19]

Again, the minimal microstructural relation for ‚Factoring' is established:

> Factoring <is> a type of business finance...

As a result of the systext analysis, it is established that 'factoring' and 'Factoring' are identical with respect to the relator and the position of 'factoring' and 'Factoring' in the relation. With the help of this microstructural comparison, an explicit and adequate context (the complete definition of 'Factoring') can be allocated to the source text where it is presupposed.

With step 2, the microstructural analysis of the underlying terms is completed.

**Step 3**:

In step three, the texterm is related to a hypothetical knowledge system (holistic interpretation) to form a TKE. In our example, 'factoring' is allocated to the first level (holon) of the knowledge system (KS) 'Business Finance' as it "…is a type of business finance" in the systerm. Applying step 1–3 to the other highlighted terms in Figure 5.1a brings about the following result:

- KS 1 ('Forms and Types of Businesses' containing the texterms *small business, big business*)
- KS 2 ('Business Combinations' containing the texterms, *transaction costs approach, mergers, acquisitions, joint venture, franchising*),
- KS 3 ('Business Management' containing the texterms *entrepreneurship*),

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[19]    From: Greenwald (²1973): S.v. *factoring*.

– KS 4 ('Business Finance' containing the texte*rms factoring, venture capitalists, leasing*).

## Step 4:

In step four, all TKEs are combined to form unstructured TKCs and are analyzed in relationship to the parameters 'quantity', 'quality', 'density' and 'valence' (see chapter 2.2.3)[20]. As a result, the related knowledge systems can be weighted according to their importance for the underlying texts.

In the following, this analysis is restricted to the results for one parameter – valence – which gives the following results:

| | | Quantity | Valence |
|---|---|---|---|
| | | knowledge systems | Text 1 |
| KS 1 | Forms and Types of businesses | | 9 |
| KS 2 | Business Combinations | | 5 |
| KS 3 | Business Management | | 2 |
| KS 4 | Business Finance | | 3 |
| **Total** | | **4** | **19** |

**Fig. 5.1.1b**   Valence of KS 1–4 in text 1

On this basis, 'Forms and Types of Businesses' would have to rank highest in priority and therefore be constituted in more depth, followed by KS 2, 4 and 3.

## Step 5:

In step five, the knowledge systems are constituted with the appropriate reference material. The higher one system has been weighted, the 'deeper' it has to be differentiated.

For illustrative purposes, only knowledge system 1 is here presented:

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[20]   It has to be noted that in the case of more than one text, the distribution of the different factors within the considered text basis should also be taken into consideration in order to not distort the results.
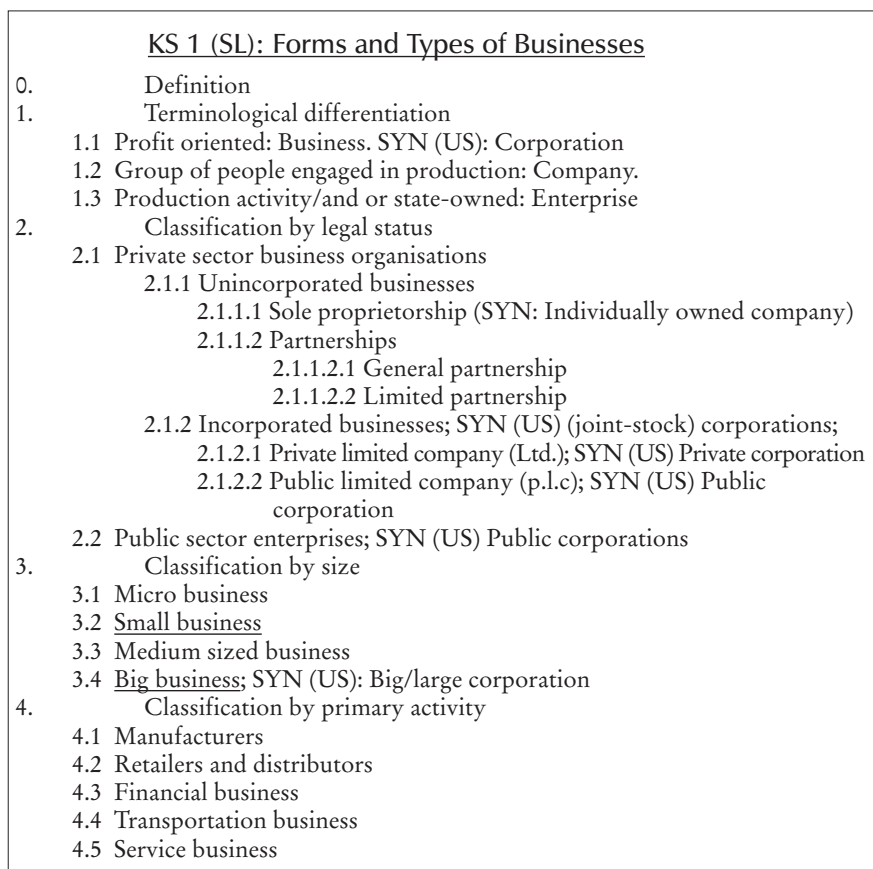
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### KS 1 (SL): Forms and Types of Businesses

0.          Definition
1.          Terminological differentiation
   1.1 Profit oriented: Business. SYN (US): Corporation
   1.2 Group of people engaged in production: Company.
   1.3 Production activity/and or state-owned: Enterprise
2.          Classification by legal status
   2.1 Private sector business organisations
      2.1.1 Unincorporated businesses
         2.1.1.1 Sole proprietorship (SYN: Individually owned company)
         2.1.1.2 Partnerships
            2.1.1.2.1 General partnership
            2.1.1.2.2 Limited partnership
      2.1.2 Incorporated businesses; SYN (US) (joint-stock) corporations;
         2.1.2.1 Private limited company (Ltd.); SYN (US) Private corporation
         2.1.2.2 Public limited company (p.l.c); SYN (US) Public
            corporation
   2.2 Public sector enterprises; SYN (US) Public corporations
3.          Classification by size
   3.1 Micro business
   3.2 <u>Small business</u>
   3.3 Medium sized business
   3.4 <u>Big business</u>; SYN (US): Big/large corporation
4.          Classification by primary activity
   4.1 Manufacturers
   4.2 Retailers and distributors
   4.3 Financial business
   4.4 Transportation business
   4.5 Service business

**Fig. 5.1.1c**   Constitution of KS 1 in the source language. Legend: SYN (= synonym); US (US-American English; <u>holeme grade</u> of the TKEs constituted in step 4

## Step 6:

In step six, the different holemes and subholemes are referred back to the corresponding texterms in order to put them into a holistic framework and thus securing the "understanding" of the text in its LSP component. In this process, structured TKEs are formed, which relate texterms (microstructural level) to a knowledge system (macrostructural level) via a precise hierarchy (holeme classification or gradation). "Understanding" means positioning an individual term exactly within the corresponding background knowledge system classification of holemes. The combination of these 2 different levels (texterm and

holeme classification) within a structured TKE can be illustrated in the following way:

We proceed from the texterm small business (holeme grade 3.2 – see Fig. 5.1.1c) in the utterance "Partnership strengthens small business" taken from text 1:

| Structured TKE | |
| --- | --- |
| Knowledge system | KS 1 – Forms and Types of Businesses |
| Holeme classification | 0. Definition |
| | 3. Classification by size |
| | 3.2 |
| Texterm | Partnership strengthens **small business** |

**Fig. 5.1.1d**   Structured TKE: **Texterm** identified in step 1 of the method

This constitutes the end of the reception phase.

## 5.1.2  Transfer

**Step 7:**

Step seven constitutes the beginning of the transfer phase in which relevant and adequate macrostructures in the target language are built: for this purpose, a corresponding knowledge system in the target language is constituted independently but along the same principles as in the source language (SL). For KS 1, with German as the target language, this could e.g. look like this:

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**KS 1 (TL): Unternehmensformen und -arten**

```
0.          Definition
1.          Begriffsabgrenzung
   1.1 Finanzorientierung: Unternehmung, SYN: Unternehmen
   1.2 Mehrere Personen: Gesellschaft.
   1.3 Produktionsorientierung: Betrieb
2.          Unterscheidung nach der Rechtsform
   2.1 Private Unternehmungen
          2.1.1 Ohne eigene Rechtsfähigkeit
                 2.1.1.1 Einzelunternehmen
                 2.1.1.2 Personengesellschaft
                        2.1.1.2.1 Offene Handelsgesellschaft
                        2.1.1.2.2 Kommanditgesellschaft
          2.1.2 Mit eigener Rechtsfähigkeit; SYN: Kapitalgesellschaften
                 2.1.2.1 GmbH
                 2.1.2.2 Aktiengesellschaft
```

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```
        2.2  Gemischte Rechtsformen
                  2.1.1 GmbH & Co KG
                  2.1.2 Doppelgesellschaft
        2.3  Öffentliche Unternehmungen
   3.             Unterscheidung nach der Größe
        3.1  Kleinstunternehmen
        3.2  Kleinunternehmen
        3.3  Mittleres Unternehmen
        3.4  Großunternehmen
   4.             Unterscheidung nach Wirtschaftszweigen
        4.1  Industrieunternehmen
        4.2  Handelsunternehmen
        4.3  Bankunternehmen
        4.4  Verkehrsunternehmen
        4.5  Sonstige Dienstleistungsbetriebe
```

**Fig. 5.1.1e**    Constitution of KS 1 in the target language. SYN (= synonym)

**Step 8:**

In step eight, the different holemes and subholemes of both knowledge systems are compared with respect to their conceptual and functional content. The comparison is based on three criteria: Identity (same conceptual and functional content), partial identity (same conceptual but differing functional content or same functional but differing conceptual content) and non-identity (no conceptual and no functional identity, e.g. in the case of a lexical gap in the target language). This is again illustrated below with KS 1:

| Conceptual and functional comparison of KS 1: *Forms and Types of Businesses* (SL) / *Unternehmensformen und -arten* (TL) | | | | |
|---|---|---|---|---|
| **Holeme grades in the source language (SL)** | Identity | Partial identity | Non-identity | **Holeme grades in the target language (TL)** |
| 0 | | X | | 0 |
| 1 | X | | | 1 |
| 1.1 | X | | | 1.1 |
| 1.2 | X | | | 1.2 |
| 1.3 | X | | | 1.3 |
| 2 | X | | | 2 |
| 2.1 | X | | | 2.1 |
| 2.1.1 | X | | | 2.1.1 |
| 2.1.1.1 | X | | | 2.1.1.1 |
| 2.1.1.2 | X | | | 2.1.1.2 |
| 2.1.1.2.1 | | X | | 2.1.1.2.1 |
| 2.1.1.2.2 | | X | | 2.1.1.2.2 |
| 2.1.2 | X | | | 2.1.2 |
| 2.1.2.1 | | X | | 2.1.2.1 |
| 2.1.2.2 | X | | | 2.1.2.2 |
| | | | X | 2.2 |
| | | | X | 2.2.1 |
| | | | X | 2.2.2 |
| 2.2 | X | | | 2.3 |
| 3 | X | | | 3 |
| 3.1 | X | | | 3.1 |
| 3.2 | X | | | 3.2 |
| 3.3 | X | | | 3.3 |
| 3.4 | X | | | 3.4 |
| 4 | X | | | 4 |
| 4.1 | X | | | 4.1 |
| 4.2 | X | | | 4.2 |
| 4.3 | X | | | 4.3 |
| 4.4 | X | | | 4.4 |
| 4.5 | X | | | 4.5 |

**Fig. 5.1.1f**   Functional and conceptual comparison of the KS in source (SL) and target language (TL)

As a result, it appears that both KS are quite similar. Some differences, however, are shown clustered in holeme 2 ('classification according to the legal status') – an important indication to the interpreter that further concretizations of this holeme (which may appear in later stages of the knowledge management) may be at best only partially identical.

**Step 9:**

Step nine accounts for adaptations that need to be made in case of differences or lexical gaps (e.g. as for the source language in comparison to holemes 2.2, 2.2.1 and 2.2.2 in the target language). This marks the end of the transfer phase.

Finally, the constituted knowledge structures can be entered into a data entry model. Applying the structures presented in chapter 3, this could be displayed in the following way[21]:

| Structured TKE (SL) | | | Data Management | Structured TKE (TL) | | |
|---|---|---|---|---|---|---|
| texterm | systerm | KS | topic and conference | KS | systerm | texterm |
| denomi-nation: | denomi-nation: | denomination: | | denomination: | denomi-nation: | denomi-nation: |
| concept: | concept: | holeme gradation and de-nomination: | | holeme grada-tion and de-nomination: | concept: | concept: |
| source: | source: | source: | conceptual and functional iden-tity SL/TL | source: | source: | source: |
| deviation/ contamination | | | | | deviation/ contamination | |

**Fig. 5.1.1g**  Entry model

## 5.2 Stage IIb – interpretation

During the interpretation stage, previously constituted TKEs are recalled in order to facilitate the adequate production of the target text.

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[21]  The presentation of the entry model is only a formal suggestion for completing structured TKEs by traditional data management categories known from terminology ('source', 'topic' and 'conference' reference in the column 'data management'). See also Wilss 1999:98, Mayer 1998 and KÜWES 1990:4.

## 5.2.1 Reception

The example for this stage is based on the following extract from a speech delivered by *Rena Blatt*, a representative of the Canadian ministry of industry on the subject of "The Performance of the Family Firm in Canada: Evidence from a Survey of Small Firms in Ontario".[22]

> We were more looking at a general view of what small businesses were out there, what kind of industrial sectors they were in, how big they were, what their growth was like. And we were – we used our Federal Statistical Agency to work on this study with us, because they have abilities that the rest of us don't have in terms of how they did this, and I'll explain it as I go on. ... The ·survey was done as a mail-out questionnaire with a telephone follow-up. It was a sample group of one-thousand-five-hundred-and-fourteen corporations out of approximately a hundred-and-sixty-seven-thousand-ninehundred-and-fifty-one   Canadian-controlled **private corporations** in Ontario. Now, what this means is that these are companies that are not traded on the stock exchange. Therefore the ownership of them is controlled by the actual owner-managers, although they're not necessarily small businesses, and in fact some of the ones in our study were quite large.

In the above indicated example it is assumed that the texterm "**private corporations**" cannot be recalled instantaneously from memory and therefore has to be collected from the pre-constituted entry model (step 1).

In step 2 & 3, we need to find out if a semasiologically corresponding entry exists and to which macrostructures it is associated. In our example, a complete formal (semasiologic) correspondence is found which is related to knowledge system 1 (Forms and Types of Businesses) as shown in Figure 5.2.1a

<div style="border:1px solid">

### KS 1 Forms and Types of Businesses:

0.                Definition
  2.                Classification by legal status
      2.1  Private sector business organisations
          2.1.2  Incorporated businesses; SYN (US) (joint-stock) corporations
            2.1.2.1  Private limited company (Ltd.); SYN (US) Private corporation

</div>

**Fig. 5.2.1a**    Holeme classification of ‚**private corporation'** within knowledge system 1

The structured TKE is now referred back to the source text in order to verify its validity within the source context (step 6[23]). This verification is first of all

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achieved by the fact that two concretizations of knowledge system 1 ('small business' and 'corporations') are evoked in the near textual vicinity of 'private corporations' (see also Figure 5.1.1c) Furthermore, the texterm 'corporation' in the immediate context of 'private corporations' is the superordinate term in the holeme 2 "classification by legal status" which is also implicitly contained in the ensuing passage:

> "Now, what this means is that these are companies that are not traded on the stock exchange. Therefore the ownership of them is controlled by the actual owner-managers…"

### 5.2.2 Transfer and production

When a corresponding TKE is found in the source language, the entry will also show corresponding structures in the target language (especially in the case of structured TKEs[24]), meaning that steps 7 & 8 are here redundant. Therefore, step 9 consists only of recalling the pre-constituted target structures until the interpretation has reached the text segment in which they are to be used (step 10).

## 6    Summary

This article proceeded from the assumption that knowledge management in simultaneous interpreting depends primarily on two problematic factors: First, the need for non-expert interpreters to constitute and use relevant LSP knowledge needed for an adequate interpretation of a specific original, and secondly to do so in relation to the specific textual situation of a conference assignment.

As a solution to this problem it was suggested to describe WHAT knowledge structures are to be considered relevant and HOW these are constituted and used during a complete interpreting assignment.

This lead to the description of a model for the underlying LSP knowledge structures essential for understanding and producing LSP or specialized texts in terms of the establishment of TKEs and TKCs which provide the necessary background knowledge both at micro –and at macrostructural level. While TKEs refer to single terms and are decisive during the interpreting stage itself, TKCs allow for a holistic knowledge management outside the conference stage. Because of the fact that interpreters are confronted with actual source

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[24]    In this case e.g. ‚Kapitalgesellschaften' – see Figure 5.1.1e – holeme 2.1.2.

texts only during the interpretation stage, TKCs are an essential element for a strategic and effective 'forward planning' in knowledge management.

On the basis of this model, a method for the constitution and use of TKEs and TKCs was developed. This was achieved by differentiating a simultaneous interpreting assignment into 6 different stages (or textual situations relevant for knowledge management) and applying a rule-governed sequence of ten steps to the different stages. The implementation of each step varies with the textual conditions of each stage: While a systematic and holistic knowledge management is performed in stage I and III, knowledge systems can only be partially identified and constituted, enlarged and recalled during the conference stage (II).

TKEs and TKCs were applied to practical examples which illustrate their mechanisms and results with authentic texts.

The development of this model and method for knowledge management of simultaneous interpreting of LSP conferences offers several further perspectives: Its implementation and computerization would lead to a data entry model (see Figure 5.1.1g) which would greatly enhance the possibilities of the described knowledge management in all stages[25]. It would also let the PC do some of the time-consuming and extensive tasks of the systematic constitution or weighting of the knowledge systems during Stage I. Finally, the method could be used for teaching purposes as well as for quality assurance.

## 7   References

AIIC (1997): "Guidelines for consultant interpreters (annex to the professional standards)". http://aiic.net/ViewPage.cfm?page_id=713.htm. Last visited on 01.05.2007.

AIIC (2004): "Practical Guide for Professional Conference Interpreters". http://aiic.net/ViewPage.cfm?page_id=628. Last visited on 01.05. 2007.

Arntz, Rainer/Picht, Heribert/Mayer, Felix (2004): *Einführung in die Terminologiearbeit*. Hildesheim: Olms.

Floros, Georgios (2003): *Kulturelle Konstellationen in Texten*. Jahrbücher Übersetzen und Dolmetschen. Band 3/2003. Tübingen: Narr.

DIN 2330 (Dezember 1993): *Begriffe und Benennungen; Allgemeine Grundsätze.* Berlin. Köln: Beuth.

DIN 2331 (April 1980): *Begriffssysteme und ihre Darstellung.* Berlin. Köln: Beuth.

Gerzymisch-Arbogast (1987): "Passepartoutwörter als fachsprachliches Übersetzungsproblem". In: *TEXTconTEXT* 1/2 (1987). 23–31.

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[25]   For the use of the pc in simultaneous interpreting, see also Will (2000) and Stoll (2002).

Gerzymisch-Arbogast (1994): "Identifying term variants in context: The SYSTEXT approach". In: Snell-Hornby, Mary, Franz Pöchhacker and Klaus Kaindl (eds.) *Translation Studies: An Interdiscipline*. Amsterdam: Benjamins. 279 ff.

Gerzymisch-Arbogast, Heidrun (1996): *Termini im Kontext. Verfahren zur Erschließung und Übersetzung der textspezifischen Bedeutung von fachlichen Ausdrücken.* Tübingen: Narr.

Gerzymisch-Arbogast (2008): "Fundamentals of LSP Translation". (in this volume)

Gerzymisch-Arbogast, Heidrun/Mudersbach, Klaus (1998): *Methoden des wissenschaftlichen Übersetzens*. Tübingen: Francke (UTB).

Gile, Daniel (1995): *Basic Concepts and Models for Interpreter and Translator Training*. Amsterdam – Philadelphia: Benjamins.

Greenwald, Douglas (²1973): *The McGraw-Hill Dictionary of modern economics*. New York: McGraw-Hill Book Company.

Hauenschild, Christa/Schubert, Klaus (2004): „Algorithmus und Methode". In: House, Juliane/Koller, Werner/Schubert, Klaus (Hrsg.): *Neue Perspektiven in der Übersetzungs- und Dolmetschwissenschaft.* Festschrift für Heidrun Gerzymisch-Arbogast zum 60. Geburtstag. Bochum: AKS. 333–348.

Hohnhold, Ingo (1990): *Übersetzungsorientierte Terminologiearbeit. Eine Grundlegung für Praktiker.* Stuttgart: InTra e.G.

Horn-Helf, Brigitte (1999): *Technisches Übersetzen in Theorie und Praxis*. Tübingen: Francke (UTB).

Kalina, Sylvia (2005): „Zur Dokumentation von Maßnahmen der Qualitätssicherung beim Konferenzdolmetschen". In: Heine, Carmen/Schubert, Klaus/Gerzymisch-Arbogast, Heidrun (Hrsg.): *Translation Theory and Methodology*. Tübingen: Narr (= Jahrbuch Übersetzen und Dolmetschen 6). 253–268.

KÜWES Terminologie (1990) (=Konferenz der Übersetzungsdienste westeuropäischer Sprachen): *Empfehlungen für die Terminologiearbeit.* Bern: Schweizerische Bundeskanzlei.

Mayer, Felix (1998): *Eintragungsmodelle für terminologische Datenbanken*. Tübingen: Narr.

Moser, Peter (1996): "Expectations of users of conference interpretation". In: *Interpreting*, Volume 1, Issue 2. Amsterdam – Philadelphia: Benjamins. 145–178.

Moser-Mercer, Barbara (1992): "Banking on terminology. Conference interpreters in the electronic age". In: *Meta* 37/3. 507–522.

Mudersbach, Klaus (1991): „Neue Methoden der Analyse historischer Daten". In: Best, Heinrich/Thome, Helmut (Hrsg.): *Historisch-sozialwissenschaftliche Forschungen*. 23. Scripta. St. Kathrein: Mercaturae. 318–362.

Mudersbach, Klaus (1999): „Die holistische Betrachtung von Fachtexten und deren Übersetzung". In: Gerzymisch-Arbogast, Heidrun/Gile, Daniel/House, Juliane/Rothkegel, Annely (Hrsg.): *Wege der Übersetzungs-und Dolmetschforschung*. Tübingen: Narr. 13–42.

Mudersbach, Klaus (2008): "Universal Thought Principles". In: Universals in Translation. Journal 1 of MuTra Publications. Saarbrücken: BOD (forthcoming).

Nida, Eugene A./Taber, Charles R. (1969): *Theorie und Praxis des Übersetzens*. Leiden: Brill.

Pöchhacker, Franz (1992): *Simultandolmetschen als komplexes Handeln. Ein Theorie- und Beschreibungsrahmen, dargestellt an einer Fachkonferenz*. Dissertation, Universität Wien (3 Bände).

Pöchhacker, Franz (1994): *Simultandolmetschen als komplexes Handeln*. Tübingen: Narr.

Schmitt, Peter A. (1986): „Die Eindeutigkeit von Fachtexten. Bemerkungen zu einer Fiktion". In: Snell-Hornby, Mary (Hrsg.): *Übersetzungswissenschaft – eine Neuorientierung*. Tübingen: Francke (UTB). 252–282.

Stoll, Christoph (2002): „Terminologiesysteme für Simultandolmetscher". In: *MDÜ* 3/2002. 47–51.

Will, Martin (2000): „Bemerkungen zum Computereinsatz beim Simultandolmetschen". In: Kalina, Sylvia/Buhl, Silke/Gerzymisch-Arbogast, Heidrun (Hrsg.): *Dolmetschen: Theorie – Praxis – Didaktik mit ausgewählten Beiträgen der Saarbrücker Symposien.* St. Ingbert: Röhrig. 125–135.

Will, Martin (forthcoming): *Dolmetschorientierte Terminologiearbeit (DOT). Zur Konstitution und Verwendung fachlicher Strukturen beim Simultandolmetschen: Modell und Methode*. Doctoral Dissertation within Universität des Saarlandes, Saarbrücken.

Wilss, Wolfram (1999): *Übersetzen und Dolmetschen im 20. Jahrhundert. Schwerpunkt deutscher Sprachraum.* Schriftenreihe der Asko-Europastiftung. Saarbrücken. Original erschienen in Englisch: *Translation and interpreting in the 20th century*. Focus on Germany. Amsterdam – Philadelphia: Benjamins.

Wright, Sue Ellen (2001): „Punktuelle Terminologiearbeit in modernen Übersetzungsumgebungen". In: *MDÜ* 1/2001. 5–10.

Wüster, Eugen (1931/1970): *Internationale Sprachnormung in der Technik. Besonders in der Elektrotechnik*. (Die nationale Spachnormung und ihre Verallgemeinerung). Dissertation von 1931. 3. Auflage. Berlin – Bonn: Bouvier.

Wüster, Eugen (1979) posth.: „Einführung in die Allgemeine Terminologielehre und Terminologische Lexikographie". In: Bauer, L. (Hrsg.): *Schriftenreihe der technischen Universität Wien*. Wien – New York: Springer.

# 8   Appendix

## Text 1 (call for papers) – 2 pages

### ICSB 36th Annual World Conference
### *Vienna, June 24-26,1991*

## CALL FOR PAPERS

Deadline for the **Receipt** of Submissions: January 31, 1991

## PROGRAM THEME: SMALL BUSINESS & PARTNERSHIP

### GENERAL INFORMATION

The thirty-sixth World Conference of the International Council for Small Business will be held in Vienna, Austria, from June 24-26, 1991. The program of the conference will include: competitive papers, panels, workshops, and evening events.

### THE CONFERENCE **HOTEL**

The Inter-Continental Vienna is within walking distance from the city center, enabling you to discover the glorious sights in the heart of Vienna while taking a leisurely stroll. The hotel (****•) offers you all kinds of services and recreational facilities, and is particularly apt for conferences.

### THE CONFERENCE THEME – GENERAL CALL FOR PAPERS

Partnership and competition are complementary phenomena in the world of small business. The existence of small business secures competition. Competition strengthens the economy. Partnership strengthens small business.

Partnership can be of different intensities: it ranges from the exchange of ideas between independent partners to co-ownership. The intensity and characteristics of partnership may, for example, be explained by the transaction costs approach and psychological approaches.

Partnership is the answer of small business to the growth strategies of big business. Partnership can be used to prepare mergers and acquisitions as well as to avoid them. Partnership is an incubator for the unfolding of entrepreneurship.

Partnership opens global markets to small business via Strategic Alliances. It gives access to new markets, to services used for reaching these markets, and to resources which small business would otherwise not be able to employ.

Partnership means hope for less developed regions in the world. Partnership can produce wealth for all partners. Partnership is an expression of old as well as new humanism.

Competition is a fact for every entrepreneur. Partnership is possible for each of them all over the world, in all socio-economic environments.

It is impossible to list all aspects of partnership. It is open to your creativity to show us what partnership can mean and achieve in the world of entrepreneurship and small business. Here are only some aspects which you may deal with in your paper and thus enrich our conference:

networks, interfirm cooperation, joint ventures, subcontracting, consulting, education and training, incubators, services, franchising, suppliers, wholesalers, customers, sources of funds, banks, venture capitalists, stockholders, leasing, factoring, insurance, social security, family relations, unions, trade associations, East-West trade organizations, auditors, lawyers, universities and business schools, political and socio-economic climate, EEC-conditions, small business organizations and institutes, neighborhood, environmental protection, etc. etc.

### PAPER SUBMISSIONS

Rules for the acceptance of papers:

1. Please submit 5 typed, double spaced, single column copies of your paper and a diskette with your textfile either written with MS-WORD (Ver. 4.0 or higher), WORD PERFECT (Ver. 5.0 or higher) or WORD STAR (Ver. 3.3, 3.45 or 4.0). Papers must not be longer than 20 pages, including references, tables, diagrams, and other materials.

2. Competitive papers must be original work and must not have been previously published or presented at other meetings. Only fully developed papers will be considered.

3. Each submission has to include a separate title page (on each copy) listing: (1) author(s); (2) organizational affiliation(s); (3) complete address(es); (4) phone and FAX number(s); (5) title of the paper; and (6) an abstract of the paper of no longer than 100 words.

4. All papers will be blind refereed. The main body of your paper should have the title and abstract, but it must not include your name(s).

5. Deadline for paper submission is January 31,1991.

6. Significant deviations from these rules will result in the return of the submissions without review.

Papers will be judged by the Program Committee on the basis of:

(a) Overall quality

(b) Originality (It is the policy of ICSB that only original papers can be presented)

(c) Interest to ICSB members

**The authors of the best papers will receive an award of excellence.**

## SPECIAL CALL FOR PAPERS

The Vienna Chamber of Commerce rewards the best papers on the theme **"Partnerships for the Renaissance of the Small Business Sector in Central and Eastern Europe"**. The first prize, AS 20.000,-, will be presented to the winner on the occasion of an evening reception in the Vienna City Hall. Additionally, six scholarships for free attendance of the conference plus AS 5.000,- are available for the winners.

The selected papers will be presented during several sessions of the Vienna International Small Business Forum. The Vienna International Small Business Forum (Wiener Internationales Gewerbeforum) is a series of lectures that has been organized by the Department of Small Business Management at the Vienna University of Economics with the support of the Vienna Chamber of Commerce since 1986. In 1991 these lectures will be integrated into the ICSB World Conference.

Rewarded papers will be published in a separate volume. Therefore you have to submit a "camera ready" copy in accordance with the following rules:

(1) The paper size accepted is DIN A4 (210 x 297 mm); the proper margins for the body text are: top: 30 mm, bottom: 20 mm, left: 30 mm, right: 25 mm. The only font accepted is Courier 12 Pt.

(2) Footnotes have to be on the same page, so do comments on tables, graphs etc. Footnotes have to be numbered consecutively.

(3) The title page must include the title of the paper in capital letters on top, followed by the author(s) and his/her (their) affiliation(s). Both must be centered. An abstract containing some 100 words should follow.

Deadline for the submission of full-length papers in English **or German** not exceeding 20 pages is **January 31, 1991.**

## INVITATION TO ORGANIZE WORKSHOPS

Workshops should bring together 3 - 5 experts on a specific theme. The organizers of workshops are expected to chair their workshop and to invite the speakers. After the presentations of the key-note speakers the workshops will be open for discussion to all participants. The key-note speakers are requested to provide summaries in English to be distributed to the participants.

Workshops are conducted in English as participants from all over the world attend. But as we expect many participants from the French, German, Italian and Spanish speaking world we would also offer additional bilingual workshops (in English and one of these languages) if requested.

The proposal should be at least four pages long and should include all activities to be carried out and all participants involved in the workshop. All participants must attend the conference if their proposal is approved.

**The 36ᵗʰ ICSB World Conference is organized by the ECSB together with the Federal Austrian Economic Chamber and the Department of Small Business Management at the Vienna University of Economics.**

**The ECSB is represented by:**

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## Discourse Transcription (Pöchhacker 1992): Rena Blatt- LOG 4A

I'D LIKE TO START BY EXPLAINING HOW WE CAME TO DO THIS PIECE OF RESEARCH. FOR SEVERAL YEARS WE'VE BEEN TALKING ABOUT AN INTEREST IN FAMILY BUSINESS IN OUR DEPARTMENT. BUT EACH TIME THE SUBJECT CAME UP WE SAID, YES, WE KNOW THEY'RE THERE AND WE KNOW THEY'RE INTERESTING BUT WE DON'T KNOW ANYTHING ABOUT THEM. MAYBE WE'LL GET AROUND TO TALKING ABOUT DOING SOME RESEARCH. IN CANADA WE HAVE AN ORGANIZATION CALLED THE CANADIAN ASSOCIATION FOR FAMILY ENTERPRISE, AND THIS IS AN ORGANIZATION THAT'S PRIVATELY SET UP AND FINANCED, THAT HAS AS ITS MEMBERS FAMILY BUSINESSES ACROSS THE COUNTRY. THEY TOO WERE INTERESTED IN FINDING OUT WHAT THE REST OF THE UNIVERSE OF BUSINESSES LOOKED LIKE IN RELATION TO THEIR BUSINESSES AND WHAT THE ECONOMIC IMPACT OF FAMILY BUSINESSES WERE. .. . THEY TOOK A SUGGESTION TO THE FEDERAL GOVERNMENT THAT THIS BE STUDIED AND THE FEDERAL GOVERNMENT SAID, WELL, IF YOU CAN GET SOME OF THE PROVINCES TO ALSO WORK ON THIS, WE WILL BE INTERESTED IN IN HELPING FINANCE IT. SO, THE PROVINCE OF ONTARIO AGREED THAT WE WOULD LOOK AT THE PROJECT WITH THEM IN ONTARIO, AND THE PROVINCE OF SASKETCHEWAN ALSO AGREED TO DO IT. UNFORTUNATELY, THE TWO PROVINCES ARE SO VERY VERY DIFFERENT, SASKETCHEWAN BEING A VERY SMALL ECONOMY THAT'S PRIMARILY FARMING AND ONTARIO BEING THE THE SINGLE LARGEST ECONOMY WITHIN THE ·COUNTRY AND PRIMARILY INDUSTRIAL, THAT WE DECIDED TO KEEP THE TWO COMPLETELY SEPARATE, AND THIS REPORT THAT WE'RE GIVING TODAY DEALS ONLY WITH THAT IN ONTARIO. I DON'T KNOW IF THE PEOPLE IN SASKETCHEWAN HAVE DONE AN EQUIVALENT PIECE OF WORK BUT I HAVE NOT SEEN IT. IN ANY RATE, WHAT OUR AIM WAS IN THIS WAS NOT SPECIFICALLY TO INVESTIGATE ANY SPECIFIC QUESTION. WE WERE MORE LOOKING AT A GENERAL VIEW OF WHAT SMALL BUSINESSES WERE OUT THERE, WHAT KIND OF INDUSTRIAL SECTORS THEY WERE IN, HOW BIG THEY WERE, WHAT THEIR GROWTH WAS LIKE. AND WE WERE – WE USED OUR FEDERAL STATISTICAL AGENCY TO WORK ON THIS STUDY WITH US, BECAUSE THEY HAVE ABILITIES THAT THE REST OF US DON'T HAVE IN TERMS OF HOW THEY DID THIS, AND I'LL EXPLAIN IT AS I GO ON. .. .. THE ·SURVEY WAS DONE AS A MAIL-OUT QUESTIONNAIRE WITH A TELEPHONE FOLLOW-UP. IT WAS A SAMPLE GROUP OF ONE-THOUSAND-FIVE-HUNDRED-AND-FOURTEEN CORPORATIONS OUT OF APPROXIMATELY A HUNDRED-AND-SIXTY-SEVEN-THOUSAND-NINEHUNDRED-AND-FIFTY-ONE CANADIAN-CONTROLLED PRIVATE CORPORATIONS IN ONTARIO. NOW, WHAT THIS MEANS IS THAT THESE ARE COMPANIES THAT ARE NOT TRADED ON THE STOCK EXCHANGE. THEREFORE THE OWNERSHIP OF THEM IS CONTROLLED BY THE ACTUAL OWNER-MANAGERS, ALTHOUGH THEY'RE NOT NECESSARILY SMALL BUSINESSES, AND IN FACT SOME OF THE ONES IN OUR STUDY WERE QUITE LARGE. BECAUSE WE WERE USING THE STATISTICAL AGENCY TO DO THIS WORK, THEY ACHIEVED A RESPONSE RATE OF NINETY-EIGHT PER CENT. AND THEY DO THIS BY TELLING EVERYBODY IT'S A VOLUNTARY STUDY, THAT PEOPLE DO NOT HAVE TO ANSWER IF THEY DO NOT WISH, BUT THEN THEY KEEP CALLING THEM UNTIL THEY DO. AND UNLIKE WORKING WITH A COMPANY THAT YOU MIGHT HIRE TO DO THIS FOR YOU OR DEALING WITH YOUR OWN TIME, THEY DON'T LOOK AT TIME AS AN ISSUE, THEY

JUST KEEP GOING .WE MADE AN ASSUMPTION THAT THE BUSINESSES THAT DID NOT PROVIDE DATA BEHAVED IN MUCH THE SAME WAY AS THOSE THAT DID. WE THEN DID POPULATION ESTIMATES WHICH WERE PRODUCED BY USING ADJUSTED WEIGHTS AND APPLYING THEM AT THE STRATUM LEVEL TO EACH RESPONSE UNIT. THE SURVEY RESULTS WERE LINKED TO ADMINISTRATIVE RECORDS, THAT IS, TAX FILINGS, TO DETERMINE SALES, ASSETS, EQUITIES AND GROWTH. .. . THE QUESTIONNAIRE THAT THE PEOPLE FILLED OUT WAS A VERY VERY SIMPLE ONE-PAGE QUESTIONNAIRE THAT ASKED THEM QUESTIONS LIKE WERE THEY A FAMILY BUSINESS, WERE FAMILY MEMBERS EMPLOYED IN THEIR BUSINESS, DID OTHER FAMILY MEMBERS HAVE MONEY INVESTED IN THEIR BUSINESS, WHAT GENERATION OF BUSINESS THEY WERE, HOW MANY YEARS THEY THOUGHT THEY WERE TO SUCCESSION, AND THEN WE LISTED SIX CHALLENGES OR CONCERNS. AND ASK THEM TO RANK THEM IN THE ORDER. WE DID NOT ASK THEM ANYTHING ABOUT THEIR SALES, WE DID NOT ASK THEM ANYTHING ABOUT THEIR PROFITS, WE DID NOT ASK THEM ANYTHING ABOUT THEIR EQUITIES, WE DIDN'T HAVE TO, BECAUSE WHAT THE STATISTICAL AGENCY DID WAS IT TOOK THE RESPONSES THAT IT GOT BACK, WHICH WERE NOT ANONYMOUS, AND IT LINKED IT TO FOUR YEARS WORTH OF CORPORATE TAX DATA FOR THAT COMPANY. SO WE HAVE A VERY DIFFERENT KIND OF INFORMATION BASE HERE, PART OF WHICH PEOPLE WERE ABLE TO TELL US AND PART WHICH WAS TAKEN AWAY FROM FOR THEM. LET ME TELL YOU SOMETHING ABOUT THE FINDINGS. OKAY. OKAY. FIRST OF ALL, AS I MAY HAVE MENTIONED, SEVENTY PER CENT OF THE RESPONDENTS WE CAME TO WERE FAMILY FIRMS. BY SALES, WE FOUND THAT THEY WERE VERY VERY SIMILAR TO NON-FAMILY FIRMS. AND JUST A LITTLE BIT LARGER THAN ALL CANADIAN INCORPORATED COMPANIES WERE. NOT JUST THE PRIVATE BUT ALL CANADIAN INCORPORATED COMPANIES, NINETY-SIX PER CENT HAD SALES OF LESS THAN TWO MILLION. WHEN WE LOOK AT OUR GROUP THEN WE FIND THAT ONLY NINETY PER CENT HAVE SALES OF LESS THAN TWO MILLION. OKAY, THANKS. OKAY. WHEN WE LOOK AT THE INDUSTRIAL SECTORS IN WHICH THEY'RE REPRESENTED, WE SEE THAT THEY'RE FAIRLY BROADLY BASED AS A GROUP. FAMILY BUSINESSES ARE MORE HEAVILY REPRESENTED IN CONSTRUCTION, AT TWENTY PER CENT COMPARED TO TEN PER CENT OF THE NON-FAMILY, AND, THIS YOU CANNOT SEE FROM THIS SLIDE, BUT THEY'RE MORE HEAVILY REPRESENTED ALSO IN PERSONAL SERVICES, BUT FAR LESS REPRESENTED IN FINANCE, INSURANCE AND REAL ESTATE, WHERE FORTY-THREE PER CENT OF NON-FAMILY BUSINESSES ARE SITUATED AND ONLY TWENTY-TWO PER CENT OF THE FAMILY. IN AGRICULTURE THERE'S A FOUR TO ONE DIFFERENCE, BUT THERE WE'RE DEALING WITH WITH A GROUP OF THAT'S ONLY FIVE THOUSAND FARMS AND AGRICULTURAL BUSINESSES IN CANADA OR IN ONTARIO. OKAY. ON THIS SLIDE, THE MOST SIGNIFICANT FACTOR IS THAT SMALL SERVICE COMPANIES ARE THE SINGLE LARGEST GROUP. BUT IN FACT, THERE'S A FAIR BIT ON THIS THAT COULD BE INTERESTING WHEN WE LOOK AT THE SIZE CATEGORIES OF THE COMPANIES AS WELL AS WHAT THEY'RE IN.. OKAY OKAY. THE ASSETS OF THE FIRM ARE LOWER THAN THE FOR THE FAMILY BUSINESS THAN THE NON-FAMILY BUSINESS IN EACH SIZE CATEGORY. UNFORTUNATELY WE DON'T KNOW WHY THAT IS, IT, IT MAY JUST BE ONE OF THOSE TAXATION ISSUES OF THE WAY THEY

THEY HOLD ASSETS. HOWEVER, WHEN WE GO ON TO LOOK AT EQUITIES, WE SEE THAT THE EQUITY IS HIGHER. OKAY. JUST ONE PICTURE TO MAKE BREAK UP ALL THE THE TABLES THAT YOU'VE GOT TO LOOK AT HERE.OKAY. WHEN WE LOOKED AT THE GROWTH PATTERN, WHAT WE FOUND IN GROWTH IN SALES IS THAT IN THE LARGEST SIZE CATEGORY, THAT OF TEN MILLION TO FIFTY MILLION SALES, FAMILY BUSINESSES HAD THE LARGEST GROWTH. IN THE AND IT ALSO IS INTERESTING THAT ON THE FAMILY SIDE THE PROGRESSION IS NINE, FORTY-ONE, FORTY-THREE, FORTY-SIX, SIXTY-SEVEN, WHICH IS A NICE STRAIGHT PATTERN WHILE ON THE NON-FAMILY IT'S ALL OVER AND THEY'RE THEY DIDN'T SHOW ANY REAL PATTERN. OKAY. YEA. I THINK THIS SLIDE THAT WE'RE PUTTING UP NOW IS THE ONE THAT MIGHT BE THE MOST CONTROVERSIAL IN TERMS OF WHAT WAS SAID AT THE EARLIER SESSION. WE FOUND THAT SUCCESSION WAS NOT THE MAIN CONCERN OR CHALLENGE TO FAMILY BUSINESSES. WHEN ASKED TO RANK THE SERIES OF CONCERNS, WHICH WERE SUCCESSION, MANAGEMENT AND ORGANIZATION, MOTIVATING AND EDUCATING FAMILY, FINANCING, CAPITAL GAINS, GROWTH AND DIVERSIFICATION, SUCCESSION WAS ONE OF THE LEAST IMPORTANT TO MOST OF THE PEOPLE WHO WHO RESPONDED.IT RECEIVED THIRTY PER CENT OF THE SIXES AND THIRTEEN-POINT-SEVEN PER CENT OF THE AND ONLY THIRTEEN-POINT-SEVEN PER CENT OF THE ONES. ON THE OTHER HAND, MANAGEMENT AND ORGANIZATION RECEIVED THIRTY-ONE-POINT-EIGHT PER CENT OF ONES AND TWENTY-FIVE-POINT-THREE PER CENT OF TWOS. SO THIS IS BY FAR THE MOST IMPORTANT PROBLEM FOR PEOPLE. BECAUSE HAVING READ ALL OR SOME OF THE LITERATURE ANYWAY, WE WE REALIZED THAT WE WERE GOING QUITE AGAINST THE TRENDS, WE STARTED PLAYING AROUND WITH OUR DATA TO SEE HOW WE COULD CHANGE THE SUCCESSION FACTOR. AND WHAT WE FOUND IS THAT IF WE BREAK OUT SUCCESSION AGAINST THE NUMBER OF YEARS THE COMPANY EXPECTS TO FACE THIS AS A PROBLEM IT JUMPS, DRAMATICALLY. AND SO WHEN WE GET TO THE POINT WHERE WE'RE ONE TO THREE YEARS FROM SUCCESSION, SUCCESSION DOES BECOME THE NUMBER ONE MAJOR ISSUE, BUT I THINK WHAT WE'RE SEEING IS THAT FAMILY FIRMS LIKE OTHER SMALL BUSINESSES DON'T PLAN VERY FAR IN AHEAD AND THEY DON'T THINK VERY FAR AHEAD. ONCE THEY'RE GETTING SO THAT IT'S ON THE DOORSTEP, IT'S OF MAJOR CONCERN. THE OTHER FACTOR WE REALIZED WAS THE GROUP WE WERE LOOKING AT WERE MAINLY FIRST-GENERATION BUSINESSES, AND SO THAT THEY HAD NEVER GONE THROUGH THE PROBLEM OF A SUCCESSION BEFORE, AND THIS ALSO MAY BE A FACTOR OF WHY THEY DIDN'T CONSIDER IT AS IMPORTANT AS THOSE WHO HAVE PEOPLE WHO HAVE BEEN STUDYING THE BUSINESSES. THINK OF IT AS. OKAY. I THINK THAT IS THE MAIN THINGS THAT WE HAVE TO REPORT ON THIS STUDY .AND IF THERE ARE ANY QUESTIONS I THINK THEY'RE GONNA COME AFTER THE NEXT PAPER.

Margaret Rogers (Surrey)

# Terminological Equivalence: Probability and Consistency

**Abstract** – With the growth of Translation Studies as a discipline, the key notion of 'equivalence' has become increasingly problematised. In this paper I would like to renew our acquaintance with Catford's (1965) early notion of 'textual equivalent', which is expressed in terms of probabilities of occurrence. Using the notion that an equivalence probability of 1 can be understood as a fully determinate ST term-TT term relationship, actual correspondences will be investigated in the translations of a safety-critical medical text from German into French and English. The correspondences will be analysed in the linguistic framework of lexical cohesion in terms of lexicogrammatical chains. It will be argued that even in genres and subject fields which might be assumed to be highly determinate with respect to lexical selection, terminological correspondences in texts can be variable.

## 1 Introduction

The study of terms and terminologies and the study of technical translation and translations enjoy a symbiotic relationship. Terms make an important semantic contribution to lexically dense texts dealing with specialist subject matter, and hence to their translation. On the one hand, data on terms and their equivalents, e.g. in technical dictionaries or termbases, support technical translators in their decision-making. On the other hand, the compilation of codified lexical resources increasingly draws on texts, including translations, as a basic data source. Codified lexical resources and texts (original or translated) are, however, organisms of different kinds. While dictionaries, glossaries, termbases, and so on, are themselves artefacts with a physical embodiment (whether digital or paper), the headwords or entry terms which they use

to identify each entry are abstract entities i.e. lexemes. The words or terms in texts are, by contrast, particular forms which perform *inter alia* various textual and referential functions. Translation competence therefore includes knowledge of how to navigate the path between these symbiotic organisms in a bi-directional way: firstly in using codified resources to solve terminological problems when interpreting a given source text and then creating a new text in the form of a translation, and secondly in using texts as a source of data for compiling, for example, personal glossaries or providing feedback to a terminology manager to extend or update existing resources.

However, from the perspective of Terminology Studies – understood here as *Terminologiewissenschaft*, at least as viewed in earlier publications such as Wüster 1974 and Felber 1984 – describing the usage of terms (as in text) was regarded as a preliminary step towards normalising that use in a terminological standard with a view to clarifying professional communication (understood as largely technical communication) in order to avoid the 'intolerable confusion' which, it was argued, would arise from 'free development of terminology' (Felber 1984:15). This claim rested on at least two assumptions: that there are clear differences in the ways that communication works in general language (LGP) and in special languages (LSPs); and that standardised terms (and in the case of translation, their equivalents) could – or should – be slotted consistently into texts in order to create the desired meaning. Subsequent research has challenged these assumptions on both philosophical grounds (e.g. maintaining that there is a constructed understanding of the world rather than an objective reality) and empirical grounds arising from the analysis of texts (and their translations) (e.g. Rogers 1999).

In this paper, the key notion of equivalence will be discussed from a terminological point of view but one which is rooted in textual analysis.


## 2   'Textual equivalence'

The key notion of equivalence has, in the history of Translation Studies, become increasingly problematised and differentiated according to formal, semantic, pragmatic and textual criteria (see, for instance, Koller 1979:159–266). Even if we confine its scope to lexical equivalence, the problem remains of where the equivalence lies: in the codified resource as part of a lexical system or in the source text-target text relation. The focus in Translation Studies is clearly on text, whereas in Terminology Studies it has traditionally been on system. In the onomasiological approach favoured in the largely German/

Nordic approach to terminology, equivalence has been defined as a one-to-one mapping of characteristics of a concept (e.g. *square root* in English and *Quadratwurzel* in German in the subject field of Mathematics). But it is also acknowledged that in most cases it is a question of establishing the *degree* of equivalence, as determined by the degree of 'coincidence' of the intension of the concept in each system (Felber 1984:152). While varying degrees of equivalence can be reflected in a codified resource by lexicographical symbols, or, more recently (e.g. in concept-based termbases) through a combination of definitions in each language combined with an additional remark to highlight differences, this view of equivalence still focuses on only one aspect: denotational equivalence. What happens when a term is plucked from a dictionary and inserted into a text?

As long ago as the 1960s, Catford distinguished between 'formal correspondence' (interlingual) and 'textual equivalence' (intertextual) (Catford 1965). While early linguistically-based scholarship in Translation Studies such as that of Catford has been much criticised over the decades, particularly following the many so-called 'turns' (pragmatic, cultural, functional, empirical: see, for example, Snell-Hornby 2006), his approach still offers an interesting perspective from a textual point of view if text is understood in terms of its relationship to language system (*parole/langue*) rather than in any other extra-linguistic or cultural dimensions. Catford states:

> In a text of any length, some specific SL [source language] items are almost certain to occur several times. At each occurrence there will be a specific TL [target language] textual equivalent                    (Catford 1965:29–30).

Catford's notion of equivalence therefore shifts the focus away from degrees of equivalence on a system level to the probability of equivalence based on a distribution throughout a text. Accordingly, the relation between an SL term and a TL term can be expressed as:

> a probability, in terms of the probability scale in which 1 means 'absolute certainty' and 0 means 'absolute impossibility'                    (Catford 1965:30).

Hence, if term A in the Source Text (ST) is always translated as term A' in the Target Text (TT), this suggests a one-to-one equivalence of A and A' which can be represented unproblematically in a bilingual dictionary, at least, in one language direction, even if it does not explain anything about the nature of the relationship. A probability of less than one indicates variation in the lexical choices made by the translator in the TT for term A, and hence, a lack of consistency if seen from a prescriptive, purely denotative point of view.

## 3    Consistency and variation in lexical choice

Consistency in the selection of terms is usually promoted as an essential feature of good technical writing, and has been cited as one of the advantages of machine translation over human translation (Vasconcellos 2001:697). In other words, the avoidance of synonymy within a text and, in turn, in its translation, is seen as a communicative virtue. While it is certainly the case that a use of synonyms which is motivated purely by stylistic considerations such as the avoidance of repetition can be outweighed by considerations of clarity in certain textual genres and domains, text-based research has demonstrated that synonymy can be functional (see, for instance, Rogers 1997 for genetic engineering and Temmerman 2000 for the life sciences).

It is well-known, however, that non-functional variation in the form of synonymy is widespread in technical writing practice (hence, advice to avoid synonymy for the sake of comprehensibility is common: see, for instance, Göpferich 2002:185). Furthermore, such intratextual variation is overlaid with intertextual variation in translation. Baker asserts, for example, that 'networks of lexical cohesion' are impossible to reproduce in translation 'even in non-literary texts' (Baker 1992:206–207). There seem, then, to be potential tensions between the demands of lexical consistency and those of patterns of lexical cohesion across languages.

One way of studying this problem in technical texts is to analyse lexical chains as an aspect of textual cohesion. By lexical chain is meant here 'cohesive ties sharing the same referent', lexically expressed (see Rogers 2007a:17). An onomasiological approach would view this as a chain of lexical designations (terms) of the same concept.

## 4    A case study

A genre in which a ST term-TT term relationship could reasonably be expected to have a textual equivalence probability of one would be instructions for use, for, say, a piece of medical equipment, as a need for consistency in term selection and translation is implied by the purpose of the text. Given the safety-critical operative function of such a text, clarity of communication can be expected to be a priority, suggesting that synonymy should be avoided since it may cloud the referential function of the instructions in relation to the equipment and/or to any non-verbal representations of the object or its parts in the text such as diagrams or photographs.

The text which is discussed here (see also Rogers 2007a; 2007b where the data are discussed more fully) is a set of instructions for patients suffering from sleep apnœia on how to use an electrically powered breathing aid. The whole device consists of a mask which is secured over the face, connected by a valve to a tube which is in turn connected to the small electric motor. It is the valve which is the focus of discussion here. The original text is German (1071 words), the translations French (1343 words) and English (1263 words) (<http://www.weinmann.de>).

Analysis of the German ST reveals that four expressions are used to refer (total 36 occurrences) to the valve: *Ausatemsystem Schalldämpfer*, *Gerät*, *Schalldämpfer* and *Ausatemsystem*. The full compound is only used once, near the beginning of the text; the generic *Gerät* also only occurs once. The clipped variant of the full compound, *Schalldämpfer* is the most frequent (28 occurrences), followed by the other component of the compound, *Ausatemsystem* (6 occurrences). The two components of the full compound have the potential to perspectivise the two functions of the device, namely to aid breathing for the patient and thereby to reduce noise (snoring) for those sleeping near-by.

Intratextual variation in the use of expressions for the same part of the device is also found in the French and English translations, but the pattern of variation does not mirror exactly that of the ST. This is immediately apparent from the fact that in the French translation, seven expressions are found for the valve, and in the English only three. The French expressions are: *valve d'expiration de type silencieux, silencieux, dispositif, produit, valve d'expiration, vanne d'expiration, toutes les pièces*. Again, the full term is used only once (but suggesting explicitly other *types* of breathing aid which do not suppress noise), with the noise-suppressant function of the device dominating the text in the form of the clipped term *silencieux* (27 occurrences). The basic patient-oriented function of the device is less in focus (*valve d'expiration* occurs four times, *vanne d'expiration* only once), as in the German. The generic expressions each occur only once. In addition, there is one grammatical co-referent in the French text: *il*; this is the only non-lexical co-referent in the three lexical chains analysed, probably because of the potential problems of anaphor resolution and the safety-critical nature of the text. The lexical chain of co-referents for the valve in the English TT shows less variation than either the German original or the French translation. There is no superordinate term covering both functional aspects of the valve such as the putative *exhalation and muffling system*. Instead, the term *muffling system* is widely used (32 occurrences) with three occurrences of *exhalation system* and two of *device*.

When the patterns of variation are considered across the three texts, there are three instances where the terms do not match between the German and the English, and five which do not match between the German and the French:

| German original | English translation | French translation |
|---|---|---|
| Schalldämpfer | muffling system | dispositif |
| Schalldämpfer | muffling system | il |
| Schalldämpfer | muffling system | toutes les pièces |
| Ausatemsystem | device | valve d'expiration |
| Ausatemsystem | muffling system | vanne d'expiration |
| Ausatemsystem | muffling system | silencieux |

**Table 1** Occurrences of non-matches (shaded cells) of co-referents in the three lexical chains

In all other cases, there was a one-to-one match between *Schalldämpfer / muffling system / silencieux*, and between *Ausatemsystem / valve d'expiration / exhalation system*, with the full compound *Ausatemsystem Schalldämpfer* translated by *muffling system* in the English.

In terms of probabilities (see Rogers 2007b:22 for calculations) for the terms occurring in the lexical chains, there are only three cases of a probability of one. In the German-French translation direction, *Ausatemsystem Schalldämpfer* is translated as *valve d'expiration de type silencieux*, but as there is only one occurrence of the full compound in the German original, this is not of any note. In the German-English direction, there are two cases of a probability of one. The first concerns the textual equivalent of the single occurrence of the full compound, the second of the all-pervasive *Schalldämpfer*. Both have *muffling system* as their textual equivalent; hence Catford's 'absolute certainty' (1965:30) is not applicable in the reverse translation direction. Indeed, muffling system has three[1] textual equivalents in the German: *Ausatemsystem Schalldämpfer*, *Schalldämpfer* and *Ausatemsystem*.

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[1]   In fact, it has four, as there is a broader concept which turns out to subsume the whole of the device plus the documentation: *Schalldämmsystem* (*système insonorisant*). For further discussion see Rogers 2007a.

Nevertheless, there is a relatively high probability for the pair *Schalldämpfer / silencieux* (0.89) (as well as the *Schalldämpfer / muffling system* probability of one) but lower probabilities for *Ausatemsystem / valve d'expiration* (0.67) and *Ausatemsystem / exhalation system* (0.50). There is therefore greater variation in textual equivalence when the breathing function is in focus in the ST.

The non-reversibility of textual equivalence as demonstrated here has implications for bi-lingual lexicography and terminography, indicating complex mappings of many-to-one and one-to-many items, with reversible one-to-one mappings being less frequent. In terms of the communicative message, there is a core of stability around the central terms *Schalldämpfer / silencieux / muffling system*, but certainly not full consistency, 'even' in this safety-critical text.

## 5 Conclusion

The limited data discussed in this paper provide no counter evidence to Baker's assertion that lexical networks are not exactly transferable in translation, although a core of stability was found in the lexical chains and their translations. Nevertheless, the French translator introduced more variation and the English translator less. The question remains, of course, whether the translations can be regarded as of good quality and fit-for-purpose, but similar questions also arise about the ST. The greater variation in the French also raises questions about possible differences and preferences in particular languages with respect to the patterning of lexical chains.

What is clear is that there is room for further empirical research to explore whether the notion of terminological consistency in the translation of technical texts is a feasible and communicatively relevant goal of technical writing and translation and what the translator's expertise is in balancing decisions in this context. Finally, there are implications for the operation of computer-assisted translation tools such as translation memory, which reconstructs texts on the basis of segmented units which are not necessarily re-presented in the same order in new texts.

## 6 References

Baker, Mona (1992): *In Other Words. A Coursebook on Translation*. London/New York: Routledge.

Catford, J. C. (1965): *A Linguistic Theory of Translation. An Essay in Applied Linguistics.* London: OUP.

Felber, Helmut (1984): *Terminology Manual.* Paris: General Information Programme & UNISIST, UNESCO, Infoterm.

Göpferich, Susanne (2002): *Textproduktion im Zeitalter der Globalisierung. Entwicklung einer Didaktik des Wissenstransfers.* Tübingen: Stauffenburg.

Koller, Werner (1979): *Einführung in die Übersetzungswissenschaft.* Heidelberg/ Wiesbaden: Quelle & Meyer.

Rogers, Margaret (1997): "Synonymy and equivalence in special-language texts. A Case Study in German and English Texts on Genetic Engineering". In A. Trosborg (ed.): *Text Typology and Translation.* Amsterdam: John Benjamins. 217–45.

Rogers, Margaret (1999): "Translating Terms in Text: Holding on to Some Slippery Customers". In G. Anderman & M. Rogers (eds): *Word, Text, Translation.* Clevedon: Multilingual Matters. 104–16.

Rogers, Margaret (2007a): "Lexical chains in technical translation: A case study in indeterminacy". In B. Antia (ed.): *Indeterminacy in LSP and Terminology: Studies in Honour of Heribert Picht.* Amsterdam/Philadelphia: John Benjamins. 15–35.

Rogers, Margaret (2007b): "Terminological equivalence in technical translation: A problematic concept? St. Jerome and technical translation". In *Synaps* 20. 13–25.

Snell-Hornby, Mary (2006): *The Turns of Translation Studies. New paradigms or shifting viewpoints?* Amsterdam/Philadelphia: John Benjamins.

Temmerman, Rita (2000): *Towards New Ways of Terminology Description. The socio-cognitive approach.* Amsterdam/Philadelphia: John Benjamins.

Vasconcellos, Muriel (2001): "Terminology and Machine Translation". In S.E. Wright and G. Budin (eds): *Handbook of Terminology Management, Volume II Application-oriented Terminology Management.* Amsterdam/Philadelphia: John Benjamins. 697–723.

Weinmann Medical Technology, http://www.weinmann.de/, site last visited 16 May 2007.

Wüster, Eugen (1974): "Die Allgemeine Terminologielehre – ein Grenzgebiet zwischen Sprachwissenschaft, Logik, Ontologie, Informatik und den Sachwissenschaften". In *Linguistics* 119. 61–106.

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# Intercultural Discourse and Translation

**Abstract** – The paper discusses the opposition between the cultural studies and the lingustic strands of translation studies and pleads for combining the two by adopting a functional-pragmatics approach. Following an exemplification of such a view, the current influence of global English on translations and multilingual text production in general is briefly discussed.

## 1   Introduction

This chapter deals with the relationship between two disciplines: contrastive discourse analysis and translation. I want to first of all characterize the concepts of 'culture' and 'linguistic-cultural relativity' in the light of their relevance for translation theory and practice. Following House (1997), two distinct types of translation, **overt translation** and **covert translation**, are distinguished, with only the covert type necessitating a so-called **cultural filter** and a concomitant switch in **discourse worlds**. The notion of a cultural filter is substantiated by evidence from a number of intercultural discourse analyses. Finally, the particular role of English as a global lingua franca and its influence on translation in general and the use of a cultural filter in particular are discussed.

## 2   Cultural studies vs linguistics in translation

In recent years there has been a shift in translation studies from linguistically oriented approaches to culturally-oriented ones. In Germany, Reiß and Vermeeer's (1984) concept of translation and Snell-Hornby's ideas about the

'interdiscipline' of translation (see Snell-Hornby 1986 and most of the contributions therein) clearly show this overall concern with viewing translating less as a linguistic and more, or even exclusively, as a cultural procedure. This view is epitomized in statements such as "One does not translate languages but cultures" and "In translation we transfer cultures not languages". In anglophone translation studies, a similar paradigm shift is clearly noticeable. How did this shift come about? Translation studies, I would suggest, is here simply following a general trend in the humanities and social sciences, whose contents and methodologies (at least in the so-called First World) have over the past decades been substantially influenced by post-modernist, post-colonial, feminist and other socio-politically and philosophically motivated schools. Translation is no exception in this regard (see e.g. Venuti 1995; von Flotow 1997; Robinson 1997), and translation studies' history of mimicking fashionable trends, is here, it seems to me, simply replayed.

Another, less modish way of taking account of 'culture' in translation follows the model set by some linguistic schools, e.g. the Prague school of linguistics or British Contextualism, schools which conceived of language as primarily a social phenomenon, which is naturally and inextricably intertwined with culture. In these and other socio-linguistically and contextually oriented approaches, language is viewed as embedded in culture such that the meaning of any linguistic item can only be properly understood with reference to the cultural context enveloping it. Since in translation 'meaning' is of particular importance, it follows that translation cannot be fully understood outside a cultural frame of reference. Adherents of such an integrative view of language and culture (see e.g. Koller 1997; Hatim and Mason 1997; House 1997; Gerzymisch-Arbogast and Mudersbach 1998; Steiner 1998), while considering translation to be a particular type of culturally determined practice, also hold that it is, at its core, a predominantly linguistic procedure. They thus differ significantly from a radical cultural studies view in which translation is taken to be predominantly, or even exclusively culture-related. It is the purpose of this chapter to contribute to attempts to bridge the gap between 'the two cultures'.

## 3   Universality versus culture specificity in translation

### 3.1 Culture, language and translation

The concept of 'culture' has been the concern of many different disciplines such as philosophy, sociology, anthropology, literature and cultural studies, and the definitions offered in these fields vary according to the particular

frame of reference invoked. Two basic views of culture have emerged: the humanistic concept of culture and the anthropological concept of culture. The humanistic concept of culture captures the 'cultural heritage' as a model of refinement, an exclusive collection of a community's masterpieces in literature, fine arts, music etc. The anthropological concept of culture refers to the overall way of life of a community or society, i.e., all those traditional, explicit and implicit designs for living which act as potential guides for the behaviour of members of the culture. Culture in the anthropological senses of a group's dominant and learned sets of habits, as the totality of its non-biological inheritance involves presuppositions, preferences and values – all of which are, of course, neither easily accessible nor verifiable. In what follows, the broad anthropological sense of culture will be pursued.

Four analytical levels on which culture has been characterized can be differentiated: the first one is the general human level, along which human beings differ from animals. Human beings unlike animals are capable of reflexion, and they are able to creatively shape and change their environment. The second level is the societal, national level, culture being the unifying, binding force which enables human beings to position themselves vis a vis systems of government, domains of activities, religious beliefs and values in which human thinking expresses itself. The third level corresponds to the second level but captures various societal and national subgroups according to geographical region, social class, age, sex, professional activity and topic. The fourth level is the personal, the individual one relating to the individual's guidelines of thinking and acting. This is the level of cultural consciousness (see Huizinga 1938: 14f), which enables a human being to be aware of what characterizes his or her own culture and makes it distinct from others.

Based on these different levels, i.e., integrating human, social and individual views of culture, the concept of culture can be (informally) defined as a type of "collective programming of the human mind", as Hofstede (1984) put it so succinctly, or more elaborately formulated as

> whatever it is one has to know or believe in order to operate in a manner acceptable to its (i.e. a society's, J.H.) members, and do so in any role that they accept for any one of themselves [...] Culture is not a material phenomenon; it does not consist of things, people, behavior, or emotions. It is rather an organization of these things. It is the forms of things that people have in mind, their model of perceiving, relating, and otherwise interpreting them (Goodenough 1964: 36).

In these two definitions the important and recurrent aspects of culture are emphasized: the cognitive one guiding and monitoring human actions and the so-

cial one emphasizing traditional features shared by members of a society (see also Kroeber and Kluckhohn 1952; Geertz 1973).

However, along with the rise of post-modernist thinking in the humanities, the whole notion of culture has come under attack (see e.g. Holliday 1999). The critique formulated in post-modernist circles can be summarized as follows: the very idea of 'culture' is an unacceptable abstraction, there are no 'pure cultures' and there are no such things as 'social groups' because these groups are constantly destabilized by external influences, individual idiosyncrasies and actions. Cultures themselves are, on this view, mere ideologies, idealized systems simply serving to reduce real differences that always exist between human beings in particular socially and geographically delimited areas. Is the very concept of a 'culture' therefore useless, in particular for an eminently practice-oriented field such as translation? Surely not. In the empirical social sciences, attempts to 'problematize' and 'relativize' the concept of 'culture' have as yet not prevented solid ethnographic descriptions. Moreover, if such criticism were taken to its logical conclusion by social scientists, they would no longer exist.

One recent approach which seems to be particularly well suited to resolve the hotly debated issue of generalization vs diversification and individualization of cultures is the one by Sperber (1996). Sperber views culture in terms of different types of 'representations' (which may be representations of ideas, behaviours, attitudes etc.). Within any group there exists a multitude of individual 'mental representations', most of which are fleeting and individual. A subset of these representations, however, can be overtly expressed in language and artefacts. They then become 'public representations', which are communicated to others in the social group. This communication gives rise to similar mental representations in others, which, in turn, may be communicated as public representations to others, which may again be communicated to different persons involving mental representations and so on. If a subset of public representations is communicated frequently enough within a particular social group, these representations may become firmly entrenched and turn into 'cultural representations'. The point at which a mental representation becomes sufficiently widespread to be called 'cultural' is, however, still a matter of degree and interpretation, as there is no clear division between mental, public, and cultural representations, which may be taken as a rational argument against those facile and stereotypical statements that make up pre-judgments, or prejudice.

Members of a particular culture are constantly being influenced by their society's (and/or some of the society's cultural subgroup's) public and cultural

representations (with regard to values, norms, traditions etc.). This influence is exerted most prominently through language used by members of the society in communication with other members of the same and different sociocultural groups. Language as the most important means of communicating, of transmitting information and providing human bonding has therefore an overridingly important position inside any culture. Language is the prime means of an individual's acquiring knowledge of the world, of transmitting mental representations and making them public and intersubjectively accessible. Language is thus the prime instrument of a 'collective knowledge reservoir' to be passed on from generation to generation. But language also acts as a means of categorizing cultural experience, thought and behaviour for its speakers. Language and culture are therefore most intimately (and obviously) interrelated on the levels of semantics, where the vocabulary of a language reflects the culture shared by its speakers.

As opposed to this view that language 'reflects' the culture of a social group, the ideas that came to be known as 'linguistic relativity' imply the very opposite: language in its lexicon and structure has an influence on its speakers' thinking, their 'worldview' and behaviour. The idea that an individual's mother tongue is an important source of cognitive and behavioural conditioning goes back to German idealistic philosophy and was most prominently formulated by Wilhelm von Humboldt, who propagated the view that every language as an a priori framework of cognition determines the '*Weltanschauung*' of its speakers (Humboldt also looked upon language as a self-contained creative symbolic organization, as *energeia* – an idea taken over in the twentieth century most prominently by Noam Chomsky). The spiritual structure that language possesses is assumed to correspond to the thought processes of its users, language being situated at the interface between objective reality and man's conceptualization of it. The relativity postulate put forward in the first half of the twentieth century by Edward Sapir and his disciple Benjamin Lee Whorf advanced basically similar ideas. Whorf in particular inferred mental and behavioural differences from differences between languages on the levels of lexis and, in particular, syntax.

The consequence of the Humboldtian and Whorfian postulate for translation and translatability seems to be the denial of its theoretical possibility – 'theoretical' because the practice of translation has, of course, been an undeniably present and, indeed, thriving business from time immemorial. This apparent contradiction can, however, be resolved by pointing out that linguistic relativity, though clearly affecting, in specified areas, some of our cognitive behaviour, can always be counteracted through language itself and its users' cre-

ativity, dynamism and flexibility. Further, it is necessary to also link linguistic diversity with external differences of historical, social and cultural background rather than one-sidedly insisting on the overriding importance of a link between cognitive and linguistic differences. If languages are seen to be structured in divergent ways because they embody different conventions, experiences and values, then the importance of what may be called *linguistic-cultural relativity* emerges. Such a notion of relativity is much more relevant for translation (for a detailed discussion see House 2000). Cultural knowledge, including knowledge of various subcultures, has long been recognized as indispensable for translation, as it is knowledge of the application linguistic units have in particular situational and socio-cultural contexts which make translation possible in the first place. 'Application' here refers to the relation holding between an expression and the cultural situation in which it is used – it is *pragmatic meaning*. In establishing equivalences between L1 and L2 linguistic units in translation, the notion of 'application' is crucial: if sense and reference differ for two linguistic units in translation, it is their application in particular knowable and describable cultural contexts that ensures translatability. Linguistic units, as argued above, can in any case never be fully understood in isolation from the particular cultural phenomena for which they are symbols.

While differences in the 'worldview' of speakers of different languages resulting in different concepts in their minds may not be accessible to the translator, the intersubjectively experienceable application of linguistic units in a particular cultural situation can. And even if cultural distances between languages are great, cultural gaps can, in theory, always be bridged via ethnographic knowledge. Conceptions of language within the broader context of culture, whereby meaning is seen as contextually determined and constructed, are not recent developments, but have a venerable tradition in Russian Formalism, Prague School and Firthian linguistics, as well as American sociology of language, speech act theory and discourse analysis. In particular Firth and Halliday, both strongly influenced by the ethnographer Malinowski, regard language as 'language events' with meanings of utterances being defined in terms of their use and function in the context of a socio-cultural situation.

Such a broad socio-cultural view of language and translation is also adopted in the functional model of translation and translation criticism developed in House (1977; 1981²; 1997) which is based on Hallidayan systemic-functional theory, and in which translation is conceived as a cross-linguistic cultural practice involving re-contextualization. Two fundamentally different

types of re-contextualiation are distinguished which lead to two distinct types of translation. These will be discussed in the next section.

## 3.2 Distinguishing two types of translation

Translation involves the replacement of a text which exists in one language by a functionally equivalent text in another language. 'Functional equivalence' is thus a key notion in translation theory and criticism. Functional equivalence can be established and evaluated by referring original and translation to the *context of situation* enveloping original and translation, and by examining the interplay of different contextual factors or dimensions reflected in the text as well as shaping it. The dimensions are used to 'open up' the text in such a way that its textual profile, which characterizes its function, can be revealed. In order to determine the **function of a text,** consisting of an **interpersona**l and an **ideational functional component** which must be kept equivalent in translation, the text is analysed at the levels of Language, Register and Genre. The relationship between these levels can be seen in terms of semiotic planes which relate to one another in a Hjemslevian 'content-expression' way, with Genre being the content-plane of **Register**, and Register being the expression plane of Genre. Register in turn is the content-plane of Language, and Language is the expression plane of Register. Register is divided in Hallidayan fashion into Field, Tenor and Mode.

Briefly, the dimension of **Field** refers to the subject matter and the nature of the social action handled in the text. In the dimension of **Tenor**, the author's temporal, geographical, and social provenance is diagnosed, as is the author's intellectual and emotional stance (his/her 'personal viewpoint') vis a vis the content the author is portraying and the communicative task he or she is engaged in. Tenor also captures the social role relationship between author and addressee(s), and between fictive characters in the text as well as the 'social attitude' adopted, i.e. formal, consultative and informal style levels manifest in the text. As to **Mode**, here Biber's (1988) distinctions between involved versus informational text production, explicit versus situation dependent reference, and abstract versus non-abstract presentation of information are taken into account. Establishing linguistic-textual correlates of Register, i.e., Field, Mode and Tenor, and of the **Genre** they realize – with Genre being understood as reflecting the communicative purpose shared by a collectivity of texts – yields a certain textual profile characterizing its textual function, which is to be kept equivalent in translation. Genre and Register thus cover different aspects of the adaptation of language to the demands of its social use: Registers are con-

glomerates of linguistic features in response to situational parameters, Genres are types of linguistic objects. As linguistic objects the texts which constitute a Genre can be considered from a static or a dynamic perspective.

Equivalence of function, however, differs markedly in two empirically derived (House 1977) types of translation, **overt** translation and **covert** translation, and distinguishing these two translational types is thus indispensable in any discussion of functional equivalence. The distinction of these two fundamental translation types – which are, of course, reminiscent of Schleiermacher's classic distinction between '*einbürgernde*' versus '*verfremdende Übersetzung*', a critical difference being however that the covert-overt distinction is tied to a well-argued theory of translation and translation criticism – was first suggested as result of a critical appreciation of approaches (e.g. by Reiss 1971) that attempted to account for different types of functional equivalence relationships via setting up a source text-linked text typology. Taking a text typology as a means of trying to gain insight into, and account for, different types of translation equivalence relationships is not fruitful because such an approach presupposes that the nature of a translation is somehow determined by the nature of the source text while the process of translation is itself a constant. Hence it has been presupposed that if one can successfully classify texts then one will have successfully accounted for differences in translation, and the theoretical problems surrounding them. As opposed to this line of thinking, a *translation typology* seems to be stronger in explanatory adequacy when it comes to describing and judging the different processes of translation involved in handling culture-specific phenomena in the two language communities. In other words, the claim is that in order to resolve the crucial conflict in translation between universality and culture specificity, a distinction of two basic translation types, **overt** and **covert** translation can prove insightful.

An **overt translation** is, as the name suggests, quite overtly a translation, not a second original, hence its target culture addressees are quite 'overtly' not being directly addressed. In an overt translation, the original is tied in a specific way to the culture enveloping it; it has independent status in the source culture, and is both culture-specific and pointing beyond the source culture because the original text – independent of its source language origin – is also of potential general human interest. In a word: it also evidences 'universality', source texts that call for an overt translation have an established worth or value in the source culture – and potentially in other cultures. In their universality, they are often 'timeless': as works of art and aesthetic creations, for instance, they transcend any distinct historical meaning. Although timeless and

transmitting a general human message, such texts that call for overt translation, are also and at the same time culture specific because they often reflect a particular *état de langue*, or a geographical or social variety and because they have independent status in the language community through belonging to the community's cultural products. Many such texts are literary texts and can be characterized by their fictional nature, i.e., they are situationally abstract in that they do not immediately refer to a unique historical situation. Fictional texts describe a kind of 'fictive reality' which is, in every reception by an individual reader, newly related to the specific historical reality in the concrete situation in which the reader finds himself. The message in a fictional text is entirely 'emic', i.e. text-contained: the message presupposes no wider context so that everything necessary for its interpretation is to be found within the message itself – and this is what gives the literary text its independent – indeed its culturally universal feature. This self-sufficiency might also explain why such texts can more easily be transferred in toto through space, time and cultures – and this despite the fact that those texts may well be heavily marked for culture-specific regional or social varieties.

An overt translation is embedded in a new speech event in the target culture: it operates in a new frame, a new 'discourse world'. An overt translation is thus a case of 'language mention' resembling a quotation or citation. In terms of the translation theory presented above, an original and its overt translation are equivalent at the levels of Language and Register as well as Genre. At the level of the individual textual function, however, 'true' functional equivalence, is not possible. At best, an equivalence of a 'removed' nature can be achieved: its function is to enable access to the function which the original has (had) in its discourse world or frame. As this access must of necessity be realized in the target 'linguaculture' via the translation, a switch in the discourse world becomes necessary, i.e., the translation operates in its own discourse world, and can thus reach only the aforesaid 'second level equivalence', featuring a sort of 'topicalization' of the original's textual function. Paradoxically, this type of functional equivalence is achieved through an equivalence at all the three analytical levels, i.e., Language/Text, Register, Genre, which together facilitate the co-activation of the source text's frame and discourse world. It is through this co-activation of both discourse worlds and frames that members of the target cultural and linguistic community are put in a position to 'eavesdrop', as it were, i.e., they are enabled to appreciate the function the original text has – albeit at a linguistic and cultural distance. In tackling an overt translation, the translator must therefore quite 'overtly' produce a translation

which allows culturally different persons to gain an impression of, and 'feel' for, the cultural impact that the original text has on source culture members permitting them to observe and be worked upon by the original text. In the case of overt translation, we can speak with some justification of genuine cultural transfer. Transfer is here understood in Uriel Weinreich's (1953) sense, i.e. a result of a contact situation which results in deviations from the norm of the target language/culture through the influence of another language and culture. This means that in overt translation, cultural transfer is often noticeable as a (deliberately) jarring difference (in Benjamin's 1972 sense) and deviation of the translation from target cultural norms.

The situation is very different in the case of **covert translation.** A covert translation is a translation which enjoys the status of an original text in the receiving culture. The translation is covert because it is not marked pragmatically as a translation at all, but may, conceivably, have been created in its own right. A covert translation is thus a translation whose original is, in terms of status, or uniqueness, not particularly tied to the target culture. An original and its covert translation are – one might say – 'universal' in the sense that they differ 'only' accidentally in their respective languages. The original is not culture specific, but rather of potentially equal concern for members of different cultures. While it is thus clear that certain texts designed for 'ready consumption', ephemeral and transitory texts, such as e.g. instructions, commercial circulars, advertisements and other 'pragmatic texts' such as journalistic and scientific texts, are not culture-bound, it is the covert type of translation which such texts (normally) require which presents much more subtle and intricate cultural translation problems than overt translation. In order to meet the needs of the new addressees in their cultural setting, the covert translator must take different cultural presuppositions in the two cultures into account.

In covert translation the translator must re-create an equivalent speech event and reproduce or represent in the translation text the function the original has in its linguistic-cultural framework, i.e., 'real' functional equivalence is aimed at, and often achieved in covert translation. A covert translation operates quite 'overtly' in the different frame and discourse world set up by the target culture without, however, – and this is in fact the critical difference between overt and covert translation – wishing to co-activate the discourse world in which the original had unfolded. Covert translation is thus at the same time psycholinguistically less complex than overt translation and more deceptive. Covert translation often results in a very real cultural distance from the original text, since the original is transmuted in varying degrees, and it is

the translator's task to 'cheat', as it were, and to remain hidden behind his feat of deception regarding the origin of the text produced. Since true functional equivalence is aimed at, changes at the levels of Language/Text and Register may, if necessary, be freely undertaken, and the result may be a very different text, which is the reason for the fact that covert translations are often received as though they were original texts.

In order to achieve this 'originality' in covert translation, the translator employs a so-called **cultural filter**. With the use of this filter, the translator can make systematic allowances for culture specificity accommodating for differences in socio-cultural **norms** and differences in **conventions** of text production and communicative preferences. This 'cultural filter' is thus the means with which the translator *compensates* for culture specificity (for an excellent description of the notion of 'compensation' specifically in literary translation see Thome 1999). The cultural filter is often so expertly integrated into the fabric of the text that the seams do not show. Since the notion of a cultural filter is crucial not only for covert translation, but also for problems of culture transfer and compensation, it will be dealt with more extensively in the next section.

## 3.3 The concept and function of a cultural filter in translation

In the course of the analyses of a corpus of texts and their translations (German-English, English-German), which were classified as belonging to the broad functional categories 'interpersonal' and 'ideational' in the Hallidayan sense, House (1977) found that, in certain of the case studies conducted with textual pairs, the translator had evidently placed a cultural filter between the source and target texts. He had to, as it were, view the source text through the glasses of a target culture member. If the source text and the target text are to have truly equivalent functions, then the translator – in order to meet the needs of the target culture addressees in their specific cultural setting, and in order to achieve an effect equivalent to the one the source text has had – must take relevant cultural presuppositions in the two language communities into account, and these presuppositions are linked most frequently to the interpersonal functional component for which values along the dimensions of Tenor and Mode are particularly important. Whenever, therefore, a text has a well-marked interpersonal functional component, the employment of the cultural filter is both particularly important and complicated, as one is here dealing with assessments and adjustments of social role relationships, social attitudes, author's personal stance, involvement etc. – phenomena that are notoriously difficult to diagno-

se, describe and translate. Despite this difficulty, it is important to point out that in any cultural filtering, actually existing and verified differences of the socio-cultural norms and presuppositions of cultural knowledge should be taken into account, and this should, if possible, stem from the results of empirical cross-cultural research (see below). An application of a cultural filter which lacks any intersubjectively verifiable evidence leads to the production of a **covert version**, which amounts to a culturally inadequate translation.

A glance at the rich anecdotal literature on translation describing numerous 'exotic' cultural oddities may lead one to believe that there are, indeed, many crucial cultural differences complicating the translation process. However, on closer examination, most of the impressive examples of cultural differences are drawn from comparisons of a European language and languages of South East Asia or American Indian languages, where the socio-cultural differences are obviously remarkable. As concerns translations between European languages, however, it seems sensible to endorse the attitude taken by Koller (1992: 176) who points out that cultural differences should not be exaggerated, since – as is well known by practicing translators – expressions referring to culture-specific political, institutional, socio-economic, historical, and geographical phenomena, which can only be understood in the particular 'cultural situation' in which they are embedded, and which consequently lack a corresponding expression in the target culture, can nevertheless be translated by means of certain compensatory mechanisms. Koller (2004) lists a number of standard translational procedures for overcoming such cultural translation problems such as e.g., using loan words or loan translations, adaptations, explications, commentaries, definitions and paraphrases. All these procedures have venerable traditions in ethnographic research and, of course, in the rich tradition of bible translations.

Elevating concrete, mundane and material differences between cultures such as e.g. differences in safety regulations or shopping routines to the rank of impenetrable cultural and translation barriers, as is unfortunately done in some contemporary translation studies, (in particular inside German functional translation theory), is both unnecessary and, more often than not, simply ridiculous. Despite this universality of the human condition, there are of course subtle if crucial differences in cultural preferences, mentalities and values that need to be known to the translator when he or she sets out to produce a covert translation and apply a cultural filter. Such knowledge should be based on empirical research into language-pair specific cultural differences, the assumption being that research into culturally determined communicative

preferences in two cultural communities can give more substance to the concept of a cultural filter than mere intuition and tacit native-speaker knowledge and understanding can. In the following, an example of such research involving English and German discourse will be outlined.

## 4  Substantiating the notion of a cultural filter

### 4.1 Evidence from intercultural discourse analyses

Over the past two decades, a series of German-English intercultural discourse analyses were conducted inside larger projects, in which the discourse of German and English native speakers was compared (for a summary of the various studies see e.g. House 1998a,b; Blum-Kulka, House, Kasper 1989). Subjects were students at British and German universities as well as experts in various professional contexts. The data was collected in open, self-directed dyadic role-plays, often followed by retrospective interviews, discourse completion tests combined with a variety of meta-pragmatic assessment tests, and naturalistic interactions between German and English native speakers, comparative analyses of texts and their translations, field notes, interviews, diary studies, and the examination of relevant background documents.

The analyses were conducted on one of the following three levels:

1. On the most 'superficial' level, a comparison was made of *tokens* that correspond pragmatically in the two language communities, given the different systems of selection holding for the various *types* in the two communities.
2. On a 'deeper' level, norms of expectation with regard to certain illocutionary acts and their effects and sequencing were taken into account.
3. On an even 'deeper' level, the socio-cultural functions of the analytic categories were investigated, i.e., their respective positions alongside classic sociolinguistic parameters such as +/– power and +/– familiarity, as well as the resulting degrees of directness, types of politeness, formality and so on.

The following pragmatic and discursive phenomena were investigated in the various studies: speech acts, discourse strategies, realization of certain discourse phases, gambits and modality markers (see House 1998a,b, for a detailed discussion of this work). The analyses yielded a series of individual results, which together provide converging evidence pointing to a set of more general hypotheses about the nature of German-English cultural differences: in a variety of everyday situations and discourse types, German subjects tend

to interact in ways that are more direct, more explicit, more self-referenced and more content-oriented, they were also found to be less prone to resort to using verbal routines than Anglophone speakers.

This pattern of cross-cultural differences that has emerged from these German-English contrastive-pragmatic analyses can be displayed along the following five dimensions:

| | | |
|---|---|---|
| Directness | ↔ | Indirectness |
| Orientation towards Self | ↔ | Orientation towards Other |
| Orientation towards Content | ↔ | Orientation towards Persons |
| Explicitness | ↔ | Implicitness |
| Ad-hoc-Formulation | ↔ | Use of Verbal Routines |

Along these hypothesized dimensions, German speakers were found to give preferences to positions on the left hand side. It must be emphasized that we are dealing here with continua or clines rather than clear-cut dichotomies, and that these continua reflect tendencies rather than categorical distinctions.

In German discourse, then, a 'transactional' style focussing on the content of a message is frequently preferred, whereas in Anglophone discourse, speakers tend to prefer an 'interactional', addressee-focussed style. This difference in focus has also an effect on the greater closeness of anglophone everyday language to English for specific purposes discourse, whereas in German there seems to be a greater distance between '*Fachtexte*' and texts written in '*Alltagssprache*'. In terms of the two Hallidayan functions of language, the ideational and the interpersonal, German discourse often leans towards the ideational function, Anglophone discourse tends to emphasize the interpersonal function. In terms of Gricean conversational maxims, the hypothesis may be put forward that German speakers tend to interpret the Maxims of 'Quantity' (Make your contribution as informative as required) and 'Manner' (Be brief) rather differently from Anglophone speakers, such that the (implicit) claims of universality for these Maxims (which has already been attacked by Japanese scholars) can also be disputed for German discourse.

By hypothesizing dimensions of cross-cultural difference in discourse orientations which add substance to the notion of a cultural filter, it is also implicitly suggested that language use is linked to culture and mentality, and that linguistic differences in the realization of discourse phenomena may be taken to reflect deeper differences in cultural preference patterns and expectation norms at a conceptual-cognitive and emotive level.

The hypothesized dimensions of intercultural German-English differences are supported by many similar results from other research (see in partic-

ular Clyne 1994). Further, there are large numbers of published translations of different genres, which demonstrate the vitality of these dimensions. In the following section, a few examples of translations exhibiting German-English and English-German cultural filtering along the dimensions will be given.

## 4.2 Examples of cultural filtering in translations

The first set of examples stems from a corpus of German signs put up in different domains of public life. In many cases, these signs are provided with translations which, more often than not, reveal German-English differences of communicative preference:

(1)  Sign at Frankfurt Airport on display at a building site; original German:

> *Damit die Zukunft schneller kommt!*

vs

> We apologize for any inconvenience work on our building site is causing you!

The difference in perspective, i.e., a focus on content in German, an interpersonal focus in the English translation is clearly noticeable here.

(2)  Sign in a hotel bathroom; original German:

> *Lieber Gast! Weniger Wäsche und weniger Waschmittel schützen unsere Umwelt. Bitte entscheiden Sie selbst, ob Ihre Handtücher gewaschen werden sollen. Nochmals benutzen: Handtücher bitte hängen lassen. Neue Handtücher: Handtücher auf den Boden legen.*

vs

> Dear guests, will you please decide for yourself, whether your towels shall be washed. Use again: please leave your towels on the towel rack. Clean towels: please put your towels on the floor.

In the German original, but not in the translation, an explicit justification for the request is offered in the first sentence. Further, the German original is more direct than the translation, which inserts the requestive marker 'please' in each individual request.

The following example is taken from Luchtenberg (1994) who contrasts American and German software manuals, and basically confirms House's hypotheses about German-English cultural contrasts with regard to directness vs indirectness, and content vs interpersonal orientation in communicative preferences. The title of her short insightful article says it all: "A friendly voice to help you versus working through your manual...". Compare:

(3)  Software manual; original English

> WordPerfect is backed by a customer support system designed to offer you fast, courteous service. If you've exhausted all other Help avenues and need a friendly voice to help you with your problem, follow these steps …

The German customer has to make do with the following translation:

> *WordPerfect hat ein Support-Zentrum eingerichtet, dessen Mitarbeiter Ihnen bei Problemen kompetente Unterstützung anbieten. Wenn Sie trotz der in Word Perfect zur Verfügung stehenden Hilfsquellen ein Problem nicht lösen konnten, wenden Sie sich an unser Support-Zentrum.*

The following example is taken from an instruction for using oven ware. A preference for greater explicitness in the German original than in the English translation is clearly noticeable here:

(4)  Instruction leaflet, oven ware; original German

> *Kerafour ist in unabhängigen Prüfungsinstituten auf Ofenfestigkeit und Mikro-wellenbeständigkeit getestet worden. Damit Sie lange Freude an ihm haben, geben wir Ihnen einige kurze Gebrauchshinweise:*
>
> *– 1.  Stellen Sie nie ein leeres, kaltes Gefäß in den erhitzten Ofen (als leer gilt auch ein nur innen mit Fett bestrichenes Gefäß) …*

vs

> Kerafour oven-to-table pieces have been tested by independent research institutes and are considered ovenproof and micro-wave resistant. Here are a few simple rules for using Kerafour.
>
> – 1.  Never put a cold and empty piece into the heated oven…

In the second sentence, the German original gives an explicit reason for this instruction: "*Damit Sie lange Freude an ihm haben*", which is left out in the English translation. And under 1., the German original – unlike the translation – defines explicitly and precisely the conditions under which the Kerafour pieces are to be considered 'empty'. One is reminded of (the then fire inspector) Whorf's famous example of a fire breaking out because of an erroneous conception of a gas-filled vessel being 'empty' – whatever the reasons for the explicitness indulged in by the German writer of the instruction leaflet (perhaps he or she was thinking of the potentially costly consequences of a customer's misinterpretation of 'empty'), the interesting fact remains that the entire explicitizing bracket is left out in the English translation.

The last example is taken from one of the texts, first analysed in House (1977) and re-analysed in House (1997). The text is a commercial circular written by the President of a multinational firm to the firm's shareholders inform-

ing them about future restructuring of the company which will not be to their advantage. The interpersonal functional component of the English original is transformed substantially such that the carefully orchestrated distantly polite and non-committally, evasively indirect tenor in the English text is turned into a more undiplomatically direct tone in the German translation. Thus the letter's recipients are often not personally addressed, e.g. 'as you know' is rendered as 'bekanntlich', and compare also the following:

(5)  Letter to Shareholder; original English

> In order to avoid the possibility of accidental misdirection of your certificate… your assistance is required. We have enclosed a 'Dividend Instruction Form' for your completion; this should be returned in the pre-addressed form.

vs

> *Um zu vermeiden, daß Ihre Zertifikate versehentlich fehlgeleitet werden... bitten wir Sie, das beigefügte Dividendenzustellungsformular auszufüllen und in dem ebenfalls beigefügten adressierten Umschlag zurückzuschicken.*

In the German translation, the author appears to be more forceful, active and direct, while the English original expresses the action to be done by the addressees more abstractly and indirectly (nominally). The utterance in the English original seems to have the illocutionary force of a subtle suggestion, which the translation turns into a request. And while the original insinuates that it is not the company's president who wants something done but rather some external necessity, the translation is less subtle about who must do what. Thus, the German translation of "Your bank (or broker) should indicate…" reads: "*Sie müssen die Bank (oder einen Makler) bitten...*".

The analyses of German and English texts presented in House (1981; 1997) and the analyses of a German and English children's books and their translations (House 2004) contain many more examples of cultural filtering in covert translation, all of which attest to translators' attempts to accommodate in a patterned way the target group's different presuppositions about cultural norms and conventions.

## 5   The Role of English as a global lingua franca in cultural (non) filtering

In the course of today's steadily increasing process of globalization and internationalization in many aspects of science, politics, culture, and economics, there is also a rising demand for texts which are simultaneously meant for, and addressed to, recipients in many different linguistic and cultural communities.

In other words, ever more texts are needed that are either translated covertly or produced immediately as 'parallel texts' in different languages. In the past, translators and text producers tended to routinely apply a cultural filter in such cases, with which the cultural specificity was taken into account. However, due to the worldwide political, economic, scientific and cultural dominance of the English language – especially in its function as lingua franca – which is propelled by globalization and internationalization processes on a hitherto unknown scale, and is given added momentum through the revolution in information and communication technologies – a tendency towards 'cultural universalism' and 'cultural neutralism' – which is really a drift towards Anglo-American norms – has been set into motion. In the decades to come, the conflict between cultural universalism and culture specificity in the presentation of a specific subject matter and, with this, the demands on text production by global information and marketing strategies on the one hand and local, particular textualization conventions on the other hand, will in all probability become ever more marked, given the unstoppable spread of English in many domains of modern life. Whereas cultural filtering in covert translation was common in the past – see here, for instance, the analyses of German and English translations of children's books (House forthcoming) and the results of an analysis of Spanish-English translations by Mason (1994) – it is plausible to hypothesize that in the future much less cultural filtering will occur, with many more 'culturally universal' or 'culturally neutral' translation texts being routinely created – a species of 'hybrid texts', which are, in reality, carriers of anglophone West-European/North-Atlantic cultural norms. A well-known example are Enid Blyton's children's books, which owe much of their success and popularity to their bland cultural universalism.

Another domain in which there is a tendency towards Anglicization in the guise of cultural universalism is, of course, the genre 'software manuals', where a trend to wholesale importing of Anglo-Saxon norms is today particularly noticeable. For example, in the case of the aforementioned German translation of the introduction to WordPerfect ten years ago, where the translation resembled a sober, informative, content-focussed 'text for specific purposes' in the tradition of the relevant German *Fachtext*-Genre, a recent German translation of a manual for Microsoft Windows 98 reads as follows: "*Erste Schritte: Willkommen! Willkommen beim Betriebssystem Microsoft Windows! Jetzt macht das Arbeiten in Windows noch mehr Spaß...*". Here we can 'smell' the original through the German lines, not so much in terms of lexis and grammar, which do of course reflect German norms perfectly well – but in terms of

discourse conventions and communicative style. The new 'oralness', 'intimacy' and 'involvedness' (in the sense of Biber 1988), which resembles Anglophone conventions in this genre, is patently obvious here.

While the influence of the English language in the area of lexis has long been acknowledged and bemoaned by many (especially by scholars in the French speaking world), Anglophone influence at the levels of pragmatics and discourse has hardly been recognized let alone rigorously researched (see House 1999 for a discussion of this point, and see Edmondson and House 2003). The effect of the trend towards cultural universalism and neutralism in certain Genres in many languages and cultures of the world is, however, an important research area for the next millennium. What is needed in this area is clearly corpus-based research into the means of analyzing hitherto unnamed problems. One first step into this new direction for future research has been made by a project funded by the German Research Foundation into the influence of English as a global lingua franca on German, French and Spanish texts (for some preliminary results see Baumgarten et al 2004; Baumgarten and Özcetin forthcoming; House 2003; 2006, 2007). One of the global aims of such research would also be to try to mediate between the two cultures described at the beginning of this article, since we are here dealing with a cultural phenomenon that needs to be explored with the rigorous analytic means provided by linguistics.

Rules of discourse, conventions of textualization and communicative preferences often remain hidden and act stealthily at a deeper level of consciousness. This does not mean, however, that they are less powerful and persuasive. On the contrary. Once we have all internalized 'universal' communicative conventions and cultural values (to which we will be exposed ever more frequently), it may be difficult indeed to appreciate multilingualism, multiculturalism and culture-specificity – phenomena clearly needed in Europe and the world today. Let us hope that in the future we may live to experience more tolerance for diversity than we so sadly see today.

## 6  References

Baumgarten, Nicole (2003): "Close or Distant: Constructions of Proximity in Translations and Parallel Texts". In: Gerzymisch-Arbogast, Heidrun & Hajičová, Eva & Sgall, Petr & Jettmarová, Zuzana & Rothkegel, Annely & Rothfuß-Bastian, Dorothee (eds): *Textologie und Translation. Jahrbuch Übersetzen und Dolmetschen, DGÜD, Band IV/II.* Tübingen: Narr, 17–34.

Baumgarten, Nicole & House, Juliane & Probst, Julia (2004): *English as lingua franca in covert translation processes*. The Translator 10(1): 83–108.

Baumgarten, Nicole & Özcetin, Demet (forthcoming) "Language Variation through Language Contact in Translation". In: Siemund, Peter & Kintana, Noemi (eds): *Language Contact and Contact Languages.* Amsterdam: Benjamins.

Benjamin, Walter (1972): "Die Aufgabe des Übersetzers", Vorwort des Übersetzers zu der Übersetzung von Charles Baudelaire Tableaux Parisien. In: Walter Benjamin (ed): *Gesammelte Schriften. Band IV/1*. Frankfurt/Main: Suhrkamp, 9–21.

Biber, Douglas (1988): *Variation Across Speech and Writing*. Cambridge: Cambridge University Press.

Blum-Kulka, Shoshana & House, Juliane & Kasper, Gabriele (eds) (1989): *Cross-Cultural Pragmatics*, Norwood. NJ: Ablex.

Clyne, Michael (1994): *Intercultural Communication at Work. Cultural Values in Discourse*. Cambridge: Cambridge University Press.

Edmondson, Willis & House, Juliane (2004): "English in the world and English in the school". In: Berg, Thomas & Cuyckens, Hubert & Dirven, René & Panther, Klaus-Uwe (eds) (1994): *Motivation in Language: From Case Grammar to Cognitive Linguistics*. Amsterdam/Philadelphia: John Benjamins, 321–346.

Flotow, Luise von (1997): *Translation and Gender*. Manchester: St. Jerome Press.

Geertz, Clifford (1973): *The Interpretation of Cultures: Selected Essays by Clifford Geertz.* New York: Basic Books.

Gerzymisch-Arbogast, Heidrun & Mudersbach, Klaus (1998): *Methoden des wissenschaftlichen Übersetzens*. Tübingen: Francke.

Goodenough, Ward H. (1964): "Cultural Anthropology and Linguistics". In: Dell Hymes (ed): *Language in Culture and Society*. New York: Harper & Row, 36–39.

Grice, H. Paul (1975): "Logic and Conversation". In: Cole, Peter and Morgan, Jerry (eds) (1975): *Syntax and Semantics. Vol. 3. Speech Acts*. New York: Academic Press, 41–58.

Hatim, Basil and Ian Mason (1997): *The Translator as Communicator*, London: Routledge.

Hofstede, Geert (1984): *Culture's Consequences*, New York: Sage.

Holliday, Adrian (1999): 'Small Cultures'. *Applied Linguistics* 20: 237–264.

House, Juliane (1977/1981): *A Model for Translation Quality Assessment,* Tübingen: Narr, 2nd edition.

House, Juliane (1997): *Translation Quality Assessment: A Model Revisited*, Tübingen: Narr.

House, Juliane (1998a): 'Kontrastive Pragmatik und interkulturelle Kompetenz im Fremdsprachenunterricht'. In: Wolfgang Börner and Klaus Vogel (eds): *Kontrast und Äquivalenz. Beiträge zu Sprachvergleich und Übersetzung*, Tübingen: Narr, 162–189.

House, Juliane (1998b): "Politeness and Translation". In: Hickey, Leo (ed) *The Pragmatics of Translation*. Clevedon: Avon, 54–71.

House, Juliane (1999): "Zur Relevanz kontrastiv-pragmatischer und interkultureller Diskursanalysen für das Fachübersetzen". In: Gerzymisch-Arbogast, Heidrun & Gile, Daniel & House, Juliane & Rothkegel, Annely (eds): *Wege der Überset-*

*zungs- und Dolmetschforschung*. Jahrbuch Übersetzen und Dolmetschen, DGÜD Band I. Tübingen: Narr 43–54.

House, Juliane (2000): "Linguistic Relativity and Translation". In: Puetz, Martin & Verspoor, Marjolijn (eds): *Explorations in Linguistic Relativity*. Amsterdam/Philadelphia: John Benjamins, 69–88.

House, Juliane (2001): "Maintenance and Convergence in Covert Translation English-German". In: Behrens, Bergljot & Fabricius-Hansen, Cathrine & Hasselgaard, Hilde & Johansson, Stig (eds): *Information Structure in a Cross-Linguistic Perspective*. Amsterdam: Rodopi, 199–213.

House, Juliane (2002): "Communicating in English as a lingua franca". In: Foster-Cohen, Susan (ed): *EUROSLA Yearbook 2*. Amsterdam: Benjamins, 243–261.

House, Juliane (2003): "English as a lingua franca: A threat to multilingualism?" *Journal of Sociolinguistics* 7:4. 556–578.

House, Juliane (2004): "Linguistic aspects of the translation of children's books" In: Armin Paul Frank et al eds. (2004) *Translation-Übersetzung-Traduction. An International Handbook on Translation.* Berlin: Mouton de Gruyter, 683–698.

House, Juliane (2006): "Text and Context in Translation". *Journal of Pragmatics* 38: 338–358.

House, Juliane (2007): "Covert Translation, Language Contact and Language Change". *Chinese Translators Journal* 3: 17–25.

Huizinga, Johan (1938): *Der Mensch und die Kultur*, Stockholm: Fischer.

Koller, Werner (2004)): *Einführung in die Übersetzungswissenschaft*. Heidelberg: Quelle & Meyer, 7th edition.

Kroeber, Alfred & Kluckhohn, Clive (1952): *Culture. A Critical Review of Concepts and Definitions*. Cambridge: The Museum.

Luchtenberg, Sigrid (1994): "A friendly voice to help you vs working through your manual. Pragmatic differences between American and German software manuals". *Journal of Pragmatics* 21: 315–319.

Mason, Ian (1994): "Discourse, Ideology and Translation". In: Beaugrande, Robert de & Shunnaq, Abdullah & Helmy Heliel, Mohamed (eds) (1994): *Language, Discourse and Translation in the West and Middle East*. Amsterdam/Philadelphia: John Benjamins, 23–34.

Reiß, Katharina (1971): *Möglichkeiten und Grenzen der Übersetzungskritik.* München: Hueber.

Reiß, Katharina & Vermeer, Hans J. (1984): *Grundlegung einer allgemeinen Translationstheorie*. Tübingen: Niemeyer.

Robinson, Douglas (1997): *Translation and Empire.* Postcolonial Theories Explained. Manchester: St. Jerome.

Snell-Hornby, Mary (1986): *Übersetzungswissenschaft. Eine Neuorientierung*. Tübingen: Francke.

Sperber, Dan (1996): *Culture: A Naturalistic Approach*. Oxford: Blackwell.

Steiner, Erich (1998): "A Register-Based Translation Evaluation: An Advertisement as a Case in Point". *Target* 10(2): 291–318.

Thome, Gisela (1999): "Methoden des Kompensierens in der literarischen Über-
    setzung". Paper given at the Saarbruecken Symposium "Translation and Interpre-
    tation: Methodological Problems in Cultural Transfer". March 1999.

Venuti, Lawrence (1995): *The Translator's Invisibility*, London: Routledge.

Waard, Jan de & Nida, Eugene A. (1986): *From One Language to Another. Functional
    Equivalence in Bible Translating*. Nashville: Nelson.

Weinreich, Uriel (1953): *Languages in Contact*. New York: Linguistic Circle of New
    York.

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# Multidimensional Control in Technical Translation

**Abstract** – Within a four-dimensional model of technical communication, this chapter describes the data formats commonly encountered in technical translation and the software tools used to create, edit, and translate technical documents. A special focus is on the automation of intelligent, language-related work processes.

## 1   Introduction

In today's professional environments, technical translation is almost exclusively carried out with the support of software systems. This chapter gives a concise overview of the most important of these tools. As in many fields of industrial or administrative automation, the use of software tools in technical translation gives rise to a series of new, secondary work processes, and these may in turn require some type of supportive work, thus tertiary work processes are also integrated in the overall workflow. The article looks into these work processes and their tools as well.

Section 2 sets the scene by sketching a four-dimensional model of technical communication. Section 3 focuses on the dimensions of the technical medium and the work processes, discusses common data formats in technical translation, and describes software tools used in technical translation work. (See also Sandrini's article in this volume.) Section 4 looks at how the automation of human work processes can affect the work of translators.

## 2   The four dimensions of technical communication

Technical communication is a professional activity. It can be described in four dimensions which mirror the competencies required for carrying out work in this field (cf. Schubert 2007: 248–250). These are

– the dimension of the technical content
– the dimension of the linguistic form
– the dimension of the technical medium
– the dimension of the work processes

The four dimensions describe technical communication at large, including both the monolingual work processes such as technical writing and the bilingual processes such as translating and interpreting.[1]

Technical translation is a form of mediated communication. Like technical writers, translators produce documents, but the content of the target document produced by a translator is very closely determined by the source document which the customer submits to the translator for translation. Although customers at times appear to disregard this, it is a well-established fact that one cannot translate a text without understanding it. The competence of understanding the technical content of source documents is therefore essential to the work of a technical translator. In some fields the question arises every now and then whether it would be more efficient to have technical translation work carried out by engineers, lawyers, business people or other professionals who specialize in the content of the documents and acquire some additional skills in languages, rather than employing linguistically trained staff with some additional skills in the relevant subject fields. The former point of view is more often held in the industrial environment than in academia. The answer from the side of the higher-education institutes involved in translator training is that their graduates possess a much broader range of competencies and thus are much more than just linguistically trained staff with some additional skills in the relevant subject fields. A modern academic degree course in translation produces professionals with a profound command of two or more languages and the relevant share of competencies in selected fields of technical content. Above and beyond these two fields, translation graduates possess text and translational

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[1]   Especially in the United States, the term technical communicator is increasingly being used to denote professionals in monolingual technical writing. These professionals are otherwise called technical writers. When speaking of technical communication we have in mind both the monolingual and the bilingual aspects.

competence, which is much more subtle and far more demanding to acquire than just being fluent in two languages (cf. Gerzymisch-Arbogast 2003).

When translators are said to require 'a relevant share' of content competencies, rather than the full competence of the content specialists, this takes into account the fact that for translating a given source text it is normally sufficient to have a descriptive command of the subject field. In other words, translators have to be capable of understanding a description of the technicalities of how a power plant works, but they need not be able to design one themselves. They must understand what engineers write or say, but they need not themselves be engineers. Whilst in the dimension of the technical content a task-oriented competence is fully sufficient, when it comes to the dimension of linguistic form, a translator needs the highest possible degree of competence. Thus, when we say that technical translation is a form of professional communication, we can now conclude more precisely that technical translation is bilingual mediated communication carried out by communication professionals. By contrast, an engineer doing translations would also be a professional carrying out communicative work, but the engineer would be a content professional, not a communication professional.

The duality of technical content and linguistic form has long been characteristic of technical translation. Since the advent of computers, however, the technical medium and the organization and the tools of the work process have exerted an increasing impact on the conditions of translation work. Decisions on which content to express and which wording to choose are directly influenced by the choices of typography, layout and data format made for the current translation job (technical medium) and by the software tools and the sequence of tasks and steps to be carried out (work process). Because of the degree of automation which is common today, the technical medium and the work process must now be considered the third and fourth dimensions of technical communication.

Software tools are used for facilitating human work in technical communication and for automating part of the work previously carried out by humans. An important function of the tools is maintaining, or helping humans to maintain the consistency of documents. When, for instance, a thousand-page manual for an assembly line for an automobile factory needs to be translated within a week, the job is too large for a single translator. It will thus be carried out by a team – and yet the end result must look as if it were done by a single person in a single pass. In other words, the customer's quality requirements make it necessary to deliver a strictly consistent target document. Consistency in this context indicates a number of linguistic characteristics such as

– terminological consistency: always naming the same object or action with the same word
– syntactic consistency: always expressing the same type of information in the same syntactic construction.

Along with strictly linguistic characteristics, there may be typographical and layout features which need to be rendered consistently. Some of these may get intertwined with the linguistic part of the translation process. For example, in software manuals it is common to set off the names of keys, menu options, dialog boxes and the like from ordinary text by writing them with a capital first letter or in bold face, italics or a special font or color. This practice must be thoroughly replicated in the translation. When translating from English or French or Spanish into German, however, one of these conventions cannot be left unchanged: in German every noun begins with a capital letter. The translator will therefore choose a different convention to set off the words in the German version which appear with a capital in the original.

The example of the thousand-page manual shows the need for consistency within a single document. But this is only one of a series of consistency requirements. Technical documentation is often required to be consistent

– with sections of the same document written or translated by another person
– with other documents in the same documentation
– with all other documents published by the same manufacturer
– with previous versions of the same document
– with public or industry standards.

All these consistency requirements make it desirable to steer the way different translators, possibly at different times and places, use their language. Many organizations publish detailed instructions for the technical writers and translators who produce their documentation. These instructions are often contained in manuals which, depending on their exact contents and objective in the particular situation, are called style guides, corporate identity manuals or quality assurance manuals. These manuals can contain instructions both as to the content, the language and the graphical form of the documents, and may even prescribe tools to be used or working procedures to be followed.

Writing instructions is one thing, but making them suitable and easy to observe for the technical writers and translators is quite a different task. This is where the dimensions of the technical medium and the work processes come into the picture. Some of the most important prescribed features of documents can be supported by software tools. Suitable instruments for maintaining con-

sistency in translation projects are terminology databases and translation memories. These software tools are described in more detail in Section 3. Their function with regard to the consistency issue is to provide a translator with words and phrases (from a terminology database) or sentences (from a translation memory) which have been established as correct at some earlier point in time. Depending on the degree of consistency control which applies in the current working situation, the data provided by these two knowledge sources may be considered either as suggestions to facilitate and speed up the work of the translators or as compulsory elements to be used as instructed by the customer.

In this way the dimension of the technical medium exerts a clear influence on the dimension of the linguistic form. Outside the realm of translation proper, but well within technical communication, the use of these kinds of consistency tools may condition the language still further. This is the case when the original documents are written to be translation-friendly and when translation-friendliness means that the text should be written in such a way that terminology databases and translation memories can be used to a maximal effect. Such a requirement imposed on the technical writers may offend the literary-minded in that it restricts the language to a somewhat monotonous and certainly highly repetitive style, but if that is what ensures the high quality of technical documentation, it will no doubt be adopted more and more widely.

At present, the software tools used by translators are undergoing development in several directions. Two of these lines of development are immediately relevant to the ideas discussed here. The first is a strong and steady tendency towards system integration. Translators are no longer given a simple terminology database to look up words in when it crosses their mind to do so, but nowadays the terminology databases are included in an integrated software environment for translation work. Such environments differ depending on the kind of documents processed. For ordinary word processor or desktop publishing documents, translation memory systems provide the software environment in which translators work. They include at least a word processor, a terminology database and a translation memory (all to be described more amply in Section 3). When the documents to be translated are the text elements of software systems, as is common in the software localization industry, the terminology databases and translation memories will be included in a software localization system (cf. Peter Sandrini's article in this volume).

The advantage of integration lies on the one hand in increased user-friendliness. In a translation memory system, the translator typically works on a single screen with different windows or fields within windows for the source

text, the target text, the information from the terminology database and the information from the translation memory. On the other hand, the integration also provides a direct connection between the software tools involved. When a source document is opened in a translation memory system, the current sentence will thus be scanned automatically for terms, and terms found in the terminology database will be displayed automatically in the relevant window for the translator to copy into the target text field with a single mouse click. This functionality and its equivalent for the translation memory information illustrate the strength of these tools in enforcing consistency. In this environment, it is no longer up to the translator whether or not to look up a word in the database, but the database entry will be displayed whenever the word appears in the text. It then depends on the instructions given to the translator whether the information provided is to be taken as a suggestion or as a must.

The second line of development which can at present be observed with many of the translation tools on the market is the integration of workflow functionality. As we have shown, it is very common that translation jobs are much too large and time schedules much too tight for a single translator to be able to handle them. This implies that several persons will work on parts of the same document or documentation, which in turn brings about an increased need for assuring consistency. In such projects there is often a co-ordinator or project manager who will ensure that the work is done according to the preset schedule and who may also have the task of assembling the portions of work delivered by the individual team members as well as ensuring that the portions form a consistent whole.

Moreover, larger projects not only require a certain number of translators, all with the same kind of skills, doing the same kind of work in parallel. When more professionals are involved, it is very common that they specialize, so that some translate, others proof-read and revise the translations, some prepare the work by running the source documents through terminology databases and translation memories before the translation starts, others extract terms not yet included in the database and carry out the requisite terminology research to establish uniform terms, while still others are responsible for the typography and the layout. In short, a complex translation work process, composed of separable tasks, may include specialists from various disciplines, such as translators, revisers, terminologists, desktop publishers and others. In software localization, software engineers play a specific role in the process.

In such a situation of complex and possibly interdisciplinary work processes, a development which suggests itself is that tool manufacturers provide

software functionality to monitor the communication between the project manager and all the different professionals. This is a way of tracking the current state of a translation job or a larger translation project at any given point in time. As in general process automation, the first generation of such workflow management systems provides a software tool with which managers can record the particular actions which they have taken or which have been taken by their team members. The second generation, which is more ambitious and is at present gaining ground on the market, will not only accompany the real work with a second layer of administrative bookkeeping, but also provide project managers with a user interface in which they directly carry out all kinds of actions such as submitting a document to a translator, attaching a terminology database extract and a translation memory to the e-mail message and agreeing on deadlines, payment and all required details. At the same time, the system automatically records these actions with full information on who sent what to whom at what time and in connection with which translation job for which customer.

Generic systems are available for the purpose of computer-aided project or process management. Business software keeps track of all relevant actions in an ordinary business workflow. However, work in the translation industry is unique in many ways, so that dedicated translation management systems are appearing on the market. While this is an interesting line of development for the technical translation sector at large, some manufacturers take a different approach and it remains yet to be seen which of the two will prevail in the long run.

This second approach does not separate the management system from the work process proper, but integrates the workflow functionality into the translators' software environment. The manufacturers of translation memory and software localization systems have begun to include team or workflow functionality in their tools, which are then called team editions, team suites or the like. This tendency is taken still much farther afield when the entire process including the writing, the formatting, the translating, the storing and the reusing of documents and document components is managed in a single comprehensive software environment with particular systems such as translation memories or terminology databases plugged into the larger system. These systems are called document management systems, content management systems, authoring systems or the like.

We showed above that the requirement for consistency results among other things in the need for consistency tools in translation work, which in turn requires the use of software tools to the greatest possible benefit. These

factors foster a certain degree of adaptation of style and language to the needs of the software tools. In this way, the classical picture of translation as determined by the two dimensions of the technical content and the linguistic form has been enlarged to contain a third dimension, the technical medium. As we now have seen, the external circumstances affecting translation work, especially when it relies on software support, make it necessary to work in interdisciplinary teams and to manage the work of these teams. In this way, the fourth dimension, the management of work processes, enters the scene. Thus, at present, technical translation is determined by all four dimensions of the technical content, the linguistic form, the technical medium and the management of work processes.

## 3   The dimensions of the technical medium and the work processes

In this section we look more closely at the technical medium of translation. After a short discussion of the different uses of the term *technical* in this field (3.1) and a definition of the term *document* as the workpiece of technical translation (3.2), we discuss the data formats commonly encountered in present-day technical translation (3.3) and the key tools (3.4).

### 3.1 Technical translation and the technical medium

In this section, the word *technical* will be used very frequently and in different senses. Let us therefore look at what the word means in the different contexts appearing in this section. The word *technical* is itself an international special language term. Adjectives similar in sound and spelling occur in virtually all European languages. In most of these languages, the adjective in question denotes something related to engineering or technology. This is also one of the meanings of the English adjective *technical*. However, along with this meaning, the adjective is also used in a broader sense to denote something related to any professional speciality. The term *technical translation* is to be understood in this broader sense. Technical translation refers to transferring written documents containing content that is related to some professional speciality from one language into another. Technical translation is part of the larger realm of written technical communication, which in turn is part of technical communication at large. There are also other terms for technical translation. When calling it technical translation, we thus view it under the perspective of the content

of the documents handled or of the activities, the professional work, with which this content is closely connected. With a view to the variety of language used in these documents, technical translation is also called *translation of special language texts* or *LSP translation*. When technical translation is compared to the translation of belles-lettres, which is much more in the focus of the general public, it is at times called *non-literary translation*.

While the adjective *technical* is used in its broader sense in the term *technical translation*, when speaking of the dimension of the *technical medium of translation* we use the same adjective in a narrower sense. The technical medium is the printed page or the electronic data format in which a document is stored. In the dimension of work processes, we find the tools with which the translation work is carried out. One could say that one depends on the other. Obviously the data format of a document is that format which the tool used by the author is capable of producing, so that the technical medium would simply be a function of the choice of tool. In translation, however, the work process normally starts with a given source document in a format chosen by others in other work processes (for instance, by technical writers). Instead of creating an entirely new document and formatting it from scratch, technical translators often prefer to make a copy of the source document and overwrite it with the target text, thus trying to keep the formatting untouched as far as possible. In translation, the technical medium of the workpiece is therefore often a function of choices made at an earlier stage in the overall workflow, which are given and can only be changed at the cost of extra time and effort.

## 3.2 Document: a definition

Before reviewing in more detail the most important document formats and software tools currently used in technical translation, the concept of a *document* should be defined with special reference to the technical medium of communication and to the document types encountered in technical translation.

In theoretical linguistics, the object of study is normally texts, pieces of text or corpora made up of large collections of very many texts. The prevailing concept is that of *text*. In technical communication, the focus is somewhat different. The object of study is often not simply texts, but documents. This wording shows that the entities analyzed in technical communication studies are viewed in the full range of their function in the communicative act rather than merely as linguistic entities. Whilst the term *text* focuses attention on the linguistic content of a written utterance no matter what its shape or form, the

concept of the *document* comprises both the textual content and its mode of presentation to readers. This view takes into account whether the document is presented on printed pages or on a computer, television or cinema screen. It is also concerned with more specialized forms of presentation such as the control panel displays of engines and machines, the displays of telephones, mobile phones and the like. Above and beyond the text proper and the presentation of the text, the concept of document even encompasses the illustrations accompanying the text. In printed documents, these include graphics, tables, drawings, photographs etc., while in electronic documents in addition to these there can be dynamic illustrations such as animated graphics, video and audio sequences or computer programs. Some of the illustrations may in turn consist of spoken or written texts. By calling all these document components 'illustrations', we characterize them as something which accompanies the text and we attribute the main role to the text. It may of course be discussed when and how the nontextual elements could assume predominance in a document, relegating the text to an accompanying function. Technical drawings are a point in case since most of the information is graphically encoded while captions with only very short pieces of text are added to explain various elements of the drawing.

The concept of the document has been described by various authors in ways compatible to the considerations sketched above. The following definition (Schubert 2003a: 229; cf. Schubert 2007: 7) summarizes and condenses these descriptions:

A document is a fixed oral or written text, including nonverbal components, which can be reread or reheard at any time.

## 3.3 Document formats

Technical translators work with a broad range of document formats. The most frequent formats fall into four classes:

- formats for printed documents
- formats for electronic documents
- formats for embedded texts
- specialized formats.

## Formats for printed documents

In the above sections we speak neutrally about the "format" of a document. The word can apply both to printed and to electronic documents, but it should be borne in mind that in present-day technical communication virtually all

documents are written, edited, revised and stored in electronic form. Even printed documents for end users are handled as computer files up to the pre-press stage. Thus, although the word "format" is essentially neutral as to the specific technical medium of the document, it is no mistake to understand it in the computer sense of the word, thus as data format. Therefore, when speaking of formats for printed documents, we have in mind computer files created and edited with a view to being printed at the end of the process.

The main formats for printed documents are those produced by word processing systems, desktop publishing systems and professional layout systems. The files created by these systems contain printable and nonprintable code. The printable code is essentially the text represented as a linear string of letters, digits, punctuation marks and blanks. The nonprintable code contains all types of formatting information. This information comprises:

- the font, size, style, colour etc. of the characters
- the horizontal spacing of letters in a word or a line, the vertical spacing of lines
- the width of the margins
- the position of the body of the text, the headers, footers, footnotes, marginalia etc.

Originally, it was necessary to insert a formatting code into the string of printable character codes wherever a change of format occurred in a document. When word processing became more common, the available printers became more sophisticated and the requirements for professionally formatted documents rose. In a longer document this resulted in having to insert the same sets of formatting codes time and again wherever paragraphs or pieces of text needed to be formatted in the same way as somewhere else in the document. Inserting these formatting codes was repetitive (and boring) work and was prone to errors and inconsistencies. In addition, making a consistent change of formatting required replacing the formatting codes in very many places in the document, which again was a repetitive and error-prone task. This situation called for another step in automation. A major development in this area was the introduction of templates. The basic idea behind templates is the principle of defining once and using often. This means that a paragraph (or some other unit of text) which needs to be assigned a certain format is not preceded by all the formatting codes this would require, but rather carries only a single code, which does no more than assign a label to this paragraph (or rather, to its format). The precise formatting information for this label is then defined once for

the entire document in a template and the information given in the template is then applied to all instances labelled with the name of the template. Obviously, this innovation is easily extensible to collections of templates residing outside the document in a special template folder or the like.

In ordinary word processing or desktop publishing systems, it is possible to define character, paragraph or document templates. The principle of defining once and applying often makes text formatting work more efficient. At the same time, it contributes to making the appearance of documents much more consistent and it allows global changes in formatting to be entered once and then automatically applied to all instances labelled with the template in question.

It is worth noting that the template principle is the idea which also underlies the Standard Generalized Mark-up Language (SGML). SGML is a standard which defines a page description language, thus a formalism for describing the formatting of printed or electronic pages. It has become enormously seminal in all computer-based document production. Both Hypertext Mark-up Language (HTML), the basic format of web pages, and Extensible Mark-up Language (XML), a generic format very frequently used in technical documentation and especially in single-source publishing, are derived from the original SGML standard.

## Formats for electronic documents

While even printed documents are created in the form of computer files, electronic documents are documents which are not only stored in the form of computer files when being worked on, but which are also intended to be read from a computer screen or a similar display device.

There are two basic types of tools for displaying document files: viewers and browsers. In addition, it is of course possible to display documents in the software systems used to create and edit them. Thus, a word processor file will very often be read in a word processing system, even if the user does not intend to make any changes to the document. Viewers and browsers, however, are systems whose basic function is displaying documents. They are intended for the readers or users of the documents, not for the authors or the translators.

Somewhat simplifying the possibilities of this technology, one can say that a viewer document is a document which is produced as if it were to be printed and is then displayed on a computer screen. This means that when a reader displays a viewer document it will look exactly as it looked when the final version was produced. A viewer page of text will appear exactly the same as it did

when the author finished it. It will contain the same number of lines, the lines will contain exactly the same number of characters, and the font, the spacing and all other features will remain unchanged. Only the size of the document in centimetres will depend on the size of the screen used by the person who reads the document, and the user has the possibility to zoom in and out. Viewer documents are usually created in a word processing or desktop publishing system and then converted into the viewer format. Once converted, the format of viewer documents usually does not allow for editing. When translators are given the task of translating an electronic document in a viewer format, the document must either be reconverted into a format which supports editing or the document must be provided in the format it was created in prior to conversion (e.g. word processing or desktop publishing).

By contrast, a browser document adapts to the displaying device. For example, the character size is defined by the author, but how many characters find room in a line depends on the resolution and settings of the screen on which the document is displayed. A browser document of a thousand words may appear on one screen in many short lines and on another screen in a few long lines. This means that the author of a browser document cannot be sure of the exact appearance which the document will assume when viewed by a user. In particular, the position of text with respect to graphics and illustrations is variable. The screen display is normally restricted to using fonts available on the displaying computer.

## Formats for embedded texts

Printed and electronic documents are the most common type of source text in technical translation. These are computer files whose main purpose is to represent and store the text and its possible accessories, such as graphics, photos and other illustrations. Another large share of the overall technical translation market, however, is made up of texts embedded in software. The translation of the text components of software systems is known as software localization (cf. Peter Sandrini's article in this volume). It is a special type of localization. Localization is a relatively new term which denotes the adaptation of products to the markets of countries or regions other than the original target market. It is thus aimed at all kinds of products, not just software systems. The formats of product documentation can normally be subsumed under the sections on printed and electronic documents above. But localization also needs to treat the text components found on or within the product itself. For technical products, this also includes, for example, the signs on the control panel of a machine or the warning signs fixed near various parts of the engine of a car.

Along with translation, localization also includes all other kinds of adaptations that may be required for the target market. This includes changes in preset values for paper sizes, changes between Anglo-Saxon and metric measures, the fields needed for address databases, the format of telephone numbers, the reading direction from left-to-right to right-to-left and much more. Because of these adaptations, it is often emphasized that localization is more than 'just' translation. One should, however, keep in mind that many kinds of translation work require cultural adaptations and other forms of audience design, so that localization in this respect is not as unique as its representatives sometimes tend to suggest.

Among the products being localized, software systems are special in that they contain a large number of text components which, in addition, are often quite complex. Text is contained in the following components of a normal software system:

– the user interface
– the help system
– the tutorial
– the documentation.

The user interface is what the user of the software system sees on the screen when working with the system. It includes all menus, menu options, dialog boxes, list boxes, task bars, status bars, tool bars, buttons etc. It also includes context-sensitive information known as tool tips or quick tips. In many software systems these very short explanatory texts appear in small boxes, 'balloons', or in the status bar when the cursor or mouse pointer is positioned over a menu option, a button or the like. A special element of the user interface is made up of the system messages, phrases or sentences which appear in the status bar or in a pop-up window. These messages inform the user about something the system is doing or has finished doing, prompt the user to do something, or draw the user's attention to an error (Figure 1).

A major problem in translating user interface texts lies in the fact that the text components are embedded in the program code.

Programming languages consist of words or word-like elements, so it is difficult to identify which components should be translated and which should be left untranslated because they are part of the program code (see Figure 2). Software localizers therefore make use of special tools that can distinguish code from embedded text. These tools extract the text components from the program code and reinsert the target language equivalents in the proper place
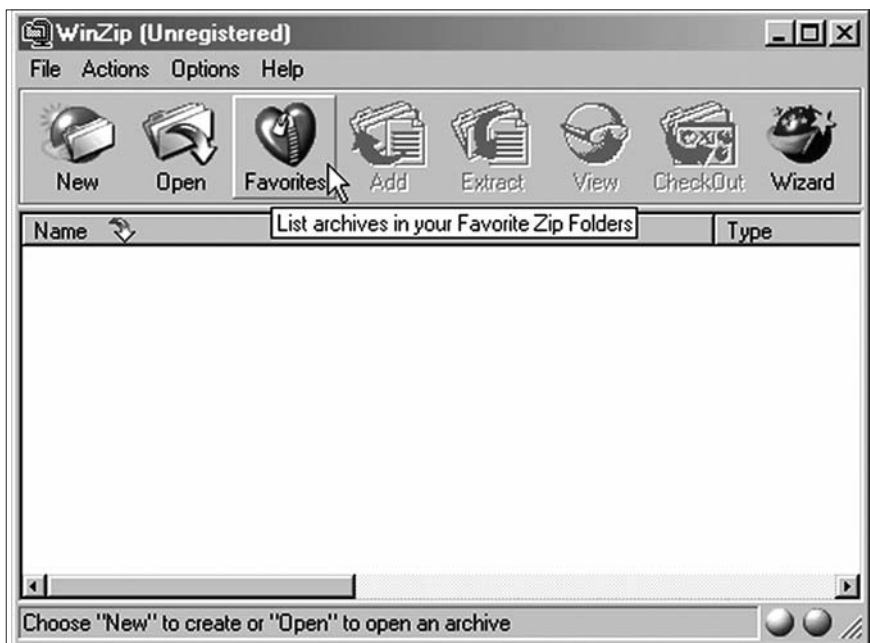
**Fig. 1**   WinZip® user interface displaying the tool tip text for Favorites and quick infor-
mation in the status bar

after localization. If translators use software localization systems, the source
document the translators work on is the source code of the software system.
Some software developers prefer a different approach. They have the text
components extracted from the program code by engineers, possibly using
some special purpose routines, and provide the translators with the isolated
text components in some easily editable format. Commonly used spreadsheet
formats are quite often used for this purpose. The principles of modular soft-
ware design and localization-friendly software development suggest yet an
easier way: In the runtime version of the software, the text elements are stored
in special resource files separately from the rest of the program code. These
special resource files need not be included in the compilation of the program
and can thus be edited at any time. While these procedures can be easily real-
ized technically and make the translators' work easier as far as the technical
medium is concerned, a significant drawback is that both the engineer-ex-
tracted text files and the resource files contain the short text units of a user inter-
face taken totally out of context. In these cases, the translator cannot resolve

```
; /* Sample.mc
; This is a sample message file. It contains a comment block, followed by a
; header section, followed by messages in English.
; */
; // This is the header section.

MessageIdTypedef=DWORD

SeverityNames=(Success=0x0:STATUS_SEVERITY_SUCCESS
               Informational=0x1:STATUS_SEVERITY_INFORMATIONAL
               Warning=0x2:STATUS_SEVERITY_WARNING
               Error=0x3:STATUS_SEVERITY_ERROR
              )

FacilityNames=(System=0x0:FACILITY_SYSTEM
               Runtime=0x2:FACILITY_RUNTIME
               Stubs=0x3:FACILITY_STUBS
               Io=0x4:FACILITY_IO_ERROR_CODE
              )

; // The following are message definitions.

MessageId=0x1
Severity=Error
Facility=Runtime
SymbolicName=MSG_BAD_COMMAND
You have chosen an incorrect command.
.

MessageId=0x2
Severity=Error
Facility=System
SymbolicName=MSG_CMD_DELETE

File %1 contains %2 which is in error
.
```

**Fig. 2** Resource editor displaying an excerpt from a message text file. This excerpt displays the header section followed by two message definitions (i.e. MessageId=0x1 and MessageId=0x2). Only the two lines "You have chosen an incorrect command." and "File %1 contains %2 which is in error" in the message definitions require translation. The comment lines, which begin with a semicolon, as well as the message definition and statement lines (i.e. those lines including the equal sign "=") must be left untouched.

the ambiguities of the isolated text components and may not even be aware of any ambiguities. (For a detailed description see Section 4.)

Software systems, especially if they are intended for the general public or for users who will not be professionally trained on the system before using it, very often contain a help function. It is often found in the main menu bar of the user interface under a word like Help, a question mark or some other suitable icon. Help systems inform the user about the functionality of the system, about how to carry out specific tasks etc. A help system is a reference resource designed to allow users to search for specific pieces of information while working with the software system. Help systems are not intended to be read from cover to cover and therefore offer different ways to navigate through the system and access information (e.g. table of contents, keyword index).

Help systems are normally stored in special hypertext formats. Help systems are categorized as hypertexts because they contain links to other topics, to pop-up windows and to graphics. As is usually the case with hypertexts, a help system is likely to be composed of a large number of separate pages, each containing a few paragraphs, less frequently two or three screen pages, which are connected by means of hyperlinks or jumps. The individual source files which make up a help system are often created in a special format, for instance as rich text format (RTF) or HTML files, and then compiled into one main help file. One difficulty which involves both translational and technical aspects is the preservation of the hyperlinks, the consistency of terms used in the help system and the software user interface itself, and a variety of other consistency matters. A purely technical difficulty is that software localization tools, which extract text from program code and then reinsert the text after translation into the program code, do not always support the help file formats, so that special help editors need to be used.

The main translation difficulty in translating help systems is the hypertextuality of the overall document. As is common with reference works, the path that readers take while looking for the information they are interested in is different from the path the author followed when writing the document. Therefore neither the author nor the translator knows which knowledge the reader has already collected when arriving at a specific piece of text. This unforeseeability can be addressed to some extent by careful text design and a certain amount of redundancy in the information provided in the texts. However, there is a trade-off between providing all the information readers might wish to receive in the case that this happens to be the first page they read in the entire documentation and the information an experienced user of the help system will find boring and even inappropriate.

If a software system contains a tutorial, which is not always the case, it may take the format of web pages and can be treated as such during translation. Some software applications also include a demo file, which is in itself a self-running program. Such demo files are dealt with during translation in the same way as other software programs.

The documentation of software systems normally includes printed and/or electronic documents and is treated in translation as such. Among software developers and especially among documentation professionals it is not considered best practice if the help system text and the documentation text are identical or if the one refers to the other for more detailed information. Present-day users expect different kinds of information from both types of documents. This means that these normally are separate translation assignments.

## Specialized formats

The formats discussed above are no doubt the most commonly handled types of data in technical translation. This last group combines a selection of other, more specialized formats encountered in present-day translation work. These include:

– the text components in technical drawings
– the text components of TV programmes, video tapes, cinema films
– the text of theatre plays and operas.

Text components in technical drawings also represent a type of embedded text. Technical drawings are most often created using computer-aided design (CAD) tools, which are usually vector-based graphic or drawing programs. Most of these tools utilize either a labelling function or text boxes to embed text in the drawings. Upon their completion, technical drawings are often stored in common file formats for graphics, which combine all the various entities and layers of the drawing into one image. Once stored in this format, the entire drawing is handled as a single image, which makes it impossible to access the text. For translation purposes, the technical drawing must be available in a format that can store the various entities and layers of the drawing separately.

## 3.4 Software tools

As discussed above in Section 3.1, the translation work process normally starts with a given source document in a format chosen by others in other work processes. In translation, the working medium is therefore most frequently a function of the document medium. This working medium refers to the software tool with which the primary translation process is carried out. By examining the entire translation workflow, we can ascertain that in addition to the primary work process of translation various other work processes are also involved, which can be categorized as secondary and tertiary work processes. Secondary work processes include such varied tasks as collecting reference information, researching terminology, revising and checking consistency, counting words, etc. Tertiary work processes involve those processes that aid in building knowledge sources for secondary processes, for instance extracting terminology from documents or referencing previously translated parallel documents.

In the following, we will supply an overview of various software tools, which translators use in the different work processes.

## Tools for primary work processes

Editors and word processing programs are the principal tools translators use for writing and storing texts. Both of these tools allow for text to be entered, deleted, copied, moved and saved in a specific data format. The major difference between editors and word processing programs is the formats they can store. Editors store documents in a text-only format, based on a specific character coding set (e.g. ASCII, ANSI, Unicode). These documents can only contain printable code. In contrast, word processing programs can store documents that contain both printable and nonprintable code (see Section 3.3).

The task of arranging text on a page will call for the use of specific tools, which in turn will depend on the document format of the source text for translation. For arranging text on a printed page, word processing and desktop publishing systems are suitable tools. These tools offer a wide variety of functions for the layout of texts. Current versions of word processing systems incorporate numerous layout features which were previously only available in desktop publishing systems. Nevertheless, desktop publishing systems are better equipped to handle the layout of large volume documents such as user handbooks that include a large amount of text and numerous graphics. These systems are specifically designed to create professional print documents and thus include a variety of features which make it possible for an entire document to have a uniform print appearance. In addition, the file formats created by some desktop publishing systems can be submitted directly to a printing service for commercial printing.

The actual arrangement of text on a viewer page normally takes place using the same tools as those suitable for arranging text on a printed page. Once the document and its layout have been finalised in either a word processing or desktop publishing system, the document is then converted into a viewer document format using a special converter.

Text and HTML editors are used to arrange text on a browser page. Both HTML and XML are text file formats which employ tags to define the document structure and layout as well to insert images etc. The layout of text on a browser page is determined by the tags inserted into the text. If a text editor is used to arrange the text, the appropriate tags must be inserted manually, which requires a good knowledge of the various tag types. HTML editors usually offer at least two different view modes when working on a text:

1. Document layout mode. In this view mode the text is displayed in the layout which will appear when the document is viewed in a browser. This

mode is sometimes called WYSIWYG, which is an abbreviation of "What you see is what you get".

2. Source mode. Viewed in source mode, the text will be displayed as plain text with all the tags being displayed.

HTML editors integrate many of the functionalities that most users are familiar with from their work with word processing programs. In document layout mode, the user can usually arrange the text simply by selecting the desired layout option or options via buttons or menu commands. All of the layout prop-



**Fig. 3**   HTML document viewed in a text editor and the same document viewed in an HTML editor in document layout mode

erties that the user applies in document layout mode are automatically rendered as tags and inserted into the source text by the program (see Figure 3). Selecting a suitable tool for editing embedded text in software programs depends on the approach used by the software developers (see *Formats for embedded text* in Section 3.3). Text-only source files can be edited in a text editor or in a corresponding resource editor. Resource editors are tools integrated into the development application software (e.g. Visual C++) that programmers use to create and edit the user interface. If resource files are edited, they must be compiled into program files afterwards. Compiled files, which are also called program files, can only be edited using a resource editor or a software localization tool. If software developers decide to have the embedded text components extracted from the source or program code, the files translators are provided with will be in some easily editable format, for instance in a spreadsheet format, which can be edited either in a spreadsheet or word processing application. It should be kept in mind that translating the embedded text components of a user interface using a text or resource editor is a very demanding task. It is both time consuming and prone to errors. Furthermore, it requires that the translators have enough knowledge of the programming language to be able to differentiate between the text components, comment lines and the actual program code.

## Tools for secondary work processes

Numerous tools are available to support translators in carrying out a wide variety of secondary work processes. They range from tools for collecting information, for researching terminology, for checking spelling, grammar and even the use of controlled languages, for counting words, and for supporting consistency. An exhaustive description of all of these tools would in and of itself fill the pages of an entire book. Therefore, we will focus in the following on a few of the major types of tools utilized for secondary work processes.

## Electronic dictionaries and terminology databases

Researching terminology is often one of the most time consuming tasks in translation, particularly in technical translation. Prior to the wide spread use of computers, translators relied on printed resources such as monolingual and multilingual dictionaries and glossaries and most often stored the results of their terminology research on index cards. Although printed resources are still used by many translators, electronic dictionaries and terminology databases have become commonplace tools for referencing and storing terminological infor-

mation. Electronic dictionaries, which are usually installed directly on a computer or on an intranet, make it very easy to search for terminology while translating. Electronic dictionaries offer extensive search functions which make it possible to search for individual terms, partial terms or multiword phrases. Some electronic dictionaries integrate a toolbar, icon, and/or a menu option for the dictionary function directly into the user interface of word processing systems. Terms found in an electronic dictionary can usually be copied either directly into the document being translated or via the clipboard. The amount of terminological information stored per entry in an electronic dictionary is subject to the same variation as in printed dictionaries. The information can range from single word entries for source and target language up to detailed information including multimedia features such as pronunciation and graphic illustrations. Electronic dictionaries are normally read-only and do not allow for user entries.

By contrast, terminology database systems are suitable tools for translators who wish to store and maintain their own terminological information and integrate the terminology resources of their customers. There are special tools designed exclusively for terminology databases, some of which can be used in connection with a translation memory system. However, a standard database system can also be used. The tools designed exclusively for terminology databases often integrate interfaces to word processing systems similar to those offered by electronic dictionaries. These interfaces make it possible for translators to look up, copy, enter or edit entries in their own terminology databases while translating a document. When a terminology database system is integrated into a software environment for translation work, it will usually include automatic term recognition. As the name implies, automatic term recognition automatically searches a terminology database for terms appearing in the source text sentence the translator is working on. When a corresponding term is found in the terminology database, the source term and its translation(s) will be displayed in a special window. The translator can then insert the desired equivalent directly into the translation simply by pressing a preset key combination or clicking with the mouse. Automatic term recognition is an effective means of supporting translators, particularly when working in a team, to maintain terminological consistency throughout a document.

## Translation memories

Translation memories are software tools used to store parallel text segments (i.e. source and target text segments). Translators and translator teams use translation memory tools as an aid in maintaining linguistic consistency

throughout their translations as well as to prevent them from having to re-translate previously translated text segments. A translation memory tool stores every translated segment that the translator produces together with its corresponding source segment. Together they make up so-called segment pairs. The translation memory continually grows as new segment pairs are added during the translation process. Each time the translator opens a source sentence, the translation memory system searches through the stored segment pairs and automatically retrieves and displays any identical or similar segments found in the translation memory. Identical segments are called 100% matches, similar segments are referred to as fuzzy matches. Depending on the translation memory program, the translator will be informed about the degree of similarity between the current source segment and the segment found in the translation memory. The degree of similarity is expressed either as a percentage (e.g. 70% match) or as a number (e.g. in a range from 0 for an exact match to 9 for a very low degree of similarity). When matches are found and displayed, the translator takes the decision to:

– Accept the suggested translation as is. This is often the case with 100% matches.
– Edit the suggested translation. Fuzzy matches with a high degree of similarity might only require replacing, adding or deleting a single word in the suggested translation to adapt it to the current source segment.
– Ignore the suggested translation. If the degree of similarity is low, the translator may decide that editing the suggested translation would take more time than translating the source text segment from scratch.

In order to use a translation memory tool, the source text for the translation must be available in electronic form. Depending on the translation memory program and the file format of the source text, the translator must either import the source text into a special editor integrated into the translation memory system or open it in a word processing system that interfaces with the translation memory program. The translator creates the actual translation sentence by sentence.

How helpful and time-saving a translation memory tool actually is in the translation process depends for the most part on the type of source text, its similarity with the source texts of previous translations, and the number of similar segments stored in the translation memory. A translation memory tool is particularly helpful when translating technical texts and documentation that contain repetitive text as well as similar text structures and when translating

newer versions of documents previously translated (e.g. the new version of a user handbook or the annual report of a company).

## Tools for translating embedded texts

As mentioned above in the sections of this chapter on formats for embedded texts and on tools for the primary work process, translating text embedded in software programs is complicated by the fact that the text components are embedded in the program code. (See Figure 2 above). Special software localization tools have been developed to support translators and make this type of translation work easier. Current localization tools can extract the text components from a variety of software files (e.g. .exe and .dll files) and generally separate them into categories: menus, dialog boxes and strings. Translators then translate the text components in an integrated editor, which normally displays the source text components in lists. Most localization tools also integrate glossaries that include the translation of individual terms and multiword phrases. These glossaries can be searched for terms or phrases while translating and can also be used as a basis for automatically pretranslating the text components of the software. A few localization tools offer an interface to translation memory systems. Generally, software localization tools offer a visual display of the menus and dialog boxes. This feature aids translators in identifying the context of single word components appearing in menus or dialog boxes. This also means that translated text will be displayed as it will appear in a menu or dialog box. The display function allows translators to quickly see whether the translation will appear truncated in the user interface due to space limitations. Localization is dealt with in detail in Peter Sandrini's article in this volume.

A rather special field is the translation of captions, legends and other text components contained in technical drawings. Such drawings are normally produced as data files in software systems such as computer-aided design systems (CAD systems). As in software localization, the translation of technical drawings is, technically speaking, a translation of text components embedded in other data and only the text data must be touched during the translation work. For this work, there are three possible procedures. Either the translators must be trained in using the CAD system and insert their translations in the same way as the engineers, designers or technical draughtspersons inserted the original texts. Since CAD systems are enormously complex, this is a very time-consuming approach, and it will not pay off unless the translator is employed full-time for translating nothing but this type of text. This procedure is not very popular among the creators of the original drawings since it implies

that non-specialists can tamper with their work. As in software localization, the translation of technical drawings cannot be restricted to just changing text, since translated text often requires more space than the original, so that text boxes need to be enlarged and the drawing may have to be rearranged. The second possible procedure is to have the engineers or draughtspersons extract only the source text from the drawings into a new file, have the translation created on the basis of these text or spreadsheet files, and then have the engineers or draughtspersons insert the target text back into the drawing. The third procedure is to use special software systems, often custom-programs, to automatically extract and reinsert the text. The latter option is used in a number of large enterprises in the manufacturing industry.

Yet another type of text should be mentioned here which shares with technical drawings and software systems only the property of embedding text in other data, having not much in common with them otherwise – subtitles in movies and TV programs (which may or may not contain technical communication). When foreign-language media are screened in the cinemas, shown on television or sold on video tapes and DVDs, they are often presented in a version translated into the language of the audience. Basically, there are two techniques, dubbing and subtitling. In a dubbed film, the original voices of the persons are replaced by a translated text spoken by actors in the target language. In a subtitled film, the audience will hear the voices in the original language while a written translation is displayed, normally in one or two lines of text, at the bottom of the screen covering part of the picture. The translation work done for subtitling is heavily restricted by time constraints. Leaving technical subtleties aside, one can say that a subtitle needs to be displayed while the corresponding piece of text is spoken. Since we normally speak faster than we read, it is necessary to shorten the target compared to the source text. Furthermore, the subtitle needs to be displayed for at least as much time as is required for an ordinary reader to read and understand it. And finally, it is necessary to stop displaying the subtitle when there is a cut in the film, because, when a new picture appears, the human eye will start reading the subtitle again.

Subtitling translators at present use relatively complex software systems which mainly keep track of all the involved time constraints and store the target text along with all relevant time codes. The files produced in this way can then be used for actually embedding the subtitles in the films. At present subtitling software is mainly an instrument for generating the very special formats needed for this technical medium – but to date none of them include functionality for supporting the actual translation work. It still remains to be seen

whether the manufacturers of subtitling and translation software will find it worthwhile to link their systems to each other or at least to define some feasible exchange formats.

## Tools for tertiary work processes

In this third category we will discuss a few of the tools that aid in building knowledge sources for secondary processes.

Term extractors are tools that extract terms from electronic documents. Term extractors search through electronic documents for term candidates and produce term lists that can be edited by translators, terminologists or other language specialists. The term extraction process usually uses statistical information to extract terms. Simply expressed, the statistical approach searches through a document for repeated occurrences of terms. Only those terms that appear a specific number of times will be extracted. Most term extraction tools allow the user to specify settings for term frequency, length, etc. and to include stopword or exclusion lists in the extraction process. It should be kept in mind that the statistical method can produce unreliable results. One example of an erroneous term candidate is 'procedure returns'. A statistically based term extraction tool will find numerous occurrences of these two words appearing together in a computing text which discusses how a variety of procedures return certain values or variables to a software program. Viewed in context, e.g. 'The GOTO procedure returns a variable X to the program', it is clear that 'returns' is used as a verb and the term candidate 'procedure returns' is erroneous. The term lists produced by text extractors can be used as a basis for researching terminology for a specific translation job or for a specific subject area and are most often utilized in building up terminology databases. To incorporate such lists in a terminology database it is necessary to edit them, for instance by deleting superfluous terms and adding translation equivalents and other pertinent information per entry, and possibly change their format. An edited list in a suitable format can then be imported into a terminology database.

Alignment tools are another example of tools for tertiary work processes. These tools are used to build up translation memories using previously translated texts. As mentioned above in the section on tools for secondary work processes, translation memories store the segment pairs created while the translator is translating. An alignment tool makes it possible to align previously translated texts into segment pairs, which can then be imported into a translation memory. A prerequisite for alignment is that both the source and target text are available as separate documents in electronic form. An align-

ment tool compares the source and target text and attempts to identify corresponding segments. The sentence is usually used as the unit of text for aligning the segments. Obviously in translation, aligning text only at the sentence level is not sufficient. Frequently a longer sentence in a source text will be split into two separate sentences in the target text or two short sentences in a source text will be combined into one sentence in the translation. Consequently, most alignment tools also analyze other factors during alignment, for instance, the formatting properties of text, and the occurrence of numbers and acronyms. After an alignment tool has aligned a source and target text, the resulting segmentation of the texts is displayed. Normally this is done in a split-pane window with the source text visible on the left-hand side and the target text on the right with connecting lines or symbols to indicate which source segment is connected to which target segment. Most alignment tools have options for editing the segmentation. The resulting segmentation of an alignment should always be verified and if necessary corrected by the translator prior to importing the segment pairs into a translation memory.

## 4   Automation within human work processes

In the sections above, we have examined a variety of software tools utilized by translators in different work processes. Without question, these software tools offer valuable support to translators working alone or in teams. In Section 2 we discussed how larger translation projects may require complex and possibly interdisciplinary work processes involving non-language specialists, such as project managers and software engineers. In this type of workflow, the project managers are tasked with the decision on how the work processes will be carried out. It is their responsibility, for instance, to decide how the work will be distributed among the team, as well as which tools will be used in what way. Frequently motivated by cost and time-saving factors or simply due to a lack of knowledge about the translation process, decisions on automating specific steps in the work processes are often taken in isolation. These decisions can, in turn, have a direct impact on the translators' work. In the following we will first look at two examples of how automation within human work processes can influence the work of the translator. The effect of automation on human work is less sophisticated, but much more fundamental in machine translation, where the translation itself is subject to automation. We discuss this specific tool at the end of this section.

## Translating text blocks and sentences out of context

The majority of translation memory systems and most localization tools include a pretranslation function that automatically translates those text segments in a source text that has an identical match stored in the translation memory, or in the case of localization, in translation lists or glossaries. As an adjunct to the pretranslate function, most translation memory systems offer an option to export only those segments from the source text that do not have a match in the translation memory. The resulting export file is simply a list of sentences extracted out of context. If the newly created subset of the original source file is seen as the source file to be passed on for translation to a translator, or divided and distributed among translators in a team, translators will be faced with translating headings, sentences and text blocks out of context. These lists of sentences cannot be translated into a coherent target text and maintaining terminological or syntactic consistency throughout an entire text is next to impossible when portions of the text are missing. To exemplify this, let us consider the following simple sample source text consisting of only two sentences:

> Browse to the folder in which you wish to store your newly created document. Assign it a file name and click Save.

If the first sentence has a match in the translation memory, the unknown segment text that the translator receives will only include the second sentence. When translating into any languages with gender, the translator will not be able to solve the ambiguity for the pronoun *it* since its antecedent is not included in the text.

Using this same example, we can also quickly discover that it is a fallacy to assume that 100% matches identified by a translation memory system are correct. The second sentence may have a 100% match in the translation memory and yet be incorrect when applied in our sample text because the pronoun does not match the gender of its antecedent.

## Translating strings from software programs

The major linguistic-translational difficulty in the localization of the user interfaces of software systems is the fact that most text units are very short, often a single word, and may therefore be ambiguous. English as a source language is known to be especially open to ambiguity in telegraphic style text units. For instance, if confronted with the unit *Open*, the translator cannot out of context know whether the word is intended as an adjective or a verb. If the target

language is German, the translation would be *Offen* or *Öffnen Sie*, respectively. In a piece of context help, which normally is a descriptive piece of text and may well be as short as a single word, the adjective reading is likely to be the solution. As a menu option, which often describes an action, the verb may be the right choice.

The problem of translating out of context is much aggravated in the case of so-called concatenated strings. These appear in system messages. System messages often are of a uniform kind containing, however, elements which depend on what the user has just done or attempted to do. In a message such as:

Cannot open the Chapter1.doc file.

there may be two variable elements: the name of the file and also the verb. The system may give the same kind of message when it is not capable of closing, deleting, moving or copying the file as requested by the user. The number of messages which may be composed based on the pattern of the sentence, the possible verbs and the possible names of files or other objects, may be very high. System developers therefore tend to 'rationalize' the text production. Rather than storing every possible variant of this message separately, system developers store so-called strings which are concatenated or combined when a specific message is to be issued. In this example, the frame string could read:

Cannot [SLOT1] the [SLOT2] file.

with one of the strings:

open
close
save
delete
copy

being inserted in slot 1 and the file name in slot 2. A solution with concatenated strings saves much double work, but it is obvious that it hard-wires the syntax of the source language into the program. Translating each of the strings separately and fitting them together as in the source-language system will only work out well if the target language happens to have a syntax identical to the source language. A different word order may require additional programing work, which the translator is neither capable of nor authorized to perform, and a different need for inflexional endings, function words or the like may render the concatenated-strings approach totally unworkable. Moreover, the re-use of very short pieces of text in such concatenations increases the danger

of ambiguities. The word *open*, used as an example of ambiguity above, appears here once more. If the system developers chose to insert it in both of the strings:

> Cannot [SLOT1] the [SLOT2] file.
> Do not remove the memory stick while files are still [SLOT1].

the error is inevitable. Note that it is not a translation error, but rather an erroneous assumption of the universality of English grammar.

## Machine translation

All tools described so far in this chapter are used by translators to support their work. The overall work process is therefore called *computer-aided translation* (sometimes abbreviated as *CAT*). The idea of designing complex work processes composed of manual and automated tasks is common today – but it must be kept in mind that this form of partial automation is a result of a development of several decades. And in terms of computer and software technology, several decades is an enormously long time-span. At the beginning of the computer age in the late 1940s, office automation of this kind was beyond imagination. What came to mind more easily when researchers thought of the immense possibilities hidden in the emerging technology, was the total automation of particular work processes. And indeed, the earliest developers of those very large machines, which later became known as computers, had the idea of automating translation. Their vision was not to support translators – they imagined a system that would replace translators altogether. This is what is called *machine translation*.[2]

The difference between computer-aided and machine translation can be explained by means of the well-known model of translation depicting it as a process which consists of the three phases of *analysis*, *transfer* and *synthesis*.[3] In this model, the analysis process transforms source text from its ordinary linear form into syntactically explicit tree structures. This is a monolingual

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[2]  For more detailed information on the history of machine translation cf. Hutchins (1986, 1997, 2000).

[3]  The distinction of these three phases became very common at an early point in the development of machine translation (cf. Yngve 1957, 1964/1982; Oettinger 1960: 119). As the modern discipline of translation studies arose as a reaction to machine translation (Gerzymisch-Arbogast 2002: 18), the three-phase model was soon taken over into the theory of human translation, notably by Nida and Taber (1969/1982: 33 fig. 6) who call the third phase *restructuring*.

transformation. The synthesis carries out the reverse transformation, linearizing target language tree structures into the correct target language word order etc. It is in the transfer phase that translation proper takes place. In this phase the source language tree structures are transformed into target language tree structures. The 'translation' of the syntactic structure is what is called *structural transfer*, while the translation of the words is called *lexical transfer*.

The transfer phase is the distinctive element in partially automated translation work: A process in which the transfer phase is carried out by humans, while other steps are automated, is called *computer-aided translation*. A process in which the transfer phase is automated, while others may be performed by humans, is called *machine translation* (Schubert 1999: 429).

A machine translation system is provided with a source text in the form of a data file. In order for a machine translation system to be economically successful, the system must be capable of handling all the data formats which are required by the customers. In most systems, the operator, normally a translator, can select a number of settings for each translation job such as indicating the subject field of the text to be translated. This subject field setting triggers the use of specific subject field dictionaries or gives them priority over other dictionaries. The machine translation system translates the file and produces a new file with a raw translation as its output. This is a document entirely in the target language, but its quality will normally be considerably below what would be acceptable to human readers (for more information on repair strategies at various text stages in multilingual text production cf. Annely Rothkegel's article in this volume). The target texts produced by machine translation systems are generated by means of an often very complex suite of algorithms, which carry out an analysis of the source text at all levels. The algorithms analyze complex words using rules of morphology and word formation and analyze phrases and sentences using syntactic rules. This automated morphosyntactic analysis is called *parsing*. A number of specific phenomena such as the anaphoric function of pronouns and similar words cannot be handled unless the system has access to suprasentential rules of text linguistics. Putting aside the technicalities of particular systems, machine translation is a process based on algorithms which open up decision spaces and other algorithms, decision mechanisms, which choose among the candidate solutions contained in the decision space (Schubert 2003b). Possibly the most fundamental problem in machine translation, which makes fully automatic high-quality translation impossible, lies in the fact that many of the criteria used by the decision mechanisms are of a semantic, pragmatic or otherwise meaning-related nature.

Meaning-related decisions are often vague and gradual, rather than exact
yes-no decisions as in syntax and morphology. Moreover and more impor-
tantly, a prerequisite for making decisions based on meaning is understanding
the text. Computers and the software running on them are not thinking
beings. They do not understand the text they attempt to translate. Researchers
in both computational linguistics and computer science have been trying to
address this challenge by applying techniques of artificial intelligence to the
decision tasks in machine translation. To date, the success of these attempts is
restricted to very closely delimited domains.

In the 1940s and 1950s researchers dreamed about fully automatic high-
quality translation (FAHQT) of unrestricted text. This idea contains three
conditions: (1) fully automatic functioning, (2) high-quality output and (3) the
capability of translating any kind of text. Machine translation systems with
professional functionality, which are available today, perform well when fewer
demands are made on one or more of these three. If less than fully automatic
translation (condition 1) is sufficient, machine translation can be used advan-
tageously. The manual part of the work is typically performed during pre-
editing or post-editing. Pre-editing a text for machine translation means re-
placing constructions and words which are known to cause mistranslations,
by other, less ambiguous wordings. Especially stringent punctuation may be
helpful as well and can meet the needs of the machine translation system with-
out conforming to general writing rules. Post-editing means correcting the
raw translations produced by the system. As a general rule, a post-edited text
will still have a lower quality than a text translated by a translator. One could
therefore say that when the criteria for condition 1 are less stringent, the qual-
ity requirements (condition 2) are automatically lowered as well.

There are, however, situations, in which lower quality is fully acceptable.
For the purpose of skimming through text for information, that is, quickly
scanning over a longer text to find out what it is about and what its tenor is, a
raw translation from a machine translation system, post-edited or not, may be
sufficient. The higher speed in such cases outweighs the suboptimal quality. A
raw translation you receive within a few minutes is sometimes better than a
brilliant translation which comes a day after you needed it.

The third option is to give up the idea that all kinds of text need to be able
to be translated by machine (condition 3). If the range of possible source texts
can be restricted, the quality of machine translations can be substantially im-
proved. The restriction can relate to the syntax or the semantics or both. A
syntactic restriction means that the source language should be written in an es-

pecially simplified and as far as possible non-ambiguous subset of the normal language. In some settings, a special type of controlled language is used for this purpose. Restricting the semantics means ensuring that only source texts from a particular, rather narrow subject field are entered into the system. One of the major problems in machine translation is lexical transfer. If all subject fields are allowed, the system will have to decide, whether the English word *file* in the current context means a cardboard folder in which paper documents are held, a set of data on a computer, or a tool for working the edges of a piece of metal. If the target language is German, this decision is necessary to choose between the translation equivalents *Ordner*, *Datei* and *Feile*, respectively. If the subject field is restricted to hardware and software documentation, the dictionary can make do with one simple equivalence relation *file → Datei* and no decision is necessary.

This option is sometimes called the sublanguage approach to machine translation. This is also the approach used in most of the projects engaged in machine interpretation, i.e. the automatic translation of spoken text, as in automated telephone interpretation. These systems attain an acceptable quality only if restricted to very narrow subject fields, such as making an appointment for a business meeting or reserving a hotel room. A major drawback of the sublanguage approach is that it presupposes that source texts are of a uniformly monothematic nature. Only texts which are strictly confined to their narrow subject field and stick to that field throughout can be translated acceptably well. As soon as a text covers two fields, as for instance a document on the politics of agriculture, mistranslations become very likely.

Machine translation systems are offered quite widely today to the lay market at very low prices and some systems are available on the Internet free of charge. Systems with a professional functionality, however, are quite expensive and, what is more central to our discussion here, their operation requires suitably specialized and well-trained staff for carrying out pre- and postediting as well as for the requisite terminology work. These systems are employed in settings where large volumes of thematically monotonous and syntactically unsophisticated text have to be translated at high speed.

## 5   References

Gerzymisch-Arbogast, Heidrun (2002): "Ansätze der neueren Übersetzungsforschung." Joanna Best, Sylvia Kalina (eds): *Übersetzen und Dolmetschen. Eine Orientierungshilfe*. (UTB 2329.) Tübingen/Basel: Francke, 17–29.

Gerzymisch-Arbogast, Heidrun (2003): "Das Zusammenspiel von Sprache und Fach beim Übersetzen. Beitrag der Übersetzung und Übersetzungswissenschaft zur Vielfalt und Einheit in Europa". In: Burr, Isolde & Greciano, Gertrud (eds): *Europa: Sprache und Recht. Akten des internationalen Kolloquiums von Saverne*. Baden-Baden: Nomos Verlagsgesellschaft. (Schriften des Zentrums für Europäische Integrationsforschung.) 127–139.

Hutchins, W. John (1986): *Machine Translation: Past, Present, Future*. Chichester: Ellis Horwood.

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.

Hutchins, [W.] John (2000): "The First Decades of Machine Translation. Overview, Chronology, Sources." W. John Hutchins (ed): *Early Years in Machine Translation*. Amsterdam/Philadelphia: Benjamins, 1–15.

Nida, Eugene A.; Charles R. Taber (1969): *The Theory and Practice of Translation*. (Helps for Translators VIII.) 2nd reprint 1982. Leiden: Brill.

Oettinger, Anthony G. (1960): *Automatic Language Translation*. (Harvard Monographs in Applied Science 8.) Cambridge, Mass.: Harvard University Press.

Rothkegel, Annely: "Multilingual Text Production". (in this volume)

Sandrini, Peter: "Localization and Translation". (in this volume)

Schubert, Klaus (1999): "Zur Automatisierbarkeit des Übersetzens." Alberto Gil, Johann Haller, Erich Steiner, Heidrun Gerzymisch-Arbogast (eds): *Modelle der Translation*. (= Sabest Saarbrücker Beiträge zur Sprach- und Translationswissenschaft 1.) Frankfurt am Main etc.: Lang, 423–441.

Schubert, Klaus (2003a): "Integrative Fachkommunikation." Klaus Schubert (ed): *Übersetzen und Dolmetschen: Modelle, Methoden, Technologie*. (Jahrbuch Übersetzen und Dolmetschen 4/I.) Tübingen: Narr, 225–256.

Schubert, Klaus (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*. (Handbücher zur Sprach- und Kommunikationswissenschaft 25.1.) Berlin/New York: de Gruyter, 636–660.

Schubert, Klaus (2005): "Translation Studies: Broaden or Deepen the Perspective?" Helle V. Dam, Jan Engberg, Heidrun Gerzymisch-Arbogast (eds): *Translation and Knowledge – Conceptual Issues, Methodological Aspects, and Systemic Approaches*. (Text, Translation, Computational Processing 7.) Berlin/New York: Mouton de Gruyter, 125–145.

Schubert, Klaus (2007): *Wissen, Sprache, Medium, Arbeit. Ein integratives Modell der ein- und mehrsprachigen Fachkommunikation*. (Forum für Fachsprachen-Forschung 76.) Tübingen: Narr.

Schubert, Klaus (forthcoming): "Technical Communication and Translation." Annely Rothkegel, John Laffling (eds): *Technical Communication*. Berlin/New York: de Gruyter.

Yngve, Victor H. (1957): "A Framework for Syntactic Translation." *Mechanical Translation* 4: 59–65.

Yngve, Victor H. (1964): "Implications of Mechanical Translation Research." *Proceedings of the American Philosophical Society* 108: 275–281 – reprinted in: Herbert E. Bruderer (ed) (1982): *Automatische Sprachübersetzung*. (Wege der Forschung CCLXXII.) Darmstadt: Wissenschaftliche Buchgesellschaft, 33–49.

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# Localization and Translation

**Abstract** – After a short introduction into the main concepts of localization the paper discusses the two main areas of software and website localization. It first focuses on the object of the localization process and its pecularities and then describes the translation procedure as well as the specific tools to use.

## 1  Introduction

Localization is a relatively new field of activity for language experts. It is closely linked to digital media and computer products. It is a field of activity where technology is deeply involved and which would be inconceivable without thorough technical preparation.

Before we can explore the methods and procedures of localization, we need to define the most important terms: globalization and internationalization, localization and locale which have been abbreviated by the acronym GILT (globalization, internationalization, localization and translation).

**Globalization** has two meanings: in general, it refers to the globalizing scope of the economy and of business activity. In the context of localization, it refers to the business activities related to marketing a product or service in multiple regional markets.[1]

**Internationalization** describes the "process of enabling a product at a technical level for localization" (Lommel/Ray 2007: 17) so that it can be easily adapted for a specific market after the engineering phase.[2]

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[1]  The acronym G11n (11 characters between G and n) is used for globalization.
[2]  The acronym I18n (18 characters between I and n) is used for internationalization.

**Locale** is a set of parameters used to identify the user's language, country and other preferences. It is roughly the combination of a language and a geographical region with all the cultural implications involved. For example, a country, a region, or a city. A locale is not a culture since a culture is more comprehensive, much more rooted and much less volatile than a locale. Take the EU for example, you could adapt a software product for the EU market to be used in English with all the necessary legal and cultural adaptations. A locale is not a language, though language is a vital part of a locale. However, there could be locales which use the same language as the original but nonetheless require an adaptation of the product to be successful, e.g. French in France and French in Canada. Localizing a product means adapting the linguistic and cultural specifics of content (text, images, voice sequences, etc) to a given geographical or demographic locale. It includes adapting content to the local conventions for such features as date and time formats, currencies, numbers, language, colour coding, cultural choices, writing systems. For data representation a locale sets sorting algorithms and also upper or lower casing characters. Technically, locales are represented by the two-letter code for the representation of languages (ISO 639–1) combined with the standardized country codes (ISO 3166–1), such as *de-BE* which refers to German spoken in Belgium, or *en-CA* meaning English in Canada.

**Localization:** Generally speaking, we can define localization as "the provision of services and technologies for the management of multilinguality across the global information flow" (Reinhard Schäler 1999 cited in Localisation Focus September 2002: 21).[3] This comprizes the industry, the providers of tools as well as the localization work itself. More practically, localization is the "process of modifying a product for a specific locale" (Yunker 2002: 17). The aim of localization should be that people from a specified locale can use the product without any difficulty in their own language. A given product could be everything you can sell to an international consumer group, but in practice the term localization is usually used for software application programs and websites.

The following introduction into the basic concepts of localization will be twofold: the first part addresses the issues that arise when localizing a software product while the second part is dedicated to website localization.

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[3]     The acronym L10n (10 characters between L and n) is used for localization.

## 2  Software Localization

If we speak of software we mean all non-material components of an electronic system, which can be software such as operating systems, compilers, hardware drivers, utilities and testing tools on one hand and application software such as databases, image manipulation, office application suites, desktop publishing, games, etc. on the other. It should be possible for users in different locales using different languages to make use of localized software systems without difficulties: this is the overall aim of localization efforts.

Technically speaking, software is basically programming code assembled in an executable file which tells the hardware processor what to do. This program code is dependent on the type of processor being used, and its instructions must work the same way before and after the localization process. Inside the program code there are elements which provide interaction interfaces with the user: menus, dialog boxes, text strings. These must be translated. The code could also contain locale specific elements which must be localized as well, such as date and time formats, currency units, paper formats, hot keys, etc. Buried in the code we could for example find other text as direct instructions such as *dir, list, copy,* etc. which cannot be regarded as English text to be translated. Such direct instructions are part of the programming language and should not be changed in any way.

Apart from the program code there will be an online help system, in most cases a hypertext type document similar to the windows help system in compressed HTML format .chm, or plain HTML in Unix environments. An online help resource will be linked to the program code, but tutorials and manuals are independent documents. Both need to be localized.

Usually a software product will come with a printed manual, quick reference guide, registration cards, promotional material, etc. Today, increasingly more software producers rely on electronic guides either online or on a CD-Rom, limiting the printed material to an installation and quick reference guide (see Figure 1). These documents in paper format also have to be translated.

In the following chapter we will concentrate on electronic resources rather than printed documents, since the translation of the latter does not differ much from other technical documents.

The main problem in software localization is separating the elements which should be localized from the programming code which should not be altered in any way, or otherwise the software will not function properly.
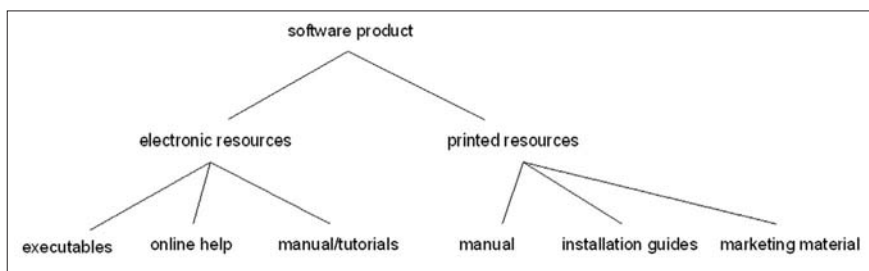
**Fig. 1**   Objects of software localization

Executable program files will come in different formats depending on the OS platform, e.g. Windows executables will be .exe, .com, .dll, .bat or .drv files, whereas Unix programs will be .bin files. Generally speaking, we can identify three steps in the localization of binary files or executable program files:

1.  preparing the programming code
2.  translating elements
3.  testing the code.

The first task in a software localization project is to analyze the product in order to understand how and with what tools the software was produced. The code environment and the source files – i.e. the code in the original programming language before it was compiled – should be made accessible to the localization professional by the customer in the so-called localization kit. A localization kit contains all necessary files as well as the documentation for the localization project: source files, code environment, guidelines, available glossaries and translation memories.

The source files are usually programming code files – e.g. instructions in the programming language C++ – and resource files (with the extension .rc), which include user interface elements such as menus and dialog boxes, which constitute the main elements to be translated. It is a good programming standard to have separate resource files which is more or less the case nowadays. Some resource files must be compiled with the programming code however, in order to obtain a binary executable program file. More and more software programers extrapolate the resource file straight away into a binary resource file, a .dll or an .exe; thus you can localize only this file without the need to recompile the entire program.

If there is no resource file whatsoever, translatable items are mixed up with the programming instructions, and it is impossible to evaluate whether a word

like 'copy' would be an English word in a dialog box, a menu item to be translated or a programming instruction in a programming language that should not be tampered with.

As a result, a localizer would have to check whether there are translation resources for re-use in this project, i.e. whether the files had already been translated for another version of the product and the translations saved in a translation memory, or whether a terminology database exists for this software or a previously localized similar product, etc.

The decision as to which tools should be used in the project is based on the following criteria:

– file format support;
– safety of program code: the tool should help you to avoid inadvertently overwriting chunks of machine code;
– client requirements;
– leveraging or re-use of translations.

These criteria follow a hierarchy where the file format is by far the most important factor. The main types of file formats in software localization are the following:

– .exe, .dll: standard binary files can only be localized with a localization tool due to the necessity to separate localizable elements from programming instructions. However, binary files compiled in a non-standard way, i.e. programming instructions without an original resource file and compiled into one application – result in non-standard .exe, .dll files: in this case the localizer must resort to the source code, translate all elements within the native development environment and recompile the whole application;
– .rc: text-based resource files can be localized using a localization tool or within the native development environment, e.g. an object-oriented programming language like Visual C++ or Delphi. Not all localization tools, however, support .rc files.
– Online help: given the repetitive and highly structured nature of online help texts the appropriate tool would be a translation memory system. Most translation memory systems can handle the HTML file format of the standard Windows help system (.chm) very well.
– Printed documents: provided all the documents are delivered in digital format, a translation memory system should be used to translate them. This would allow for re-use of repetitive text, increase consistency

throughout the document and facilitate the translation of new versions later on.

The right tool for the file format should allow for the efficient translation of text elements, but it also protects the sensitive programming instructions from inadvertently being changed by the user. It would be a risky undertaking to try to translate a binary file from within a general text editor without the strict division between translatable text elements and programming instructions provided by localization tools.

Situations could arise where the customer requires the localizer to use a specific tool either because there are resources available like a translation memory or because the software publisher has developed their own proprietary tool, as is the case for Sun or Oracle for example.

Traditionally, the tools available are divided into the following groups: translation memory tools, software localization tools, native development environments, machine translation, terminology tools. Meanwhile, many tools have a broad range of features although many of them are designed for a specific task. If we leave aside the programming environments and concentrate on their functionality, we can clearly see that translation tools have become more linked. In the area of software localization tools the following systems are the most notable:

Passolo <http://www.passolo.com>
Alchemy Catalyst <http://www.alchemysoftware.ie>
Language localizator <http://www.localizator.com>
Multilizer <http://www.multilizer.com>
RC-WinTrans <http://www.schaudin.com>
Visual Localize <http://www.visloc.com>

A detailed comparison chart of these localization tools is available online at <http://www.localizationworks.com/DRTOM/Conclusions.html>.

Correspondingly, we will now explain briefly how to translate a small piece of software using Passolo (see Figure 2). Firstly, a new project must be created where you have to specify the source file to translate, the type of binary file, the language of the text elements to extract from the binary file and the target language. The tool will then generate a list of text strings extracted from the binary file. These strings can be marked to exclude elements which should not be translated or changed. Next, you have to create the bilingual string list where each string is listed in a table with the source language on the right and the target language on the left. Clicking on a string will open the edi-
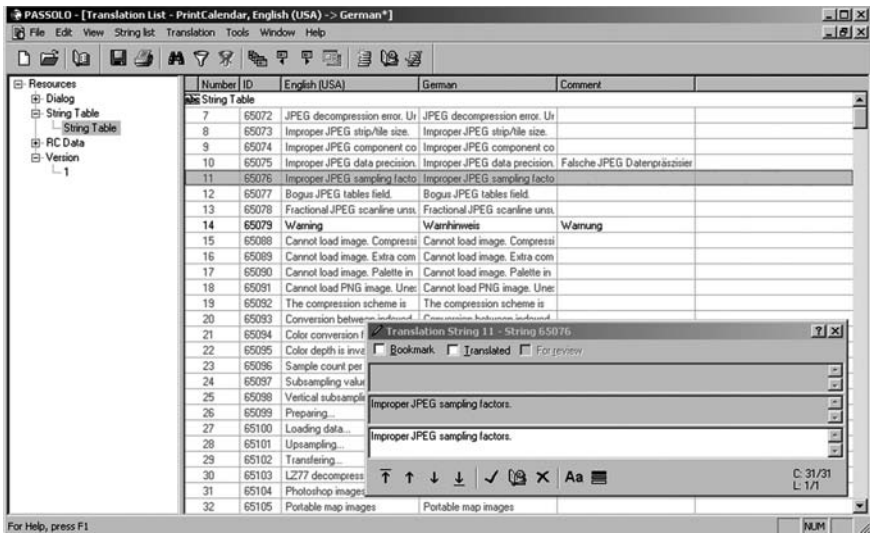
**Fig. 2**    Localizing with Passolo

tor window where the translation can be typed in. Translations can be auto-
mated, at least partially, using a glossary list. After translating all the strings in
the table, you will generate the target file, resulting in a new binary file .exe be-
ing created and launched.

While this roughly outlines the procedure, there are a few other problems
which have to be dealt with, such as the re-sizing of dialog boxes or the assign-
ment of hot keys. During translation, text strings will inevitably change in
length and this will affect dialog boxes as well as text messages. Alternatively,
when translating from English to German, target text elements will usually be
considerably longer and graphical elements must be adapted. A good localiza-
tion tool will assist the localizer in this respect and provide a WYSIWYG
(what you see is what you get) environment for changing graphical elements,
which could then be just as simple as re-sizing a window on the Windows
desktop.

Hot keys are marked letters in menus which can be used in combination
with the ALT key to access the menu command, e.g. ALT F for the menu File
and ALT O for the menu command Open file used in many Windows applica-
tions. These keys obviously change with localization and become e.g. ALT D
for *Datei* (File) in German and ALT f for *Öffnen* (Open). All hot keys must be
unique within the menu where they are used to ensure that the functionality of

the user interface is guaranteed. Hot keys must also be chosen so as not to collide with key combinations from the operating system.

Today, many localization tools integrate some form of translation memory component. Passolo and Catalyst in their current versions integrate a translation memory engine from SDL/Trados and can, therefore count on one of the most sophisticated tools in this regard with fuzzy matching and extended functionality.

After the translation process the software package should be run and tested. Such a quality check on the localized application implies some knowledge of software quality assurance principles and requires a testing plan which should take into account with focus on at least the following three aspects:

– *linguistic test*: this involves questions such as: Have all the text strings been translated? Are special characters displayed correctly? Is the text in dialog boxes and error messages truncated? Is text wrap and hyphenation ok? Are all menu items and titles used consistently? Is assignment of hot keys correct? Some localization tools offer routines for this kind of testing such as finding duplicate hot keys automatically.
– *user interface test*: this kind of testing refers to the aesthetic questions of the user interface in the localized version of the application.
– *functional test*: the functionality of the localized version will be tested against the functionality of the source language product to assure that there were no bugs introduced during the localization process. Also, the localized application must work properly in the target language context, which means that full interoperability with the corresponding localized operating system and with other localized products should be tested. And finally, all deliverables and installing procedures should be tested also.

## 3   Website Localization

Localization is the process of adapting a product to a new locale. We have seen how a software product is localized, Website localization, however, is something quite different. It is not only relatively new, as the World Wide Web we now take for granted only took off in the early 1990s and Website localization emerged a few years later. Website localization is a "specialised service that has emerged in recent years (since 1999). It is basically a packaging of translation services with technical services that ensure the proper functioning of the translated sites" (van der Meer 2002: 10). Translation and technical services consti-

tute the two main aspects of Website localization which can be defined as the process of modifying an existing Website to make it accessible, usable and culturally suitable to a target audience. Website localization is also much more open and less specialized than software localization.

The main differences between software localization and Website localization are:

– Update frequency: websites are subject to constant change and localization is therefore a program-based task, whereas software localization is a project-based task where each new version of a software product will become a new localization project.
– Translation expertise: the Web is as multifaceted as the real world and websites contain many different types of text which require different translation strategies: marketing texts, product descriptions, legal information, manuals, listings, etc. In many cases, website translation requires much more particular subject-related knowledge than software localization.
– The relationship between the localizer and the customer in software localization is a project-oriented relationship where a defined task is carried out and the relationship is ended. For a website there is the need for an ongoing relationship with the localizer as a result of the ever changing content of the website. The customer decides between either fully outsourcing where the localizer does the entire job or employing a translation service where only the planning and coordination remain with the customer.

Now that we have defined website localization, let us move on to examine the object of localization and what kind of content has to be localized.

A Website can be "a marketing channel, a software product, a brochure, a shopping mall or all of the above" (Yunker 2003: 4), indeed a complex matter as a source text for translation. To make things easier we will speak of the content of a Website which is composed of digital assets. These digital assets constitute different aspects of website content:

1. common content: texts, images, links which constitute the main structure of a website.
2. multimedia assets: audio- and video streaming, flash animations.
3. application-bound assets: files and documents which are accessible only with special software applications (e.g. MS-Word documents or Adobe PDF), in this case the Web acts as a distribution service without displaying the content.

4.  transactional assets: information about transactions (e.g. shopping baskets, sessions) in e-commerce.
5.  community assets: dynamic content of discussion forums and chat rooms created by Website visitors.

All these digital assets possibly contain localizable information with the primary localizable component obviously being the texts. In relation to the need for change in the content and the durability of the content, the information can be divided into:

–   static information (e.g. records of historical events, biographies, documentation of hardware and software, economic figures, manuals, laws and bills and legal documents, text passages from books or periodicals, press memos, etc.);
–   dynamic information (e.g. stock exchange rates, warehouse inventory, the content of an email account, sports results, prices at online auctions, date and time, etc.);
–   semi-dynamic information (e.g. people at a company, bibliographies, biographies of living people, price lists, etc.).

All information on the Web is subject to a *content life cycle* which describes the usability of the information from the time of creation to publication and finally archiving (internal or public). Dynamic information has a very short life cycle, while static information can have quite a long life cycle.

Not all assets are equally important for localization. Dynamic information would be rather difficult to localize efficiently for a website. Decisions have to be taken on what kind of information should be localized. We will come back to the criteria on which such decisions should be based.

All digital assets on a website need a structure to be presented to the visitor, and many websites use some form of integrated software to offer services or interactivity to the visitor, usually Java or Javascript code or Perl scripts embedded in the website. In this regard, website localization has much in common with software localization as these smaller programs need to be localized as well.

Information and digital assets will be made accessible in the form of files. Let us have a look at the most popular file formats on the Web:

HTM/HTML (Hypertext Markup Language), is localizable/translatable;
XML (Extensible Markup Language), is localizable/translatable;
CSS (Cascading Style Sheet), no content to localize;
XSL (Extensible Style Sheet Language), is localizable/translatable;

JS (Javascript) is localizable/translatable;
ASP (Active Server Pages), is localizable/translatable;
PHP (Hypertext Preprocessor) is localizable/translatable;
JSP (Java Server Pages), is localizable/translatable;
GIF (Graphics Interchange Format), no (only when text is embedded);
JPG (Joint Photographic Experts Group), no (only when text is embedded);
PSD (Photoshop Document), is localizable/translatable when one of the layer contains some text.

Website localization is not about translating single documents. The object of the localization process is an entire website composed of many pages, just as the text is the object of translation and not single sentences. For website localization, stretching this metaphor, the source text would be the complete website.

Before a website can be localized, the localizer should advise the publisher about the pros and cons of localization. The following items have to be considered by the publisher of the website:

–   language choice: an international company would choose languages on the basis of their involvement in a certain market, the market potential measured in GNP growth rates, the number of active Internet users, costs, available staff for a particular language, etc.
–   Return on Investment (ROI): will the necessary costs for localization be covered by the resulting advantages? Does the new market need the products/services and are they affordable there? How can potential customers pay and how can goods/services be delivered? Is there customer support for this market and language? Are there legal problems with the products in this market?

Only by answering these questions can the localization of a website be a success. If the publisher has uncertainties or doubts about these facts, every cent spent on localization will be too much. One of the tasks of the localizer is not only to advise the publisher on the advantages of localization but also on the implications of dealing with people from another culture and language.

Different approaches can be taken with localization, but it is never an *all or nothing* decision. There are various levels of localization possible depending on the volume of text and the type of Web content to be translated (global or regional content) or produced directly in the target language (local content). Regarding the websites of international companies, Rose Lockwood

(2000) has identified three main strategies for the management of multilingual and multicultural content:

1.  The monarchist approach with central control over the content where content is translated but seldom adapted. The result is a website which is not sensitive to local markets.
2.  The anarchist approach with multiple local sites without coordination, each using a different design. In this case there would be high costs and no corporate strategy.
3.  The federalist or subsidiary approach would be a compromise between the first two as it integrates global regional and local content (GRL). Global content will be produced centrally, translated and used internationally; regional content is also translated and used in a regional context while local content will be produced locally in the local language without the need for translation.

Each company decides what kind of approach matches its requirements and possibilities. Another study (Schewe 2001: 204) establishes a close link between the marketing policy of a company and the choice of languages for its Web presence. The six main website language design strategies identified cover a broad range, from a monolingual site written in the home language reflecting a domestic marketing strategy to the multilingual website with English or the home language and several local independent websites in the respective local language reflecting a global player strategy.

Once an appropriate Web publishing strategy is in place, the first thing to do is to analyze the content in order to make its locale independent. This process which is called *internationalization* should adapt any locale-specific information such as dates, times, numbers, currencies, etc. It is about changing and adapting a website to simplify localization.

Texts have to be also adapted in order to be suitable for new cultures or to be at least culturally neutral. In comparison to software localization, website localization involves a slight shift of priorities. Software localization concentrates on functionality – the application must work in the target language – and language quality concerns are less critical to a certain extent. For websites, however, language quality is crucial as it is the medium to convey a specific content to the target audience.

Careful consideration should be given to which texts can be translated into which languages and which texts should be omitted or at least shortened. Localization has its cost and a text should therefore be as concise as possible while still clear and comprehensible.

There are a few things to consider in source texts in order to simplify localization: use consistent terminology throughout the website, eliminate political, religious or specific references to individual countries, do not use slang or jargon, delete references to humor. All these elements are deeply rooted in culture and cannot be transferred easily across languages. Special attention should be given to visual effects such as graphics, symbols, the use of colors, etc., which also strongly depend on culture. Their reception differs significantly across languages and cultures. Culturally sensitive elements in texts also concern formatting conventions such as the representation of currency units, dates, time zones, time units, measurement units, numbers (e.g. the difference of meaning of *1,000* between US-English and German), addresses (zip-codes), international phone numbers, etc.

Another important preparatory step is to ensure that the multilingual website is capable of processing and displaying all the required languages and scripts. This is a technical challenge for the Web developers involved since there are several possibilities of displaying writing systems and languages on the Web. Computers understand only numeric codes and every input must be encoded using ordered numeric codes which are stored in bytes within the memory of the computer. There are different character types for the various languages and consequently the encoding must be specified for each web page.

The oldest encoding standard is the ASCII-code based on a 7-bit byte representation which has space for 128 characters. Thus, it was able to support only English and other languages without special characters while most other Western languages with their special characters could not be represented in ASCII. So, a new encoding was developed, the ISO–8859 series of character sets: ISO 8859–1 (Latin 1) for Western European languages, ISO–8859–2 (Latin 2) for Eastern European languages, ISO–8859–3 (Latin 3) for Southern European languages, ISO–8859–4 (Latin 4) for Northern European languages, ISO–8859–5 (Cyrillic) for Russian, Bulgarian and Ukrainian, and so on through ISO–8859–16.

At the same time, some encoding standards for languages with more than 256 characters or symbols were developed using a double-byte encoding such as Big5 for Chinese, Shift-Jis for Japanese. Still, these encoding standards are not able to represent two or more different languages on the same page since another code page has to be used for every language. This led to the development of a single standard which tries to combine all existing character representations into one encoding scheme: Unicode. Unicode is a 16-bit encoding

system that currently has space for more than 96,000 characters or symbols meaning that in one encoding standard we have a unique numeric value for each conceivable character or symbol: each Latin character, each Chinese symbol or for that matter each Korean symbol or just about every other character possible. Almost all modern browsers support Unicode encoding (UTF–8).

An international multilingual website requires some planning. A directory structure has to be set up which should reserve one directory for each language where all the files for the localized versions are saved. A very simple example could look like the one shown in Figure 3.

The most important thing to remember concerning the layout of an international website is the link between the different localized versions. This is one of the changes in a website which become necessary with localization. There has to be a gateway which lets the user choose the right language version or the version of the website for his or her specific country or region. The criteria by which the website is subdivided into localized versions reflects the locales chosen and may be languages, regions or countries. These three types of gateways can also be combined hierarchically where the user chooses first the region, then the country and the language, e.g. region EU, country Belgium, language French. Examples for combined gateways can be found at <http://www.olympus.com, http://www.ikea.com, http://www.canon.com>.

Certain factors have to be considered for the global gateway:

–   the global gateway must be located in a prominent place on the website so that users can easily make their choices;
–   it must support all the necessary character sets;
–   all choices must be available in the proper language, a country choice should read e.g. *Deutschland* not *Germany*;
–   graphical and visual elements (maps, globe) are highly versatile since they are neutral;
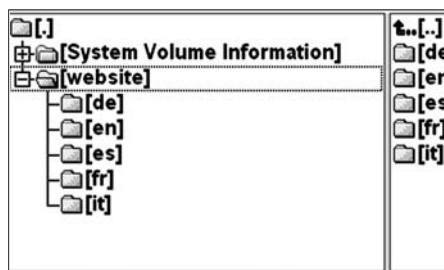


**Fig. 3**   Simple directory structure

– avoid flags, this is a bad habit born out of the early days of the Web. A national flag seldom reflects a language in its entirety: what kind of flag would you use for Spanish? Argentina, Spain, Mexico, Guatemala or even the US; what flag for German, English, Portuguese or French?
– user preferences regarding language may be saved in cookies on the local computer so that the user has to choose only once.

To construct a global gateway you will need an HTML Editor, a software package which will allow you to edit the HTML code directly. The global gateway can be constructed just like any other website component using either a WYSIWYG-editor or a text-based HTML-editor. A text-based editor is the tool of choice when HTML-files should be compared or tested for errors, good freeware examples are the following editors:

NVU <http://www.nvu.com>;
Notetab light <http://www.notetab.com>;
Phase 5 <http://www.qhaut.de/forums/index.php?dlcategory=1>;
PSPad editor <http://www.pspad.com/>.

Websites are accessible through the net and can be easily downloaded. Such offline versions are not well suited for translation purposes because of possible problems that result from direct downloading. It is good practice, therefore, to ask for a localization kit from the customer. A localization kit is the complete set of files necessary for the localization project saved on a disk, CD-Rom or received via email and consists of:

1. the entire original operational website as it would appear on the Web, as well as
2. all the files scheduled for localization;
3. resources for re-use such as glossaries or translation memories;
4. guidelines and style sheets.

The original website serves as a reference for the localizer regarding the functionality of the website. Furthermore, the customer should specify which parts of the original website are intended to be localized and identify all the respective files. And finally, all language resources should be made available to the localizer, such as existing glossaries and translation memories.

A common standard file format has been developed by a consortium of localization tools providers to overcome difficulties in sharing files for localization: XLIFF or the *XML-based Localization Interchange File Format*. XLIFF supports the lossless interchange of localizable data and its related information

and ensures the compatibility of tools because it is tool-neutral. A few tools which already support XLIFF are:

–  Enlaso's Rainbow which is essentially a file converter between HTML, XML and RTF files and the XLIFF file format <http://www.translate.com/technology/tools>;
–  Heartsome's XLIFF Translation Editor, a translation memory system which uses XLIFF as the format of choice <http://www.heartsome.net>.

Apart from file conversions, website localization needs tools that can:

1.  separate content from form: meaning basically, separating HTML or XML code from the text;
2.  re-use already translated text (translation memories);
3.  detect changes and updates in already translated websites (translation memories);
4.  edit Web documents: HTML/XML-editors.

Additional requirements may include terminology management and project management features.

The most popular file format on the Web is still the HTML-Format (Hypertext Markup Language), a relatively simple file format which is used to mark up text elements either to assign them a layout or to give them a certain meaning. The mark up element <H1>*text*</H1>, for instance, stands for a heading of first order, a <p>*text*</p> for a paragraph, a <b>*text*</b> for bold formatting of the text. While HTML does both layout (e.g. bold formatting) and content mark up (e.g. header), a newer mark up language has been developed to separate both aspects more clearly. XML *eXtended Markup Language* uses only content markup and leaves layout and formatting to external style sheets. XML has been applied to Web documents and the new standard is called XHTML. In the following we will outline briefly how such a tagged file is translated; we cannot, however, talk about other types of files such as script files, written in JavaScript or VBScript, or server-side technologies such as ASP, PERL or PHP.

The markup language and its version as well as the encoding used in a Web document will be inserted in the header of the Web page and is visible in the browser under the menu item view/source. Figure 4 shows the header element of a HTML document.

In the first line you see the specification DOCTYPE stating that HTML version 4.01 is used in this document, transitional refers to the pre-XML/

```
    <!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN">
<html><head>
    <meta name="Description" content="The Open Source Home Page">
    <meta name="Keywords" content="open source, open-source, free
    software">
    <meta http-equiv="Content-Type" content="text/html; charset=iso-8859-
    1"><title>Open Source Initiative OSI - Welcome</title></head>

<body bgcolor="#ffffff">...
```

**Fig. 4**   HTML-Header

XHTML status of HTML version 4.01. In line number 5 you see the specification <meta http-equiv="Content-Type" content="text/html; charset=iso–8859–1"> meaning that this document uses the encoding ISO–8859–1 (Latin 1).

Apart from these specifications, the header of a Web page also contains some elements which must be translated: e.g. the description of the content in the <meta name="Description" content=...> element, or the keywords used by search engines in the <meta name="Keywords" content=...> element, and most importantly, as it is directly visible to the visitor, the title as displayed in the title bar of the browser window in the element <title>...</title>, and possibly quite a bit more as specified in the RDF-standard (Resource Description Framework).

A good tool will recognize and protect all the tags in the Web page. It should, however, highlight all the elements which should be translated. In Figure 5 you see how Trados® TagEditor handles the HTML markup: the tags are grey and blocked out leaving the text editable for translation.

Not all tools allow the translation of meta-tags in the header: see in Figure 6 how the freeware tool OmegaT hides all the information in the header except the title. Some tools hide all tags from the translator, others protect them but make them visible to the translator. Even when tags are protected, they often need to be moved within the text to accommodate target language requirements. Some tools allow moving of tags, others do not. This ability to move, edit or delete tags, however, is a must if you wish to use a comprehensive tool; or you would have to otherwise adjust the tags in a HTML-editor.

Another way to translate HTML files is to prepare the files before translating them. This must be done when you want to use an MS-Word based translation tool like Wordfast® or Trados® Workbench without the TagEditor
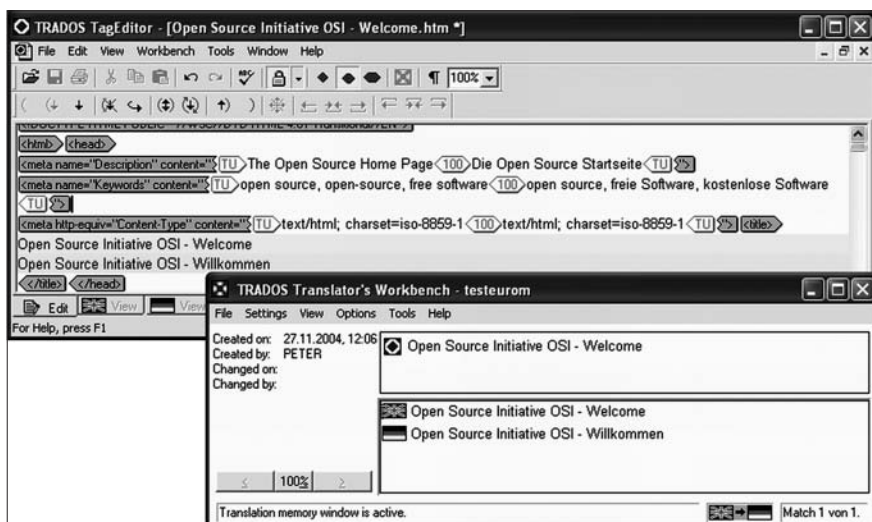
**Fig. 5**    Trados TagEditor and Trados Workbench.
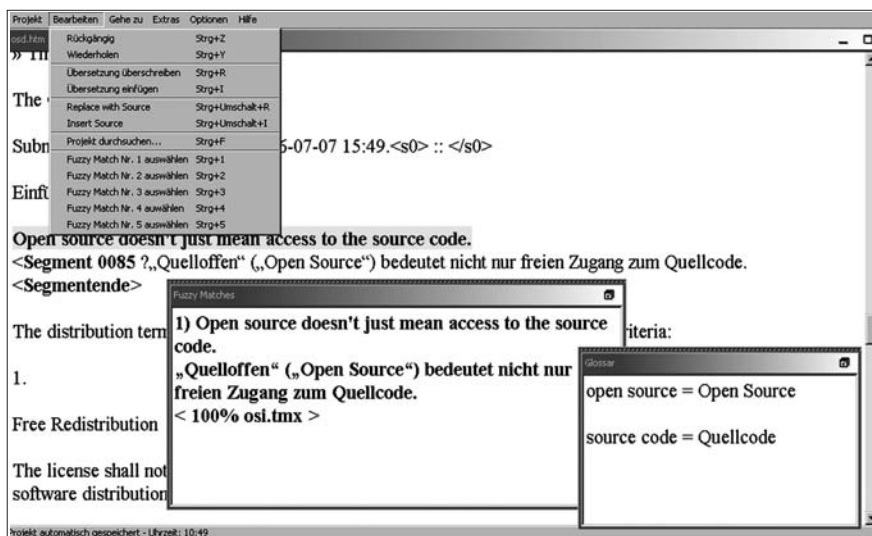


**Fig. 6**    OmegaT open source translation memory system

for instance. Since MS-Word can not edit HTML files directly, it loads the HTML code, converts it and recompiles it using a very proprietary HTML output which inevitably leads to a multitude of problems. To avoid this, you

can use a tool (e.g. the freeware Enlaso Rainbow) to convert the HTML file to an RTF file which you can load into Word and translate with Wordfast® or Trados Workbench®.

Separating the HTML tags from the localizable text is the most important feature of a Web localization tool. A translation memory feature makes translations more cost-effective allowing for the re-use of previously translated text. It also saves time on translation projects and increases consistency. Other criteria influencing the choice of a translation memory system could be:

– Segmentation rules: the underlying principle by which the system segments the text. Some tools segment by sentences, some by paragraphs, others by word sequences. The smaller the unit the more matches the system is able to propose, which is potentially attractive, but not really practical if you have to choose the right translation from more than ten matches. The larger the segmentation unit, the fewer results will be produced by the system, but the results will be better as more context is taken into account and a word-for-word or sentence-for-sentence translation procedure will be avoided.
– Matching algorithm: not just perfectly corresponding units should be found and proposed for re-use, but also more or less similar units. Such a search strategy is called *fuzzy matching*.
– Support of standards: this is important if you plan to exchange translation memories. A standard file format for translation memories based on XML has been developed: the Translation Memory Exchange Standard TMX. Most tools support the TMX standard today, either by providing import/export utilities or by using the TMX format directly like OmegaT <http://www.omegat.org>. A tool completely dedicated to creating and maintaining translation memory databases in the TMX format is the Heartsome TMX Editor <http://www.heartsome.net>.
– Compatibility with your clients requirements: cases could arise where a client wants the localizer to use a proprietary tool or a certain commercial tool because he wants to re-use translation memories he has or he wants to obtain the new translation memory in a proprietary format.

Meanwhile there are quite a few translation memory systems for Web localization on the market, here are a few examples:

Déjà Vu: <http://www.atril.com>;
SDL/Trados: <http://www.sdl.com>;
STAR Transit: <http://www.star-group.net>;

Webbudget: <http://www.aquino.com>;
Heartsome TMX Editor: <http://www.heartsome.net>;
Foreigndesk: <http://sourceforge.net/projects/foreigndesk/>;
OmegaT: <http://www.omegat.org>.

Translation Memory rationalizes the translation of repetitive texts, but this is not the only advantage. Even more important for the localization of websites is the possibility to automatically detect changes and updates in websites. Websites are constantly updated and the task of identifying new content can be very time consuming. With a translation memory from the previouly translated version of the website, the system matches the content of the new version against the translated content of the old version. As a result, all the old text will be replaced by the saved translations in the database and only new text will have to be translated manually.

All the aforementioned tools are a wise choice for the localization of static Web pages, a process which could be described as repurposing existing information resources for the multilingual Web. It is, however, becoming more and more a task of developing entirely new types of interactive information resources which can be maintained and delivered multilingually. Initially, Content Management Systems CMS have been developed to maintain extensive websites. These tools save all information in a database and produce HTML output on the fly using style sheets the moment a visitor to a site requests a Web page. However, traditional CMS do not support multiple languages. Only recently has a new type of CMS come forward with multilingual support and incorporated terminology and translation memory tools. These applications are called Global Content Management Systems (GMS). The additional benefits for these kind of systems, besides the advantages already mentioned for translation memory systems, are the decentralized management of websites with different access rights for central and local Web developers/content providers, less manual work and faster turn around times, support for the localization workflow and also translation vendor management where data about the costs of translations will be stored centrally and can be accessed immediately for statistical purposes by language, vendor or text type. Examples for GMS are:

Idiom WorldServer: <http://www.idiominc.com>;
Transware: <http://www.transware.com>;
SDL GIM Platform: <http://www.sdl.com>.

Once the website has been adapted and translated, all files should be verified and tested. Inevitably, changes have been made during the localization process which can lead to errors in the target files. Changes in character and language encoding or the translation of text elements may cause problems regarding the layout of the target files or functional problems so that the target file will not display or work properly.

Thus, the first thing to assess after translation is whether the localized site functions in exactly the same way as the source site. All the hyperlinks must work properly, locale-specific formats must have been adapted like currency, dates, addresses, etc. A special problem with interactive websites can be Web forms, where many locale-specific formats will be used, which may cause text length and encoding problems.

Having tested the functionality of the localized site, all the language-related aspects must be checked. Have all the source text elements actually been translated? Are the target text elements of a satisfactory linguistic quality?

And finally, the appearance of the localized website must be checked. Is all the text visible? Has text embedded in graphics been translated? Is the formatting correct?, etc. Different browsers display Web pages differently, so the visual aspects must be tested on a number of popular browsers on different OS platforms (e.g. Internet Explorer, Mozilla, Firefox, Opera, Konqueror, Apple Safari).

The easiest way to test a website is to click through all the pages in turn but this may be a very time consuming and boring task to perform. There are tools which will do many different testing procedures automatically, among them SDL HtmlQA <http://www.sdl.com/htmlqa>. One of the above mentioned text-based HTML editors will be beneficial when correcting errors and performing basic testing of the code.

After the testing phase, the site is uploaded to the web server. The next task is to make the new website visible to visitors who come from this locale and speak the language of the localized site. This is done through the global gateway integrated into the website by the localizer. This is, however, not enough to attract foreign visitors. The new localized Web page must be promoted on the Web, a task which has to be performed in the foreign language. Apart from registering the site with international indexes and search engines, it is advisable to promote it with country or language-specific indexes and search engines. Announcements in local newsgroups and forums, link exchange agreements with strategic websites, as well as traditional press releases are another possibility. And finally, country-specific domain names can be registered with the

local Internet authority, such as <www.yourname.fr> for the French version, <www.yourname.it> for the Italian version, etc.

New opportunities for translators emerge with these services (language-specific promotion of websites, building a global gateway) which require language fluency and cultural knowledge. To take advantage of these new opportunities, new skills and competences must be integrated into translator training curricula.

Granted that a translator has acquired the necessary language competence and a broad base of general knowledge which enables him or her to gain familiarity with a specific field rather quickly, as well as translation skills and a general awareness of cultural issues, basic knowledge about terminology management and translation memories, the following additional requirements have also been identified:

– computer applications: basic knowledge of operating systems and platforms as well as standard software types. Experience with programming languages and compilers for software localization could also be specified;
– HTML- and XML-authoring: a must for all types of localization as the XML standard gains broad acceptability;
– language-specific technical knowledge: the technical infrastructure of the Web with regard to language and character encoding;
– translation tools for localization purposes: neither type of localization is strictly feasible without such tools. Thus, a vital requirement;
– basic knowledge of project management, quality assurance and business models applied to localization. A translation student or for that matter every person emanating from a strictly linguistic or philological context should bear in mind that localization is a business-orientated activity which requires at least some insight into business practices and procedures.

A good localizer also has a basic knowledge of Machine Translation, Controlled Languages, writing for an international audience and International Marketing. Trained localizers must be able to provide consultancy services to companies who want to operate internationally. In doing so, they must be able to communicate with managers in companies using their language regarding costs and benefits of localization projects.

Localization can be a great opportunity for translators if they have the ambition to go beyond translation, to acquire the necessary skills and to take responsibility for the whole process. If not, or if translators insist on doing only

text translation without taking into account the larger picture, their role will be reduced to mere free-lance contributors for localization professionals.

This article is only a basic overview of localization principles and tools. Much more can be added about localization if we were to delve into greater detail. What has not been touched upon is, for instance, the workflow of localization projects and project management, the people involved, the differences between in-house localization and outsourcing, writing for the Web and an international audience, or the localization of graphics or images.

As an introduction, this overview should awaken interest in localization and stimulate further reading about this fascinating activity.

## 4   References

Ballstaedt, Steffen-Peter (2003): "Anforderungen an die Gestaltung elektronischer Kommunikate: Texten und Visualisieren". *Fachsprache* 25 (1–2). Vienna: Braumüller. 6–13.

Bruner, R., Harden, Leland and Heyman, Bob (2000): *NetResults.2 Best Practices for Web Marketing.* Indianapolis: New Riders.

Bungarten, Theo (ed) (1999): *Sprache und Kultur in der interkulturellen Marketingkommunikation*. Toestedt: Attikon.

Cheng, Susan (2000): "Globalizing an e-Commerce website". In: Sprung, Robert C. (ed): *Translating into success. Cutting-edge strategies for going multilingual in a global age*. Amsterdam: John Benjamins. 29–42.

Crystal, David (2001): *Language and the Internet.* Cambridge: Cambridge University Press.

DePalma, Donald (2002): *Business without Borders. A Strategic Guide to Global Marketing*. Wiley and Sons.

Dreikorn, Johannes (2001): "Der Reiz des Besonderen. Tipps zum Schreiben von Online-Texten". *Technische Kommunikation* 5: 23–31.

Dunne, Keiran J. (ed) (2006): *Perspectives on Localization*. ATA Scholarly Monograph Series XIII. Amsterdam/Philadelphia: John Benjamins.

Esselink, Bert (2000): *A Practical Guide to Localization.* Amsterdam: John Benjamins.

Esselink, Bert (2001): "Web Design: Going Native". *Language International* 2: 16–18.

Freigang, Karl-Heinz (1996): "Zum Stellenwert von Lokalisierungsprojekten in der Übersetzerausbildung". In: Fleischmann, E. et al. (eds): *Translationsdidaktik. Grundfragen der Übersetzungswissenschaft*. Tübingen: Gunter Narr. 122–132.

Fulford, Heather (2000): "Monolingual or multilingual websites? An exploratory study of UK SMEs". In: Schmitz, Klaus-Dirk (ed): *Sprachtechnologie für eine dynamische Wirtschaft im Medienzeitalter*. Proceedings of the XXVI. Annual conference on Sprache und Wirtschaft. 23.– 25. November 2000. Wien: TermNet. 39–50.

Gondouin, Daniel (2007): "Localisation de sites web: constraintes et enjeux". In: Lavault-Olléon, Elisabeth (ed): *Traduction spécialisée: pratiques, théories, formations*. Bern: Peter Lang, 179–188.

Grebenstein, Kay; Schumann, Christian-Andreas ; Tittmann, Claudia; Tsering, Gonpo; Weber, Jana; Hennig, Jörg and Tjarks-Sobhani, Marita (eds) (2002): *Lokalisierung von Technischer Kommunikation*. Lübeck: Schmidt-Römhild.

Harris, John and McCormack, Ryan (2000): *Sapient Report: Translation is not enough. Considerations for global Internet development*. Sapient Report.

Langewis, Chris (1998): "Avoiding 'Weblock'". *Language International* 10 (4): 22–24.

Lockwood, Rose (2000): "Have Brand & Will Travell". *Language International* 12 (2): 14–16.

Lommel, Arle and Ray, Rebecca (2007): *The Globalization Industry Primer. An introduction to preparing your business and products for success in international markets*. The Localization Industry Standards Association.

Loughman, Liza (2000): "Style Online". *Language International* 2: 33–34.

McDonough, Julie (2006): "Hiding Difference: On the Localization of Websites". *The Translator* 12: 85–103.

Multilingual Computing (2002): *Multilingual Content Management*. The annual Guide from Multilingual Computing.

Nielsen, J. and Del Galdo, Elisa M. (1996): *International User Interfaces.* John Wiley & Sons.

Oldenburg, Jan (2000): "Translating the Web: Into the Future". *Translation Journal* 4 (1). http://www.accurapid.com/journal/index.html.

Pearrow, Mark (2000): *Website Usability Handbook*. Charles River Media.

Pym, Anthony (2004): *The Moving Text. Localization, translation and distribution*. Amsterdam: John Benjamins.

Reineke, Detlev and Schmitz, Klaus-Dirk (eds.) (2005): *Einführung in die Softwarelokalisierung.* Tübingen: Gunter Narr Verlag.

Sánchez-Mesa Martínez, Domingo (2001): "Hypertext and Cyberspace: New Challenges to Translation Studies". In: Gambier, Yves; Gottlieb, Henrik. (eds) (2001)*: (Multi)media translation: Concepts, Practices and Research.* Amsterdam: John Benjamins. 35–43.

Savourel, Yves (2001): *XML. Internationalization and Localization*. Indianapolis: Sama Publishing.

Schewe, Theo (2001): "Multilingual Communication in the Global Network Economy". In: Eschenbach, Jutta and Schewe, Theo (eds): *Über Grenzen gehen - Kommunikation zwischen Kulturen und Unternehmen*. Halden/Norwegen: Hogskolen i Ostfold. 195–209.

Schlutter, Stefanie. (1996): *Sprachliche Gestaltung und Internationalisierung von Benutzeroberflächen. Erläutert an Beispielen aus dem Englischen, Deutschen und Italienischen*. Saarbrücken: Saarbrücker Studien zur Sprachdatenverarbeitung.

Schweibenz, Werner and Thissen, Frank (2003): *Qualität im Web. Benutzerfreundliche Webseiten durch Usability Evaluation*. Berlin, Heidelberg: Springer.

Singh, Nitish and Pereira, Arun (2005): *The Culturally Customized Web Site. Customizing Web Sites for the Global Marketplace*. Burlington MA, USA: Elsevier, Butterworth Heinemann.

Van der Geest, Thea M. (1995): *Website Design is Communication Design.* Amsterdam: John Benjamins.

Van der Meer, Jaap (2002): "Impact of Translation Web Services". In: Localisation Research Center (LRC) (ed): *Localisation Focus* 1 (2). Limerick: 9–11.

Wallace, Patricia (1999): *The Psychology of the Internet*. Cambridge: Cambridge University Press.

Weiss, Andreas and Wieden, Wilfried (2000): "Die Herstellung mehrsprachiger Informations- und Wissensressourcen in Unternehmen". In: Schmitz, Klaus-Dirk (ed): *Sprachtechnologie für eine dynamische Wirtschaft im Medienzeitalter.* Proceedings of the XXVI. Annual conference on Sprache und Wirtschaft. 23.–25. November 2000. Wien: TermNet. 25–38.

Wolle, Jörg (2003): "Globale IT-Infrastruktur für die interkulturelle Kommunikation". In: Bleich, Susanne; Jia, Wenjian and Schneider, Franz (eds): *Kommunikation in der globalen Wirtschaft*. Frankfurt/Main: Peter Lang.

Wright, Sue Ellen (2004): "Localization Competence for Translation and Project Management". In: Fleischmann, Eberhard; Schmitt, Peter A. and Wotjak, Gerd (eds): *Translationskompetenz.* Tübingen: Stauffenburg. 581–595.

Yunker, John (2002): *Beyond Borders. Web Globalization Strategies*. Indianapolis: New Riders Publishing.

Yunker, John (2003): "Building a Global Web Site". In: *Multilingual Computing: The Global Web Guide*. 55 (14): 4–9.

Zervaki, Thei (2002): *Globalize, Localize, Translate*. 1stBooks.

Zimmermann, Hansjörg (2001): "Web-Usability – Pflicht oder Kür" *Technische Kommunikation* 5: 17–22.

Zschau, O., Traub, D. and Zahradka, R. (2002): *Web Content Management. Websites professionell planen und betreiben*. Bonn: Galileo Business.

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# Multilingual Text Production

**Abstract** – Text production within the framework of MT is understood as a series of specified transitions between a starting text state (defective output) and a resulting text state (post-editing). The transitions consist of two types of "repair actions": working on the surface (editing) and working in deep on the structures (re-creating). It will be discussed what kind of "text tasks" will result from this approach.

## 1   Introduction

The following article discusses translation from a machine translation perspective and portrays multilingual text production within the framework of MT. Within this approach multilingual text production is understood as a series of specified transitions from an actual beginning stage of a text to a desired target text stage. These various stages in which texts are produced are here called 'text states'. The transitions from an actual text state (a potentially defective text version) to a target text state (achieved by post-editing) involve two types of "repair actions", i.e.: working on the text surface (editing texts) and working on the deep structure of texts (re-creating texts). These repair actions are interrelated with a number of "text tasks" with the objective of showing the transparency of the editing and re-creation steps as they apply to producing texts which may show analogies or similarity with translation processes.

## 2   The concept of multilingual text production

Multilingual text production can be compared to building a house with text production encompassing the whole process from having an idea (of the text) to the final product (cf. Flower/Hayes 1980, de Beaugrande 1984). Translation in this view begins with some actual product and ends with another product (cf. Resch 1998). Multilingual text production begins with one individual language product and ends with several or a series of different language products which differ at least with respect to the individual language in which each of them is produced. With the starting point being the same for all end products we can – using our house building construction metaphor – say that there is one architectural basic plan from which all successive stages proceed and from which final versions may evolve to differ in material and form.

The idea of multilingual text production relates to terms like standardization, mass and high speed production as well as computerization and software technologies. While we may all be familiar with these concepts in our everyday life (especially with respect to the quick and low-cost availability of a wide range of products), relating such concepts to texts and text production may be unusual or even irritating because handling human language is widely understood as an intellectual activity beyond mass production, repetitive standards and norms. Artificial intelligence, computational linguistics and machine translation, however, set out to model such intellectual activities as language handling and it may be interesting to see whether the arguments and descriptions below can be transported to 'translation' or 'translating' albeit not in its traditional sense.

Different from the contributions by Schubert/Link and Sandrini in this volume who concentrate on the translation process from the translator's perspective of managing translation tools in a professional environment, this contribution focusses on the basic tasks and possible consequences arising from a possible division of labor between machine translation systems and human translators. We will attempt to show that – different from translation memory tools which leave the act of translating to humans – the concept of machine translation implies that the system does the translation work and leaves it to the human translators to concentrate on the text or document and its repair with their native speaker competence. It is assumed that this approach may help when evaluating the opportunities and risks of text production in general as well as provide some abstract principles which are suggested to facilitate handling machine translation systems and thus shift the translator's work to more creative dimensions like text repair or revision.

For the purposes of this article, text production is understood as a series of specified transitions between a starting point, i.e. a possibly defective initial "text state" and a target "text state" as an end result. In this approach a "text state" may relate to both very different stages or versions of a text as well as to different inividual languages in which the text may be written. The production process implies man-machine-interaction. The inclusion of machine translation involves a different approach to multilingually working with and on texts. This is described in section 4 after a very brief discussion of relevant basic machine translation concepts (section 3). Subsequently examples from the Langenscheidt translation data are presented in section 5, where in three English texts and their translations into German using the Langenscheidt T1 Professional are discussed from the perspective of the involved repair work. This may be interesting for the human translator when comparing human translation behavior with the machine translation methodologies. On the basis of these examples, a possible list of repair tasks is suggested in section 6, which may be relevant to the translator's task of revising texts.

## 3   Principles of machine translation (MT)

### 3.1 Basic concepts

MT – as a fully automatic translation process – was the first large-scale endeavor in natural language computation. It started around the 50ies and appeared to have ended shortly afterwards as an intellectual as well as a commercial failure. Nevertheless, research is still going on (Federking/Taylor 2004) and commercial systems have become more and more successful on the market (Bennet/Gerber 2003, Hutchins 2003). Tremendous progress has been made – even if MT and especially some selected output of translation systems still continue to be a source of laughter which indicates that the role of MT, its concepts, principles, objectives and intentions are misunderstood. To comprehend how MT operates may help to use it in a more appropriate manner. Machine translation is not meant for literary translation or highly individualized texts, it is not meant to deal with constructions which we would normally not use, and it is not meant to deliver "good" texts – whatever "good" means. Machine translation is meant for coping with mass data and standardized data.[1] It

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[1]    There are about 300 million pages machine-translated every year; about 1 million pages within the EU Commission alone.

is meant for delivering texts which are to be worked on, i.e. 'repaired' at a later stage. Translation is only used to provide information or to serve as a basis from which to produce other texts. This is quite a different concept, claim and purpose from what we normally think of when referring to translation.

While much of the literature on machine translation focusses on its history (Schwanke 1991, Arnold 1994, Hutchins 2002, Somers 2002, Rothkegel 2007) to reflect its interrelationship with MT products, i.e. MT-systems, we will here look closer at MT-systems in their portrayal of different options for modelling language work according to the theoretical (linguistic) and technological dimensions they imply.

## 3.2 Transfer and/or interlanguage approaches

In Austermühl (2001, 158ff) different "MT architectures" are shortly described (for a statistical approach cf. Brown et al. 1990, i.e.):

– direct architecture
– transfer architecture
– interlingua architecture

which are summarized below. Austermühl (2001, 158) notes that almost all commercial MT systems are still based on direct or transfer systems whereas interlingua architectures are mainly considered as research approaches. Nevertheless, the interlingua concept is – to some extent – related to the concept of 'single source production' which is a promising concept also for the application to projects in practice.

The 'direct approach' is based on the similarity of a language pair. The system makes use of syntactic, semantic and lexical similarities between source and target languages: the more similarities, the better the output quality. The main load of all processes is on the dictionary and the dictionary look-up procedure. The output quality depends on the quality of the dictionaries. This includes the possible inclusion of polysemy, collocations, idioms and even set phrases of language use.

The 'transfer approach' is the most common MT approach. Whereas the 'direct approach' consists of two stages (one for each language) the 'transfer approach' consists of three stages: analysis (of source text), transfer, synthesis (or the 'generation' of a target text). Transfer systems presuppose and are based on a complete linguistic description of all three stages. The differentiation of three stages allows for the reusability of the analysis and synthesis parts in other language pairs. The EUROTRA-system (European Translation sys-

tem) is representative for a transfer approach (cf. Arnold 1994). A PC-based transfer approach is realized for instance in the Langenscheidt T1-system (Köchling 1998, Langenscheidt 2003).

The 'interlingua concept' assumes that it is possible to develop a text representation of the source text that includes all information necessary for generating the text over and again. Within this framework a text, therefore, can also be generated in another language if a synthesis grammar and a monolingual lexicon of this selected language is available. An example is the system developed at Carnegie Mellon University (Nirenburg 1987). The interlanguage approach presupposes a high standard of linguistic analysis/generation concerning semantics and pragmatics. It is supported through the developments of research in Artificial Intelligence concerning knowledge representation and knowledge management (Hahn 2005). Austermühl (2001, 162) comments on it in a critical manner:

> Nevertheless, the transfer approach is often preferred to the interlingua method for two reasons:
> – It is difficult to devise truly language-independent representations (free of elements depending on the source or target language).
> – The analysis and generation grammars are complex owing to the fact that the representations are far removed from the characteristic features of source and target language.

The question is what impact does the architecture of a system have on the quality of the translation output. For theoretical reasons the interlingua approach is the high-standard solution, but it also presupposes high standards concerning the grammar and lexicon which are to be used. In contrast to this the transfer approach might be handled in a more flexible way. Thus quality of output and costs of input can be balanced according to the different demands of the users (organized in terms of an interaction between system and usersas described in Boitet/Blanchon 1994).

## 3.3 Grammar and lexicon

Directly relevant for the quality of the MT translation output is the elaboration of the two components: grammar and lexicon (Lehrberger/Bourbon 1988). The lexicon provides all information that is necessary for the identification of each lexical unit (monolexical as well as polylexical ones e.g. idioms and collocations). Furthermore, all information is provided (or is to be provided) that is necessary to identify all syntactical functions of a word or a word group

in a sentence, and last but not least to identify the meaning within a variety of alternatives. Thus the lexical entry of each lexeme has to include morphological information, syntactic information and semantic (and eventually pragmatic) information. Another question concerns the selection of the inventories of the vocabulary. As it is not possible to include all lexical material only some fragments can be provided which have to be completed by the users according to their demands. This is one of the biggest problems of the application of machine translation systems for practical purposes. It is not difficult to see that a sentence cannot be analyzed in cases where morphological, syntactic and semantic information which should be provided by the lexicon is missing. Nevertheless, the system must be robust enough to avoid a breakdown of the system and to deliver some analysis on the basis of the information that is available.

The level of sophistication and exhaustive description of grammar is also crucial for the quality of the output. The whole grammar of a language has to be formulated in terms of rules that concern the combination of words and word groups in a sentence as well as rules that allow the disambiguation of different meanings. The results of the analysis procedures are formulated in terms of representations (meta-linguistic description of the entity). In order to manage this complexity, the algorithms for the analysis of the sentences usually operate on different levels. For instance, the EUROTRA system consists of three levels for which representations are provided, i.e. constituent structure, dependency structure and argument structure. Each representation is also considered the input for the following step in the analysis, the preceding analysis representation is at the same time the input structure for the following generation process. The generation grammar is not as complicated as the analysis grammar because there are no possibilities for ambiguities left on the level of generation.

In the transfer approaches, grammar and lexicon constitute different components. There is a monolingual lexicon for the source text analysis and a lexicon for the morphological and syntactic generation of the target text. What is related to the specific language pair is the bilingual transfer lexicon. It is obvious that lexicon and grammar are highly interrelated. Mistakes or gaps in one of them or in both necessarily have consequences for the overall results.

## 3.4 Single source production

With respect to translation, the case of 'constructing' a text relates to a situation of 'single source production' as it is used in the field of documentation (Closs 2007). The idea is to start from a generalized 'content basis' in order to

create a set of different texts containing the same or similar content in e.g. different text types, different languages or different media. Such a 'content basis' is organized similarly to a 'knowledge basis', containing already selected elements which are relevant for the envisioned text. The concept stems from the modelling of computational text generation and refers to a systematic collection of content elements according to some specified principles of data organization, e.g. in terms of knowledge representation formats such as semantic networks or schema representations (e.g. Horacek/Zock 1993). Semantic networks provide the traditional semantic relationships of term classification whereas in schemata (e.g. frames) class-instance relationships are organized. In practice, both formats might be used depending on the required text content. The concept of single source production is similar to the concept of interlingua translation as the interlingua is also considered to be the initial 'text representation' for the generation of a target text (cf. also Sager 1994).

## 4   Working with texts

### 4.1 'Constructing' texts

As was indicated above, we consider the use of MT for multilingual text production purposes as working on texts at different stages, i.e. in different "text states" in a specified way. As it is presupposed that the application of an MT system ends in a text state that needs to be worked on ("repaired") as well, we need to define the different procedures and specifications entailed in working within the subsequent stages. This differs quite substantially from MT texts discussed with respect to pre- and post-editing. Pre-editing is understood as a preparation or modification of the source text in order to adopt the text to the requirements of efficiency of the individual MT system (e.g. 'controlled language'; cf. Schubert in this volume). Post-editing refers to the correction of the output.

Whereas pre- and post-editing (a concept developed at the beginning of MT in the 50ies) operates on the surface of texts, our approach proceeds from a "repair"-concept which refers to the different production stages ("text states") involved in the process. This presupposes a concept of 'text' which implies a 'construction' performed as a series of different steps within different "text states" as final or intermediate results. Correspondingly, the process of text production is defined in terms of the transitions from one specified text state to another (Rothkegel 2003, Tonfoni/Rothkegel 2007). Although this view bears similarities to translating considered as an activity within a highly speci-

fied system of text production (e.g. discussed by Resch 1998), there are differences with respect to how this system is constituted and how the entity of 'text' is understood. 'Text' is considered to be a complex language entity on three levels. On the content level (level 1), there are representations of structures in terms of hierarchies and sequences reflecting the different relationships between pieces of knowledge and text. Level 2 reflects textual patterns. On level 3, words and sentences are organized in terms of global and local text properties according to level 1 and level 2. Additionally, there are two perspectives of looking at texts: a static perspective of considering text units as a completed whole and a dynamic perspective of considering text progression from the beginning to an end. These different levels are matched by different options of representing the text (state).

While for communication purposes, a text is not an aim in itself, in professional MT language use it is. The aim of handling, i.e. working on or repairing a text is to produce another text. In this view, the input and output of work are of the same kind: language product(s) which are transformed into other language product(s). The basic principle implied is that the defined transitions take place between two text-pairs (text-a > text-b). Text pairing (Rothkegel 2004) is a crucial strategy for defining several "repair actions": starting from the beginning defective text state and repairing it in a controlled manner to produce another output in the form of another specified text state (which does not have to be the final text state).

Repair strategies can be expressed in terms of "tasks" ("text tasks") which define the "text states" involved and the parameters operating on the transition between two text states. With respect to translation all text-states, beginning with the source text and ending with the target text are available for modification and "repair":

Text-state 1 is considered to be some global structure of selected knowledge which is transformed into a text form and in this process becomes the topic of the text (level 1).

Text-state 2 integrates the text function. It requires a re-structuring of text-state 1 because of different options when developing the text topic according to the text function. Some culturally determined strategies of connecting textual segments are also located on this level (cf. the alleged explicitness of links in German texts compared to implicit connectors of English texts).

Text-state 3 is produced by selecting lexical and syntactic material on the basis of previous text-state representations. As some studies have shown, this process of explicating information is not to be understood in terms of substitution but rather as a result of decisions between alternatives (Gerzymisch-

Arbogast 1997). The question is not whether the choice is correct but whether it corresponds to the intention of the writer and/or translator, i.e. to his/her understanding of the text scenario. Research in the area of corpus linguistics has tried to provide some evidence of particular selection strategies. What can be shown are occurrences and preferences of occurrences which may be statistically relevant. What is missing are some indicators that allow the prediction of preferences. The representations of the preceding text-states might provide such indicators e.g. in terms of pragmatic representation categories and text parameters (e.g. illocution, perspective, focus, etc.).

## 4.2 Defective texts and repair

It is obvious that the text states derived from this procedure are defective texts. The various MT-systems differ in the degree of defectiveness (for an evaluation cf. Minnis 1994, White 2003). The system used here provides some medium quality. There are better (and more costly) ones available for professional use whereas the Systran system (freeware in Altavista, Babelfish) is meant only for obtaining a rough indication of the content of the source text.

The question of what constitutes a defective text refers to the question of what the accepted standards ("for what purposes") are or should be, i.e. at least grammaticality, correctness, no mixture of languages, identified semantic relationships between sentences and parts of sentences, adequate lexical choices.

It is often not clear whether a defective element arises from a decision relating to the lexicon and/or grammar of the algorithm or whether it is a follow-up of another mistake. To identify the source of defectiveness may be important, however, when selecting the proper repair strategy. We may avoid this problem by interrelating the dynamics of the MT algorithm with the concept of text production as transitions between different stages. In this view we can define the standards concerning text coherence (level 1), text structure and text patterns (level 2) and text performance (level 3).

Missing information on the lexicon level can cause defectiveness on each of the three levels. Additionally, some defective instances on the level of text performance relative to one part of a sentence can lead to a general defectiveness on a preceding text state level. Repair, therefore, always means repair on the specified level of analysis (or generation) on which the defectiveness was caused. Even though the grammars of commercial MT systems are not usually accessible, the defective text offers traces of its creation (and mis-creation). Repairing thus presupposes an exploration of the genesis of the text.

The following examples will illustrate two lines of repair: (a) working on the surface, which involves editing tasks (4.3) and (b) working on the deep-structures which involves re-creating the text (4.4) involving translation, i.e. the translation output of three English texts which are processed by the commercial system Langenscheidt T1 Professional 5.0. This is done for illustrative purposes to suggest that the resulting tasks of text repair may be of relevance for systematic translation.

## 4.3 Editing work on defective text states

The editing tasks include technical decisions on how the textual units are spread over the surface of the medium (Dragga/Gong 1989). This requires some simple tasks of revision, e.g. the repair by grammar checks, which may not be interesting to translators. Mossop (2001) distinguishes the "mental editing during translation" from the specific editing procedures operating on a given document such as copy-editing (house style, syntax and idioms, spelling), stylistic editing (smoothing, readability), structured editing (repairing the physical structure of the text), content editing (repairing factual errors, logical errors) and checking for consistency.

Text-1 below (cf. Data), similar to text–3, provides quite a number of examples for necessary repair work on the surface level (level 3). As a whole unit, however, the text is comprehensible even if there are many lexical and grammatical 'mistakes'. The morphological component seems to be dominating the picture with a high frequency of composite nouns in German, e.g.: *Befestigungsbüromaschinen* (4), *Unterhaltsdokumentation* (6), *Datumsmanipulation* (7), *Gesellschaftsgeld* (11). For MT it may be interesting to note that if there had been a more literal translation of the separate nominal groups, the output could have been more correct. This is an example for when the system does too much. Interestingly, though, a 'normal' decomposition of *workgroup* is beyond the capabilities of the system. Most of the editorial repair involves syntactic (valence) and lexical (composite NP) categories. Here are some examples (cf. 5).

(1) *Auf soziale Umgebungen achten*
    The lexical choice of *gesellschaftlich* for *social* (instead of *sozial*) is stylistically not adequate. It refers to a principle of the lexicon which specifies that each lexeme should be substituted by a German expression.

Another mistake is the case of an incorrect valence choice: *Acht geben auf*. This mistake is caused by the grammatical coding of this entry.

(2) Again an incorrect valence: *entwerfen (für) das Erzeugnis*.

(5) In this sentence the adverb *simply* provides a problem: there are two sentences; the adverbs belong to the second one.

(7) The lexical choice of *basisch* für *basic* provides a hint to the ordering of meanings in a lexical entry: the first specified meaning should have been *grundlegend*.

(9) This sentence demonstrates the problems which arise concerning composed verb forms.

(11) This sentence is an example for an incorrect syntactic analysis. The dative-object (*companies*) is not identified. As a repair strategy the system offers a composite noun (*Gesellschaftsgeld*).

## 4.4 Creative work on defective texts

It may be assumed that a source text in its initial state is complete, correct and easy to understand before it is machine translated. Nevertheless, the algorithm can provide some 'regression' in a sense that some entities, e.g. semantic or pragmatic markers are lost or some defective instances appear in a configuration that relates to a state which is on a lower level of development than the source text. In this case the repair consists in re-constructing the missing level. Text-2 – if repair is necessary at all - demands repair strategies on a deeper level. Whereas (14) and (15) are almost correct (except for the preposition in (15) […] *Kapitel über* […]), sentences (12) and (13) contain a combination of defects which make it difficult to reconstruct the meaning and the relationships between the nominal and verbal groups. For repair it is necessary to go back into the original text. From there the deep structure of the relationships needs to be identified and reorganised in order to repair them.

## 5  Data

*Text-1 (from: Hackos, J.T./Redish, J.C., 1998, User and Task analysis for interface design, p. 106. Wiley, N.Y.)*

(1) Paying attention to social environments

(2) The social environments of your users may also affect the way you design the product, its interface, and its documentation and training.

(3) Workgroups frequently divide responsibilities for a process among themselves, with some individuals specializing in the part of a process where they have more expertise.

(4) For example, in many organizations, one or two individuals assume responsibility for fixing office machines when they break down.

(5) Those who have not acquired maintenance and repair expertise simply alert the specialists, who then take care of the problems.

(6) This division of labour may affect the design of "maintenance" interfaces and maintenance documentation.

(7) You may encounter less technically skilled people doing basic data manipulation, while more complex tasks are performed only by people with more experience and expertise.

(8) You may also encounter situations in which individuals work in isolated places, such as telecommuters working at home.

(9) They find themselves having to take responsibility for aspects of a task that they might never had to perform as part of a workgroup.

(10) You may find that users typically have to share equipment so that if one user takes a long time, others have to wait, or if one user has a problem, many users spend time trying to solve it.

(11) These interactions cost companies money for "down time".

*German translation of text-1:*

(1) *Zu gesellschaftlichen<A[gesellschaftlichen\sozialen]> Umgebungen Acht geben*

(2) *Die gesellschaftlichen<A[gesellschaftlichen\sozialen]> Umgebungen deiner Benutzer können sich auch auf den Weg auswirken, den du das Erzeugnis, seine Schnittstelle, und seine<A[seine\ihre]> Dokumentation und Ausbildung entwirfst.*

(3) *Workgroups verteilen unter sich häufig Verantwortung für einen Prozess, mit einigen Individuen, die sich auf den Teil eines Prozesses spezialisieren, wo<A[wo\wohin]> sie mehr Sachkenntnisse haben.*

(4) *Zum Beispiel, in vielen Organisationen übernehmen eins oder zwei Individuen Verantwortung für Befestigungsbüromaschinen, wenn sie ausfallen.*

(5) *Jene, die Unterhalt und Reparatursachkenntnisse nicht einfach erworben haben, warnen die Spezialisten, die dann auf die Probleme aufpassen.*

(6) *Diese Arbeitsteilung kann sich auf das Design von maintenance Schnittstellen und Unterhaltsdokumentation auswirken.*

(7) *Du kannst weniger-technisch-Fach-Leute treffen, die basische Datumsmanipulation machen, während mehr komplexe Aufgaben nur von Leuten mit mehr Erfahrung und Sachkenntnissen erfüllt werden.*

(8) *Du kannst auch Situationen, in denen Individuen arbeiten, in isolierten Orten, wie zu Haus berufstätige Telependler, finden.*

(9) *Sie finden sich Verantwortung für Aspekte von einer Aufgabe übernehmen müssend den sie könnte musste niemals als Teil eines workgroup funktionieren.*

(10) *Du kannst finden, dass Benutzer typisch Ausstattung gemeinsam nutzen müssen, so dass andere wenn ein Benutzer eine lange Zeit<A[Zeit\Mal]> braucht, warten müssen, oder wenn ein Benutzer ein Problem hat, verbringen viele Benutzer Zeit<A[Zeit\Mal]>, versuchend, es zu lösen.*

(11) *Diese Wechselwirkungen kosten Gesellschaftsgeld für down-Zeit.*

**Text-2** *(book announcement)*

(12) Among the hundreds of artificial languages created in recent centuries are a fair number of modified versions of Latin and languages which have taken many elements from Latin.

(13) These diverge in varying degrees and ways from Classical Latin.

(14) This book is a survey of such projects.

(15) An introduction presenting the languages is followed by chapters on phonetics, lexicon, morphology, syntax, and semantics.

*German translation of text-2:*

(12) *Unter den Hunderten künstlicher herein geschaffener Sprachen sind jüngste Jahrhunderte eine gerechte Anzahl von veränderten Versionen von Latein und Sprachen, die viele Elemente von Latein genommen haben.*

(13) *Diese gehen auseinander, wenn<A[wenn\indem]> sie Grade und Wege von Klassischem Latein variieren.*

(14) *Dieses Buch ist ein Überblick über solche Projekte.*

(15) *Einer die Sprachen präsentierenden Einführung wird von Kapiteln auf Phonetik, Lexikon, Morphologie, Syntax, und Semantik gefolgt.*

*Text-3 (EU-text)*

(16) Globalisation, connectiveness and rapid progress in scientific knowledge and application continue to fundamentally transform nature and societies.

(17) Growing interdependencies of technical, natural and social hazards increase the complexity and vulnerability of vital systems.

(18) Policy- and decision-makers around the world find themselves challenging by changing technological structures, but also completely new emerging systemic risks, while institutional responses lag behind these pervasive developments.

(19) New strategies of governance and public-private partnership, both at global level, urgently need to be designed.

*German translation of text-3:*

(16) *Globalisierung, connectiveness und rascher Fortschritt in wissenschaftlichem Wissen und Anwendung fahren grundsätzlich fort, Natur und Gesellschaften zu transformieren.*

(17) *Wachsende Interdependenzen von technischen, natürlichen und gesellschaftlichen<A[gesellschaftlichen\sozialen]> Gefahren vergrößern die Komplexität und Anfälligkeit von lebenswichtigen Systemen.*

(18) *Policy- und Entscheidungshersteller um die Welt finden sich durch die Veränderung technologischer Strukturen herausfordernd, aber auch vollkommen neue sich zeigende systemische Risiken, während institutionelle Antworten hinter diese überall vorhanden Entwicklungen zurückbleiben.*

(19) *Neue Strategien von governance und Öffentlichprivatteilhaberschaft, beide an globaler Stufe, müssen dringend entworfen werden.*

## 6   Tasks

While the concept of text production aims at generalizations and the categorization of types of processes (and products) the concept of text "tasks" refers to a concrete 'case' of text production where general aspects and specific aspects of a particular text (or text state) are brought together and interrelate. The added value of the distinction between states and tasks of text repair may be an extended list of a variety of 'new' tasks for multilingual text production. For translation it may be of value to make this distinction because different competences are required for the resulting tasks, i.e. the editing tasks could be performed by a native speaker, not necessarily a translator. The re-creation repair tasks, however, involve condensation and explicitation strategies (e.g. deleting, integrating, summarizing or paraphrasing) which would necessitate competences of source and target text analysis and constitution.

Potential repair tasks may include but are not limited to:

– substitution of lexical items (level 3) according to coherence requirements (level 1 or 2) (stylistic level, level of meaning)
– decomposition of composed expressions (level 3)
– composition of non-composed nominal groups (level 3)
– insertion of prepositions (valence mistakes) (level 3)
– re-ordering of word order according to information sequencing requirements (level 2)
– re-structuring of the sentence according to coherence requirements (level 1 and level 3)
– separation of sentences and simplifying hypotactical structures (level 3)
– combination of sentences (i.e. integrating and condensation processes) (levels 1,2,3)
– etc.

This list can, of course, only be of heuristic value. Larger studies into text states and text tasks involving different text genres may well provide a more detailed list of tasks which – if related to the respective states – may guide the translator by providing a rule-governed systematic and transparent procedure of producing and revising texts.

# 7 References

Arnold, Douglas (1994): *Machine Translation. An Introductory Guide*. Manchester: NCC Blackwell.

Austermuehl, Frank (2001): *Electronic Tools for Translators*. Manchester: St. Jerome.

Bennett, Scott and Laurie Gerber (2003): "Inside Commercial Machine Translation". In: Somers (2003: 175–190).

Boitet, Christian and Blanchon, Hervé (1994): "Multilingual Dialogue-Based MT for Monolingual Authors: the LIDIA Project and a First Mockup". *Machine Translation* 9: 99–132.

Brown, P.F. et al. (1990): "A statistical approach to Machine Translation". *Computational Linguistics* 16(2): 79–85.

de Beaugrande, Robert A. (1984): *Text Production. Toward a Science of Composition*. Norwood (NJ): Ablex.

Closs, Sissi (2007): *Single Source Publishing*. Siegen: Entwickler press.

Dragga, Sam and Gong, G. (1989): *Editing: The design of rhetoric*. Amityville NY: Baywood.

Flower, Linda and Hayes, John (1980): "The dynamics of composing: Making plans and juggling constraints". In: Gregg, Lee/Steinberg, Erwin (eds), *Cognitive processes in writing*, 31–50. Hillsdale/NJ: L. Erlbaum Ass.

Frederking, Robert E. and Taylor, Kathryn B. (2004): *Machine Translation: from real users to research*. Berlin: Springer.

Gerzymisch-Arbogast, Heidrun (1997): "Translating cultural specifics: macro- and microstructural decisions". In: Hauenschild, Christa and Heizmann, Susanne (Hg) (1997): *Machine Translation and Translation Theory*, 51–67. Berlin: Mouton de Gruyter.

von Hahn, Walther (2005): "Knowledge representation in machine translation". In: Dam, H.V.; Engberg, J. and Gerzymisch-Arbogast, H. (eds), *Knowledge systems and translation*. 61–81. Berlin: Mouton de Gruyter.

Horacek, Helmut and Zock, Michael (eds) (1993): *New concepts in natural language generation. Planning, Realization and System*. London: Pinter.

Hutchins, John (2002): "Machine Translation Today and Tomorrow". In: Willèe/ Schröder/ Schmitz (2002: 159–162). (2003): "Commercial Systems. The State of the Art." In: Somers (2003: 161–174).

Köchling, Olivia (1998): *Das PC Übersetzungsprogramm Langenscheidts T1. Systembeschreibung und Untersuchung anhand einer Textstichprobe*. Sankt Augustin: GMD.

Langenscheidt (2003): *Langenscheidts T1 – Der Textübersetzer für PC´s. Englisch. Professional 5.0. Benutzerhandbuch*. Berlin, München: Langenscheidt.

Lehrberger, John and Laurent Bourbeau (1988): *Machine Translation. Linguistic Characteristics of MT Systems and General Methodology of Evaluation*. Amsterdam/ Philadelphia: John Benjamins Publishing Company.

Minnis, Stephen (1994): "A Simple and Practical Method for Evaluating Machine Translation Quality". *Machine Translation* 9: 133–149.

Mossop, Brian (2001): *Editing and Revising for Translators*. Manchester: St. Jerome.

Nirenburg, Sergejev (ed) (1987): *Machine Translation: Theoretical and Methodological Issues*. University Press, Cambridge.

Resch, Renate (1998): "Textproduktion". In: Snell-Hornby, Mary/Hönig, Hans G./ Kussmaul, Paul/Schmitt, Peter A. (eds), 1998. *Handbuch Translation*, 164–167. Tübingen: Stauffenburg.

Rothkegel, Annely (2003): "Text tasks and Multilingual Text Production". In: Gerzymisch-Arbogast, H./Hajicová, E./Sgall, P./Jettmarová Z./Rothkegel, A./Rothfuß-Bastian, D. (eds), *Textologie und Translation*, 249–259. Tübingen: Narr.

Rothkegel, Annely (2004): "Textpaare – ein Beitrag zur Diskussion eines erweiterten Übersetzungsbegriffs". In: House, J./Koller, W./Schubert, K. (eds), *Neue Perspektiven in der Übersetzungs- und Dolmetschwissenschaft,* 321–332. Bochum: AKS.

Rothkegel, Annely (2007): Geschichte der maschinellen und maschinengestützten Übersetzung. In: Kittel, H./Frank, A.P./Greiner, N./Hermanns, Th./Koller, W./ Lambert, J./Paul, F. (eds), *Übersetzung. Translation. Transduction. Internationales Handbuch zur Übersetzungsforschung*. Bd. I, 748–756. Berlin: de Gruyter.

Sager, Juan (1994): *Language Engineering and Translation*. Amsterdam: Benjamins.

Schwanke, Martina (1991): *Maschinelle Übersetzung. Ein Überblick über Theorie und Praxis*. Berlin: Springer.

Somers, Harold, ed (2003): *Computers and Translation. A Translator´s Guide*. Amsterdam/ Philadelphia: John Benjamins Publishing Company.

Tonfoni, Graziella and Rothkegel, Annely (2007): *Visualisierung von Textprozessen*. Wiesbaden: Deutscher Universitätsverlag.

White, John S. (2003): "How to Evaluate Machine Translation." In: Somers (2003: 211 – 244).

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# Teaching a Postgraduate Program in LSP Translation

## Curriculum and Experiences

**Abstract** – Translation practitioners acquire their qualifications at language schools, translation and interpreting institutions, and universities, or they train themselves. In Switzerland, both of these target groups have had little opportunity until recently to take part in postgraduate programs in translation and especially in LSP translation. Bridging the gap between the realities of professional translation and the theories and research findings of translation studies as they are, for example, offered in this volume, is the aim of a postgraduate program in specialized translation that has been offered at the Zurich University of Applied Sciences (ZHAW), Winterthur, since 2003. The program is designed not only to provide trained translators with further education but also to teach practitioners from various fields the norms and conventions of the translation profession and to integrate them into practice. To reach those goals, a curriculum has been developed that is customized for the needs of professional translators and professionals who translate. It is introduced here with special reference to LSP or specialized translation and integrates the aspects outlined in the articles of this volume.

# 1 Introduction

Communication is essential to mankind, and translation has always played an important role. The increase in and diversification of individual as well as economic, political, scientific, and cultural contacts across language and cultural barriers have led to a rising number of translators in the course of the 20th cen-

tury. Postgraduate education has become increasingly important at a time when translation as a profession has changed substantially in various key respects.

Translators working in companies, in agencies, or as freelancers were educated at language schools, at translation and interpreting institutions, or at universities, or have trained themselves. In Switzerland, these target groups have had little opportunity until recently to take part in any postgraduate programs in translation, although the body of knowledge in translation studies has broadened considerably since the middle of the twentieth century and the gap between the theoretical knowledge of most translators and the state of the art in research has widened with it. Bridging that gap between the academic world and that of professional practitioners – the 'real' world – is one of the foremost tasks of postgraduate education for translators. Linking theory and practice, as proposed by Durban et al. (2002) at the XVI World Congress of the International Federation of Translators in Vancouver, was the motivation driving the development of the postgraduate program in specialized translation[1] described in the following article.

Of course, the essential substrate for the concept of such a program was translation studies, with its diverse aspects and the heterogeneity of translation research (see Gerzymisch-Arbogast, 2002). Various theories with their respective proponents were influential in the development of the program as well as in the design of the teaching units and choice of teaching methods, some of which integrating thoughts expressed in the contributions of this volume. In general, the functional approach as described in Nord (1995) was considered the most appropriate theoretical basis. The program is customized for translators working within specific areas (science & technology, business & finance, law), in line with Schmitt's suggestions for technology and engineering (1998), as well as for legal and business professionals. Its didactic orientation is based as much on various reference works on translation studies, insights into translator training (e.g. Lee-Jahnke, 1997; Kußmaul, 1995), acquisition of the skills of translators (e.g. Kiraly, 2000), and assessment of translations (e.g. House, 1997) as on my own and other instructors' teaching experience in translation courses at the Institute of Translation and Interpreting at the Zurich University of Applied Sciences (ZHAW).

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[1]    Known in German as Fachübersetzen.

## 2 Concept for a postgraduate program in specialized translation

The postgraduate program in specialized translation was designed to meet real-world demands in various respects: technical know-how, specialist knowledge, and methods. The goal was to enable translators to adapt to the developments in these specialized areas and to enhance their skills. Before work on the concept really began, numerous discussions with translators, employers, and representatives of translation and terminology departments of Swiss companies took place, and many alumni of translation colleges were surveyed to find out what they actually needed in their work as translators and what they had not studied to a sufficient extent in the course of their initial degrees. The concept reflects the mandate assigned to our institute as part of a university of applied sciences: to focus on the practice of professionals. Accordingly, the target groups and objectives were easy to define, as described below.

### 2.1 Target groups and objectives

The main target groups for the postgraduate program in specialized translation are people with a university degree or equivalent in translation and/or interpreting, professional translators, and experienced professionals from related areas. Another important target group is university graduates with non-language specializations who are interested in translation.

The program objectives include the following:

– Participants gain a greater understanding of the issues in translation studies, update their specialist knowledge, and deepen their awareness of the norms and conventions of the translation profession according to their personal professional needs.
– Participants acquire increased competence in dealing with specialized texts and by the end of the course are in a better position to handle the tools that allow access to specialized knowledge.
– Participants have the opportunity to establish a network that they can profit from in a professional context. They have contact not only with instructors who are professional translators but also with participants from areas other than their own who have various native or first languages.

Participants whose first languages are not taught in Switzerland at the undergraduate level also have access to the postgraduate program and thus the opportunity to continue their education. Reflecting the process of globalization,

this mainly concerns participants whose first languages are becoming increasingly important in the markets of the 21st century (in the 2004/2005 course, these were Arabic and Russian).

## 2.2 Instructors

Some of the instructors of the postgraduate program in specialized translation are faculty in the undergraduate program at the ZHAW Institute of Translation and Interpreting[2]. The challenge was and continues to be for them to impart their competence and scientific and practical knowledge in an appropriate way while exposing themselves to a critical audience of postgraduate students, many of whom have several years of experience as professional translators. The design of specific modules was only possible thanks to the instructors' great commitment to innovative postgraduate programs, since most of their previous teaching had been in traditional undergraduate programs. The instructors have had to develop teaching methods and a variety of new techniques to adapt to different language combinations (see below) and translation direction (into or out of first languages). In addition to faculty members, translation theorists and experienced practitioners, such as lawyers, economists, and engineers, from Switzerland and abroad are invited to take part in
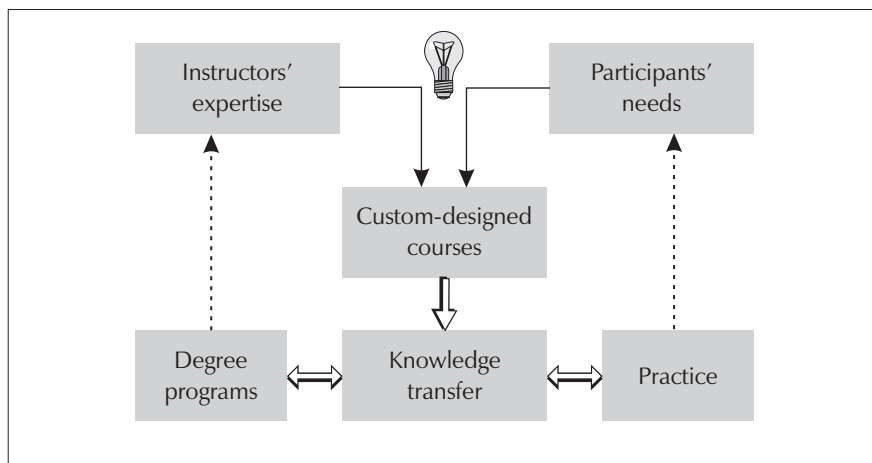


**Fig. 1**   Process of custom designing professional development courses

[2]     Formerly the Zurich School of Translation and Interpretation, known in German as the Dolmetscherschule Zürich (DOZ).

order to intensify the discourse between theory and practice. Collaboration across international borders is much more feasible nowadays thanks to modern technology. Postgraduate programs of this nature foster a permanent dialogue between academe and professional development, with knowledge transfer working in two directions: from universities to professionals and vice versa. This orientation to the needs and requirements of working translators is an underlying principle of all of the postgraduate education and professional development courses and programs offered by the Center for Continuing Education of the Institute for Translation and Interpreting (see Figure 1).

## 2.3 Content and structure of the program

The main areas chosen as the focus of the program were (new) developments in translation theory, advanced computer use and research techniques for translation practitioners, application of computer-assisted translation tools, terminology, new communication processes, and specialist knowledge (science & technology, business & finance, and law). Internalizing what is learned and applying it in practice are of utmost importance in this program: translation workshops are specifically designed to meet this purpose (see below, section 3.1, for details). The choice and content of the topics as well as the development of the workshop concept is based on exchanges with professional practitioners (freelancers and professionals working in the translation departments of companies).

   The program is organized into modules, each based on one of the five following themes:

– Consolidation of translation competence and first language skills (translation theory, text analysis, technical writing, and editing)
– Software for translators and interpreters
– Specialist knowledge (topics in science & technology, business & finance, and law)
– Modern research techniques (Internet) and communication
– Basic principles of terminology.

In all of the modules, relevance to translation practice is a primary focus. The instructors who are faculty members of the Institute for Translation and Interpreting all have professional translation experience, other instructors are professional translators with business experience, and still others are experts in their professional areas. Bridging the gap between theory and practice is the aim of all of the instructors, especially in the translation workshops.

The modules usually include three components:

– Introductory lecture(s)
– Theoretical input and exercises relating to resources relevant to translation (reference works, dictionaries, databases, secondary literature, research and evaluation of Internet sources)
– Practical work with texts.

## 2.4 Organization

### Language of instruction

The modules are generally taught in German and may be taught in English. If there are enough participants with other first languages (e.g. English, French, Italian, or Spanish), the module "Consolidation of translation competence and first language skills" is taught in the respective language(s) based on a needs analysis.

### Program schedule

The postgraduate program in specialized translation is part-time: it takes two semesters and includes about 200 lessons. A lesson is usually a 90-minute unit. As a rule, the modules are held on Friday afternoons and Saturday mornings. The first course took place in the 2003/04 academic year, the second in 2004/05. The course is run annually if there is enough demand.

### Certificate requirements

A certificate is awarded upon completion of a thesis if the following requirements are met: at least 80% attendance of the compulsory classes, satisfactory performance in all modules and in the thesis (see section 4), and 200 lessons (or "lesson equivalents" in the form of project work).

## 3   The modules

## 3.1 Module 1: Consolidation of translation competence and first language skills

### Objectives

The competence of a translator includes sophisticated insight into the subject matter in question as well as excellent knowledge of both the source and the target language. In principle, translators are producers of texts: writing must

be an integral part of a translation course. If the language of a translated text is not appropriate or is difficult to understand, then the translation will not have the desired effect in the target language.

In the module "Consolidation of translation competence and first language skills", a survey of the major translation theories is presented as well as applied linguistics topics, such as the important aspects of text types of source and target texts. The focus in the theoretical section is on the acquisition of subject content, information, and knowledge. In the practical section of the module, participants are expected to work out their own translation solutions, reflect on them, learn to split up the translation process into various stages, make choices between solutions, and justify those choices. The practical work concentrates on the translation process as presented in the theoretical part, on discovering characteristic features of texts, and on rendering them appropriately for the respective text types.

## Content

The module consists of three parts (see Table 1 for lesson allotment):

1.  Principles of translation theory and translation skills. Translation theories, translation strategies, examples of text types in various languages, as well as dealing with what is "untranslatable", pitfalls in translating, evaluating and analyzing defective translations, and developments within the profession.

2.  Translation workshop. Topics and methods from translation studies are integrated into the process of translating, with various choices and perspectives weighed against each other. The participants analyze source texts, discuss specific translation problems, assess translations, reflect on the criteria for these assessments, and use computer-based tools. The participants, with a variety of first languages, receive a translation brief and texts on various subjects (science & technology, business & finance, or law) from their instructor or coach, translate these texts using their own strategies, and bring their solutions to the workshop. They exchange their experiences and insights during discussions of these complex authentic texts and work towards optimizing the translations. This form of instruction is along the lines of the translator workshops in Straelen, Germany. In the 2003/4 course, the source texts were in German, English, French, and Italian, and in the 2004/5 course in German, English, French, Italian, and Spanish. The target texts are in the first languages of the participants, and the workshops are divided into various language combinations. The in-

structors always have the target language as a first language and function as coaches.

3. Writing seminar. Writing skills are an integral part of the translator's craft. They are needed when composing, paraphrasing, editing, and revising texts. The organization and style of specialized texts is a primary focus of the writing workshops; another is the writing skills of individual translators. The objectives are to address the issues of why some translations are defective or even incomprehensible and why they are so often characterized by awkward or 'uneven' writing in the target language. To upgrade their writing skills, translators have to be made aware of stylistic phenomena in their languages and of how comprehensibility and readability can be achieved.

| 1st semester | Translation theory | 15 lessons |
| | Translation workshop | 8 lessons |
| 2nd semester | Translation theory | 8 lessons |
| | Translation workshop | 16 lessons (2 sessions) |
| | Writing seminar | 16 lessons (2 sessions) |

**Tab. 1** Lesson allotment for "Consolidation of translation competence and first language skills" module

## 3.2 Module 2: Software for translators and interpreters

### Objectives

The latest developments in software tools relevant to translators and interpreters are demonstrated to the participants. They become familiar with the tools of the SDL Trados® suite, develop skills in using them, and learn how to evaluate new products in the area of information technology. They learn about the technical and formatting requirements of the respective tools and learn to apply them efficiently in their work.

### Content

The module consists of two parts (see Table 2 for the lesson allotment):

1. Overview of the latest generation software tools (lecture, demonstrations, practice with selected tools, cf. for instance the contributions of Peter Sandrini and Klaus Schubert & Lisa Link in this volume). Technological developments in the field of translation, translation memory systems and

their components, machine translation und its applicability, quality criteria for the assessment of products, localization, and systems for workflow management.
2. Practical applications. Working with translation memory systems, exercises with selected SDL Trados® tools, data exchange, and evaluation of other products on the market.

| 1st semester | Overview of software | 16 lessons |
| | Practical applications | 8 lessons (workshop) |

**Tab. 2**  Lesson allotment for "Software for translators and interpreters" module

## 3.3 Module 3: Specialist knowledge

### Objectives

The participants acquire in-depth background knowledge about their subject specializations (topics in science & technology, business & finance, and law) to enable them to develop their expertise. They gain a deeper understanding of various subjects and learn how to keep up with new developments in those areas. They gain insight into the special characteristics of specialized texts and text types, become familiar with the relevant reference resources (online and in print), and learn how to use them efficiently. They become more aware of the prerequisite knowledge for new areas in specialized translation and potential translation problems. They develop skills that enable them to respond to the changing demands of the market.

### Content

Input is offered in the following broad areas: science & technology, business & finance, and law (see Table 3 for lesson allotments).

Each broad area in the module includes a general introduction, theoretical input and exercises with resources relevant to translation in that area (reference works, dictionaries, databases, secondary literature, research and evaluation of Internet sources), and a translation workshop (half-day slots).

| 1st semester | Science & technology | 5 lessons |
| | Business & finance | 24 lessons |
| 2nd semester | Law | 16 lessons |

**Tab. 3**  Lesson allotment for "Specialist knowledge" module

## 3.4 Module 4: Modern research techniques (Internet) and communication

### Objectives

The participants consider a variety of practical aspects of the translation profession. They optimize research techniques specific to translation needs and gain an overview of the various Internet search engines and tools useful to translators and interpreters.

In the "Communication" section of the module, they expand their repertoire of argumentation strategies. They study rhetoric and practice methods of leading discussions to establish a basis for developing of their own negotiating and communication strategies (cf. for example the contribution of Juliane House in this volume).

### Content

The module includes two distinct sections (see Table 4 for lesson allotments): efficient research techniques and translation-specific online resources; and communication skills, client-orientation, and negotiating strategies.

| **1st semester** | Research techniques | 8 lessons (workshop) |
|---|---|---|
| **2nd semester** | Communication | 8 lessons (workshop) |

**Tab. 4**    Lesson allotment for "Modern research techniques and communication" module

## 3.5 Module 5: Basic principles of terminology

### Objectives

The participants gain an overview of the basics of terminology (cf. for example the contribution of Heidrun Gerzymisch-Arbogast in this volume). Terminology management, meaning the process of collecting, researching and defining technical terms, is indispensable preparation for specialized translation and often a time-consuming activity. It is thus essential for specialized translators to become familiar with and understand the important issues in terminology, appropriate methods, and research techniques. They also need to familiarize themselves with computer-supported tools and terminology management.

## Content

Significance of consistent terminology for translation and interpreting, introduction to terminology, basic principles, and tools for terminology management.

| 1st semester | Terminology | 8 lessons |
|---|---|---|

**Tab. 5**   Lesson allotment for "Basic principles of terminology" module

# 4   Thesis

The participants submit a final thesis related to some aspect of specialized translation at the end of the two-semester program (the summer can be spent writing the thesis). The participants choose their thesis topics in consultation with their supervisors and the program coordinator. The thesis can take two forms: (1) an analysis of some aspect of translation theory and its relevance to specialized translation; (2) an annotated translation of a specialized text. The latter consists of the translation from a working language into the first language and a commentary linking the translation problems to translation theory and explaining the decision-finding process. With an annotated translation, the participants must demonstrate their expertise in translation, their understanding of the subject matter, their first language competence, and their appreciation for translation issues. The choice of source text is based on the participants' specialization (science & technology, business & finance, or law) and the working language.

## 4.1 Aims of the thesis

The thesis serves two purposes: to allow the participants to demonstrate the skills and knowledge they have acquired over the two semesters and to serve as a capstone project. Successful completion of the thesis is required for the student to earn the certificate.

Theoretical thesis: The participants prove that they can present a translation problem or issue in theoretical terms and link it with other theoretical concepts, that they are familiar with current research in a particular field of translation theory, and that they are able to reflect on their topic from their own perspective and based on their own experience as translators.

Annotated translation: The participants prove that they are able to understand a complex specialized text in one of their working languages and translate it into their first language correctly according to the standards of the functional approach. A major component of the thesis associated with the professional treatment of texts in the translation process provides evidence that the candidate is aware of fundamental translation problems and the rationale for the decisions that form the basis for their solution. In addition to a discussion of such problems, the commentary includes all of the important features of the translation process (such as a text analysis of the source text with respect to target audience, text type, genre, function, and effect, as well as aspects of cultural awareness, theoretical context, and translation strategies). The commentary is written in the same language as the target text (as a rule in the participant's first language).

## 4.2 Assessment

The thesis is assessed according to the following criteria, as applicable:

– Inclusion and relevance of translation theory principles
– Adequacy and completeness of the translation
– Technical, terminological, and linguistic correctness (this includes evidence of mastery of orthographic, grammatical, lexical, and genre conventions of the target language in question)
– Comprehensibility of the target text and commentary
– Content-related research and the application of new technologies
– Adherence to formal requirements (layout, bibliography, etc.).

## 5  Program development and evaluation

The postgraduate program in specialized translation was offered for the first time in 2003/2004, for the second time in 2004/05. Nine participants were in the first course, mainly alumni of the former Zurich School of Translation and Interpretation (DOZ) who wanted to upgrade their first diploma to a university degree. There were 16 participants in the second course, five of whom had graduated from the DOZ and 12 others who had either a university degree in translation or a degree in another area (linguistics, science, engineering, economics, etc.) and/or were professional translators in business settings. The variety of first languages was much greater in the second course. In 2003/04, the first languages were: German (6) and French (3). In the 2004/05 course, there

were seven different first languages among the 16 participants: Arab (1), German (6), English (1), French (2), Italian (4), Spanish (1), and Russian (1).

## 5.1 Practical problems

One of the most significant difficulties in this program, as with all translation studies programs, is the heterogeneity of the participants with respect to prior education and first languages. Not only do the participants have translation skills to varying degrees, they also come from different areas of specialization and in many cases from different countries.

   Another difficulty is financial: the tuition fees were EUR 3,600 for the 2004/05 course. This is a significant obstacle for translators and other language specialists, since their professions are not known for their high salaries.

## 5.2 Solutions

The problem of heterogeneity can be solved on the one hand by the structure of the program, which at an early stage provides the theoretical input needed for the practical translation process. The translation workshops, on the other hand, are organized by language pairs. In the 2003/04 course there were three combinations (en–de, fr–de, and de–fr); in the 2004/05 course there were also three combinations offered in the translation workshops: the two most frequent in Switzerland (en–de and fr–de) as well as de–it. Language pairs for which there are only one or two participants are offered in coaching sessions (these included de–en, de–fr, de–es and de–ru in 2004/05).

   Although challenging for the instructors, heterogeneity can also be considered an advantage. Discussion on topics and texts are stimulated by participants with different educational backgrounds and different professional experience.

   The problem of relatively high tuition fees is alleviated somewhat by the willingness of many Swiss companies to support continuing education for their employees; some agree to pay the tuition fees outright and/or give their employees time off to attend (the course is on Friday afternoons as well as on Saturdays; in other words, a significant part of the course is during normal working hours). Obviously, the preceding applies only to employees, not to freelancers or unemployed people. However, participants may also be eligible to apply for a subsidy from governmental or municipal authorities if they are not working as translators, but are trying to gain new qualifications to increase their employability.

## 5.3 A preliminary evaluation

The participants' assessment of the 2003/04 pilot course, based on anonymous course evaluations and oral feedback, was very good. Specialist knowledge and a technology update was mainly what the participants had been looking for. In addition, the instructors motivated the participants to compare and discuss individual solutions in the various workshops and at the same time offered a reality check because they are professional translators themselves. The learning environment in all of the modules was viewed by both the participants and instructors as essentially active and interactive, and the general tone of the course was characterized by the opportunity and encouragement for participants to exchange and reflect on their experiences and perspectives.

## 6   Future steps

Again and again, participants have asked about additional modules in areas of specialization that have not (yet) been offered, and we have received enquiries by businesses and individuals as to other modules (such as medicine, psychology, and culture). There is no doubt that it would be desirable to increase the number of topics on offer. These could complement the program and serve the purpose of enabling translators and interpreters to develop other areas of expertise. Such topics might be assigned their own modules or be covered by existing courses or combinations of modules in other institutions. A look across national borders provides new perspectives: cooperation across language and cultural barriers can lead to new solutions in the form of international modules and programs.

## 6.1 Implications of the Bologna reform

Continuing education accentuates the dovetailing between professional life and school, where basic knowledge is acquired and related skills are practiced. In the course of life-long learning, the boundaries between undergraduate and postgraduate education become increasingly blurred. International recognition is equally important for both levels of education, and the modules of the postgraduate education programs are also to be integrated into the European Credit Transfer System (ECTS), which until now has served primarily to equate and allow transfer of undergraduate credits between institutions. In Switzerland, the doors to Bologna are wide open, and the universities of ap-

plied sciences are restructuring their programs to be in line with those recommendations.

Such modularization and ECTS alignment of programs correspond to the trend towards and need for individualization and allows professionals to add modules from anywhere in Europe to their personal education portfolio. A discipline such as translation can only profit from an integrated European approach to postgraduate education. This is essential especially at a time when the market is demanding more flexibility from employees. Professional translators can study part-time and choose modules which are useful for them in their work, help them attain an additional qualification, or even reach a new position in their careers. Flexible education includes e-learning: modules for the program in specialized translation are planned. In addition to the obvious benefit of reducing the barriers of distance and scheduling, e-learning modules, which can be offered in cooperation with foreign universities, make it even more feasible to address the needs of students living outside Switzerland.

## 7   Continuing education at universities of applied sciences

In the last few years, it has become obvious that the labor market in Switzerland is very interested in highly specialized, accredited postgraduate programs. The universities of applied sciences have good contacts with a great variety of companies, quite often through alumni. The alumni are also an important target group for postgraduate courses and programs. And if the numbers of young people who opt for tertiary education continue to rise, then logically there will also be an increasing demand for both postgraduate programs and continuing education courses.

### 7.1 Continuing education at the ZHAW Institute of Translation and Interpreting

The Institute of Translation and Interpreting has been part of the ZHAW since 1999 when the former DOZ merged with other professional colleges. The ZHAW, with its eight departments, is the only comprehensive university of applied sciences in Switzerland; our institute is part of the department of Applied Linguistics. The institute offers an undergraduate degree in translation[3]

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[3]     Until the full implementation of the Bologna recommendations, the program leads to a
        4-year degree and afterwards a 3-year Bachelor's with the possibility of acquiring a
        2-year Master's degree.

and a degree program in interpreting. The Center for Continuing Education of our institute has the mandate to develop and offer postgraduate courses and professional development seminars for our alumni and other target groups (see section 2.1) as well as for various institutions where multilingual communication is essential (e.g. federal government, banks, insurance companies, and courts). Ever since the universities of applied sciences were given the opportunity by the government to develop postgraduate programs for various target groups, most have enthusiastically launched various courses and programs with a speed atypical of Swiss institutions. In the case of language-related fields, it is very unlikely and would be overly optimistic to assume that financial gain is the primary motivation. The objective of postgraduate programs in government-supported universities of applied sciences is to broaden and deepen the competence acquired in their undergraduate degree programs and not to duplicate what private institutions have been offering for decades (e.g. general language courses).

Thus, the continuing education courses offered by our institute focus on the interface between language(s) and competence in professional areas like law, science & technology, and business & finance. Some of the special courses and programs that have been offered by our institute recently are shown in Figure 2.



**Professional Competence and Language**
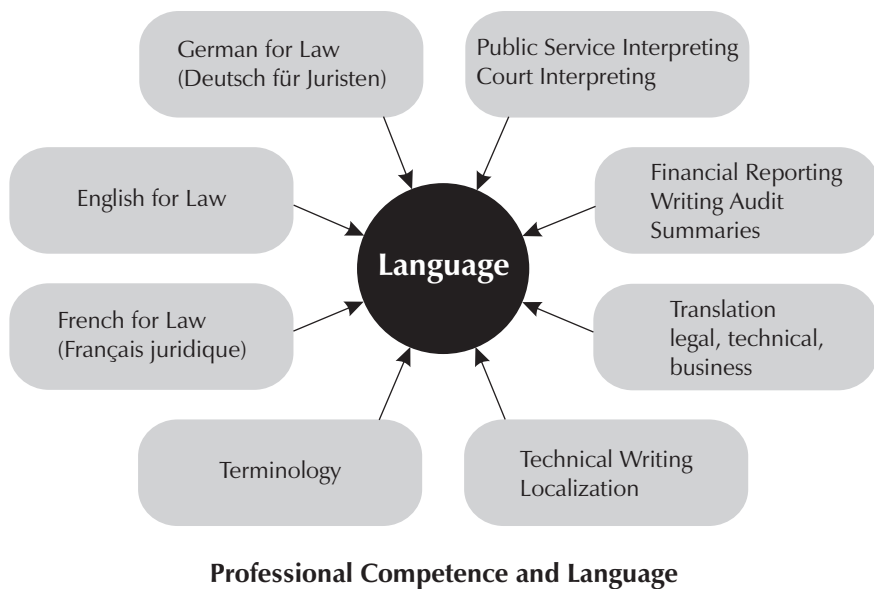
**Fig. 2**   A selection of continuing education courses and programs for professionals

Courses in technical writing, terminology, specialized translation, localization, and language for special purposes are all relevant to translators, communicators, and professionals in other areas and offer the opportunity to acquire additional qualifications or prepare for a new career. The possibility of professional re-orientation can motivate the acquisition of new skills in language(s) for people who have no formal education in technical writing, communication, or translation. Several modules or even several programs may be required to attain a recognized standard. Longer units may be the right solution for graduates and/or professionals who want to receive a Master's of Advanced Studies (MAS) at a later stage. For all of these variants, cooperation with other German-speaking universities and international institutions is desirable.

In addition to the one- or two-semester postgraduate certificate courses, the Institute of Translation and Interpreting specializes in on-demand professional development courses and seminars based on needs analyses in consultation with interested clients. One example is a customized seminar for translators in a large Swiss corporation. Management had expressed a degree of dissatisfaction with the translations produced by the internal translation service, so the translators looked to our institute for expertise. On the basis of preliminary interviews with the translators, the institute instructors designed professional development seminars to meet their needs and address management's concerns. During the regularly scheduled seminars, the instructors examine source and target texts supplied by the translators (especially those considered deficient by the clients), analyze text patterns, translation problems, and difficult passages with them and consider them from the perspective of theoretical translation issues. The direct relevance of theory to familiar texts allows the participants to extrapolate insights to apply to their daily work and maximize the effects of the education.

Other courses deal with writing skills, again developed in response to specific client needs. A linguistically-based approach that incorporates new insights from the field of genre analysis allows the institute instructors to provide valuable guidance in writing to professionals from other specializations. For example, many internationally active Swiss companies have made English a priority for important corporate communications such as annual reports, press releases, and advertising. The staff and/or managers responsible for producing such texts are specialists in their areas of expertise, know English, and may even have recognized certificates in English. But in many cases, they lack competence in the textual patterns, conventions, and terminology required for such specialized writing because these are not dealt with in standard English

courses and rarely in sufficient detail in Business English courses. Institute instructors with English as their first language and experience in the economic sector concerned work out professional development seminars in close collaboration with a representative from the corporate department in question.

Additional modules could be designed using this collaborative approach with clients and representatives from various industrial sectors. In principle, it would be possible to develop joint projects with institutional partners from other countries to maximize synergy effects and allow insights to be distributed more broadly. An example where this is almost reality is a module in public service interpreting which can be combined with the postgraduate course in specialized translation.

## 7.2 Public service and court interpreting

Public service and court interpreting have been topics of special interest for hospitals, schools, authorities, and courts for the last few years. Modern migration of people has meant that the need for competent interpreting has reached an astonishingly high level in many areas. The demand for interpreters is rising continually, with an increasing number needed in hospitals, court rooms, schools, police stations, and so on. Very often these interpreters have no formal training or education in interpreting or translation, and their first languages are not even offered at university level in their country of residence. Some of them may be employees of the organization involved (administrative, professional, or cleaning), relatives, or friends (except in courts). In Switzerland, conference interpreters rarely work in these fields because remuneration is far below their normal scale.

In the summer of 1999, questions were raised in the Swiss parliament in connection with court interpretations. One issue mentioned was that the quality of the interpretations was not always satisfactory and another was that the costs were too high for that level of quality. The criticisms with respect to quality concerned deficiencies in language skills, awareness of the terminology required, knowledge of the subject matter and Swiss institutions, and above all interpreting skills.

The objective of continuing education programs in this area is the increased professionalism of interpreters. Some courses have already taken place at the Institute of Translation and Interpreting and others are in the development phase. All of the courses are planned in cooperation with clients, in this area primarily representatives from the courts, and therefore customized to their needs. At the same time, the clients have to be sensitized to what inter-

preting really is: very often they believe it is a word-for-word process and are not able to provide the interpreters with the background information they require to do a reasonable job. Many, too, still wrongly believe that a person who is bilingual will have no problems interpreting in any situation.

There are also continuing education programs devised for interpreters in the public service sector. This can also be an interesting option for professional translators who have no formal training as conference interpreters. Many of the interpreters working in the public service sector have first languages that are not offered in the interpreting degree programs in Switzerland (i.e. other than German, French, Italian, English, or Spanish). This aspect of multilingualism is one of the difficulties in any educational program. By necessity, the teaching language is the common language of the course participants (in our institute's case: German) and the exercises are unidirectional. Only very late in the programs are sessions in language pairs planned.

The interface between the postgraduate education program in specialized translation and the programs for interpreters is the translation competence interpreters need to translate documents that are needed or referred to during the proceedings they are interpreting. Very often, interpreters are hesitant to even try because they do not have the competence to translate specialized texts, which are often highly complex (e.g. medical or technical reports, contracts, and certificates). The required competence includes understanding complex specialized contexts, converting the message to another language, and then carefully formulating it. The first two steps are common to both the interpreting and translating process, but the additional skill of converting the message into written form, text production competence, must be acquired and trained. There are therefore synergies that can be exploited in several modules, such as translation theory, research techniques, basics of terminology, exercises in text production, and the translation workshops.

Programs in postgraduate education can react flexibly to developments in professional life, create new modules, provide the link between theory and practice, and last but not least easily incorporate "new" languages into modules. These strengths should be applicable internationally to an interdisciplinary approach in continuing education. Ideally, participants would be able to acquire a broad spectrum of multilingual competence without interrupting their careers by attending part-time courses at various universities throughout Europe.

## Acknowledgement

# 8   Appendix: Lesson allotment for modules and sub-modules

| Specialized translation modules and sub-modules | 1st semester (12 weeks) | | 2nd semester (7 weeks) | |
|---|---|---|---|---|
| | Theory | Workshop | Theory | Workshop |
| Translation theory | 15 | | 8 | |
| Basic principles of terminology | 8 | | | |
| Specialist knowledge (science & technology) | | 5 | | |
| Specialist knowledge (business & finance) | 24 | | | |
| Specialist knowledge (law) | | | 16 | |
| Translation workshop | | 8 | | 16 |
| Writing seminar | | | | 16 |
| Software for translators and interpreters | 16 | 8 | | |
| Research techniques | | 8 | | |
| Communication | | | 8 | |
| **Total** | **63** | **29** | **32** | **32** |

| | |
|---|---|
| Theory lessons | 95 |
| Workshop lessons | 61 |
| Project work (lesson equivalents) | 50 |
| **Total lessons** | **206** |

# 9 References

Durban, Chris & Martin, Tim & Mossop, Brian & Schwartz Ros & Searles-Ridge, Courtney (2002): "Translator Training and the Real World: Concrete Suggestions for Bridging the Gap." In: *Proceedings of the XVI FIT Congress*, Vancouver, Canada.

Gerzymisch-Arbogast, Heidrun (2002): "Ansätze der neueren Übersetzungsforschung". In: Best, Joanna & Kalina, Sylvia (eds) (2002): *Übersetzen und Dolmetschen*. Tübingen: Francke (UTB).

Gerzymisch-Arbogast, Heidrun (1994): *Übersetzungswissenschaftliches Propädeutikum*. Tübingen: Francke (UTB).

Gerzymisch-Arbogast, Heidrun (2008): "Fundamentals of LSP Translation". (in this volume)

Hönig, Hans G. & Kußmaul, Paul (1982): *Strategie der Übersetzung*. Tübingen: Narr.

House, Juliane (1997): *Translation Quality Assessment: A Model Revisited*. Tübingen: Narr.

House, Juliane (2008): "Intercultural Discourse and Translation". (in this volume)

Kiraly, Don (2000): *A Social Constructivist Approach to Translator Education*. Manchester: St. Jerome Publishing.

Kußmaul, Paul (1995): *Training the Translator*. Amsterdam/Philadelphia: Benjamins.

Lee-Jahnke, Hannelore (1997): "Voraussetzung für eine optimale Übersetzerausbildung heute". In: Fleischmann, Eberhard & Kutz, Wladimir, & Schmitt, Peter A. (eds) (1997): *Translationsdidaktik. Grundfragen der Übersetzungswissenschaft*. Tübingen: Narr.

Nord, Christiane (1995): *Textanalyse und Übersetzen. Theoretische Grundlagen, Methode und didaktische Anwendung einer übersetzungsrelevanten Textanalyse*. Heidelberg: Groos.

Rothkegel, Annely (2008): "Multilingual Text Production". (in this volume)

Sandrini, Peter (1996): *Terminologiearbeit im Recht. Deskriptiver begriffsorientierter Ansatz vom Standpunkt des Übersetzers*. Wien: TermNet.

Sandrini, Peter (2008): "Localization and Translation". (in this volume)

Schmitt, Peter A. (1998): *Translation und Technik*. Tübingen: Stauffenburg.

Schubert, Klaus & Link, Lisa (2008): "Multidimensional Control in Technical Translation". (in this volume)

Snell-Hornby, Mary (1988): *Translation Studies – an Integrated Approach*. Amsterdam/Philadelphia: Benjamins.

Stolze, Radegundis (1994): *Übersetzungstheorien. Eine Einführung*. Tübingen: Narr.

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# Subject Index