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Transfer in translation

The role of literal translation in the Beginner and Novice phases of BA students

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List of abbreviations

Beg	beginner
E-G	English-German
G-E	German-English
L1	first language
L2	second language
Nov	novice
SLA	second language acquisition
SL	source language
ST	source text
TL	target language
TT	target text

Abstracts

This paper investigates the role of literal translation, or transfer, on the syntactic level in translations done by the same students at the beginning and at the end of their BA studies within the framework of the CTP project at the ZHAW. The corpus of translations came from two different groups of native German-speaking students: one group translated from German into English and the other translated from English into German. The translations were compared with regard to the amount of literal translation, which was determined using a new method of analysis, as well as with regard to the nature of revisions, the length of time taken to translate a sentence, and the number of errors that were attributable to transfer. The results showed differences between the two groups. The German-English group avoided syntactic transfer at the beginning of their studies but used more transfer at the end and were more prone to making errors as a result of transfer. The English-German group used more transfer at the beginning of their studies and less at the end, using literal translation more as an in-between step in the process.

Diese Arbeit untersucht die Rolle von wörtlicher Übersetzung, oder Transfer, auf syntaktischer Ebene in Übersetzungen, die die gleichen Studierenden zu Beginn und am Ende ihres BA-Studiums im Rahmen des CTP-Projekts an der ZHAW schrieben. Der Übersetzungskorpus kam von zwei verschiedenen Gruppen deutschsprachiger Studierenden: Die eine Gruppe übersetzte von Deutsch auf Englisch und die andere übersetzte von Englisch auf Deutsch. Die Übersetzungen wurden hinsichtlich folgender Aspekte untersucht und verglichen: Menge wörtlicher Übersetzung (anhand einer neuen Analysemethode), Art der Revisionen, Zeit und Anzahl der Fehler, die aufgrund von Transfer entstanden. Die Resultate zeigten Unterschiede zwischen den zwei Gruppen: Die Deutsch-Englisch-Gruppe vermied syntaktischen Transfer zu Beginn ihres Studiums, aber benützte ihn mehr am Ende und war anfälliger für Fehler aufgrund von Transfer. Die Englisch-Deutsch-Gruppe brauchte zu Beginn ihres Studiums mehr wörtliche Übersetzung, während sie sie am Ende des Studiums eher als Zwischenschritt benützte.

Introduction

This paper investigates the role of literal translation in two different stages of students' translation studies. Literal translation, which can also be considered a type of linguistic transfer, seems to have been gaining increased scientific attention in recent years and has been found to be an important part of the translation process. Moreover, differences have been found in the way literal translation is used by professional translators and by translation students. What has not yet been examined is the way it is used by the same translators at different stages in their careers, and herein lies the main focus of this paper. This research question could be investigated thanks to the opportunity to use data from the corpus of the *Capturing Translation Processes* (CTP) project that is currently being carried out at the ZHAW Institute of Translation and Interpreting by a team led by Prof. Dr. Maureen Ehrensberger-Dow. This corpus includes translations done by the same students at different stages in their studies. The aim of this investigation is to compare translations that the students did at the beginning of their training with translations that they did at the end of their training and determine whether and how the role of literal translation changes, as well as whether there are any differences between translations into the first language (L1) and translations into the second language (L2). The type of transfer specifically investigated in this paper is syntactic transfer, and the languages involved are English and German.

Chapter 1 presents the theoretical background and an overview of the current state of research as well as hypotheses that can be made on the basis of existing theories.

Chapter 2 describes the data and the method used in this investigation. The main part of this section is the description of a new method for determining the amount of syntactic transfer in a specific translation.

Chapter 3 presents the results of the analysis and some possible explanations for the findings.

The results are subsequently discussed with relation to the theory and the hypotheses in chapter 4.

1 Theory

1.1 Transfer

1.1.1 History and definition

Transfer is also referred to as *crosslinguistic influence*. Jarvis & Pavlenko (2008) define the term *transfer* as "the influence of a person's knowledge of one language on that person's knowledge or use of another language" (Jarvis & Pavlenko 2008: 1). Since antiquity, the phenomenon of transfer has largely been met with negative attitudes and associated with laziness and a lack of sound thinking (cf. ibid.: 2). It was only in the mid-20th century that language transfer began to be studied with a scholarly interest and was legitimised as "an unavoidable feature of language learning and use" (ibid.: 3). The field of second language acquisition (SLA) is the field in which language transfer has been investigated the most. The use of the notion of transfer in the field of translation studies will be discussed in chapter 1.2.

In one of the earliest works on the topic, Weinreich (1953) defined the phenomenon of transfer, which he called *interference*, as "those instances of deviation from the norms of either language which occur in the speech of bilinguals as a result of their familiarity with more than one language" (Weinreich 1953: 1 in Mauranen 2004: 66). It must be noted here that the terms *transfer*, *interference* and *crosslinguistic influence* have been used to refer to the same phenomenon. The differences between these three terms will be discussed in more detail below.

In what Jarvis & Pavlenko (2008: 3) consider to be the broadest synthesis of transfer literature to date, Odlin (1989) defines transfer as follows:

> "Transfer is the influence resulting from similarities and differences between the target language and any other language that has been previously (and perhaps imperfectly) acquired." (Odlin 1989: 27)

He also mentions that, already in the 19th century, Whitney (1881) used the term *transfer* to refer to crosslinguistic influences (cf. Odlin 1989: 26).

In comparison with this definition, that of Jarvis & Pavlenko (2008) is more general and also clearer in that it names *what* influences *what*: a person's knowledge of one language influences that person's knowledge and use of another language. Since this paper is concerned with transfer in translation, the appearance of language *use* in Jarvis & Pavlenko's (2008) definition is especially significant.

1.1.2 Types of transfer

Jarvis & Pavlenko (2008) propose a scheme for characterising transfer types across ten dimensions. These dimensions include the following (cf. Jarvis & Pavlenko 2008: 20ff.):

- area of language knowledge/use (phonological, orthographic, lexical, semantic, morphological, syntactic, discursive, pragmatic, sociolinguistic)
- directionality (forward = L1-L2, reverse = L2-L1, lateral = L2a-L2b, bi- or multi-directional = L1-L2 and L2-L1 synchronously)
- cognitive level (linguistic, conceptual)
- type of knowledge (implicit, explicit)
- intentionality (intentional, unintentional)
- mode (productive, receptive)
- channel (aural, visual)
- form (verbal, nonverbal)
- manifestation (overt, covert)
- outcome (positive, negative)

The type of transfer investigated in this paper can be characterised in five of these dimensions even before any data is analysed. Since the objects of the analysis will be written translations, any transfer found will clearly be *linguistic* in the dimension of 'cognitive level'*, productive* in the dimension of 'mode'*, visual* in the dimension of 'channel', and *verbal* in the dimension of 'form'. With respect to the dimension of 'directionality', instances of transfer found in this paper's corpus will be either *forward* (L1 to L2) or *reverse* (L2 to L1), as both L2-L1 and L1-L2 translations will be examined. The type of knowledge affected and the intentionality of transfer are aspects that require specific investigation in each given instance, and whether transfer is overt or covert is probably a question that is of interest mostly in the area of second language acquisition. These three dimensions will therefore not be further discussed in this paper.

The two dimensions of transfer that are of particular interest here are 'area of language knowledge/use' and 'outcome'. Since there are so many areas of language that can be affected by transfer, the focus of this investigation will be narrowed down to the area of *syntax*. This criterion defines the entire methodological approach of the analysis. The reason this area has been chosen is that in the context of translation, syntax is an important aspect because the structure of the source text (ST) and the source language (SL) can influence the target text (TT) rendered in the target language (TL). Here, the topic of transfer links to the topic of literal translation, which will be discussed below.

Finally, the characterisation of transfer in the dimension of 'outcome', which can be *positive* or *negative*, is one of the aspects that will be of interest in the discussion of the results of this investigation. The next two sections will be devoted to a more detailed description of the transfer types of positive/negative transfer and syntactic transfer.

1.1.2.1 Positive transfer, negative transfer, and interference

The terms *positive transfer* and *negative transfer* date back at least to Selinker (1969) (cf. Jarvis & Pavlenko 2008: 25) and refer to the appropriateness of the result, that is, whether transfer leads to production that corresponds to the target language norms.

Odlin (1989), who describes transfer in the field of SLA, says that transfer is positive when crosslinguistic similarities help a language learner acquire a second language more easily. For example, "[s]imilarities between native language and target language vocabulary can reduce the time needed to develop good reading comprehension" (Odlin 1989: 36).

In contrast, negative transfer "involves divergences from norms in the target language" (Odlin 1989: 37). Ringbom (2007) observes that emphasis has consistently been placed on negative transfer because it is much easier to attribute errors in L2 production to L1 influence than to ascertain how the L1 has influenced correct production in L2 (cf. Ringbom 2007: 30). This focus on errors might be the reason why the term *interference* is used frequently as a synonym of *transfer*. Mauranen (2004: 71) remarks that *transfer* and *interference* are sometimes used interchangeably and sometimes as opposites. In the latter case, interference corresponds to negative transfer.

Herdina & Jessner (2002) consider this use of *interference* as a synonym of *negative transfer* to be rather confusing. They propose that the term *transfer* should be used for "phenomena which result from the application of a structure in one language to a structure in another language" (Herdina & Jessner 2002: 27), meaning that positive and negative transfer are based on structural similarities and differences between L1 and L2. *Interference*, however, should be used "to describe language processing, rather than language structure", that is, for "phenomena which are not reducible to either of the language systems involved" (ibid.: 29).

In the present paper, *transfer* will be used to refer to language production in one language that bears a structural similarity to the other language (only two languages, English and German, are involved). When a differentiation is made between correct and incorrect outcomes, then the terms *positive transfer* and *negative transfer* will be used. In order to avoid confusion, the term *interference* will generally not be used, except in citations.

1.1.2.2 Syntactic transfer

Syntactic transfer is transfer that is related to grammatical features within phrases, the form and complexity of sentence constituents or the form and complexity of sentences (cf. Ehrensberger-Dow & Künzli submitted: 3).

The question whether syntax is at all susceptible to crosslinguistic influence has been controversial, but many studies have found evidence that this is indeed the case (cf. Odlin

1989: 85ff., Jarvis & Pavlenko 2008: 96ff.). Investigations of syntactic transfer in SLA have shown, for example, that multilingualism affects language users' judgments about the grammaticality of utterances, both in the forward (L1-L2) and in the reverse (L2-L1) direction. In production, some of the most conspicuous cases of syntactic transfer are those involving the placement of adverbials, a topic that has received attention since Selinker (1969) (cf. Jarvis & Pavlenko 2008: 99). Other areas of grammar in which syntactic transfer has been found include the use of relative clauses, prepositions, and cleft constructions (cf. ibid.: 100). While transfer often leads to grammatical errors, in many cases it does not. This leads Jarvis & Pavlenko (2008: 100f.) to suggest that the reason why syntactic transfer has often been overlooked may be the focus on errors that has been historically predominant in transfer research.

Now that the types of transfer that are most relevant for this investigation have been presented, the next section will describe factors that have been found to influence transfer.

1.1.3 Reasons for transfer

Ringbom (2007) points out that "the detailed ways in which transfer works together with other variables are complex and anything approaching a full study remains to be carried out" (Ringbom 2007: 33). The factors that have, to date, been empirically established as having an effect on the occurrence of transfer have been summarised in Jarvis & Pavlenko (2008). They have divided them into the following categories: linguistic and psycholinguistic factors, cognitive, attentional and developmental factors, factors related to cumulative language experience and knowledge, factors related to the learning environment, and factors related to language use (cf. Jarvis & Pavlenko 2008: 175). They also point out that all of these factors can have effects related to both performance and learning (ibid.).

As the list of factors affecting transfer is extensive, only some of the factors that are the most relevant to this paper will be presented here.

1.1.3.1 Crosslinguistic similarity

The first important linguistic factor influencing transfer is crosslinguistic similarity, which refers to the degree of congruence between languages (cf. Jarvis & Pavlenko 2008: 176f.). In SLA studies, it has been shown that people understand languages that are similar to their L1 more easily than languages that are very different, which allows them to learn them more easily and leads to more transfer in their use of the L2 (ibid.). A distinction is made between similarities that are objective and similarities that are subjective. Objective similarities between languages are those that actually exist, and subjective similarities are those that the L2 user perceives or assumes to exist (cf. ibid.: 177). The latter are of greater consequence

for transfer, since an L2 user may transfer an L1 structure that is perceived to be, but is not actually, similar to the L2 structure (cf. ibid.: 179, 182).

1.1.3.2 Task type, attention to and awareness of language

These factors are treated in separate sections by Jarvis & Pavlenko (2008): the former as a factor related to language use and the latter as a cognitive and attentional factor. Here they are presented together because they seem to be relevant with regard to transfer in the context of translation (which will be discussed in more detail below).

According to Jarvis & Pavlenko's (2008) summary of research results, it appears that transfer is affected by the degree of conscious control that language users try to exert over their language production (cf. Jarvis & Pavlenko 2008: 195) and the degree to which a task "fosters conscious attention to and awareness of the formal properties of language" (ibid.: 209). For example, Jarvis (2003) has found in a case study that L2 English has fewer effects on L1 Finnish in tasks that promote reliance on explicit knowledge and conscious reflection than in tasks that elicit spontaneous language production (cf. Jarvis 2003: 100). Similarly, Odlin (1989) has pointed to research showing that the occurrence of negative transfer decreases in situations where explicit knowledge and conscious monitoring are involved ("focusing", Odlin 1989: 146f.).

Since translating is clearly a task that fosters attention to language, the above findings could mean that less transfer occurs in translation situations than in normal language use situations. However, a translation situation activates knowledge of two languages at once, whereas the above statements were made on the basis of findings from tests that activated one language in particular, such as Jarvis (2003). Therefore, the findings from SLA studies may not be directly applicable to translation situations. This leads us to the link between transfer and translation, that is, literal translation.

1.2 Literal translation

1.2.1 History and definition

Literal translation has been an object of debate in the area of translation since antiquity as part of the 'free vs. literal translation' dichotomy. This dichotomy represents the strategic dilemma of whether to be faithful to the author and the source language or faithful to the readers of the translation and the target language (cf. Newmark 1988: 38). In modern linguistics, the emphasis has mostly been placed on the reader, and literal translation has been frowned upon under the assumption that it leads to a translation that reflects the ST structure too strongly (cf. Englund Dimitrova 2005: 52).

Some theoreticians have mainly stressed this dichotomy between two distinct translation types, with the translator having to choose between one or the other. This was done, for example, by Nida (1964/2004), who contrasted the two translation types of *formal equivalence*, which is focused on the form and content of the message, and *dynamic equivalence*, which is focused on natural expression and the effect on the reader (cf. ibid: 156). To give just one other example of a dichotomous perspective on translation types, Newmark (1988) describes literal (or "semantic") translation as being more complex, awkward, detailed and concentrated and tending to result in overtranslation, whereas free (or "communicative") translation is simpler, clearer, more direct and conventional, tending to result in undertranslation (cf. Newmark 1988: 39).

Another perspective on translation types can be found in Vinay & Darbelnet (1958/1995/2004), a work that was very influential in translation literature and teaching (cf. Newmark 2009: 31). Although they also presupposed the two general methods of "direct, or literal translation and oblique translation" (Vinay & Darbelnet 1958/1995 in Venuti 2004: 128), they broke up the cline between these two poles into seven different translation procedures, with three on the "direct" side and four on the "oblique" side of the cline. The difficulty of these procedures is lowest at the "direct" end (borrowing) and highest at the "oblique" end (adaptation). A table showing the seven procedures, slightly adapted by Newmark (2009) to include more up-to-date examples, can be found in Appendix I.

In their descriptions of translation procedures, Vinay & Darbelnet (1958/1995/2004) put literal translation, which they also call *word-for-word* translation, in the third position on the "direct" side. They define it as

> "the direct transfer of a SL text into a grammatically and idiomatically appropriate TL text in which the translators' (sic) task is limited to observing the adherence to the linguistic servitudes of the TL" (Vinay & Darbelnet 1958/1995 in Venuti 2004: 130).

According to the authors, literal translation is most common in translations "between two languages of the same family" such as French and Italian, "and even more so when they also share the same culture" (ibid.). Two of their examples of literal translations from English into French (or the other way around) are the following (ibid.):

(1) *I left my spectacles on the table downstairs. → J'ai laissé mes lunettes sur la table en bas*.

(2) *Where are you? → Où êtes-vous?*

The two sentences in each of these two pairs both mean the same thing and also have the same syntactic structure.

If translators try out the literal translation procedure and the result is not acceptable either because the message is altered, the structure of the TL does not allow it, or because there is no corresponding expression in the TL, then they must turn to the methods of oblique translation (cf. ibid. 2004: 131).

The definition given by Vinay & Darbelnet (1958/1995/2004) is still applied today. In their dictionary of translation terminology, Delisle et al. (1999) define literal translation as

> "[a] translation strategy where a translator produces a target text while retaining the formal features of the source text, but conforming generally to the grammar of the target language" (Delisle et al. 1999: 154f.),

as well as any product of this translation strategy (ibid.). The concept of literalness in this definition "applies to both the meaning and the form of the text" (ibid.). What has changed in the definition of literal transfer in comparison with the one made by Vinay & Darbelnet (1958/1995/2004) is that the term is no longer used synonymously with *word-for-word* translation. Wilss (1996) explains that the difference between word-for-word and literal translation is that word-for-word translation retains the meaning *and* the exact syntactic structure of the ST, whereas literal translation retains the meaning of the ST while conforming to the syntactic rules of the TL (cf. Wilss 1996: 179f.). Vinay & Darbelnet's (1958/1995/2004) classification of procedures has also been criticised, for example by Schreiber (1993), who sees its greatest weakness in the fact that the defining criteria are not homogenous (cf. Schreiber 1993: 212). What he means is that some of the procedures are defined by "Invarianten" (the elements of the ST that are *not* changed in the translation) and that some are defined by "Varianten" (the elements that *are* changed in the translation) (ibid.: 213). Schreiber's (1993) own classification of translation procedures ("Verfahren") is based on language levels: lexis, morphosyntax, and semantics. In his classification, literal translation is not a procedure, but a translation that is as literal as possible within the grammatical structure of the SL: "'wörtlichste' grammatikalisch korrekte und denotativ (weitgehend) äquivalente Übersetzung" (Schreiber 1993: 177). It is therefore a translation in which only those changes are made that are necessary to render it grammatically correct. With respect to translation procedures, this means that only those procedures beyond word-for-word translation are used that are obligatory. As soon as procedures making changes on the morphosyntactic level are used only for stylistic reasons, then Schreiber sees this as crossing the boundary between literal and free translation, as the criterion of idiomaticity is added to that of grammaticality (cf. Schreiber 1993: 177).

1.2.1.1 Non-literal translation strategies

Before literal translation is discussed further, this section shall present some non-literal translation strategies, which have to be used if the TL structure does not allow a literal translation and requires "obligatory" changes, as Schreiber (1993) calls them, or which can be used if a literal translation is correct but not stylistically appropriate. Only strategies pertaining to syntax will be presented here, and strategies in the areas of lexis and semantics (cf. Schreiber 1993: 215ff.; 224ff.) will not be included.

The first strategy on the "oblique translation" side of Vinay & Darbelnet's (1958/1995/2004) classification of translation procedures is *transposition.* It is described as involving a replacement of "one word class with another without changing the meaning of the message" (Vinay & Darbelnet 1958/1995 in Venuti 2004: 132). A distinction is made between obligatory transposition and optional transposition. To use Vinay & Darbelnet's (1958/1995/2004) example, the French adverbial phrase *Dès son lever* cannot be translated into English in exactly the same way, i.e. using a noun, but the lexical item *lever* has to be transposed into a verb phrase: *As soon as he gets up* (ibid.). This is an example of obligatory transposition. Optional transpositions apply to cases in which a phrase can be translated literally, but the translator chooses to use transposition for stylistic reasons. In Schreiber's (1993) classification, a translation containing obligatory transpositions would still be a literal one, as he does not define literal translation as a strategy (see definition above).

Further non-literal translation strategies relating to syntax can be found in Schreiber (1993). One is *permutation*, which is change in the order of constituents (Bussmann 2008: 517). Schreiber (1993) also uses it to describe changes in word order. A typical example of an obligatory change in the order of constituents between German and English relates to the position of adverbials: *Ich stelle immer Fragen → I always ask questions* (example by L.D.).

The other strategies involving syntactic change that can be found in Schreiber (1993) will not be considered here, as they do not seem to be relevant for the present investigation. For example, his category "intrakategoriale Transformation" (ibid.: 222) seems to affect mostly morphology, as a change from singular to plural is given as an example, and other examples are noted to be very close to lexical and semantic changes (such as *Je me taisais → Ich schwieg* or *Ich verstummte*).

1.2.2 The concepts of transfer and literal translation

It seems that very few studies have used both the concept of transfer and that of literal translation. Even though the former is used in the area of SLA and the latter is used mostly in translation contexts, the two concepts are clearly related.

A parallel between the histories of both concepts lies in the fact that they have mostly been frowned upon and considered to lead to undesirable language production. The most important difference between their definitions is that literal translation is mostly defined as a strategy or the product of a certain strategy, and transfer is defined as an influence.

A *strategy* seems to be something that results from conscious decision: Delisle et al. (1999) define a *translation strategy* as "a coherent plan of action adopted by translators based on their intention with respect to a given text" (ibid.: 192). Therefore, the definition of transfer is wider than that of literal translation, as transfer can occur either consciously or

subconsciously, as shown in Jarvis & Pavlenko's (2008) dimension of intentionality (see above). Despite this difference, the outcomes of literal translation and of transfer in translation could in principle be considered to be the same thing, namely a target text that resembles the source text in form and message. Literal translation can therefore be considered as a form of transfer. Thus, it seems reasonable to include considerations of transfer when investigating literal translation.

The following chapter presents some theoretical considerations that have been made on transfer in translation generally, and in 1.2.3 some theories on the role of transfer and literal translation in the concrete process of translation will be presented.

1.2.2.1 Theoretical considerations of transfer in translation

The role of transfer in translation has been viewed in various ways. In the discussion of translation universals, transfer has been declared both to contradict universality and to be a basic manifestation of universality (cf. Mauranen 2004: 66). On the one hand, an exclusion of transfer from the definition of translation universals can be found in Baker's (1993) definition of universal features of translation as "features which typically occur in translated text rather than original utterances and which are not the result of interference from specific linguistic systems" (Baker 1993: 243). On the other hand, Toury (1995) suggests that there might be a universal "law of interference" in translation, which says that "in translation, phenomena pertaining to the make-up of the source text tend to be transferred to the target text" (Toury 1995: 275).

In support of Toury's (1995) theory, Mauranen (2004) argues that it is reasonable to expect cross-linguistic influence in translation given that "translation involves a contact between two languages and is a form of bilingual processing" (Mauranen 2004: 67). Interestingly, she mentions anecdotal evidence among literary translators saying that "it is the syntactic level that the SL most easily slips through" (ibid.). Although it is not supported by any scientific proof, this comment is interesting because the focus of this study is on syntactic transfer.

With regard to positive and negative transfer in translation, Mauranen (2004) suggests that they can be seen as opposite ends of a cline: at one end, the translation deviates grossly from the target language norm (cf. Mauranen 2004: 71f.) and at the other end, the translation is "indistinguishable in a normal reading from an original language text, but in principle can be traced back to transfer from the ST" (Mauranen 2004: 72). Positive transfer therefore only becomes evident when a translation is compared with its source text (cf. Toury 1995: 252). Faced with the issue of where a line should be drawn between acceptable and unacceptable transfer on this cline, Mauranen (2004) refers to Toury (1995), who suggests that tolerance

of interference is determined by socio-cultural factors and varies according to the community and the relative prestige of the languages (Toury 1995: 277f.).

1.2.3 Literal rendering in the translation process and the Monitor Model

Literal translation has recently been investigated with regard to its position in the translation process. Englund Dimitrova (2005a; b) has found empirical evidence that literal translation is an important part of the process. In her study, translation professionals in particular showed a pattern of revision suggesting that "writing down literal translations functioned as an intermediate step in their process" (Englund Dimitrova 2005b: 232). She also suggests that "it can be assumed to have an important role in actually allowing the processing of larger units, since writing down a part of [a] sentence in the target language liberates working memory capacity for the processing of further parts of the sentence" (Englund Dimitrova 2005a: 36). Another reason might be that writing down a tentative solution helps the translator decide whether it is appropriate (cf. Englund Dimitrova 2005b: 146). In addition, Krings (2001) has found that in text production, people do not plan long sentences completely before writing them, but rather write down text segments quickly at first in order to prevent forgetting them, and then they revise them to create a correct sentence (Krings 2001: 403f.)

Tirkkonen-Condit et al. (2008) have also made discoveries that support the hypothesis that literal translation is an inherent part of the translation process. Their analysis of professional translators' processes shows that almost half of all revisions (not counting revisions of typing errors) "are accounted for by an attempt to translate literally, i.e. by a formally corresponding item, which is subsequently revised" (Tirkkonen-Condit et al. 2008: 4). This copying and revising of the source text patterns took place at all linguistic levels (lexical, syntactic and textual) (cf. ibid.: 13f.). Their analysis also shows that there does not seem to be a correlation between the number of literal translation revisions and the quality of the translation (cf. ibid.: 5). On the basis of their findings, the authors argue for the Monitor Model of translation, which was first mentioned by Toury (1995).

In his discussion of the method of studying interim solutions to investigate the translation process, Toury (1995) mentions the idea of a "monitor model" in reference to the following statement made by Ivir (1981):

> "The translator begins his search for translation equivalence from formal correspondence, and it is only when the identical-meaning formal correspondent is either not available or not able to ensure equivalence that he resorts to formal correspondents with not-quite-identical meanings or to structural and semantic shifts which destroy formal correspondence altogether." (Ivir 1981: 58, in Toury 1995: 191)

The idea of formal correspondence as a default production mode can also be found in Toury's (1995) description of a possible "law of interference" (Toury 1995: 275 and see above).

Tirkkonen-Condit (2005) finds evidence in empirical material to support the Monitor Model. She suggests that literal translation might be a default procedure (a "literal translation automaton", ibid.: 409) that generates formally corresponding material as long as it is equivalent to the ST and acceptable in the TL, and is only interrupted as soon as the "monitor" detects a problem in the outcome (cf. ibid.: 407f.; 412).

The Monitor Model, therefore, is "based on the hypothesis that the effect of the source language in the translation process needs to be monitored so that unwanted literal or formal equivalents are restrained from the final product of translation" (Tirkkonen-Condit et al. 2008: 2). It is interesting and significant that Tirkkonen-Condit et al. (2008) say "the effect of the source language", on the one hand because this links back to the concept of transfer. The problems in the outcome that the monitor has to detect can also be called negative transfer, and as long as literal translation procedures produce results that are acceptable in the TL, this can be called positive transfer. On the other hand, the use of the formulation "effect of the source language" is interesting because it evokes the difference between the effect of the source *text* and that of the source *language*. Some thoughts on this difference have been presented by Mauranen (2004). She suggests that in a translation situation, there might not only be crosslinguistic influence on a textual level, in that the structure of the ST influences the structure of the TT, but also an indirect influence resulting from the simultaneous activation of both the SL and the TL systems. Evidence for such a possibility can be found in "instances where a TT item looks like a likely candidate for transfer from the ST, but in fact has no stimulus in the source" (Mauranen 2004: 68). Thus, the source language system, activated by the ST, may influence processing in the target language, leading to transfer not from the ST but from the SL (cf. ibid.).

An additional feature of literal translation that has been suggested is that it requires less cognitive effort than non-literal translation (Englund Dimitrova 2005a: 31). This assumption seems to be inherent in the idea that literal translation is a default production mode. On the basis of his analyses of students' translation processes, Krings (1986a) has proposed that translators can create equivalence on three different levels (cf. Krings 1986a: 507f.). The first level, requiring the least cognitive effort, is the interlingual level of *primäre Äquivalentassoziationen* ("spontaneous interlingual associations", Krings 1986b: 269), which are subjective associations of pairs of equivalents, usually on the lexical level, that are triggered more or less automatically (cf. Krings 1986a: 304f.). These can be seen to correspond to literal translations, as mentioned in Englund Dimitrova (2005a: 31). The

second level is the combined intra- and interlingual level of reverbalisations in L1 and subsequent spontaneous interlingual associations (cf. Krings 1986a: 507). The third level, requiring the most cognitive effort, is the deep semantic level of direct conceptualisations (ibid.; translation in Englund Dimitrova 2005a: 31). Krings (1986a) found a tendency in his participants to start by trying to create equivalence on the easiest level and only proceed to the next most difficult level if they were not successful[1], which suggests that they use a "psycholinguistic minimax strategy" in order to keep the cognitive effort in translation as low as possible (ibid.: 508).

To return to the monitor hypothesis and to lead into the question of the link between literal translation and translation competence, we will look at further research results presented by Englund Dimitrova (2005b). She mentions the idea of monitoring when she asserts that her results "seem to corroborate Tirkkonen-Condit's (2002: 14) assumption that in the process, the translator replaces ST chunks by default TL equivalents, followed by immediate monitoring and, if necessary, revision" (Englund Dimitrova 2005b: 146). In addition, her results showed that, while all participants started by keeping the translation close to the ST, the professionals were able to handle literal translation more systematically in the writing process than the students (cf. ibid.: 146; 233f.). She thus suggests that this ability to use literal translation is an important aspect of translation competence. More specifically, she means the ability to "use them [literal translations], in order to minimise cognitive effort, but also to apply appropriate procedures for evaluation and, if necessary, revision" (ibid.: 234).

1.2.4 Literal translation and translation competence

Since the CTP project data used in this paper consists of translations done by the same participants at different points in their studies, this offers the opportunity to investigate the question whether the use of literal translation changes between the beginning and the end of translation training and whether it could be linked in any way to aspects of translation competence and its development.

While translating a text, a translator must constantly ensure that the content of the ST is transferred completely and correctly into the TL and evaluate the structural possibilities in order to decide whether a similar structure can be chosen in the TL or whether a different structure is preferable. As a result of her finding that literal translation is a step in the

[1] An example for spontaneous interlingual associations that can be found in Krings (1986a) is the French phrase *petits mots*. This was spontaneously translated as *kleine Wörter* ('little words') by the participants, although they subsequently realised that the phrase could not be translated literally and that they had to find equivalence on a different level (cf. ibid.: 303f.).

translation process of professionals, Englund Dimitrova (2005b) reflects that to use the strategy of literal translation successfully, a translator

> "needs to be able to produce short TL chunks (words, collocations, phrases and clauses) and evaluate them for TL correctness and stylistic and pragmatic appropriateness in relation to the translation purpose (cf. Pym 1992; Toury 1986). This evaluation is a demanding part of the process, since chunks of TL linguistic material are compared to SL stretches, requiring the translator to constantly switch between two languages" (ibid.: 232).

Therefore, in order to achieve professional competence, a translator "needs to know which text fragments can be translated literally and which cannot" (Englund Dimitrova 2005a: 32). She refers to Pym (1992), who suggests that translational competence could be defined as a combination of two skills, namely the ability to generate more than one possible translation of a source text segment and the ability to select only one of these, "quickly and with justified confidence", as a translation "for a specified purpose and reader" (Pym 1992: 281).

In a newer study comparing the translation processes of professionals and students, Ehrensberger-Dow & Künzli (submitted) also suggest that translation competence might include "the awareness that similarities between languages can be exploited with strategies such as literal translation" (ibid.: 15). As a result of their findings, they suspect that

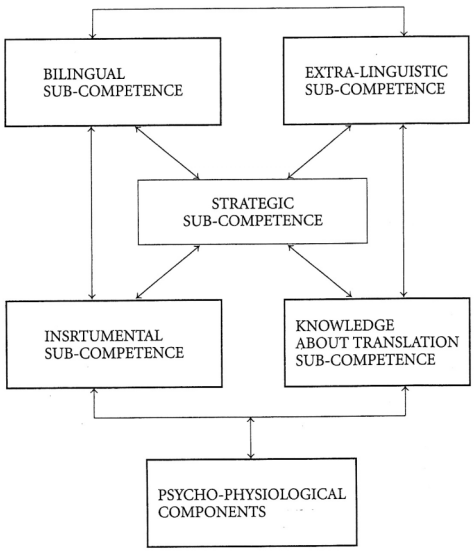
> "[a]s translation competence develops and translators gain confidence and experience, they are presumably more prepared to use positive transfer, especially when translating into their L1, thus increasing the speed and efficiency of their translation processes. This competence must also include the recognition of when to avoid using source text forms and structures that would be inappropriate in the target text." (ibid.)

To explore the question of the role of literal translation or transfer in translation competence, it should be helpful to define translation competence and its components and to find a place in this definition for literal translation strategies. Since translation competence is an issue of great interest in translation studies and especially translation training, a large amount of research has been done on this topic and various models have been developed. The model that will be presented here is the one developed by the PACTE group.

The PACTE research group presented their revised model of translation competence in 2003. In their model (Fig. 1), translation competence is made up of five sub-competencies: bilingual, extra-linguistic, knowledge about translation, instrumental and strategic. It also activates a series of psycho-physiological mechanisms (cf. PACTE 2003: 58).

In the descriptions of the five translation sub-competencies, the idea of transfer or literal translation strategies appears in three different places. 1) First of all, it appears in the *bilingual sub-competence*, which includes, among other things, "the specific feature of interference control when alternating between the two languages" (PACTE 2003: 58). This definition clearly seems to include the aspect of avoiding negative transfer in the translation process. 2) Secondly, the *knowledge about translation sub-competence* includes "knowledge

Figure 1: PACTE's revised model of translation competence (PACTE 2003: 60)



about how translation functions: types of translation units, processes required, methods and procedures used (strategies and techniques), and types of problems" (ibid.: 59). Here, literal and non-literal translation strategies could be included in the element of 'methods and procedures'. 3) Finally, literal translation strategies could have a place in the *strategic sub-competence*, which is described as "the most important" sub-competence (PACTE 2005: 610) and includes the following points:

> "[I]t is responsible for solving problems and the efficiency of the process. It intervenes by planning the process in relation to the translation project, evaluating the process and partial results obtained, activating the different sub-competencies and compensating for deficiencies, identifying translation problems and applying procedures to solve them." (PACTE 2005: 610)

If a transfer monitor as described above (e.g. by Tirkkonen-Condit et al. 2008) is assumed to exist, this could be included in the elements of *evaluating partial results* and *identifying (and solving) translation problems*, as it evaluates the transfer possibilities between the SL and the TL and identifies any problems in this area. Moreover, Ehrensberger-Dow & Künzli's (submitted) proposal that professional translators know how to use the potential of positive transfer to increase their efficiency could also link to the strategic competence: one could suggest that the strategic competence includes the ability to recognise when positive transfer can be used to increase efficiency.

To sum up, transfer and literal translation could be linked to various sub-competencies in the PACTE model through the elements of evaluation and identification of problems (1; 3), strategy (2), and efficiency (3). Consequently, the ability to avoid negative transfer, the knowledge of literal and non-literal translation strategies, and the recognition of how positive transfer can be exploited could be indicators of translation competence as it is defined in the PACTE model.

1.2.5 Identifying/measuring literal translation or transfer in translations

This last section in the chapter on literal translation shall present methods that have been used to investigate literal translation and transfer in translation.

Jarvis & Pavlenko (2008) devote an entire chapter to the methodology of identifying transfer. However, their scope is the psycholinguistic phenomenon of crosslinguistic influence, which means that they concentrate on methods of investigating the internal languages of language users (cf. ibid.: 29). Since the present investigation aims to identify potential transfer in translations and not ways in which an individual's various languages cross-influence each other, a method from within translation studies has to be found. Here, in contrast to SLA, rather little seems to have been done in the area of measuring transfer or literalness of translations. As a starting point for the methodology of this paper, the methods used in four different studies are presented in the following.

Mauranen (2004) tested the status of transfer in relation to universality using a large (10 million-word) corpus of original Finnish texts and texts translated into Finnish from English, Russian and other languages. She compared the various subcorpora of original Finnish texts, translations from various source languages, translations from English and translations from Russian based on a comparison of lexis on a rank order basis (cf. Mauranen 2004: 75). The rank ordered vocabulary of the original Finnish texts was used as the standard for comparison, and the other corpora were compared to it "by noting the deviation of each item from the standard, that is, the difference in the item's rank order position from the position of the same item in the standard" (Mauranen 2004: 76). The items' points of difference in the rank were then "summed for an aggregate estimate of the difference between the reference corpus and each subcorpus" (ibid.).
This method was useful in showing that translations bear "a closer affinity to each other than to untranslated texts" (Mauranen 2004: 79), lending support to Toury's (1995) claim that transfer is a law of translation. However, it cannot be used for the present paper as it is based on lexis only.

Englund Dimitrova (2005a; b) used quantifications of syntactic revisions to show that professional translators use literal translation as a strategy. She classified syntactic revisions made during the translation process into the four categories "more dissimilar", "more similar" (meaning that they changed structures similar to the ST structure into structures less similar, or the other way around), "other structure change" (if it was neither) and "change of word order" (ibid. 2005a: 33f., 2005b: 117). A comparison of the percentages of each type of revision showed that changes to "more dissimilar" structures were the most frequent,

suggesting that ST structures were transferred, perhaps by default, to the translation and then removed to create a different structure. This method can be used in this paper to examine the nature of syntactic revisions in the translation processes.

Tirkkonen-Condit et al. (2008) analysed the revisions in key-log files from 18 translators to determine the number and proportion of revisions that changed tentative solutions which were formally equivalent to the ST to solutions that deviated from the ST form. They classified revisions in the categories “typing error revised”, “literal translation revised”, and “other revisions” (ibid.: 4). Revisions changing less literal to more literal solutions are not mentioned, but perhaps the participants, which were professionals, were assumed to be more likely to make revisions away from the ST. In addition, the aim of the analysis was to show that literal translation was a step in the translation process and to give examples supporting the Monitor Model (see above). Unlike Englund Dimitrova (2005a; b), Tirkkonen-Condit et al. (2008) looked at literal translations on all linguistic levels: lexical, morpho-syntactic, syntactic and textual.

Ehrensberger-Dow & Künzli (submitted) compared degrees of transfer directly by comparing translations with their source texts. In one section of their paper (pp. 5-9), the processes of a professional and a beginner translating the same text are compared and comments are made on differences in efficiency and in the way positive transfer was exploited and negative transfer avoided, and on how these reflect the difference in translation competence. In the other transfer analysis section of this paper (pp. 10-14), the amount of transfer in the title and in the sentence initiators of the first three sentences of translations done by beginners, graduates and professionals is determined in the following way: each item (the title and each sentence initiator) is assessed in relation to the corresponding ST item “as a ‘match’ (i.e. same in form, order, and/or structure), ‘partial match’ (i.e. different in form, order, or structure), ‘mismatch’ (i.e. different in form, order, and structure), or ‘not done’” (Ehrensberger-Dow & Künzli, submitted: 10). The results were used to compare the different groups of translators with regard to how close they stayed to the source text.
This scale does not seem to be suited for use in this paper, as it does not easily allow for application to the syntax of whole paragraphs or at least whole sentences. Nevertheless, the idea of matches, partial matches and mismatches was used in the method of transfer measurement developed for the analysis in the present investigation (see below).

1.3 Translation into L2

Since half of the texts analysed in this paper were translated by German native speakers into their non-native tongue, English, this section shall be devoted to a short discussion of the issue of translation into a second language (L2).

Pokorn (2005) has found empirical evidence against the traditional idea that translators should translate only into their mother tongue to create linguistically and culturally acceptable translations. She criticises how the conviction of the necessity to translate into one's mother tongue, which can be traced back to the Romantics, has been silently accepted in translation theory and shows that this principle has never really held true in actual practice. Translation into a non-mother tongue, or inverse translation, has "been known in Western history from Antiquity onwards" (Pokorn 2005: 37) and is especially common in minor language societies, "which are pushed into a peripheral position because of the global distribution of power" (ibid.). Her findings ultimately show that the acceptability, accuracy and fluency of expression of a translation does not depend on a translator's mother tongue or on the directionality of the translation, but rather on the translator's individual translation competence, strategy and knowledge of the source and target cultures and languages (cf. Pokorn 2005: 123).

Krings (1986) differentiated between "Hin-Übersetzung" (L1-L2) and "Her-Übersetzung" (L2-L1) in his study of translations done by German-speaking students of French and developed two different translation process models as a result of finding considerable differences between translations done in the two directions. Although they are similar in their basic structure, differences in the processes seem to be the result of differences in competence. For example, *Rezeptionsstrategien* play a more important role in L2-L1 translation because the chance that the translator has difficulties understanding the ST is greater here (cf. Krings 1986: e.g. 263).

1.4 Hypotheses for the present study

Based on the theoretical background that has been presented, the following hypotheses can be made for this study:

1. If the Monitor Model theory is applied to translation competence, then one could expect the transfer monitor to become more effective in eliminating negative transfer with more translation training. Therefore, the texts that the students translated at the end of their studies should feature less negative transfer than those that they translated at the beginning of their studies.
2. If literal translation is assumed, as in the Monitor Model, to be the default translation mode requiring less cognitive effort than free translation, then translations with more

positive transfer should be done more efficiently, i.e. in less time and with fewer revisions, than translations with structures that deviate from the ST structure.

3. If it is assumed that competence in the L1 is higher than competence in L2, then one might expect the transfer monitor in L2 translation to be less effective and thus that there is more negative transfer in the texts that were translated into L2 (German into English) than in those that were translated into L1 (English into German).
4. Since there have been research findings showing that professionals use literal translation as a step in their translation process and that they handle literal translation strategies more systematically than students do, then one could hypothesise that this kind of translation behaviour increases with experience. Therefore, there might be more revisions changing literal solutions to freer solutions, i.e. structures that deviate from the ST structure, in the texts that were translated at the end of the participants' studies.

In order to test these hypotheses, the data will have to be analysed with regard to the following factors: the amount of transfer, the amount of positive and negative transfer, the time taken to do the translations, and the nature of revisions.

Now that the theoretical background and the hypotheses have been established and the factors to be investigated in the data have been identified, the methods of analysis used for this study shall be presented.

2 Method

2.1 Data

The data used in this paper comes from the corpus of *Capturing Translation Processes*, a large-scale longitudinal project at the ZHAW Institute of Translation and Interpreting, in which students and professional translators are monitored at various points in their careers (cf. Ehrensberger-Dow & Künzli 2010: 113). The data for this project was gathered using a complex methodology that was relatively non-invasive and thus produced data that can be considered to be ecologically valid (cf. ibid.: 114). The method was based on progression analysis, which was developed by Perrin (2003) to study the writing processes of journalists and combines ethnographic observation, interviews, computer logging, graphical representations of writing processes, cue-based retrospective verbalisations, and version analyses (cf. Ehrensberger-Dow & Künzli submitted: 4).

For this paper, the data from two groups of students was chosen: each group comprised 9 BA students studying translation at the Institute with German as their native language (L1) and English as a second language (L2). One student (SK0833) was an English-German bilingual who grew up in England and in Switzerland. Both groups were recorded doing a translation in their third semester and near the end of their sixth semester. The first group was recorded translating a German source text into English (L1-L2) and the second group was recorded translating an English source text into German (L2-L1).

In the first year (first two semesters), the students had completed grammar, text analysis and writing courses in all their languages as well as courses on linguistics, research, and topics such as IT, law and economics. The only translation-related course was a theoretical introduction to translation in general. At the time they did their first translation for the CTP project, they had just started taking translation classes (Beginner stage). At the time they did their last translation for the CTP project, they had had almost four semesters of translation classes (Novice stage). The terms *Beginner* and *Novice* as well as the corresponding abbreviations *Beg* and *Nov* will be used to refer to the texts that were translated at the two different points in the participants' translation training.

Various types of data resulted from each participant's translation session for the project. The participants had 15 minutes to translate a roughly 90-word text. As they translated, all screen events were recorded using Camtasia Studio software, the keystrokes were recorded using Inputlog 2.0 and, in some cases (most of the Novice translations), the participants' eye movements were recorded using Tobii T60 eye-tracking software. Directly after they had done the translation, the participants were shown the Camtasia recording and asked to

comment on their own process (retrospective verbalisation). These comments were recorded as well and subsequently transcribed. Three types of files that resulted from each participant's CTP session are consulted for the purposes of this paper:

- the word files containing the source texts (ST) and the word files containing the translations, or target texts (TT)
- the .avi-files containing the Camtasia recordings as well as the cue-based retrospective verbal protocols (RVPs) and, where applicable, the eye-tracking data
- the transcripts of the RVPs

The word files are used to analyse the grammatical structure of the source texts and the translations in order to determine and compare the amount of transfer. Additional information about the processes, for example regarding revisions, time, and comments about difficulties, is gained from the Camtasia recordings and the RVPs.

The source texts and each participant's translation can be found in Appendices II and III. Due to the fact that not every participant was able to translate the whole text, only a part of each text was used for this analysis, namely the first two sentences, or, in one case ("whales"), the first one and a half sentences. The following list shows the amount of each text that was used for the analysis (in percentage of words in the ST):

G-E Beg ("Wale"):	32%	G-E Nov ("Sterne"):	47%
E-G Beg ("whales"):	34%	E-G Nov ("stars"):	49%

The following chapters describe the methods with which these data were analysed for each specific purpose.

2.2 Measuring syntactic transfer

In order to be able to compare the texts with regard to how much literal translation they contained in the area of syntax, the grammatical structure of the texts had to be examined and compared. Therefore, the first step was a grammatical analysis of each text and the second step was a comparison of the structure of each TT with the structure of the ST. As a result of this comparison, each TT was scored to reflect the degree of similarity.

While the first step was relatively straightforward given that the analysis could be carried out according to existing grammar analysis rules, the method of comparison had to be chosen in a way that the resulting scores would be plausible. In the analysis of the amount of transfer, no distinction was made yet between negative and positive transfer, i.e. the correctness of the sentence structures was disregarded for the time being. In addition, to refer back to the strategies of non-literal translation mentioned above, it should be noted here that in the

comparison and scoring of sentences with regard to syntactic structure, any differences that might have been the result of obligatory transposition or permutation were disregarded. That is, the amount of transfer was ascertained without taking into consideration the amount of transfer that was actually possible.

2.2.1 Step 1: Grammatical analysis

The grammatical analysis of sentence constituents was carried out according to Leech et al. (2006) in English and Duden (2009) in German. The grammatical units that were considered in this analysis were clauses and phrases; the analysis did not extend to the level of words and morphemes.

First, the main clause constituents and the phrases or clauses inside complex constituents were identified and their forms and functions were noted. Appendix IV is a list of forms and functions that phrases and clauses can have in English and in German, based on Leech et al. (2006) and Duden (2009). It also shows the abbreviation for each type of form or function that was used in the analysis.

Since main clause verb phrases have a special role in sentences, they are not considered to be constituents in German grammar and thus do not have functions like other constituents do. In Duden (2009), the term *Prädikat* is used to refer to the role of a verb phrase in a sentence (cf. Duden 2009: 844). In order to facilitate the grammatical analysis and the scoring in this study, *Prädikat* was used as a 'function' for German verb phrases, because it corresponds to the function of *predicator* in Leech et al. (2006).

Some of the source text sentences could be interpreted in more than one way and thus allowed more than one possible analysis: the second sentence of the German ST "Wale" (3 interpretations, see Appendix VII) and the second sentence of the English ST "stars" (2 interpretations, see Appendix XIII). In these cases, a table was made for each possible interpretation of the sentence and each participant's translation was compared with the table of the interpretation they seemed to have made.

2.2.2 Step 2: Information units as a basis for comparison

The first important issue that had to be solved before any transfer scoring could be done was how to compare the sentences. The four elements that had to be considered in the comparison were the form, function and order of constituents as well as distribution of information among the constituents. It was found that information content would make the best basis for a comparison, as it is the only element that is not determined by syntactic criteria, as form, function and order are. Therefore, the information units contained in the ST constituents were identified and compared with the corresponding information units in the TT

in order to examine whether they were transferred into constituents similar in form, function and position in the sentence. What is meant here by an *information unit* is a group of *information items* that make up a sentence constituent. *Information items* are considered to be lexical words and names as opposed to grammatical words (cf. definition in Crystal 2008: 279). That is, words that have semantic content are counted as information items, whereas words that signal grammatical relationships (such as pronouns) are not. Verb phrases are treated differently (see below), because they contain information that is important for the overall meaning of the sentence, such as tense and voice, and because separate elements from the verb phrase, such as negation, can be transformed and become parts of different phrase types.

It has been considered whether these information units could also be called "translation units". Delisle et al. (1999) list "translation unit" as a synonym of "unit of sense" and "Übersetzungseinheit", defining it as:

1. "A text segment consisting of a single word, a phrase, a whole sentence, or even more than one sentence, which a translator treats as a single cognitive unit in establishing equivalence."
2. "A single element in the source text or a group of elements that are linked by semantic or formal features and which translators interpret as a single entity in association with their situational knowledge." (Delisle et al. 1999: 194f.)

Since these definitions include the criteria of cognitive processing, the information units used in this paper cannot be called translation units in accordance with these definitions. A translation unit can only be called thus while or after being translated, and the present information units are determined only according to semantic and grammatical criteria.

The following procedure was followed to prepare the ST and TT sentences for scoring:

The individual lexical information items were first identified and given a separate letter of the alphabet to be represented by. This sometimes resulted in rather long lists of information items in sentences containing a lot of information. To simplify things, all information referring to the same object was counted as one single item (for example *die Nasa-Sonde 'Stardust'* or *the Perseid meteor shower*). Verb phrases were treated slightly differently from the other constituents: besides their lexical meaning, any other elements that deviated from the "default" form of affirmative present tense, simple aspect and active voice were counted. This means, for example, that the occurrence of a passive or negative element in the verb phrase was counted as a separate information item. It must be noted here that the occurrence of a progressive aspect in English texts was disregarded, as such an aspect does not exist in German.

The ST information items were then entered in a table, grouped according to main clause constituents, and the forms and functions of the constituents determined in the grammatical

analysis were added. In determining the position of verb phrases in German sentences, a problem consisted in the *Satzklammer*, or *brace construction* (Bussmann 2008: 604), which is the German word order principle of moving elements of the predicator to the end of the sentence (e.g. in the case of VPs containing morphologically complex verbs, auxiliary and modal verbs, and in subordinate clauses, cf. ibid.). To facilitate the scoring, the position of the first element (usually position 2) was counted as the position of the entire verb phrase. Transfer of this kind of verbal splitting from German into English could be ruled out, since it could be expected that the participants were at a level of competence at which mistakes such as *I have the apple eaten* (instead of *I have eaten the apple*) are highly unlikely. It could also be ruled out that German native speakers would let the structure of the English verb phrase influence their verb phrase in the German translation, which would result in sentences like *Ich habe gegessen den Apfel*.

Finally, a table was created for each TT sentence, mirroring that of the corresponding ST sentence. This posed no problems as long as the information items were grouped in the same way. If they were grouped differently, this was made clear using slashes.

2.2.2.1 Results of steps 1 and 2: example

Tables 1 and 2 illustrate the results of step 1 and step 2:

Table 1

ST Beg0 G wale

Inf. units	a(b)	c;e;f	d
form	NP(PP)	VP(lex,mod,neg)	NP
function	S(Attr)	P	O
order	1	2	3

Table 1 shows the grammatical analysis and information units of the first sentence of the German source text “Wale”, which was given to the participants doing the German-English translation in the Beginner phase. The sentence reads “Ein Hang zum Selbstmord dürfte dem Phänomen nicht zugrunde liegen”. The information items were identified as follows:

a=Hang; b=Selbstmord; c=dürfte; d=Phänomen; e=nicht; f=zugrunde liegen

Since the sentence is in German, the abbreviations of the German form and function types were used. The first constituent is “Ein Hang zum Selbstmord”. It is shown in the table as “a(b)”, meaning that it contains information items *a* as the head and *b* as a subordinate phrase. The constituent is a noun phrase (NP) functioning as the subject of the sentence (S) and contains a postmodifying (Attr for “Attribut”) preposition phrase (PP). Subordinate phrases or clauses are always shown in brackets. Constituent 2 is a verb phrase (VP), which

naturally functions as a predicator (P), containing information items *c* (the **mod**al element "dürfte"), *e* (the **neg**ator "nicht") and *f* (the **lex**ical item "zugrunde liegen"). Following these explanations, the meaning of the column for information item *d* has most likely become clear as well.

Table 2

SK0810 Beg0

ST inf. units	a(b)	c;e / f	(d)
form	NP1(PP)	VP(mod,neg) / NP2(PP)	(PP) in NP2
function	S(postM)	P / Cs(postM)	(postM) in Cs
order	1	2;3	3

Table 2 shows the analysis of participant SK0810's translation of the same sentence. The translation reads "A tendency to suicide can not be the reason fort he[2] phenomenon (sic)". The information items from the source text were identified in the translation as follows:

tendency=a, suicide=b, can=c[3], not=e, reason=f, phenomenon=d

In this translation, items *f* and *d* were grouped into one constituent, whereas in the ST, *f* was part of the VP and *d* was the head of the object constituent. In the table for the TT, however, *f* was depicted alongside *c* and *e* in order to allow a comparison of the same items in the ST and the TT. The slash shows that *f* is in a separate constituent from *c* and *e*, and the grammatical analysis shows that it is a noun phrase[4] functioning as a complement to the subject and containing a postmodifying preposition phrase. The column for item *d* shows firstly that *d* is in a subordinate phrase because it is shown in brackets. The notation in the grammatical analysis shows that *d* is the postmodifying preposition phrase (PP and postM in brackets) contained in the complement to the subject.

2.2.3 Step 3: Scoring

The scoring was done on a yes/no, or 1/0 basis. Since the representation of the TT sentence structure mirrored that of the ST sentence structure as it was aligned on the groups of information items, each box in the table of the TT could be compared with the corresponding box in the table of the ST. If it had an equivalent entry, the score for that box was 1. If it had a

[2] Since this participant had not set the language settings to English, the German correction programme in Word changed "for the" to "fort he".

[3] Although the meaning of "can" does not correspond exactly to the meaning of "dürfte" in that the latter expresses probability whereas the former expresses certainty, it is counted as the translation of item c because it expresses modality, which shows that the translator at least attempted to translate this information item while perhaps not (yet) realising the difference in meaning. There were several such cases in the translations of this sentence.

[4] In cases such as this one, where two different constituents have the same form, numbering is added (such as "NP1" and "NP2") in order to facilitate the identification of each one.

different entry, the score was 0. To enable this comparison, the forms and functions in English and German that corresponded to each other had to be identified. Appendix V is a list of the forms and functions in English and German according to Leech et al. (2006) and Duden (2008) showing which ones can be considered to be the same. Corresponding forms and functions were usually easy to identify because of their names in cases like *noun phrase* and *Nominalphrase*, or because their definitions in the two grammars are clearly the same, as in the case of *modifier* and *Attribut*. Some comparisons were harder to make, however, because the category definitions did not cover exactly the same things in both grammars. This was the case with noun clauses and *Subjunktionalnebensätze*. In the analyses of the translations of sentence 2 in the E-G Beg text ("whales"), there was a NCl constituent in the English ST, which was often translated using a SubS in German. At first sight, this seemed to mean they did not correspond to each other, but closer inspection showed that the NCl was a *THAT* clause and the SubS started with "dass", which can be considered to be the same structure. Therefore, these cases were considered to be cases of literal translation.

The scoring procedure shall now be illustrated using the same example as above:

Table 3

ST Beg G wale

Inf. units	a(b)	c;e;f	d
form	NP(PP)	VP(lex,mod,neg)	NP
function	S(Attr)	P	O
order	1	2	3

SK0810 Beg G-E

Inf. units	a(b)	c;e / f	(d)
form	NP1(PP)	VP(mod,neg)/ NP2(PP)	(PP) in NP2
function	S(postM)	P / Cs(postM)	(postM) in Cs
order	1	2;3	3

form score	1	0.67	0
function score	1	0.67	0
order score	1	0	1

Table 3 shows the same tables for the ST and the TT as well as the scoring for the TT.
The first information unit, *a(b)*, has exactly the same structure in this translation as in the ST. It is a noun phrase containing a postmodifying preposition phrase, functioning as the subject and holding the position of the first constituent in the sentence. Consequently, this group of information items received 1 point in each of the three boxes. The verb phrase constituent was scored according to how many of the information items from the ST were transferred. In this case, only the modal and the negative item (2 out of 3 items) were transferred into the TT verb phrase, while the lexical item was transformed into a separate noun phrase. This

information unit thus receives 2/3 of a point (0.67) both for the form and the function criteria. For order, this information unit received a 0 points, since the individual items were split up into different constituents. Information item *d*, which made up a constituent on its own in the ST, became subordinated to item *f* in the translation. Therefore, it received 0 points for form and function. However, it received 1 point for order, as it was still in constituent number 3. This was also one of the scoring issues, which are described below.

The score points were added up (the total number of points is featured to the right of each TT table in Appendices VI to XIII) and the result was divided by the highest possible amount of points to produce a score reflecting the percentage of transfer points attained (the calculated transfer scores can be found in Appendix XIV). In this case, the total was 5.33 and the transfer score was 0,592 (59,2%). This kind of calculation for determining the transfer score was made in order to compare sentences containing different numbers of constituents. For example, for a sentence with three constituents (9 points maximum), 5 points means more than half is similar to the ST and for a sentence with five constituents (15 points maximum), 5 points means just a third is similar to the ST.

2.2.3.1 Scoring issues

The analysis and the way in which it is represented, as described above, laid a reasonably good foundation for a transparent comparison and scoring. However, there were still a few issues that posed problems for scoring decisions. This section presents some difficulties that arose in the scoring and the decisions made to solve them.

One issue was related to the verb phrase as a consequence of the decision to count present simple active as default elements that were not added to the information items. If one of the default elements was changed, for example active was turned into a passive, then this element was added to the source text VP to calculate the score. For example, one source text VP had a lexical element, past tense and passive ("*VP(lex,past,pass)*"), and the corresponding VP in a translation had a lexical element, present tense, passive and perfective aspect ("*VP(lex,present,pass,perfective)*"). The score was two out of four: the lexical element was a quarter, the passive was a quarter, the quarter for the past tense was not fulfilled and neither was the new quarter for the simple aspect that was added for the scoring of this constituent (the source text constituent was now seen as "*VP(lex,past,pass,active)*").

Another issue was related to order. In several translations, an information unit that had been the head of a constituent in the ST was put in a constituent that had the same position in the translation as in the ST, but it had become subordinated to a different (or new) information

item. In this case, the unit still received a score of 1 for order, since the fact that it was no longer the head of the constituent was already reflected in the form and/or function scores.

Missing information items usually did not have an impact on the scoring, as it was meant to reflect the degree of syntactic similarity and not completeness. However, if information items that made up entire main clause constituents were left out, this did influence the scoring, as these constituents, being nonexistent, received 0 points for all three criteria. Moreover, if the head of a ST constituent was left out and subordinated information became the head, then the information unit generally received a score of 0 for form and function.

2.3 Determining the time spent on each sentence

The time spent on each sentence was ascertained by looking at the drafting phases in the Camtasia recordings (the drafting phases began as soon as the participants started writing). The point at which the participants had finished (or skipped) the title and started to read the first ST sentence was marked as the starting point of sentence 1, and the point at which they had finished sentence 1 and started reading the second ST sentence was marked as the starting point of sentence 2. The starting and ending points could be ascertained with the highest degree of certainty in cases for which eye tracking data was available (some of the Nov processes). In cases where eye tracking data was not available but the participant switched back and forth between the ST file and the translation, the ending and starting point between title and first sentence or first and second sentence was counted as soon as they switched back to the source text file. In cases where the participant had both the ST and the translation on the same page, the ending point of sentence 1 and the starting point of sentence 2, for example, was counted a few seconds after sentence 1 had been finished. Any rather long stretches of time (more than a few seconds) that were spent on formatting in between sentences were not counted as part of the translating time. In addition, in cases where the participant had time for a revision phase at the end, time spent on revising the sentences after the text had been completed was counted as well.

2.4 Identifying syntactic revisions

In order to investigate the participants' revision behaviour, the Camtasia recordings were viewed and all revisions in the first two sentences (except for corrections of typing mistakes) were noted. Whereas Delisle et al. (1999) define *revision* as a "comparative examination" of the TT with the ST in order to verify that the sense is equivalent and to improve the quality of the TT (cf. Delisle et al. 1999: 175), here, revisions are considered to be any changes made in the process of writing the target text, which includes deletions and additions. In most texts, the revisions for each sentence were completed while the sentence was being written, but

some participants were able to finish their translation before the time was up and had the opportunity to revise their draft in the sense of Delisle et al.'s (1999) definition.

In the revisions that were noted, those pertaining to syntax were classified as "more similar" or "more dissimilar" with regard to the ST structure or as "other syntactic change". This classification follows the one used by Englund Dimitrova (2005a; b). However, her category "change of word order" was left out and instead, changes of word order were counted in the other three categories. A category "other revisions" was added so that differences in the overall amount of revision done in different sentences would still be visible. The following changes made in the translations were counted as syntactic revisions: revisions that changed the form or function of a constituent (including changes in elements of verb phrases, for example tense), the complexity of constituents or the order of constituents. Revisions concerning lexis and morphology or additions of missing content after completion of a sentence were not counted as syntactic revisions and were classified as "other revisions". Cases in which the type of revision could not be determined with any degree of certainty were classified as "other revisions" as well. Revisions involving more than one word that belonged to one change in the text were counted as one instance of revision, such as a change of a masculine noun to a feminine noun in German and the corresponding changes in any adjectives or articles belonging to it. Revisions that went back and forth, for example changing a less similar solution to a more similar one and then back to a less similar one, were counted as a single revision, e.g. one "more dissimilar" revision. In cases where entire sentences were rewritten, a quantification of the revisions was attempted by counting the elements of the tentative solution that were changed in the new sentence.

2.5 Identifying negative syntactic transfer

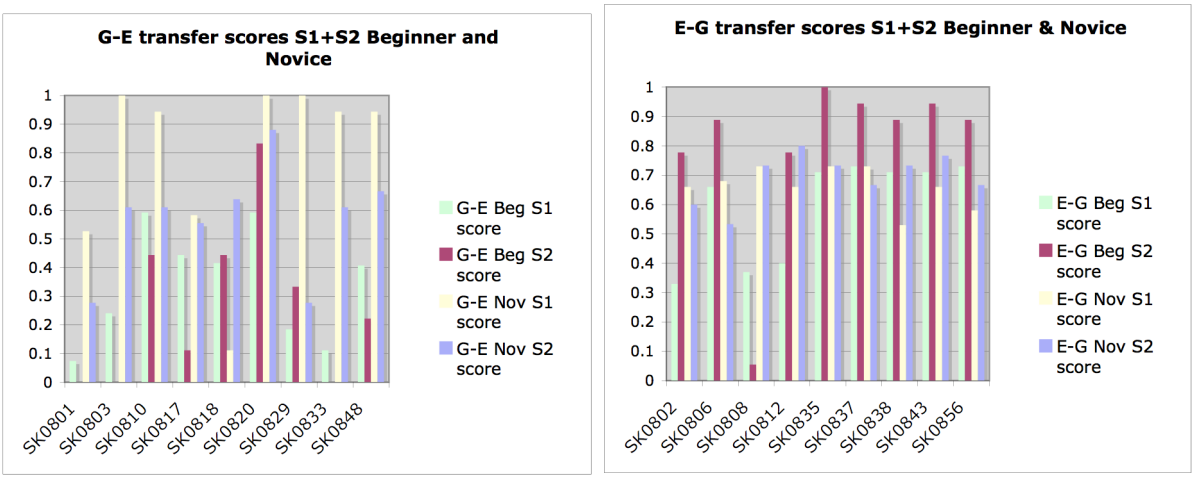
The number of occurrences of negative transfer was determined by finding syntactic errors in the translations and then comparing them to the syntactic structure of the corresponding text passage in the ST. If the incorrect structure in the translation could be seen as a result of transfer of the same structure from the ST, then it was counted as an instance of negative transfer. Negative syntactic transfer was identified in a separate step because it had not been accounted for in the grammar analysis. The rest of the transfer besides the identified instances of negative transfer was considered to be positive, as it had not led to errors.

3 Results

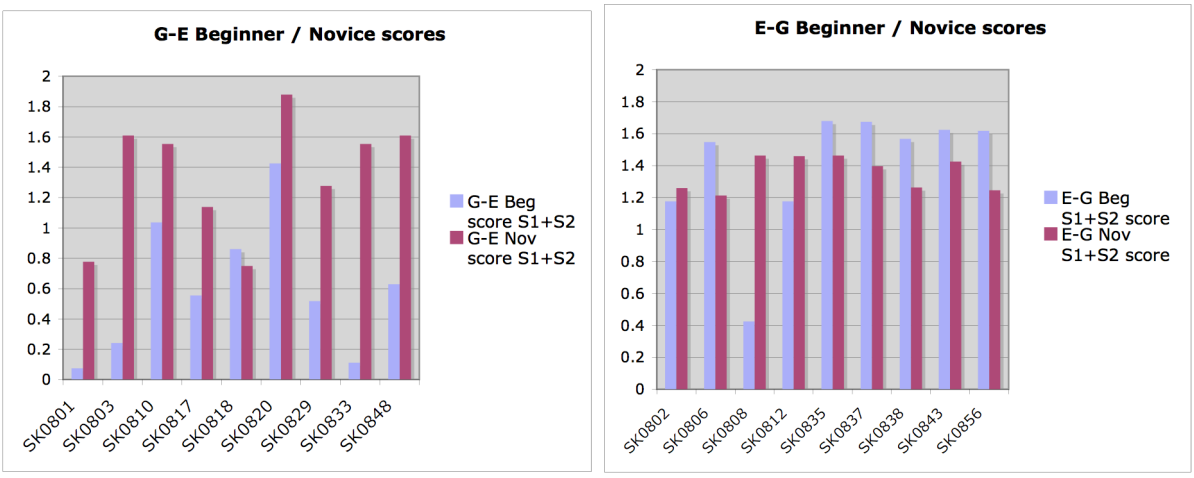
3.1 Transfer scores

Figures 2 and 3 show the four transfer scores that were calculated for each participant: the scores of sentence 1 (S1) and sentence 2 (S2) of their Beginner text and the scores of sentence 1 and sentence 2 of their Novice text. The English-German (E-G) group and the German-English (G-E) group are shown separately. Figures 4 and 5 show the added transfer score of each participant's Beginner and Novice text; the maximum in these diagrams is 2 (or 200%) because the scores of S1 and S2, each shown on a scale of 1 (or 100%) in Figures 2 and 3, were added together. The Beginner (Beg) texts are those that were done in the third semester just after the participants' first translation classes had started, and the Novice (Nov) texts are the ones that were done in the sixth semester, at the end of their studies, after they had had almost four semesters of translation classes.

Figures 2 and 3: transfer score for each sentence



Figures 4 and 5: each participant's Beg and Nov score



These diagrams allow the following observations: In the G-E group, eight out of nine participants had a higher transfer score in their Novice text than in their Beginner text. The large variety of scores also reflects the fact that the texts were quite varied. In contrast, in the E-G group, six out of nine participants had a slightly lower transfer score in their Novice text. The range of different scores is clearly smaller in the E-G group than in the G-E group: the standard deviation of the G-E scores is 0.544 and the standard deviation of the E-G scores is 0.289. This is also reflected in the fact that the highest number of both 100% scores and 0% scores can be found in sentences done by participants in the G-E group. However, the overall amount of transfer appears to be larger in the E-G group: the average G-E score is 0.98 and the average E-G score is 1.37. The main reason for this difference seems to be the much lower transfer scores of the G-E Beginner texts in comparison with those of the E-G Beginner texts, as can be seen in table 4:

Table 4: average transfer scores

average G-E Beg score	0.61	**average E-G Beg score**	1.38
average G-E Nov score	1.34	**average E-G Nov score**	1.35
average G-E score	0.98	**average E-G score**	1.37

If quite freely interpreted, these results might suggest the following: The beginner students translating into English might have felt that they should not stick to the German structure but write a 'new' English sentence. This could be because of what they had learned in their first-year introductory courses and in their first couple of translation courses, as what is usually taught is to 'deverbalise', to come away from the source text structure in order to express the content idiomatically in the target language. The G-E participants might have particularly taken this to heart in their Beginner texts. Another possibility is that the G-E participants, translating into their L2, felt less confident in English and thus were not sure whether a similar sentence structure was possible. The results of participant SK0833 are rather confusing in this respect: she was a bilingual who had grown up first in England then in Switzerland, but her transfer scores, which were lower in the Beg text and higher in the Nov text, correspond to the general tendency of the G-E group (L1-L2) rather than the E-G group (L2- L1).

Similar findings relating to directionality were made in Ehrensberger-Dow & Künzli (submitted): native English participants "tended to exploit transfer of form, order, and/or structure" of sentence initiators more than native German participants did in German-English translations (ibid.: 12). They concluded that "translating into the L1 may allow translators to more fully exploit positive transfer" (ibid.: 14).

The following sections shall compare the transfer scores presented above with other aspects of the translations and the processes in order to include more factors in their interpretation and to search for possible explanations.

3.2 Transfer scores and time

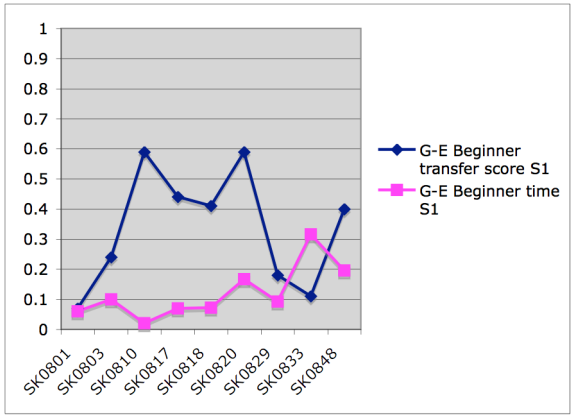
It could be assumed that, if literal translation is less demanding cognitively than free translation, translations with a higher degree of transfer are done in less time. To test this hypothesis, the transfer score of each translated sentence was compared with the time taken to translate it. These two parameters could be displayed in a single diagram by transforming the amount of time into a percentage: the number of seconds that had been ascertained from watching the Camtasia recordings was divided by 900, which is the number of seconds contained in 15 minutes. The fact that the participants never actually had exactly 15 minutes was not taken into account for reasons of consistency in the calculations. The eight diagrams on the next page (Fig. 6 to 13) display the resulting comparisons.

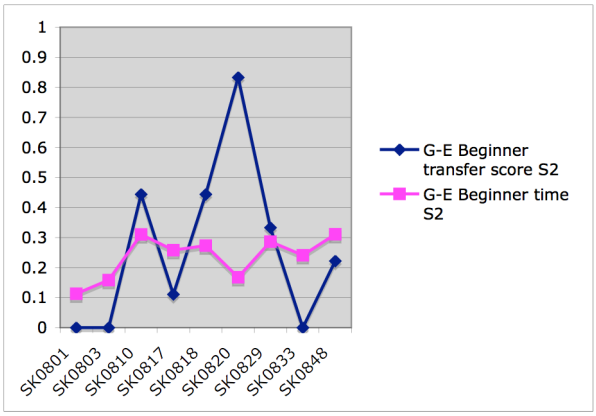
The diagram for sentence 2 of the E-G Novice text is the only one that shows a pattern that suggests there could be a correlation between the transfer score and the time taken to translate the sentence: the two lines nearly mirror each other. All of the other diagrams show very different and irregular patterns. This and the correlation coefficient of 0.119 for all the sentences and their respective times suggests that there is no linear correlation between the amount of syntactic transfer in a translated sentence and the time taken to do it.

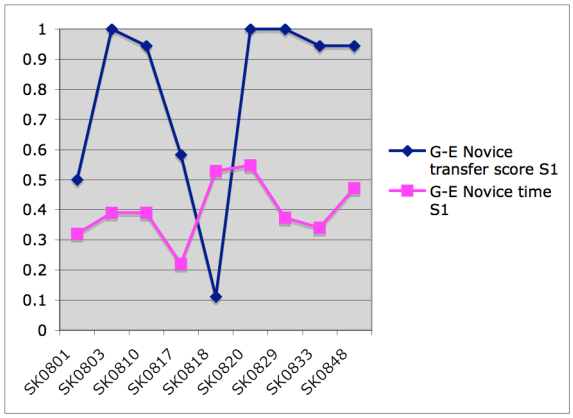
One striking example that illustrates this finding can be found in the diagram for sentence 1 of the G-E Novice text. Participants SK0818 and SK0820 took nearly the same amount of time to translate it, but SK0818 had only 10% transfer, while SK0820 had 100% transfer. The same situation can be found in the diagram for sentence 2 of the E-G beginner text between participants SK0808 and SK0835. In the diagram for sentence 2 of the G-E Novice text, the participant with the highest transfer score (SK0820) was also the one who took the longest to finish it.

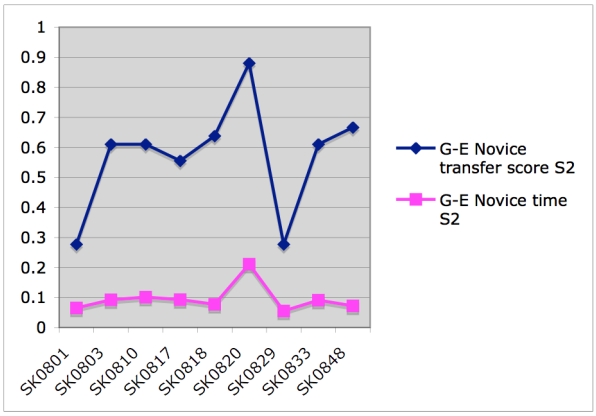
Obviously, there are more factors than the amount of literal translation that influence the length of time taken to translate a sentence; for example, a participant may take longer because he or she spends more time researching a particular expression than another participant who does not have to do any research. Therefore, explanations for time differences will also be searched for in the discussion of further aspects of the translations.

Figures 6 to 9: transfer score and translation time for each sentence, G-E group

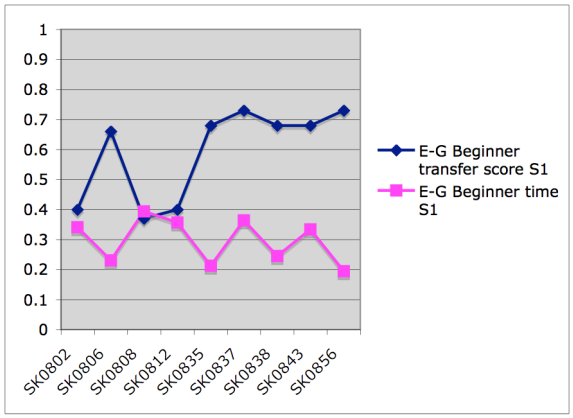


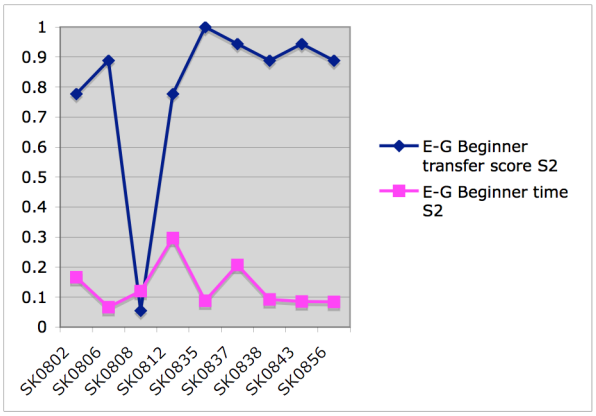


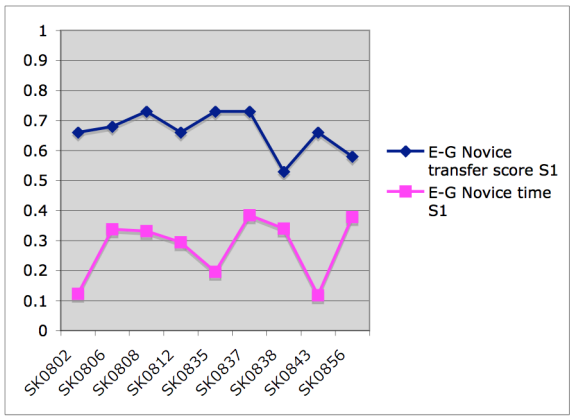


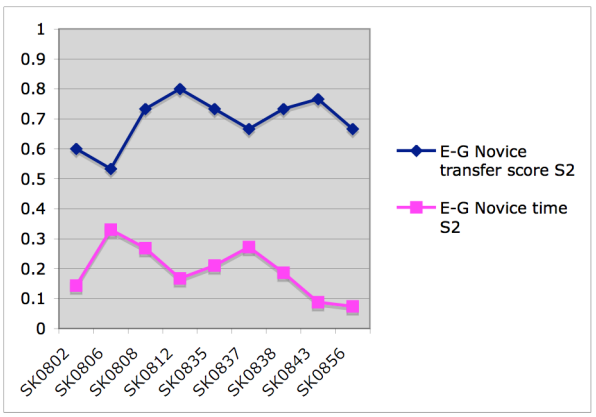


Figures 10 to 13: transfer score and translation time for each sentence, E-G group





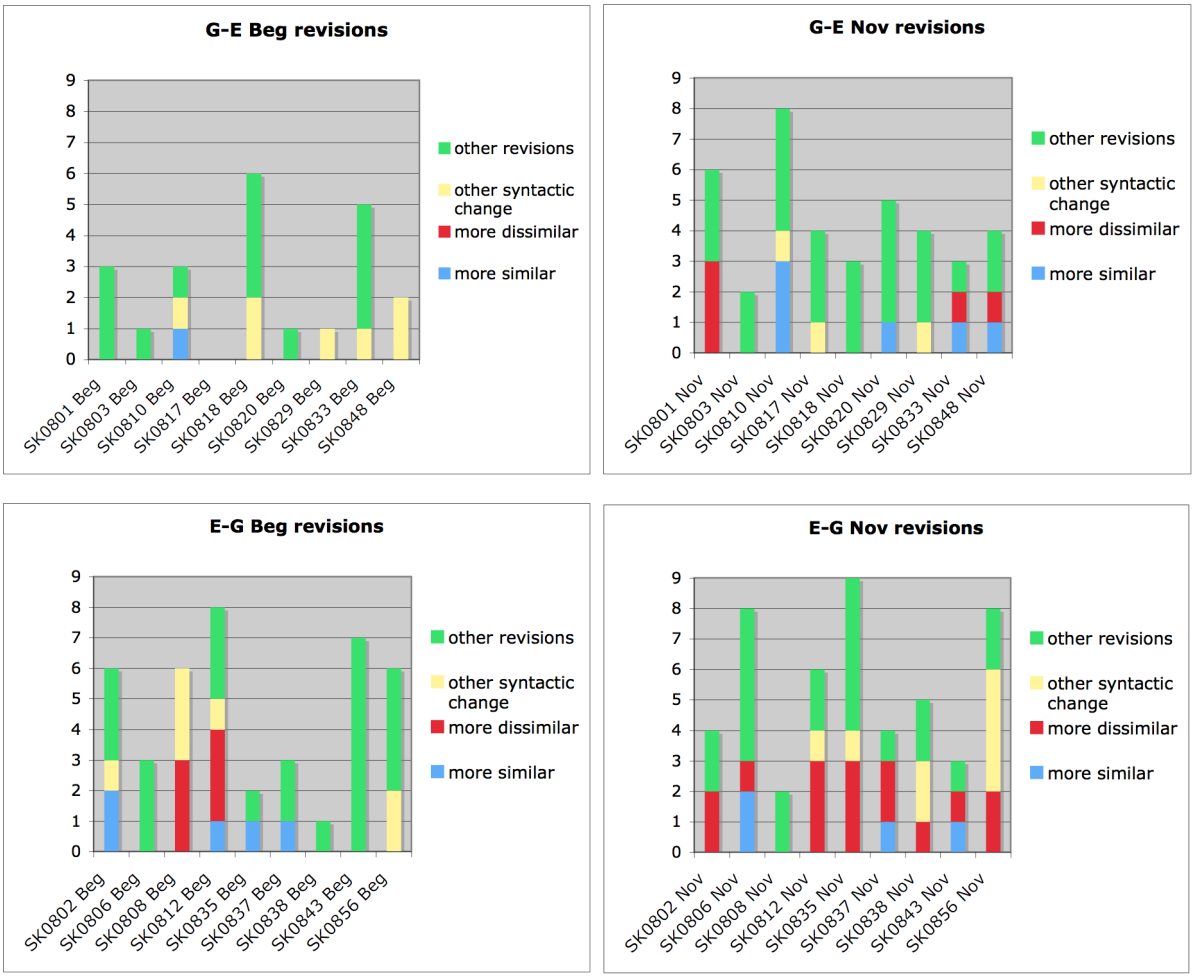




3.3 Syntactic revisions

Figures 14 to 17 show the number of revision instances identified in each text, differentiating between syntactic revisions that changed the first solution to one that was more similar or less similar to the syntactic structure of the source text ('more similar' and 'more dissimilar'), revisions that changed the syntax but changed it to be neither more nor less similar to the source text ('other syntactic change'), and revisions that had nothing to do with syntax or that could not be determined clearly ('other revisions').

Figures 14 to 17: revisions made in each text



These diagrams allow the following observations: In both groups, most of the participants made more revisions in their Novice text than in their Beginner text. However, while it was 7 out of 9 participants in the G-E group, it was only 5 out of 9 participants in the E-G group who made more revisions in their Nov text, so it is hard to tell whether this could be generalised. A clearer difference can be seen in a comparison of the revisions done by each group: the E-G group made more revisions than the G-E group in both phases. Both groups made more 'dissimilar' revisions in their Novice text than in their Beginner text, and again the E-G group

made more of these revisions than the G-E group. These results suggest that for the students translating into their mother tongue, interim solutions and revisions moving away from the ST structure played a greater role than for the students translating into their second language, and that literal translation had become a slightly more important step in the process by the end of the students' training, especially for L2-L1 translation.

3.4 Negative transfer and ST or SL influence

In the first two sentences of the E-G texts, no negative transfer could be identified. There was only one clear syntactic error in all the texts done by this group: the syntactic error in SK0835's Beginner text (see below). However, although there were no instances of transfer or of syntactic errors except this one, an influence of the ST constituent structure could be found in several of the E-G Nov texts. This influence seemed to come from the frequent English constituent structure of noun phrases in which the head is postmodified by a preposition phrase, as in "a dazzling display of shooting stars" and "a peak in activity" (from the English "stars" ST, see Appendix II). The former was translated in five cases using a similar structure, for example "ein funkelndes Spektakel von Sternschnuppen" (SK0808 Nov). The latter was translated in one case as "Maximum an Aktivität" (SK0843 Nov). Although these translations are not wrong in German, a more idiomatic way of rendering these noun phrases would be to create composite nouns, such as "Sternschnuppen-Spektakel" (translation by L.D.). Interestingly, all the participants who decided to use a more typically German structure either left out the information item *display*, added a slightly different one, such as "Sternschnuppen-Feuerwerk" (SK0812 Nov, underlined by L.D.), or transformed the whole sentence (SK0838 Nov). One more instance suggesting an influence of English preposition phrases can be found in SK0808's sentence "[…] dieses Jahr soll es eines der besten werden in der jüngsten Geschichte". Most of the other participants translated the preposition phrase "in recent history" ("stars" ST) using a German noun phrase in the genitive, without a preposition ("der jüngsten Geschichte").

In contrast to the E-G group texts, the texts of the G-E group did feature some instances of negative transfer. Table 5 shows which texts were affected. "Negative transfer" ("neg. transfer") and "other errors" both refer to *syntactic* errors in the TL.

The table shows that three instances of negative transfer occurred in the Beg texts and two occurred in the Nov texts. SK0820 made 2 errors from negative transfer in his Beg text but no syntactic errors at all in his Nov text. SK0833 was a similar case, but with only 1 error from negative syntactic transfer. SK0817, however, made his only error from negative transfer in his Novice text, as did SK0848. The table also shows that more 'other' syntactic errors were made in the Nov texts.

Table 5

G-E group	Beg		Nov	
	neg. transfer	other errors	neg. transfer	other errors
SK0801	0	1	0	0
SK0803	0	0	0	0
SK0810	0	0	0	1
SK0817	0	0	1	0
SK0818	0	0	0	1
SK0820	2	0	0	0
SK0829	0	0	0	1
SK0833	1	0	0	0
SK0848	0	0	1	1

A closer look at the origins of each of these syntactic errors shows the following:
Two of the three negative transfer errors in the Beg texts were the result of premodifying the head of an adjective phrase with a preposition phrase, which cannot be done in English (see observations on SK0820 below). The negative transfer error in SK017 and SK0848 Nov came from the past perfective (*Plusquamperfekt*) in the German, which was wrong in the English sentence because it contained a specific time reference: "**At the time**, the spacecraft **had been** 320 million km from the Earth" (SK0817 Nov, bold formatting by L.D.). The 'other errors' in SK0818 and SK0848 Nov were the results of similar problems with verb phrases. The 'other error' in SK0848 Nov could have been classified as an instance of negative transfer as well, because the use of past perfect in the subordinate clause did not fit with the present perfect that had been used in the main clause: "The microscopic traces of glycine have been detected in a probe of particles which had been collected by […]" (SK0848 Nov). However, it was considered to be a different case from the other use of past perfect that led to an error (in S2[5]). Although this decision could easily be challenged, the reasoning behind it was that the transfer of the same verb form from the ST in the subordinate clause of S1 led to an error because the participant had changed the verb form of the main clause predicator. Thus, the error was the consequence of an instance of *non*-transfer, as it were, in a different part of the sentence. In contrast, the use of the past perfect in S2 was considered to be an instance of negative transfer because the inappropriateness of transfer in this case was not detected.

An indication of possible influence from the SL rather than the ST can be found in SK0801's Nov text: "In a sample of particles […], there have been found microscopic traces of glycine" (SK0801 Nov). In writing this sentence, the participant might have had the German structure

[5] "At that time, the probe had been located at a distance of 320 million kilometers from the Earth." (SK0848 Nov S2)

in mind that is used when an adverbial has the first position in the main clause: the finite verb comes in the second position (*linke Satzklammer*, cf. Duden 2009: 876) and the subject comes in third, e.g. “In einer Probe (…) wurden Spuren von (…) gefunden.”

The introduction of an existential *there* in this translation and the introduction of empty subjects in two of the Beginner G-E translations indicate a possible influence from German, where the expletive *Platzhalter-es* (cf. Duden 2009: 823) is used very frequently. However, as in the present case, some empty subjects that were introduced in English translations did not come from a *Platzhalter-es* in the source text, as might have been expected. One example is “It is not the tendency to suicide that lies behind the phenomena (sic)” (SK0803 Beg S1). A possible explanation for this use of a structure that is typically used in German could be found in Mauranen’s (2004) suggestion that in a translation situation, transfer can occur not only because of the influence of the ST structure, but also because the SL system is activated simultaneously to the TL system and thus can influence processing in the TL.

3.5 Observations on individual results

In the following, some participants with particularly striking transfer scores or time parameters in comparison with the others will be picked out and examined and attempts will be made to explain their results, taking into consideration their revisions, comments and any other relevant features of their translations. When referrals are made to comments made in the RVPs, the lines in the transcripts where the comments can be found are indicated in brackets, for example like this: (<u start="00:02:06" end="00:02:15">).

3.5.1 G-E SK0801: low transfer and short time in Beg and Nov

In Fig. 6 and 7 on page 33, participant SK0801 catches the eye because she had one of the lowest transfer scores for sentence 1 and 2 of the Beg text and was also one of the quickest to translate them. This participant made three minor revisions in these two sentences (see Appendix III): missing information was added by inserting the words “probably” and “likely”, and an attempt to translate *von Fall zu Fall* was abandoned (deletion of “in each”).

Considering the short time it took for this participant to do the first sentence, it probably did not cost her a great deal of mental effort to restructure the information from the source text. It is conceivable that this was thanks to the relatively simple structure, short length and small number of information items of the ST sentence, which may have made it easier to process. Moreover, item *a* (“Hang”) was left out.

The second sentence of this participant’s Beginner text was also done very quickly and featured no syntactic transfer in the main clause constituents. The analysis of this sentence in Appendix VII shows that items *c, d, e, f, k* and *n* are missing. Leaving out these items

possibly lessened the cognitive load, allowing quicker completion of the sentence. The deletion of “in each” reveals one of these decisions to leave out an information item that was difficult to fit in. Participant SK0801 happens to be one of the two in the G-E group who were able to translate the whole Beginner text in the given time. It is possible that skipping certain information items helped this participant finish the text more quickly than the others. Although five of the other participants left out at least one or two items in the second Nov text sentence and three left out five items, this participant left out six.

The comments in SK0801’s RVP include some explanations for the decisions she made in translating these two sentences.
At the beginning, she commented that she had had trouble with the first sentence because of the phrase “ein Hang zum Selbstmord” (<u start="00:02:06" end="00:02:15"> in the transcript). When she looked up “Hang” on Leo, she quickly found that she did not like the suggestions given there and decided to “reformulate” (<u start="00:02:17" end="00:02:33">). She added an empty subject and transformed the modal element “dürfte” into an adverb, but ended up leaving out the translation of “Hang”. She commented that she was not happy with the first sentence, but that she had thought at least she “had something” and could always revise it later (<u start="00:02:43" end="00:02:53">). In the second sentence, she commented that she had not been sure how to translate “von Fall zu Fall” because she had already used the word “case”, so she had just left that part out (<u start="00:03:56" end="00:04:08">). She also commented that she skipped translating “begünstigen” because she did not like any of the suggestions in Leo and because she had considered one verb to be sufficient (<u start="00:04:18" end="00:04:52">).
In conclusion, this participant made very quick decisions in these two sentences. Her two main reactions to difficulties seemed to be to use a different structure and to leave out content. One error can be found in the second sentence: “more likely” was used as an adverb phrase. However, this error cannot be clearly attributed to negative transfer.

The Novice text of SK0801 also features rather low transfer scores and shorter times in the first two sentences in comparison with most of the other participants, although the difference is not quite as striking there as in the Beginner text. This participant made more ‘dissimilar’ revisions in the Novice text than the others did: the complex adverbial “in the sample of particles […]” was moved to the first position, the tense of the main clause VP was changed from present to past and back to present, and the NP “orbiter” was changed from subject to part of a preposition phrase postmodifying the new head of the subject. These revisions as

well as the introduction of an empty subject ("there have been found") resulted in a lower transfer score than most of the other participants had[6].

SK0801's comments on the Nov text do not reveal any explanations for the first two changes away from the ST structure. However, with regard to the structural change in the second sentence, she commented that she was unsure of how to add the word "distance" to her sentence "the orbiter was situated within", and decided to use "the distance between", which she had found in a Google search (<u start="00:08:42" end="00:10:37">). What is interesting about this is that it shows that other resources consulted in the translation process can also influence the structure of the TT. It is conceivable that the use of a deviating structure found in other resources does not take much more cognitive effort than following the structure of the ST.

3.5.2 G-E SK0820: high transfer in Beg, high time & transfer in Nov

Participant SK0820 catches the eye in Fig. 6 to 9 on page 33 because he is among those with the highest transfer scores both in the Beg and the Nov text. Similarly to SK0801, this participant was unsure about the translation of "Hang" in the first sentence of the Beg text, but spent a longer time (15 seconds) looking at the Leo results page than SK0801 (who looked at it for 8 seconds) and chose one of the terms given there, although he was not sure whether it was correct (<u start="00:02:40" end="00:03:42">). No revisions were made in this sentence. In the second sentence of the Beg text, SK0820 stayed extremely close to the ST structure, although some subordinated information items were left out (items *b, c, e, k* and *n*, see Appendix VII, and dots were put in to mark where a verb for item *n* had to go), which perhaps helped him finish more quickly. The only revision was the addition of "In fact" after the rest had been written. This sentence was translated so literally as to contain negative transfer: "In fact it's several and from case to case different criteria, which […]" (words underlined by L.D.). The VP and empty subject, "sind es", were transferred almost directly into English. SK0820 obviously noticed that the third person plural form of "to be" would not work with "it" and therefore put it in third person singular, but did not realise that "it" did not work with the plural of "criteria" in the first place. The preposition phrase "from case to case" in the adjective phrase with the head "different" is an instance of negative transfer because preposition phrases can only be postmodifiers, not premodifiers, in English adjective phrases (cf. Leech et al. 2006: 76).

[6] The only participant in the G-E group who had a lower transfer score in the Nov text, SK0818, had such a low score because she left out content from the main clause constituents in S1 and turned subordinated information into main clause constituents in the translation, changing the sentence's meaning.

In addition, although this study does not take into account orthographic transfer, one might add in examining this sentence that the comma after “criteria” is an instance of negative orthographic transfer: this is a case of a defining relative clause, which should not be separated from the head by a comma in English.

It could be that a greater willingness to use terms from Leo he was not sure about led this participant to stay closer to the source text structure than participant SK0801 (see above) did, who preferred to restructure the sentence using words she knew rather than use a term she was unsure about that would be needed to write a sentence with the same structure as the ST. It could also be that SK0801 had a higher competence in English, as she seemed to be quite confident in restructuring the sentence. The occurrence of more negative transfer in the Beg text of participant SK0820 also supports the conclusion that he might have had a lower competence in English than SK0801.

For SK0820’s Nov text, Fig. 8 and 9 on page 33 show, again, that he was among those with the highest transfer scores. This time, he was also the participant who took the longest to translate both sentences. In the first sentence, he was one of 6 who translated very literally. The reason why he took slightly longer may be that he spent more time doing research; for example, he spent about 40 seconds verifying the name of “Wild 2” in English. SK0820’s results for the second Nov text sentence are a bit more conspicuous than those for the first: whereas 6 of 9 participants had a transfer score of around 60%, he had 80%, and also took about 10% of total time longer than all the others. The reason his transfer score is highest is that he kept the order of the constituents of the ST, the lexical element of the VP and the form and function of information item *d*, all of which most participants did not. An examination of his Camtasia recording shows that the reason he took longer than the others most likely lies in the fact that he spent a lot of time (1 minute, 40 seconds) researching the English translation of “Millionen Kilometer”. Therefore, the fact that he took longer cannot be attributed to the higher degree of literal translation in his text.

3.5.3 E-G SK0806, SK0835 & others: low time, high transfer in Beg

Participants SK0806 and SK0835 in the E-G group were among those with lower time parameters and high transfer scores in both sentences of the Beg text, besides SK0838 and SK0856.

Participant SK0806 said at the beginning of her RVP that she usually works quite fast in order to “have something on the page” and then revises the text at the end, which she had not been able to do here (<u start="00:00:42" end="00:02:01">). In the first sentence, she made three minor revisions: two article corrections and the substitution of “MoD” with “das

amerikanische Verteidigungsministerium" after a Google search[7]. In the second sentence, she made neither revisions nor comments.

Participant SK0835 mentioned early in her RVP that she had had rouble understanding what the text was about (<u start="00:00:04" end="00:01:22">). Seeing how she typed the first sentence in the Camtasia recording, she commented that she usually gets ahead faster after having done the title (<u start="00:05:21" end="00:06:23">). Her only two revisions in the first two sentences were both done on the main verb in sentence 2: one revision regarded a lexical choice ("beschliessen" or "schliessen") and the other one regarded the tense, which was changed to correspond with the ST. Here, she mentioned in the RVP that she had decided to write the "correct" translation and mark it so that she could go back to it again later (<u start="00:09:55" end="00:10:52">). Participant SK0835's text features an error: "[…] ein ähnliches System zu testen, welches das Verteidigungsministerium unbedingt vorstellen möchte" (words underlined by L.D.). However, this error cannot be attributed to negative transfer, as it does not have the same structure as the ST; it is more likely to be a logic error or a reading mistake. A rather daring conclusion that could be drawn from the occurrence of this error is that this participant was too focused on the structure or on the lexical items, so that she did not notice that her formulation in the TL had a logical flaw. Another possibility is that she did not realise that the preposition phrase after "system" in the English text was actually a postmodifier of "similar", maybe as a result of overlooking "to that".

In the E-G Beg text, participants SK0837, SK0838, SK0843 and SK0856 had transfer scores that were similarly high to those of the two participants discussed here. An interesting observation that can be made in the comparison of their texts is that the two (SK0837 and SK0843) with high transfer scores that took slightly longer than the others were the only ones besides SK0808 and SK0812 (who both took about as long as SK0837 and SK0843) who seemed to have found out that the MoD was British. It could be that their higher time parameters in the first Beg sentence had something to do with how thoroughly they researched MoD.

Participant SK0812, who was among the three that had a lower transfer score in the first Beg sentence than the other six (Fig. 10 on page 33), commented at one point in her Camtasia recording where she had a 15-second pause that she had been trying to sort out the rather complicated section after "American Navy" in her head (end of line <u start="00:05:50" end="00:07:11"> and start of line <u start="00:07:12" end="00:08:38">). It might be possible that since she had transposed the item *testing* into a noun phrase, which was now the object, and postmodified it with the ST object *American Navy* ("die Tests der amerikanischen

[7] This happens to be the wrong solution, since the MoD is actually British.

Marine", SK0812 Nov), it cost her more effort to continue the rest of the sentence than it might have if she had used a structure similar to that of the ST, because she had to restructure the rest to fit in with the sentence she had started. This suggestion could be supported by the fact that she makes three structural revisions in the rest of her sentence.

In addition, the observation in Fig. 16 on page 34 that SK0808 and SK0812 are among those with the most revisions as well as more 'dissimilar' revisions than most is interesting because these participants both were among those that took longer and had a lower transfer score.

3.5.4 E-G Nov results in general

The scores of the English-German group's Novice texts were all very similar, between 60% and 70% in the first sentence and between 70% and 80% in the second sentence. Of the revisions made in the E-G Nov texts, those changing solutions that were similar to the ST to solutions that were less similar to the ST ('more dissimilar' revisions) made up the largest portion of syntactic changes. The lowest transfer score in S1, that of SK0838, cannot be explained by more 'dissimilar' revisions, but rather by the fact that this participant chose to create two sentences in the TT and redistribute the content. Despite this change of structure, SK0838 did not take longer than average. The lowest transfer score in S2, which was that of SK0806, can be explained by this participant's deletion of an information item that made up a constituent in the ST (*this year*), leading to 0 points for all three criteria in this item. The fact that SK0806 also took the longest for sentence 2 could have something to do with her higher number of 'other' (e.g. lexical, morphological) revisions in comparison with the others.

3.6 Sentences with generally high or generally low transfer scores

In this section, sentences that have a large number of high transfer scores or a large number of low transfer scores are compared and examined with the purpose of finding out whether the sentence structures had any influence on the average amount of transfer.

3.6.1 Sentences with many low transfer scores

The two ST sentences with the lowest average transfer scores in the translations were the following:

a) S1 G-E Beg: "Ein Hang zum Selbstmord dürfte dem Phänomen nicht zugrunde liegen."
b) S2 G-E Beg: "Vielmehr sind es wohl meist mehrere und oft von Fall zu Fall verschiedene Faktoren, die Strandungen lebender Wale verursachen oder begünstigen."

The highest scores in **sentence a)** were 0.6 and most were below 0.5. Positive transfer of the forms and functions of the constituents of this sentence into English is actually possible, as it could be translated as *A tendency to suicide should not underlie this phenomenon*.

However, the students seemed to prefer different expressions for “dürfte nicht” and “unterliegen”, such as “is not likely to” and “be at the bottom of” or “be the reason for”. These solutions involve transposition of the ST content and therefore result in less syntactic transfer than the first solution.

Three participants chose the adjective “likely” and one chose the adverb “probably” for the item *dürfte*. Two participants left this information item out altogether and the remaining three used a modal verb (“can” or “should”), which gave them 1/3 of a point for the form of the predicator constituent. For the less literal solutions, the ST constituents had to be restructured into constituents with different forms and functions and with different complexities, as in the translation “(A tendency to suicide) is not (likely (to be the reason (for this phenomenon)))” (SK0848 Beg, brackets added by L.D.). Here, the main constituents are a subject, predicator and a subject complement, whereas in the ST they were a subject, predicator and object. The item “phenomenon”, which was a main constituent, is now a subordinate phrase, as is the lexical element of the ST verb phrase, which was transposed into a noun. This example shows that a very natural translation of this sentence ended up having a rather different structure (transfer score of 0,4 or 40%) even though it appears to be quite similar to the ST sentence in that the order of the information was largely taken over.

One possible reason why these less literal solutions were chosen despite the availability of literal solutions could be that the students judged them to be more natural-sounding in English or preferred them for another reason, for example because they sounded more familiar. However, these speculations cannot be confirmed because such reasons were not made explicit in the RVPs, although difficulties with the first sentence were mentioned. Another reason why less literal solutions could be chosen over more literal possibilities could lie in what Krings (1986a) has called *primäre Äquivalentassoziationen*, or *spontaneous interlingual associations* (Krings 1986b). This is a psycholinguistic category for pairs of words in two different languages that are directly associated with one another and which the language user judges to be equivalents (cf. Krings 1986a: 304f.). Krings (1986a) also included the criterion that these associations are not momentary but remain stable, at least for a certain period of time (ibid.).

For example, participant SK0833 spontaneously translated the word “dürfte” as “probably”, which has a completely different form. It could be, therefore, that spontaneous interlingual associations have structures or forms that vary from those of the corresponding elements in the ST, but do not require more cognitive effort, given that they are spontaneous. What might, however, require more cognitive effort is any restructuring of the rest of the sentence that becomes necessary as a consequence, as is shown in the next example.

In contrast to sentence a), **sentence b)** did not clearly offer the possibility of positive transfer. The most problematic part of the sentence was the beginning: “Vielmehr sind es wohl […]” (with “wohl” as a main adverbial, which was the most frequent interpretation). The participants did not associate the word “vielmehr” with an English equivalent that could be used at the beginning of the sentence: five participants used “more likely” in their translation, possibly because they had already used it in the first sentence, and one used “rather”. Two (SK0810 and SK0820) used “in fact”, which they found on Leo, at the beginning of the sentence. They were also the only ones who decided to look up “vielmehr” in a dictionary.

The decision made by most participants to use “more likely” or “rather” led to changes in the forms and functions of the main constituents: in four cases, a noun clause with *that* was introduced This moved the ST main clause subject complement (the NP “Faktoren”) into a subordinate position and thus resulted in 0 transfer points (see e.g. SK0801 and SK0803 in Appendix VII). This also resulted in three 0 scores for items *a* and *b*, which had been put into a new, complex constituent together (see ibid.). Although the structure of the NP with “Faktoren” mostly remained similar as it still contained a relative clause, this did not count in the scoring as the forms and functions of subordinate phrases and clauses were not included. The results of this sentence show that syntactic changes in just a few constituents can lead to an obligatory restructuring of the rest (such as the addition of a noun clause with “that”) and consequently to low transfer scores for the main constituents.

3.6.2 Sentences with many high transfer scores

The two ST sentences with the highest average transfer scores in the translations were the following:

c) S1 G-E Nov: “Die mikroskopischen Spuren von Glyzin wurden in einer Probe von Partikeln nachgewiesen, welche die Nasa-Sonde «Stardust» vom Schweif des Kometen Wild 2 im Januar 2004 eingefangen hatte.“
d) S2 E-G Beg: “The judge concluded that the booming sounds could damage marine life”

For **sentence c)**, six participants had transfer scores of 100% or 94%. Contrary to the first impression given by this sentence due to its length and complexity, the revision data suggests that the main difficulties lay in areas other than syntax: 14 of 23 revisions were ‘other revisions’, most of which pertained to lexical and preposition choices, and of the 9 revisions pertaining to syntax, 5 were actually revisions changing the structure to be closer to that of the ST. Here is one participant’s translation as an example: “Microscopic traces of glycine were detected in a sample of particles, which the NASA probe ‘Stardust’ captured from the tail of the comet ‘wild 2’ in January 2004” (SK0820 Nov). The revisions in this particular sentence done by SK0820 concerned the translation of *Schweif des Kometen Wild 2*: the first solution, “cometary tail”, was changed to “comet’s tail of” (‘other’ revision) and then

to “tail of the comet” (‘more similar’ revision). It appears that this participant had inserted “cometary tail” first (as an automatic reaction of sorts) because the same had been used in the title. Probably realising that this formulation could not be used in the context of sentence 1 because of the addition of the comet’s name, SK0820 revised it to a more literal translation with the item “comet Wild 2” as a postmodifier of “tail”.

The reason for this sentence’s high amount of transfer could lie in the fact that all the information units making up main constituents in the ST can be transferred into constituents with the same form, function, complexity and even order in English (with the exception of the German *Satzklammer*). Another reason why this sentence was translated very literally by most participants could be that in very complex sentences, restructuring takes more cognitive effort than in simple sentences because more elements have to be ‘juggled’ in the mind. Therefore, processing is probably easier when the ST structure is followed, as long as the TL grammar allows it.

The case was similar for **sentence d)**. The information units making up the ST constituents could be transferred into constituents with the same form, function and order, for example: “Der Richter beschloss, dass die dröhnenden Geräusche das Unterwasserleben gefährden könnte (sic)” (SK0835 Beg[8]). The change of the function of the “dass” clause (*Subjunktionalsatz*, SubS) to *Attributsatz* in some translations (see SK0806, SK0838 and SK0856 Beg) was a consequence of the translation choice of using the *Funktionsverbgefüge* “zum Schluss kommen” in the predicator: the “dass” clause was then, strictly speaking, a modifier of the noun in the predicator.

Sentences c) and d) are examples of cases in which the content of the ST could be transferred to the TL in exactly the same form without causing problems related to obligatory restructuring, i.e. syntactic changes that have to be made in order for the TT to be grammatically correct. In addition, it seems that in these cases, the translations of lexical items that were preferred or spontaneously used by the participants were ones that did not require restructuring of the rest of the sentence, as was seen in parts of sentences a) and b).

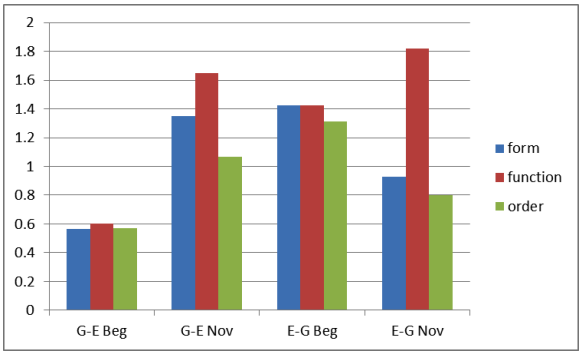
3.7 Transfer of form, function or order

In order to determine whether there are differences in the amount of transfer that pertained to the form, function or order of constituents, the total number of transfer points that were given in the analysis was calculated for each criterion. Since the sentences had different numbers of constituents, the sum of transfer points for each criterion was divided by the total number of transfer points that could possibly have been given for each criterion in each sentence. For

[8] italics in “beschloss” removed by L.D.

example, the criterion of *form* could receive a total of 27 transfer points in sentence 1 of the G-E Beg text (**3** constituents x **9** participants). The total number of points, 9.9, was therefore divided by 27 to receive the number 0.36, which can also be seen as 36% of the possible form score across all participants. For the diagram in Fig. 18, the percentages calculated for each criterion in sentence 1 and 2 of each text were added, which is why the maximum is now 2 (200%).

Figure 18



This diagram shows the following: Both groups did not particularly favour transfer of one of the three aspects of form, function and order over the others in their Beginner texts. However, in their Novice texts, both groups transferred the functions of constituents more than their forms and positions in the sentence. While the G-E group has more transfer in all three aspects in the Nov text than in the Beg text, the results of the E-G group suggest that they favoured transfer of functions, but also changed the forms and sentence positions, more strongly in the Nov text than in the Beg text.

3.8 Summary of results

The transfer score results reveal that the group of participants translating from English into German (L2-L1) translated more literally in their Beginner text than the group translating from German into English (L1-L2) did in their Beginner text. The E-G group also used less literal translation in their Novice text than in their Beginner text, whereas the G-E group used much more transfer in their Novice text than in their Beginner text. A possible explanation for this could be that the G-E participants tried to deverbalise more in their Beginner text, possibly as a result of what they had learned in translation courses.

The results regarding the relationship between time, revisions and amount of transfer do not reveal any clear tendencies. On the one hand, some participants' translations and processes showed more revisions away from the ST structure, a lower transfer score and a longer time parameter in comparison with the others, suggesting that free translation takes more effort than literal translation (e.g. SK0808 and SK0812 Beg). On the other hand, there have also

been results indicating that participants with high transfer scores took longer than others with lower transfer scores. Thus, no linear correlation could be found to exist between the amount of transfer in a sentence and the time taken to translate it, which is not surprising, as there are so many different factors involved that influence both of these parameters. For example, the fact that participant SK0820 had longer time parameters than others despite his higher transfer scores could be attributed to longer research of lexical items. In fact, it seemed that amount and length of research as well as the number of revisions generally had more influence on time than the amount of transfer had (e.g. SK0806 Nov).

A greater number of revisions was identified in the texts translated from English into German than in the texts translated from German into English. This suggests that interim solutions played a larger role for the students translating into their mother tongue than for those translating into their second language. In addition, the E-G Nov processes featured the highest number of revisions that changed an initially literal translation to one that deviated from the structure of the ST. This suggests that students used literal translations as an in-between step more if they were translating into their mother tongue and more in their Novice phase than in their Beginner phase.

With regard to the difference between positive and negative transfer, most of it was positive because only five syntactic errors were identified in the texts that were attributable to negative transfer. All of them were found in the G-E texts, which suggests that students were more prone to negative transfer when translating into their L2. Two of the negative transfer instances were found in Nov texts of participants that had not had any negative transfer in their Beg text. Since the number of identified instances of negative transfer is so small, no definite conclusions can be drawn from this finding. It would probably take a much larger corpus, i.e. analyses of more or longer texts done by each participant, to determine whether they are less prone to negative transfer at a later stage in their training.

A closer examination of the source text sentences that were translated with the most and the least syntactic transfer showed that the possibilities for positive transfer of the ST forms and structures into the TL and the preferred or preferrable translations for lexical items influenced the amount of literal translation that was used. The German sentence “Ein Hang zum Selbstmord dürfte diesem Phänomen nicht zugrunde liegen” serves as a good example. The translations of the items *dürfte* and *zugrunde liegen* that were preferred or chosen spontaneously by the participants had forms that varied from those of the ST items, e.g. “probably“ and “to be at the bottom of“. Reasons for choosing less literal translations of lexical elements could be spontaneous interlingual associations as proposed by Krings (1986a; b) or other reasons such as stylistic preferences or limits of vocabulary knowledge.

In contrast, ST sentences that were generally translated quite literally both offered possibilities for positive syntactic transfer and featured lexical items for which the translation equivalents chosen by the students were the same or similar in form and thus did not require transpositions of the content.

A comparison of the proportions that the criteria of form, function and order made up in the transfer scores revealed that transfer of the functions of constituents was more important than transfer of form and order, especially in the Nov texts and more so in the E-G group than in the G-E group. The reason why function seemingly became the preferred element to be transferred could perhaps have something to do with semantics. Jacobson (2006) suggests that "syntactic constituents generally also behave as semantic units" and that "the semantic composition of a sentence is mirrored by its constituent structure" (Jacobson 2006: 62). Therefore, the cautious suggestion could be made that, since the functions of constituents determine their relationships to each other, it could be that the E-G group in their Nov text kept the semantic information from the ST in constituents with the same functions in their translations to ensure correct transfer of the message and made changes that were necessary for grammaticality or idiomaticity in the areas of form and order. The question of what aspects of syntax are preferrably transferred is one that could be interesting for further research.

Closer examinations of various translation processes led to some additional observations:

1. Omission of ST content was possibly used as a strategy for lessening the cognitive load in syntactically complex sentences, especially sentence 2 of the G-E Beginner "Wale" text.
2. Structures found in other resources that are consulted in the translation process may lead to use of structures that deviate from the ST structure (SK0801 Nov).
3. The tolerance of uncertainty about lexical equivalents could also be a factor influencing the amount of transfer. This was seen in a comparison of participants SK0820 and SK0801. The former translated the first Beg text sentence more literally, inserting a word found in an online dictionary that he was not sure about, while the latter was not sure about the words proposed in the dictionary and therefore translated the sentence using a different structure that she was apparently more confident in using.
4. In the Beginner process of participant SK0812, an RVP comment and revisions that were made showed that a structural change made early in a sentence can have the consequence that the rest of the sentence has to be restructured as well, meaning that its processing might take more cognitive effort than if a literal translation had been chosen.

4 Discussion

In this final chapter, the most important results of the present investigation shall be discussed in relation to the hypotheses that were presented at the end of the theory section. The hypotheses will not be treated in the same order here; the ones with simpler answers will come first and the ones with more complex answers will be presented at the end.

The first hypothesis was that if the monitoring of transfer becomes more effective with training and experience, then less negative transfer can be found in translations that are done at the end of students' BA studies than in translations done at the beginning. A clear answer to this hypothesis, however, cannot be found in the results of this study. Only five errors that were attributable to negative transfer could be identified in the corpus, three of which were in Beginner texts and two of which were in Novice texts. Moreover, the two that were found in the Novice texts were made by participants who did not have any negative transfer in their Beginner text. In order to find a clearer indication whether instances of negative transfer decrease with more training, a larger corpus would have to be used, i.e. longer and/or more texts done by each partipipant.

The third hypothesis was that if competence in L1 is assumed to be higher than competence in L2, the monitor is stronger and thus more effective in avoiding negative transfer in L2-L1 translation than in L1-L2 translation. This was assumed because it seems less likely that the ST structure could lead a translator to make errors in his or her native language, since the knowledge and intuition about what is correct in one's native language is usually quite strong, especially in linguistically oriented people such as translation students. It was therefore expected that more instances of negative transfer would be found in the L1-L2 translations than in the L2-L1 translations. This hypothesis is supported, albeit not very strongly, by the results of this study, as five errors attributable to negative transfer were found in the German-English group (L1-L2), and none were found in the English-German group (L2-L1). If these findings mean that the students' monitor was more effective in avoiding negative transfer when translating into L1, this might also mean that their *bilingual sub-competence* as proposed in the PACTE model, which includes, among other things, "the specific feature of interference control when alternating between the two languages" (PACTE 2003: 58), is better in L2-L1 translation.

Although more *negative* transfer was found in the L1-L2 translation group, *positive* transfer (i.e. transfer of forms and structures that were correct in the TL) was actually more frequent in the L2-L1 (English-German) group: on average, the E-G group used much more transfer in their Beginner text than the G-E group used in their Beginner text, while the average amount

of transfer used in both groups was about the same in the Novice texts. This finding will be discussed further below.

The fourth hypothesis was that in their Novice phase, students use literal translation more similarly to the way professionals use it than in their Beginner phase. This hypothesis was based on research findings showing that translators use literal translation as a step in their translation process. Most particularly, professionals were found, in the research cited above, to use literal translation, or positive transfer, as a means to work more efficiently. Assuming that this more strategic use of literal translation as a step in the process increases with experience and/or training, the hypothesis was therefore that the translations done in the Novice phase would feature more revisions changing literal solutions to less literal ones. This hypothesis is supported by the finding that more revisions away from the ST structure were made in the Novice texts than in the Beginner texts. This was most clearly the case in the group translating from English into German. The results of the syntactic transfer measurements of the German-English group also showed that not only were more revisions of literal translations made, but also that transfer per se was used more in the Novice texts. This would suggest that literal translation is used more after a certain amount of experience or training, not only as an in-between step but also as a definite translation solution. What weakens this hypothesis is the fact that the translations that were analysed were done within a rather short time limit (15 minutes), meaning that most processes ended in the middle of the drafting stage and did not include a revision stage. Therefore, literal solutions that seemed to be definite in the processes investigated here might have been changed to freer solutions if they had undergone a final revision. Moreover, the same finding was not made for the English-German group. The differences between the two directions are discussed in more detail below.

The second hypothesis for this paper was that translations with more transfer are done more quickly than translations with less transfer. This hypothesis was based on the Monitor Model described e.g. by Tirkkonen-Condit et al. (2008), which says that literal translation is a default mode that is stopped only as soon as problems with the outcome are identified. The assumption that goes with the Monitor Model is that literal translation takes less cognitive effort and that translators only go beyond literal translation if this procedure does not allow equivalence of meaning to be established (cf. e.g. Krings 1986a). This second hypothesis is not directly supported by the results of this study, as no strong correlation was found to exist between the amount of transfer in a sentence and the time taken to translate it. Some sentences that were translated with structures that were completely different from the ST structures were translated faster than sentences that contained a certain amount of syntactic

transfer. The amount of research that was done in the process (e.g. looking up words, searching on Google) seemed to have a greater influence on the length of time that it took to translate a sentence. Although the hypothesis partly assumed that the amount of cognitive effort would be reflected in the length of time, this assumption does not seem to be tenable since the amount of effort cannot be measured by the amount of time.

The finding that some participants wrote down a translation that deviated strongly from the ST structure in quite a short time (e.g. SK0801 Beg) could mean that for these students, literal translation is not a default production mode. However, it could be possible that these participants actually started from a literal solution in their head and were able to restructure everything quite efficiently because of the simple structure of the sentence or because these participants have, in some way, a greater capacity for such cognitive activities than others. Another explanation could be something resembling Krings' (1986a; b) spontaneous interlingual associations: these participants might have happened to think of a different structure quite spontaneously, without first thinking of a literal solution and restructuring it in their head. In a comparison of ST sentences translated with a generally large amount of transfer and ST sentences translated with a generally small amount of transfer, it was found that choosing less literal solutions or spontaneous ideas on the lexical level could lead to necessary transpositions or other restructuring in the rest of the sentence. At this point, a comparison with professionals translating the same sentences would be interesting in order to investigate whether literal translation is a default production mode for more experienced translators only.

Since the very low transfer scores mentioned here were mostly found in the texts translated from German into English (L1-L2) and more specifically in those done in the Beginner phase, this raises questions regarding the difference between L1 and L2 translation, as already indicated above. The English-German (L2-L1) group had more transfer overall than the German-English (L1-L2) group, but most in the English-German group had less in their Novice phase than in their Beginner phase, while most in the German-English group had more transfer in their Novice phase than in their Beginner phase. Ehrensberger-Dow & Künzli (submitted), whose research was also based on CTP project data, found that graduates used less literal translation than beginners and professionals did, which raised the question of whether they had been "(over)trained to avoid transfer" (ibid.: 14). The present paper's findings for the English-German (L2-L1) group correspond to the findings of Ehrensberger-Dow & Künzli (submitted), since these participants used less literal translation at the end of their studies than at the beginning. However, the findings for the German-English (L1-L2) group suggest that, in L1-L2 translation, graduates use *more* transfer at the end of their studies than at the beginning. Ehrensberger-Dow & Künzli (submitted) found a

difference between the two directions in their data as well: there was more transfer in the L2-L1 translations they analysed. The authors suggested that the reason for this difference in the use of transfer could be that "the translators [translating into L1] are confident that it is a good option in this context whereas groups translating into their L2 might purposely be avoiding literal translation and transfer because they are uncertain" (ibid.: 14). Therefore, the reason why some in the G-E group wrote structurally deviating solutions so quickly could perhaps be that they deliberately started thinking of non-literal translations when they read the German sentence because they were unsure whether the same would work in English. Another reason could be that they had just learned that one has to distance oneself from the ST in order to avoid 'translationese', and took this to heart more strongly because it was fresh in their minds, or because of the particular testing situation. However, if such was the case, one would not expect such a clear difference between the two groups.

In conclusion, two hypotheses (the third and the fourth) are supported by the results of this investigation, one (the first) cannot be answered clearly and one (the second) is not supported by the results. A new question has been raised regarding the difference in the use of positive transfer in L2-L1 translation and in L1-L2 translation.

Finally, a few reflections shall be made on the method used in this investigation. One of its merits is that it provides a new procedure for determining the amount of syntactic transfer in a sentence. The resulting transfer scores are objective and can be displayed and compared numerically. Its weaknesses lie in the fact that the measurement is focused on main clause constituents and that it does not take into account the amount of positive transfer that is actually possible in a sentence. Moreover, only a relatively small quantity of data has been analysed in this paper, that is, only two sentences in two texts done by each of 18 participants, and the sentences that were analysed featured different syntactic structures. Perhaps comparisons of the results of such an analysis would be more reliable if sentences with identical syntactic structures and the same potentials for positive transfer were chosen, although this does not seem very feasible. In addition, comparisons of more and longer texts done by the same participants would be interesting, as well as comparisons including translations done by the same participants (at some point in the future) after several years of professional experience.

Conclusion

The research question of this Master's thesis was whether and how students use literal translation on the syntactic level differently at the beginning and at the end of their studies and whether there are any differences between translation into L1 and translation into L2. The results have shown that students seem to use literal translation more as an in-between step in their translation process at the end of their studies than at the beginning, especially when translating into L1. One difference pertaining to directionality that has been found is that students translating into L2 seem to avoid translating literally in their beginner stage and then use it more at the end of their studies, while students translating into L1 translate more literally in their beginner stage and then use literal translation rather as an in-between step, revising literal solutions to less literal ones more often, at the end of their studies. Taking into consideration the theory resulting from previous research that more systematic use of literal translation as an in-between step in the process is a component of translation competence, these findings could be an indicator that translation competence had increased by the Novice phase in the group translating into L1. Another difference found in the data is that students translating into L2 seem to be slightly more prone to negative syntactic transfer than students translating into L1. Taking into consideration the component of ability to avoid negative transfer that can be found in models of translation competence, this finding could also be an indicator for higher translation competence in the L2-L1 direction.

Interesting questions for further investigations into this topic could include the use of transfer on other levels of language, such as lexis, and comparisons of translations done by the same participants after gaining more professional experience.

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Appendices

I. Translation procedures

Procedure	*Lexis*	*Collocation/Group*	*Message*
1. Loan / Borrowing	Fr. *Bulldozer* En. Fuselage	*Science-fiction* à la mode	*Five o'clock tea* Bon voyage
2. Calque	Fr. *Économiquement faible* En. Normal School	*Lutetia Palace* Governor General	*Compliments de la saison* Take it or leave it
3. Literal translation	Fr. *L'encre* En. (The) ink	*L'encre est sur la table* The ink is on the table	*Quelle heure est-il?* What time is it?
4. Transposition	Fr. *Expéditeur* En. From	*Depuis la revalorisation du bois* Since timber has increased in value	*Défense de fumer* Thank you for not smoking
5. Modulation	Fr. *Peu profond* En. Shallow	*Donnez un peu de votre sang* Give a pint of your blood	*Complet* No vacancies
6. Équivalence	Fr. (mil) *La soupe* En. (mil) Tea	*Comme un chien dans un jeu de quilles* Like a bull in a china shop	*Château de cartes* Hollow triumph
7. Adaptation	Fr. *Cyclisme* Br En. Cricket US En. Baseball	*En un clin d'œil* In next to no time	*Bon appetit!* Enjoy your meal!

Source: Newmark (2009: 32), translated from Vinay and Darbelnet (1958: 55), adapted from Vinay and Darbelnet (1958/1995: 41)

II. Source texts

This appendix contains the four source texts that were given to each group in their Beginner phase and in their Novice phase.

CTP Deutsch

Übersetzungsauftrag: Zu übersetzen ist ein Abschnitt aus einem Artikel, der im April 2009 in der Tageszeitung *Neue Zürcher Zeitung* erschienen ist. Der Text soll für eine ähnliche Tageszeitung der Zielkultur übersetzt werden.

Strandungen von Walen

Ein Hang zum Selbstmord dürfte dem Phänomen nicht zugrunde liegen. Vielmehr sind es wohl meist mehrere und oft von Fall zu Fall verschiedene Faktoren, die Strandungen lebender Wale verursachen oder begünstigen. Die am besten untersuchten Strandungen sind die von Schnabelwalen, für die ein Zusammenhang mit dem Einsatz bestimmter Sonartypen vermutet wird. Nach solchen Sonareinsätzen beobachtete man mehrfach ein für die Gattung ungewöhnliches Strandungsmuster: Viele Schnabelwale strandeten innert weniger Stunden, über viele Kilometer Küstenlinie verstreut. Bei manchen von ihnen stellten die Forscher Verletzungen der Hörorgane fest, die auf einen Verlust der Navigationsfähigkeit schliessen lassen.

(Anzahl Wörter: 96)

CTP Deutsch

Übersetzungsauftrag: Zu übersetzen ist ein Abschnitt aus einem Artikel, der im August 2009 in der Tageszeitung *Neue Zürcher Zeitung* erschienen ist. Der Text soll für eine vergleichbare Tageszeitung der Zielkultur mit ähnlicher Leserschaft übersetzt werden.

Baustein des Lebens in Kometenschweif entdeckt

Die mikroskopischen Spuren von Glyzin wurden in einer Probe von Partikeln nachgewiesen, welche die Nasa-Sonde «Stardust» vom Schweif des Kometen Wild 2 im Januar 2004 eingefangen hatte. Die Sonde hatte sich damals in einer Entfernung von 320 Millionen Kilometern von der Erde befunden. Wild 2 ist benannt nach dem Schweizer Astronomen Paul Wild, der lange Jahre dem Astronomischen Institut der Universität Bern vorgestanden hatte. Kometen wie Wild 2 enthalten Material, das bei der Entstehung des Sonnensystems vor einigen Milliarden Jahren gebildet wurde.

(88 Wörter)

CTP Englisch

Übersetzungsauftrag: Zu übersetzen ist ein Abschnitt aus einem Artikel von Mark Townsend, der im August 2004 in der Onlinezeitung *The Observer* erschienen ist. Der Text soll für eine ähnliche deutschsprachige Tageszeitung übersetzt werden.

Whales at risk in sonar sea exercises

Recently, a US judge banned the American Navy from testing a similar system to that which the MoD is keen to introduce. The judge concluded that the booming sounds could damage marine life, yet his comments have done little to deter Britain from entering the low-frequency race in which powerful speakers on a metal post are lowered into the sea. An intense burst of noise designed to detect enemy vessels floods the ocean, causing panic among whales, which use similar sonic booms to find food and mating partners.

(Anzahl Wörter: 95)

CTP Englisch

Übersetzungsauftrag: Zu übersetzen ist ein Abschnitt aus einem Artikel, der im August 2010 in der Onlineausgabe von *The Guardian* erschienen ist. Der Text soll für eine deutschsprachige Tageszeitung mit ähnlicher Leserschaft übersetzt werden.

Perseid meteor shower set for shooting stars show over UK skies

Astronomers are predicting a dazzling display of shooting stars tonight as the Perseid meteor shower reaches a peak in activity. The celestial light show is one of the highlights of the astronomical calendar and this year is expected to one of the best in recent history. The bright streaks of light are caused by tiny particles of debris left by a comet hurtling into the atmosphere at 135,000mph. The particles range from the size of a grain of sand to a pea.

(93 words)

III. Target texts

This appendix contains the complete Beginner (Beg) and Novice (Nov) translations done by each participant. The texts were left exactly the way they were written by the participants, except that the formatting was changed to be consistent throughout this appendix. The "SK08xx" codes identify each participant. The grey sections of the texts are those that were not part of the analysis. Formulations that were assessed as syntactic errors are underlined; those that could be attributed to negative transfer are framed. The points in the texts where revisions were made are marked using superscript numbering and described below each text, along with the category of revision that they were attributed to. The revision categories are: *more dissimilar* (revisions changing syntactic elements that were initially similar to the ST to be less similar to the ST), *more similar* (revisions changing syntactic elements that were initially less similar to the ST to be more similar to the ST), *other syntactic change* (revisions making syntactic changes that were neither less similar nor more similar to the ST), and *other revisions* (any revisions that were not clearly identifiable as syntactic). A description of which revisions were counted as syntactic can be found in chapter 2.4.

SK0801 G-E Beg

Beaching of whales
It's probably[1] not suicide that accounts fort his phenomenon. It is more likely[2] the case, that there are different factors which lead to the beaching of whales. Those beachings which are most investigated, are those of beaked whales. In that case, scientists assume a connection with the use of certain sonar types. After the use of such an instrument, a very unusual pattern of beaching could be observed. A large number of beaked whales stranded within a few hours and were scattered along miles and miles of the coastline. Some of the whales showed injuries on their acoustic organs, which are due to a deficit in their navigation ability.

1. "probably" added later → *other revision*
2. "likely" added later → *other revision*

SK0801 G-E Nov

Component of life being discovered in a comet's train
[1]In the sample of particles that the NASA orbiter "Stardust" caught [2]in the train the comet Wild 2 back in January 2004, there have been found microscopic traces of glycine. Back then, the [3]distance between the orbiter and the earth was 320 million kilometers. Wild 2 is named after the Swiss astronomer Paul Wild, who was the head of the Astronomical Institute at the University of Bern for a long time. Comets such as Wild 2 contain substances that were formed by the time the solar system was formed.

1. First solution: "The microscopic traces of glycine ~~have~~ were discovered in a sample of particles" → *more dissimilar* (change of constituent order), *more dissimilar* (change of tense), *other revision* (change of "a sample" to "the sample")
2. First revision: "caught of the ~~planet~~ comet […]" → *other revision*
   Second revision: "caught ~~of the tra~~ in the train the comet […]" → *other revision*
3. First solution: "orbiter was situated within" → *more dissimilar*

SK0802 E-G Beg

Sonartest auf hoher See gefährden Wale
[1]Vor kurzem kam ein US-Richter zum Schluss, dass die Amerikanische Marine [2]mit ihrem Sonarsystem, ähnlich demjenigen von Verteidigungsministerium, keine Tests durchführen dürfe[3]. Der Richter schloss mit der Begründung, die dröhnenden Geräusche könnten die Meerestiere[4] gefährden. Doch dies hielt Grossbritannien keineswegs davon ab, die Signale tiefer Frequenz auszusenden, was mit Hilfe von leistungsstarken Lautsprechern, die an Metallstäben befestigt und im Meer versenkt werden, geschieht. Eine enorme Schallwelle wird ausgesendet, um feindliche U-Boote aufzuspüren. Doch diese

1. First solutions: "Ein US-~~Gerichtshof~~ Richter ~~hat~~ kam vor kurzem zum Schluss" → *other revision* (lexical), *more similar* (tense), *more similar* (constituent order)
2. First solution: "ihr Sonarsystem, […] Verteidigungsministerium, nicht " → *other syntactic change*
3. First solution: "darf" → *other revision*
4. First solution: "Unterwasserwelt" → *other revision*

SK0802 E-G Nov

Perseiden-Meteoritenschauer ist bereit für die grosse Show der Sternschnuppen am Himmel über Grossbritannien
Astronomen rechnen für heute Nacht[1] mit einem überwältigenden Spektakel von Sternschnuppen, da der Perseiden-Meteoritenschauer gerade seinen Höhepunkt erreicht. Die natürliche Lichtshow am Nachthimmel ist eines der Highlights im astronomischen Kalender,[2] dieses Jahr [3]gehört voraussichtlich zu den besten [4]der jüngeren Geschichte. Die hellen Lichtstreifen entstehen durch kleine Schuttpartikel, die von einem Kometen abgesplittert sind, als dieser mit mehr als 217'000 km/h in die Atmosphäre gerast ist. Die Grösse der Partikel reicht von Sandkorn- bis zu Erbsengrösse.

1. "für heute Nacht" added here after "Sternschnuppen" was written → *more dissimilar*
2. First solution: "Kalender." → *other revision*
3. First solution: "ist voraussichtlich eines der besten […]" → *other revision*
4. Deletion of "in" → *more dissimilar*

SK0803 G-E Beg

Stranding of whales
It is not the tendency to suicide that lies behind the phenomena. It is more likely that there are various and often different factors that cause or[1] favour strandings of living whales. Fort he strandings of Schnabelwal, on which most reasearch has been done, exists a link between the usage of sonartypes. After the usage of sonars, a unusual Strandungsmuster has been observed: Many Schnabelwale stranded during little time, all over the coast. Researchers found that the hearing organs of some of them were injured, which means that the whales are unable navigate.

1. "cause or" added later → *other revision*

SK0803 G-E Nov

The base of life was discovered in the tail of a comet
The microscopic[1] traces of Glyzin were found in a sample of some particles, which NASA probe "Stardust" had[2] caught from the tail of the comet Wild 2 in January 2004. Back then, the probe was 320 millions of kilometers away from the earth. Wild 2 got its name from the Swiss astronomer Paul Wild, who was the chief of the Astronomical Institute of the University of Bern during many years. Comets like Wild 2 contain material that had been built during the formation of the solar system billions of years ago.

1. First solution: "microscopical" → *other revision*
2. "had" was first put after NASA, then later added before "caught" → *other revision*

SK0806 E-G Beg

Wasserradar-Übungen gefärden Wale
Vor Kurzem verbot ein amerikanischer Richter der[1] amerikanischen Marine ein Sytstem zu testen, welches demjenigen ähnlich ist, das das [2]amerikanische Verteidigungsministerium einführen will. Der Richter kam zum Schluss, dass das[3] dröhnende Geräusch das Meeresleben zerstören kann. Sein Urteil hielt jedoch Grossbritannien nicht davon ab, einem Niederfrequenz-Rennen, bei welchem starke Lautsprecher an einem Metalpfosten in das Meer heruntergelassen warden. Diese Lautsprechr warden für die Aufspührung von feindlichen Schiffen verwendet. Da Wale ein ähnliches Geräusch nutzen, um ihre Rudelmitglieder oder Nahrung zu finden, verursacht der Lärm der Lautsprecher Panik unter den Tieren.

1. First solution: "die" → *other revision*
2. First solution: "MoD" → *other revision*
3. First solution: "der" → *other revision*

SK0806 E-G Nov

Astronomen haben für heute Nacht ein funkelndes Schauspiel an Sternschnuppen vorausgesagt, da der Meteorstrom[1] der Perseiden[2] heute [3]seinen Höhepunkt erreichen wird. [4]Diese Sternenlichtershow ist einer der Höhepunkte im astronomischen Kalender und soll ausserdem eine der besten der letzten Jahre sein. Diese hellen Lichterstreifen werden durch winzige Schutt-Partikel, die durch den Eintritt eines Kometen in die Erdamospehre frei werdem, erzeugt

1. First solution: "Meteorregen" → *other revision*
2. First solution: "Perseiden Meteor~~en~~strom" → *more dissimilar*
3. First solution: "am aktivsten se" → *more similar*
4. First solutions: "Dieses Ereignis ist eines der Höhepunkte des ~~astron~~ ~~astrologischen~~ astronomischen Kalenders und soll ~~ausserdem~~ dieses Jahr ausserdem eines der besten der letzten Jahre sein." → *other revision* (lex: Ereignis + eines der besten), *other revision* (eines der Höhepunkte), *more similar* (des […] Kalenders), *other revision* (astrologisch), *other revision* (ausserdem)

SK0808 E-G Beg

Echolotübungen gefährden Wale
[1]Das britische Verteidigungsministerium plant, neue Echolotsysteme einzuführen. Doch erst kürzlich wurde es der amerikanischen Marine verboten Tests mit ähnlichen Systemen durchzuführen, da das Gericht der Auffassung war, dass die dröhnende Laute den Meerestieren schadet. Doch dies hat Grossbritannien nicht davor abgehalten mächtige Lautsprecher im Meer zu versenken. Die intensiven Geräusche, die gegnerische Schiffe sichten sollen

1. First solutions: “Kürzlich”, then deleted → *more dissimilar*
   “Ein amerikanischer Richter”, then deleted → *more dissimilar*
   “Der amerikanischen Marine wurde ~~es~~ gerichtlich verboten Tests mit ~~Echolotsystemen~~ ähnlichen Echolotsystemen durchzuführen, die nun auch das britische” → *other syntactic change* (“Marine” moved to 2nd sentence), *other syntactic change* (transformation of “gerichtlich”), *other syntactic change* (“Echolotsysteme” moved to different position, “Systeme” added), *more dissimilar* (“das britische” moved to different position)

SK0808 E-G Nov

Sternschnuppenspektakel über Grossbritannien dank Perseiden Meteorstrom
Astronomen sagen für kommende Nacht ein funkelndes Spektakel von Sternschnuppen voraus, da der Perseiden-Regen seinen Höhepunkt erreicht. Das Sternschnuppenspektakel ist einer der Höhepunkte des astronomischen Kalenders und dieses Jahr soll es[1] eines der besten werden in der jüngsten[2] Geschichte. Die hellen Funken

1. First solution: “sogar” → *other revision*
2. First solution: “jungen” → *other revision*

SK0810 G-E Beg

Beached Whales
A tendency to suicide can not be the reason fort he phenomenon. In fact, there must be multiple and various factors[1] [2]that cause and abet beaching of living whales, [3]differing from case to case. Beachings have been researched the most with beaked whales*, for which* a relationship with the operation of sonar types is assumed. After these kinds of sonar operations an unusual beaching behaviour has been observed. Several beakes whales beached within only a few hours along many kilometres of the coastline

1. First solution: “re” → *other revision*
2. “~~for~~ that cause and abet the beaching of living whales” → *more similar*
3. First solutions: “that ~~are different~~ differ from case to case” → *other syntactic change*

SK0810 G-E Nov

[1]Microscopic traces of glycine have been discovered in a particle sample[2] taken [3]by[4] [5]the NASA's “Stardust“ spacecraft from the tail of the comet Wild 2 in January 2004. The spacecraft was <u>at</u>[6] 320 million kilometers from[7] the earth[8]. Wild 2 was named after the Swiss astronomer Paul Wild, who had worked at the Astronomical Institute of the University of Bern for a long time. Comets like Wild 2 contain substances that were built while the solar system.

1. First solution: "~~Small~~ Researchers discovered microscopic traces of […]" → *more similar*
2. First solutions: "~~sample~~ probe" → *other revision*
3. First solution: "from the tail […] by the […]" → *more similar*
4. First solution: "from the NASA's […]" → *other revision*
5. First solutions: "'Stardust', a ~~spacecraft~~ NASA spacecraft" → *other syntactic change*
6. "at" added later → *other revision*
7. First solution: "awa" → *other revision*
8. First solutions: "~~the Earth~~ the planet Earth" → *more similar*

SK0812 E-G Beg

Schallwellentests im Meer gefährden Wale
[1]Ein amerikanischer Richter sperrte kürzlich mit seinem Urteil die Tests der[2] amerikanischen Marine, wobei [3]ein [4]System, ähnlich dem, [5]das das britische Verteidigungsministerium einführen möchte, getestet werden sollte. Der Richter schloss mit dem Argument, dass die dröhnenden Geräusche[6] das Leben im Meer[7] gefährden[8],

1. "Kürzlich" deleted → *more dissimilar*
2. First solution: "des" → *other revision*
3. First solution: "sie ei" → *other syntactic change*
4. First solution: "ähnliches System, das auch" → *more dissimilar*
5. First solution: "des Verteidigungsministeriums" → *more similar*
6. First solution: "K" (probably "Klänge")→ *other revision*
7. First solution: "die Meerestiere" → *other revision*
8. Deletion of "kö" (probably "können") → *more dissimilar*

SK0812 E-G Nov

Der Perseiden-Meteorstrom set for Sternschnuppen-Show über UK
Astronomen künden[1] für heute Nacht ein [2]Sternschnuppen-Feuerwerk an[3]. Ausgelöst soll[4] es von dem Perseiden-Meteorstrom, der zu[5] dieser Zeit höchste Aktivität aufweist. Die Lichtshow am Himmel ist eines der Highlights im astronomischen Kalender und dieses Jahr soll eines der besten der[6] jüngsten Vergangenheit. Die hellen Lichtstreifen werden durch kleinste Schmutzpartikel verursacht, die von einem Kometen stammen, der mit einer Geschwindigkeit von 220'000 km/h in die Atmosphäre braust. Die Partikelgrösse reicht von der Grösse eines the size of a grain of sand to a pea.

1. First solution: "sage" → *other revision*
2. First solution: "Feuerwerk aus" → *more dissimilar*
3. First solution: "an, da ~~sich~~ der" → *more dissimilar*
4. First solution: "wird" → *other syntactic change*
5. First solution: "einen" → *other revision*
6. First solution: "in" → *more dissimilar*

SK0817 G-E Beg

Whale Beachings
A tendency for suicide is unlikely to be the explanation for the phenomenon. In most cases, several factors, varying from case to case, are more likely to cause and favour the beaching

of living whales. The most examined beachings are those of toothed whales, for which a connection between certain types of sonar.

(no revisions)

SK0817 G-E Nov

Title
Scientists have [1]discovered microscopic traces of glycine in a sample taken from the nucleus of the comet Wild 2 in January 2004 and returned by NASA spacecraft "Stardust". At the time, the spacecraft had been [2]320 million km from the Earth. Wild 2 was named after Swiss astronomer Paul Wild, who presided over the Astronomical Institute of the University of Bern (AIUB) for many years. Comets like Wild 2 contain material which was created by the creation of our solar system billions of years ago.

1. First solution: "found samples of glycine" → 2x *other revision* (lexical)
2. First solutions: "~~orbiting~~ lying" → *other revision*, *other syntactic change*

SK0818 G-E Beg

Running aground of Wales
The phenomena can not be explained with a tendency to suicide. [1]Normally, there are rather[2] different factors, varying[3] from one case to the other, that [4]cause [5]whales to end up on a[6] shore. The running aground of beaked whale has been most thoroughly investigated and scientists see a link between this phenomena and the use of particular types of sonar devices. After the use of these sonar devices, a unusual pattern of running aground has been seen.

1. First solution: "There are normally" → *other syntactic change*
2. "rather" added later → *other revision*
3. First solution: "that vary" → *other revision*
4. First solution: "can" → *other syntactic change*
5. Deletion of "or" → *other revision*
6. First solution: "the" → *other revision*

SK0818 G-E Nov

In January 2004, the Nasa probe "Stardust" has captured microscopic traces of Glycine from the tail of the comet Wild 2. At the time, the probe was located[1] at[2] a[3] distance of 320 millions of kilometers from the earth. Wild 2 is named after the Swiss astronomer Paul Wild, who had been the head of the astronomical institute (AIUB) of the University of Berne

1. First solution: "sit" → *other revision*
2. First solution: "in" → *other revision*
3. First solution: "the" → *other revision*

SK0820 G-E Beg

Beaching of whales
A disposedness to suicide shouldn't be at the bottom of this phenomenon. In fact[1] it's several and from case to case different criteria, which cause or ……..beaching of whales. The

beaching of beaked whales is the most explored field. Scientists found out, that there must be a connection of a type of sonar to these beachings. After introducing such sonar, a peculiar behaviour of this species was observed several times.

1. "In fact" added later → *other revision*

SK0820 G-E Nov

Element of life discovered in cometary tail
Microscopic traces of glycine were detected in a sample of particles, which the NASA probe "Stardust" captured from the [1]tail of the comet "wild 2" in January 2004. The probe was then[2] located 320 million. kms[3] away[4] from the earth. "Wild 2" is named after the Swiss astronomer Paul Wild

1. First solutions: "~~cometary~~ comet's tail" → *other revision, more similar*
2. "then" added later → *other revision*
3. First solution: "mio. Km" → *other revision*
4. "away" added later → *other revision*

SK0829 G-E Beg

Stranded wales
It is not that the wales like[1] to kill themselves. There are more and often different circumstances which cause and favour the xxx of living wales. The best examined xxx are those of

1. First solution: "would lik" → *other syntactic change*

SK0829 G-E Nov

Discovery of life in a tail of a comet
The microscopic traces of Glycine were found in particles, which "Stardust", the probe of Nasa,[1] captured from[2] the comet's tail[3] Wild 2 in January 2004. The probe's distance to [4]earth was 320 million kilometers. The name Wild 2 comes from the Swiss astronomer Paul Wild, who led the astronomic institute in Berne for a long time. Comets such as Wild 2 contain material which was built

1. "the probe of Nasa" added later → *other revision*
2. First solution: "of" → *other revision*
3. First solution: "a tail" → *other syntactic change*
4. Deletion of "the" → *other revision*

SK0833 G-E Beg

Beached Whales
[1]This phenomenon is unlikely to be caused by a tendency towards suicide. It is more likely that [3]from case to case different factors cause or [2]favour the beaching of living whales. The most researched cases are those of the beaked whale, where a connection to the use of certain

1. First solution: “It is probably not a tendancy towards suicide that” → *other syntactic change*
2. First solution: “increase the number of beached whales” → 3x *other revision*
3. Addition and deletion of “often” → *other revision*

SK0833 G-E Nov

Building block of life found in comet’s tail
Microscopic traces of glycerine have been found in a sample of particles [1]captured by the NASA probe “Stardust” from[2] comet Wild 2’s tail in January 2004. [3]At this time, the probe was at a distance of 320 million kilometres from planet Earth. Wild 2 was named after Swiss astronomer Paul Wild, who was head of the Astronomical Institute of the University of Bern for many years. Comets like Wild 2 contain material that was created many billion years ago when the solar system came into being.

1. Deletion of “which were” → *other revision*
2. First solution: “when” → *more similar*
3. First solution: “The o” → *more dissimilar*

SK0835 E-G Beg

Wale durch Übungen mit Unterwasserortungsgeräten gefährdet
Kürzlich hat ein amerikanischer Richter der US-amerikanischen Marine verboten, ein ähnliches System zu testen, welches das Verteidigungsministerium unbedingt vorstellen möchte. Der Richter *beschloss*[1], dass die dröhnenden Geräusche das Unterwasserleben gefährden könnte, trotzdem konnte er mit seiner Aussage die Briten nicht davon abhalten, mit ihrer Niederfrequenz-Regatta in See zu stechen, von

1. First solutions: “~~hat beschlossen~~ schliesst” → *other revision, more similar*

SK0835 E-G Nov

Meteorschauer Perseid sorgt für Sternschnuppen über England
Astronomen sagen für heute Abend[1] ein[2] umwerfendes Schauspiel von Sternschnuppen voraus, da der Meteorschauer Perseid[3] seinen [4]Aktivitäts-Höhepunkt erreicht. Die himmlische Lichtshow ist eines der Highlights des[5] astronomischen Kalenders [6]und dieses Jahr [7]soll es [8]die schönste/beste der jüngsten[9] Geschichte werden. Die grellen Lichtstreifen entstehen durch kleinste Schmutzpartikel eines Kometen, der mit 135'000 Meilen pro Stunde in die Atmosphäre saust. Die Partikel können von der Grösse eines Sandkorns bis zu der einer Erbse haben.

1. “für heute Abend” was initially after “Sternschnuppen” → *more dissimilar*
2. First solution: “einen” → *other revision*
3. First solution: “Perseid-Meteorschauer” → *other revision*
4. “Aktivitäts-“ added later: → *other revision*
5. First solution: “im” → *more dissimilar*
6. First solution: “in diesem Jahr” → *other syntactic change*
7. First solution: “wird […] erwartet” → *more dissimilar*
8. First solution: “das schönste der Gesch” → *other revision*
9. First solution: “ganzen” → *other revision*

SK0837 E-G Beg

Wale durch Sonar Anwendung im Meer gefährdet
Kürzlich untersagte ein amerikanischer Richter der American Navy ein ähnliches System zu testen, wie das, welches [1]das englische Verteidigungsministerium (MoD) einführen will.
Der Richter erklärte, dass [2]das dröhnende Geräusch das Leben im Meer schädigen könnte,

1. First solutions: "~~von der MoD~~ die MoD einführen will" → *more similar, other revision*
2. First solution: "der dröhnende Lärm" → *other revision*

SK0837 E-G Nov

Astromnomen sagen [1]für heute Abend einen umwerfenden Sternschnuppenregen voraus, da der Perseiden-Regen [2]den Höhepunkt seiner Aktivität erreicht. Das Lichtspektakel am Himmel ist eines der Highlights im Astronomischen Kalender, und [3]in diesem Jahr soll[4] es eines der besten sein.

1. First solution: "einen" → *more dissimilar*
2. First solution: "seinen Höhepunkt erreicht" → *more similar*
3. First solution: "dieses" → *more dissimilar*
4. First solution: "ist" → *other revision*

SK0838 E-G Beg

Wale sind bei der Durchführung von Übungen mit Echolot gefährdet
Kürzlich hat ein amerikanischer Richter der US Navy verboten, ein System zu testen, das demjenigen ähnlich ist, welches MoD, das amerikanische Verteidigungsministerium einzuführen plant.Der Richter kam zum Schluss, dass die donnernden Geräusche die Meereslebewesen [1]in Mitleidenschaft zeihen könnten. Leider haben seine Bemerkungen wenig Einfluss auf das Verhalten Grossbritanniens, die
Ein heftiger Ausbruch von Geräuschen, der darauf zielt feindliche Schiffe zu entdecken, überflutet den Ozean und verursacht eine Panik unter Walen. Sie benützen ähnliche Echogeeräusche um Nahrung und Geschlechtspartner zu finden.

1. First solution: "veerletzen" → *other revision*

SK0838 E-G Nov

[1]Für den heutigen Abend versprechen uns die Astronomen ein fantastisches Spektakel: Der Meteorstrom der Perseiden erreicht den Höhepunkt seiner Aktivität und der Abendhimmel ist [2]mit Sternschnuppen übersät. Diese himmlische Lichtshow ist ein Höhepunkt im astronomischen Kalender und [3]dieses Jahr dürfte in dieser Hinsicht eines der ereignisreichsten der jüngeren Vergangenheit sein. werden durch winzige Partikel verursacht, die Ein Komet, der mit einer Geschwindigkeit von über 200'000 km/h durch das Universum rast, hinterlässt. Diese kleinsten dieser Partikel sind nur gerade so gross wie ein Sandkorn, die grössten erreichen die Ausmasse einer Erbse.

1. First solution: "Astronomen kündigen eine fantastische" → *more dissimilar, other revision*
2. First solution: "erfüllt von Sternschnuppen" → *other revision*

3. First solution: “in diesem Jahr dürfen wir mit einem der ereignisreichsten” → 2x *other syntactic revision*

SK0843 E-G Beg

Wale in Gefahr während Schallmessungen
Kürzlich hat ein amerikanischer[1] Richter der[2] US[3]-Marine[4] verboten, ein System zu testen, welches Ähnlichkeiten [5]zu einem System aufweist, welches [6]das Britische Verteidigungsministerium gerne einführen würde. Der Richter sagte, dass die lauten Töne das marine Leben zerstören könnten; Grossbritannien sieht sich von seinen Kommentaren aber nicht soweit beeinträchtigt, als dass es sich davon abbringen liesse, in den Niederfrequenzbereich einzudringen, indem starke Lautsprecher an Metallstangen ins Meer gelassen werden. Ein intensiver Lärm, der feindliche Schiffe ausfindig macht, durchdringt das Meer und löst bei den Walen Panik aus, welche ähnliche Schallwellen verwenden, um Nahrung und Paarungspartner zu finden.

1. First solutions: “~~Amer~~ US-Richter” → *other revision*
2. First solution: “die” → *other revision*
3. First solution: “Amerikanische” → *other revision*
4. First solution: “Navy” → *other revision*
5. First solution: “aufweist zu dem System” → 2x *other revision*
6. First solution: “die MoD” → *other revision*

SK0843 E-G Nov

Sternschnuppen des Perseiden-Meteorstroms erleuchten den Britischen Nachthimmel
[1]Für heute Abend künden Astronomen ein einzigartiges Schauspiel von Sternschnuppen an, da der Perseiden-Meteorstrom sein [2]Maximum an Aktivität aufweist. Die himmlische Lichtshow ist eines der Highlights des astronomischen Kalenders und dieses Jahr verspricht eines der besten der [3]jüngsten Vergangenheit zu werden. Die hellen Lichtstreifen entstehen aus winzigen Schuttpartikeln – zurückgelassen von einem Kometen, der mit 217'000 km/h durch die Atmosphäre schiesst. Die Grösse der Partikel reichen von der eines Sandkorns bis zu der einer Erbse.

1. First solution: “Astronomen künden ein […] für heute Abend an” → *more dissimilar*
2. First solution: “Aktivitätsmaximum” → *more similar*
3. First solution: “xx Geschichte” → *other revision*

SK0848 G-E Beg

Stranded whales
A tendency to suicide is not likely to be the reason for this phenomenon. [1]What is more likely is that [2]most often several factors that are different from case to case cause or encourage living whales to strand. Cases of stranded beak whales are best investigated. For this species, it is supposed that there is a link

1. First solution: “Different factors” → *other syntactic change*
2. First solution: “different factors that” → *other syntactic change*

SK0848 G-E Nov

Element of life found in tale of a comet
[1]The microscopic traces of glycine have been detected in a probe of particles which had been collected[2] by the NASA spacecraft "Stardust" from the tale[3] of comet Wild 2 in January 2004. [4]At that time, the probe had been located at a distance of 320 million kilometers from the Earth. Comet Wild 2 is named after the Swiss astronomer Paul Wild, who had presided at the Astronomic Institute of the University of Bern (AIUD) for many years.

1. First solution: "In a probe of particles" → *more similar*
2. First solution: "captured" → *other revision*
3. First solution: "coma" → *other revision*
4. First solution: "The probe […] Earth." → more dissimilar

SK0856 E-G Beg

Wale in Gefahr bei Unterwasser-Sonarexperimenten
Kürzlich [1]verbot ein amerikanischer Richter der US Navy, ein System zu testen, [2]das Ähnlichkeiten hat mit demjenigen, das das //Ministry of Defence// unbedingt einführen will[3]. Der Richter kam zum Schluss, dass der[4] dröhnende Lärm Meereslebewesen[5] schädigen[6] könnte, was jedoch Grossbritannien nicht davon abhielt, sich am Niederfrequenz-Rennen zu beteiligen, bei dem leistungsstarke Lautsprecher auf Metallpfosten in den Ozean abgesenkt werden. In diesem breitet sich darauf eine Lärmexplosion, die dazu gedacht ist, feindliche Wasserfahrzeuge zu entdecken. Der Lärm versetzt Wale in Panik, da diese ähnliche Schallwellen bei der Essens- und Partnersuche verwenden.

1. First solution: "verbannte der" → *other revision*
2. First solution: "das dem ähnlich ist, das" → *other syntactic change*
3. First solution: "wollte" → *other syntactic change*
4. First solution: "die" → *other revision*
5. First solution: "Un" → *other revision*
6. First solution: "st" → *other revision*

SK0856 E-G Nov

Perseiden sorgen für Sternschuppen-Show am englischen Himmel
Astronomen sagen für heute Nacht unzählige[1] Sternschnuppen [2]aus dem Meteorenschauer der Perseiden voraus, da dessen[3] Aktivität zu diesem Zeitpunkt seinen[4] Höhepunkt erreichen soll. Die himmlische Lichtshow ist eines der Highlights des astronomischen Kalenders und [5]die diesjährige Show soll eine der besten seit langem werden. Die hellen Lichtstrahlen entstehen durch kleine Geröllpartikel, die von einem Kometen mit fast 220'000 km/h in die Atmosphäre geschleudert werden. Die Partikel können so klein wie ein Sandkorn sein oder die Grösse einer Erbse erreichen.

1. First solution: "eine Unzahl von" → *other syntactic change*
2. First solutions: "voraus, da der Meteorschauer der Perseiden am aktivsten ist" "Sternschnuppen der Perseiden voraus, da die Aktivität des Meteorenschauers ihren Höhepunkt erreicht" → Meteorschauer changed twice: *other syntactic change, more dissimilar,* Perseiden: *other syntactic change,* am aktivsten: *other syntactic change*
3. First solution: "deren" → *other revision*
4. First solution: "ihren" → *other revision*
5. First solution: "dieses Jahr" → *more dissimilar*

IV. Forms and functions of phrases and clauses

	ENGLISH		GERMAN
	Phrase forms		**Phrase forms**
VP	Verb phrase	AvP	Adverbphrase
AvP	Adverb phrase	NP	Nominalphrase
NP	Noun phrase	ArtP	Artikelphrase
GP	Genitive phrase	AjP	Adjektivphrase
AjP	Adjective phrase	PP	Präpositionalphrase
PP	Preposition phrase[9]	KonjP	Konjunktionalphrase
	Phrase functions in clauses		**Phrase functions in clauses**
S	Subject	S	Subjekt
Od	direct object	O	Objekt (Akk., Dat., Gen.)
Oi	indirect object	Ps	Subjekts-Prädikativ
Cs	complement to subject	Po	Objekts-Prädikativ
Co	complement to object	A	Adverbiale
A	Adverbial		
	Phrase functions in phrases		**Phrase functions in phrases**
preM	premodifier	Attr	Attribut
postM	postmodifier	App	Apposition
	Subordinate clause forms		**Subordinate clause forms**
ACl	Adverb clause[9]	RS[10]	Pronominalnebensatz
PCl	Preposition clause[9]	SubjS	Subjunktionalnebensatz
NCl	Noun clause	InfS	satzwertige Infinitivphrase
RCl	Relative clause	PartS	satzwertige Partizipphrase
CCl	Comparative clause	V2S	uneingeleiteter Verbzweitnebensatz
		V1S	uneingeleiteter Verberstnebensatz
	Subordinate clause functions		**Subordinate clause functions**
S	Subject	SS	Subjektsatz
Od	direct object	OS	Objektsatz
Oi	indirect object	PS	Prädikativsatz
Cs	complement to subject	AvS	Adverbialsatz
Co	complement to object	AttrS	Attributsatz (in phrases)
A	Adverbial		
postM	postmodifier (in phrases)		

[9] Rather than "adverbi*al*" clause and "preposition*al*" clause and phrase from Leech et al. (2006), this study used "adverb" clause and "preposition" clause.
[10] The abbreviation "RS" is used for what Duden (2008) calls "Pronominalnebensatz" because this type of clause is often also called "Relativsatz".

V. Comparison of English and German

	ENGLISH		GERMAN
	Phrase forms		**Phrase forms**
VP	verb phrase	VP	
GP	genitive phrase		
AvP	adverb phrase	AvP	Adverbphrase
NP	noun phrase	NP	Nominalphrase
AjP	adjective phrase	AjP	Adjektivphrase
PP	preposition phrase	PP	Präpositionalphrase
		ArtP	Artikelphrase
		KonjP	Konjunktionalphrase
	Phrase functions in clauses		**Phrase functions in clauses**
P	predicator	P	(Prädikat)
S	subject	S	Subjekt
Od	direct object &	O	Objekt (Akk., Dat., Gen.)
Oi	indirect object		
Cs	complement to subject	Ps	Subjekts-Prädikativ
Co	complement to object	Po	Objekts-Prädikativ
A	adverbial	A	Adverbiale
	Phrase functions in phrases		**Phrase functions in phrases**
preM	premodifier &	Attr	Attribut &
postM	postmodifier	App	Apposition
	Subordinate clause forms		**Subordinate clause forms**
ACl	adverb clause		
PCl	preposition clause		
RCl	relative clause	RS[11]	Pronominalnebensatz
CCl	comparative clause		
NCl	noun clause (*THAT*-clause)	SubjS	Subjunktionalnebensatz (with *dass*)
	noun clause (zero *THAT*-clause)	V2S	uneingeleiteter Verbzweitnebensatz
		V1S	uneingeleiteter Verberstnebensatz
		PartS	satzwertige Partizipphrase
	infinitive noun clause ~	InfS	satzwertige Infinitivphrase
	Subordinate clause functions		**Subordinate clause functions**
S	subject	SS	Subjektsatz
Od	direct object &	OS	Objektsatz
Oi	indirect object		
Cs	complement to subject &	PS	Prädikativsatz
Co	complement to object		
A	adverbial	AvS	Adverbialsatz
postM	postmodifier (in phrases)	AttrS	Attributsatz (in phrases)

[11] The abbreviation “RS” is used for what Duden (2008) calls “Pronominalnebensatz” because this type of clause is often also called “Relativsatz”, which corresponds to “relative clause”.

VI. Analysis & Scoring G-E Beg sentence 1

ST Beg0 G wale S1 Ein Hang zum Selbstmord dürfte dem Phänomen nicht zugrunde liegen.			
Inf. units	a(b)	c;e;f	d
form	NP(PP)	VP(lex,mod,neg)	NP
function	S(Attr)	P	O
order	1	2	3

info: a=Hang; b=Selbstmord; c=dürfte; d=Phänomen; e=nicht; f=zugrunde liegen

SK0801 Beg G-E S1
It's probably not suicide that accounts fort his phenomenon. (sic)

ST inf. units	b	e/c/f	(d)
form	NP1(RCl)	VP(neg)/AvP/(RCl) in NP1	(NP2) in (RCl)
function	Cs(postM)	P/A/(postM) in Cs	(O) in (postM)
order	4	2;3	4

form score	0	0.33	0	
function score	0	0.33	0	
order score	0	0	0	**0.67**

SK0803 Beg G-E S1
It is not the tendency to suicide that lies behind the phenomena.

ST inf. units	a(b)	e/f	(d)
form	NP(PP)(RCl)	VP(neg)/(RCl) in NP	(PP) in (RCl)
function	Cs(postM)(postM)	P/(postM) in Cs	(A) in (postM)
order	3	3	3

form score	0.50	0.33	0	
function score	0	0.33	0	
order score	0	0	1	**2.17**

SK0810 Beg G-E S1
A tendency to suicide can not be the reason fort he phenomenon (sic).

ST inf. units	a(b)	c;e / f	(d)
form	NP1(PP)	VP(mod,neg) / NP2(PP)	(PP) in NP2
function	S(postM)	P / Cs(postM)	(postM) in Cs
order	1	2;3	3

form score	1	0.67	0	
function score	1	0.67	0	
order score	1	0	1	**5.33**

SK0817 Beg G-E S1
A tendency for suicide is unlikely to be the explanation for the phenomenon.

ST inf. units	a(b)	c;e / f	(d)
form	NP(PP)	AjP(NCl) / (NCl) in AjP	(PP) in (NCl)
function	S(postM)	Cs(postM1)/(postM1) in Cs	(postM2) in (postM1)
order	1	3	3

form score	1	0	0	
function score	1	0	0	
order score	1	0	1	**4**

SK0818 Beg G-E S1
The phenomena can not be explained with a tendency to suicide.

ST inf. units	a(b)	c;e;f	d
form	PP(PP)	VP(lex,neg,mod,passive)	NP
function	A(postM)	P	S
order	3	2	1

form score	0	0.75	1	
function score	0	1	0	
order score	0	1	0	**3.75**

SK0820 Beg G-E S1
A disposedness to suicide shouldn't be at the bottom of this phenomenon.

ST inf. units	a(b)	c;e / f	(d)
form	NP(PP)	VP(mod,neg) / PP(PP)	(PP) in PP
function	S(postM)	P / A(postM)	(postM) in A
order	1	2;3	3

form score	1	0.67	0	
function score	1	0.67	0	
order score	1	0	1	**5.33**

SK0829 Beg G-E S1
It is not that whales like to kill themselves.

ST inf. units	(a) / (b)	e	x
form	(VP) in a NCl1/(NCl2) in NCl1	VP(neg)	0
function	(P) in a Cs/(O) in Cs	P	0
order	3	2	0

form score	0	0.33	0	
function score	0	0.33	0	
order score	0	1	0	**1.67**

SK0833 Beg G-E S1

This phenomenon is unlikely to be caused by a tendency towards suicide.

ST inf. units	(a(b))	e;c / f	d
form	(PP(PP)) in (NCl)	AjP(NCl) / (NCl) in AjP	NP
function	(A(postM)) in (postM)	Cs(postM) / (postM) in Cs	S
order	3	3	1

form score	0	0	1	
function score	0	0	0	
order score	0	0	0	**1**

SK0848 Beg G-E S1

A tendency to suicide is not likely to be the reason for this phenomenon.

ST inf. units	a(b)	e / c / f	d
form	NP(PP)	VP / AjP(NCl) / (NCl) in AjP	(PP) in (NCl)
function	S(postM)	P / Cs(postM1) / (postM1) in Cs	(postM2) in (postM1)
order	1	2;3	3

form score	1	0.33	0	
function score	1	0.33	0	
order score	1	0	0	**3.67**

VII. Analysis & Scoring G-E Beg sentence 2

ST Beg G wale S2 Vielmehr sind es wohl meist mehrere und oft von Fall zu Fall verschiedene Faktoren, die Strandungen lebender Wale verursachen oder begünstigen.			
Inf. Units (1)	a	b	(c;d)(e;f;g)h((j(k,l))m,n)
form	AvP	AvP	(AjP)(AjP)NP(RS(NP(NP)))
function	A	A	(Attr)(Attr)Präd(AttrS(O(Attr)))
order	1	4	5

Inf. Units (2)	a	(b,c;d)(e;f;g)h((j(k,l))m,n)
form	AvP	(AjP)(AjP)NP (RS(NP(NP)))
function	A	(Attr)(Attr)Präd(AttrS (O(Attr)))
order	1	4

Inf. Units (3)	a	(b)c	(d)(e;f;g)h((j(k,l))m,n)
form	AvP	(AvP)AvP	(AjP)(AjP)NP(RS(NP(NP)))
function	A	(Attr)A	(Attr)(Attr)Präd(AttrS(O(Attr)))
order	1	4	5

a=vielmehr, b=wohl, c=meist, d=mehrere, e=oft, f=von Fall zu Fall, g=verschiedene, h=Faktoren, j=Strandungen, k=lebende, l=Wale, m=verursachen, n=begünstigen

SK0801 Beg G-E S2
It is more likely the case, that there are different factors which lead to the beaching of whales.

ST inf. Units (1)	(a)	b	(g)h(m(j(l)))
form	(AvP) in AvP	(AvP) AvP	(AjP)NP(RCl(PP(PP))) in (NCl) in NP
function	(preM) in A	(preM) A	(preM)Cs(postM(A (postM))) in (postM) in Cs
order	3	3	4

form score	0	0	0	
function score	0	0	0	
order score	0	0	0	**0**

SK0803 Beg G-E S2
It is more likely that there are various and often different factors that cause or favour strandings of living whales.

ST inf. Units (1)	(a)	b	(d)(e,g)h(m,n(j((k)l)))
form	(AvP) in AvP	(AvP) AjP (NCl)	(AjP)(AjP)NP(RCl(NP(PP))) in (NCl) in AvP
function	(preM) in Cs	(preM) Cs (postM)	(preM)(preM)Cs(postM(O(postm))) in (postM) in Cs
order	3	3	3

form score	0	0	0	
function score	0	0	0	
order score	0	0	0	**0**

SK0810 Beg G-E S2
In fact, there must be multiple and various factors that cause and abet beaching of living whales, differing from case to case.

ST inf. Units (1)	a	b	((d)(g))h(m,n(j((k)l)))(g (f))
form	PP	VP(mod)	(AjP)(AjP)NP(RCl(NP(PP)))(RCl(PP))
function	A	P	(preM)(preM)Cs(postM(O(postM)))(postM(A))
order	1	3	4

form score	0	0	1	
function score	1	0	1	
order score	1	0	0	**4**

SK0817 Beg G-E S2
In most cases, several factors, varying from case to case, are more likely to cause and favour the beaching of living whales.

ST inf. Units (1)	(a)	b	c / (d)h(g(f)) / (m,n(j((k)l)))
form	(AvP) in AjP	(AvP) AjP (NCl)	PP / (AjP)NP(RCl(PP)) / (NCl(NP(PP))) in AjP
function	(preM) in AjP	(preM) Cs (postM)	A / (preM)S(postM) / (postM(O(postM))) in Cs
order	4	4	1;2;4

form score	0	0	0	
function score	0	0	0	
order score	0	1	0	**1**

SK0818 Beg G-E S2
Normally, there are rather different factors, varying from one case to the other, that cause whales to end up on a shore.

ST inf. Units (3)	(a)	c	(g)h(g(f))(m(l)(j))
form	(AjP) in (AjP) in NP	AvP	(AjP)NP(RCl(PP))(RCl(NP)(NCl))
function	(preM) in (preM) in Cs	A	(preM)Cs(postM(A))(postM(O)(Co))
order	4	1	4

form score	0	1	1	
function score	0	1	1	
order score	0	0	0	**4**

SK0820 Beg G-E S2
In fact it's several and from case to case different criteria, which cause or .....beaching of whales.

ST inf. Units (2)	a	(d)((f)g)h(m(j(l)))
form	PP	(AjP)(AjP)NP(RCl(NP(PP)))
function	A	(preM)(preM)Cs(postM(O(postM)))
order	1	4

form score	0	1	
function score	1	1	
order score	1	1	**5**

SK0829 Beg G-E S2
There are more and often different circumstances which cause and favour the xxx of living whales.

ST inf. Units (2)	x	(d)(e,g)h(m,n(...((k)l)))
form	0	(AjP)(AjP)NP(RCl(...(PP)))
function	0	(preM)(preM)Cs(postM(...(postM)))
order	0	3

form score	0	1	
function score	0	1	
order score	0	0	**2**

SK0833 Beg G-E S2
It is more likely that from case to case different factors cause or favour the beaching of living whales.

ST inf. Units (1)	(a)	b	(((f)g)h)m,n(j((k)l))
form	(AvP) in AjP	(AvP)AjP(NCl)	(NCl((preM)NP)(NP(PP))
function	(preM) in Cs	(preM)Cs(postM)	(postM((preM)S) (O(postM))
order	3	3	3

form score	0	0	0	
function score	0	0	0	
order score	0	0	0	**0**

SK0848 Beg G-E S2
What is more likely is that most often several factors that are different from case to case cause or encourage living whales to strand.

ST inf. Units (1)	(a)	b	(c)((d)h(g(f)))m,n((k)l)(j)
form	(AvP) in (AjP)	(AvP)AjP in NCl	NCl(AvP)((AjP)NP(RCl(AjP(PP))))(NP)(NCl)
function	(preM) in (Cs)	(preM)Cs in S	Cs(A)((preM)S(postM(Cs(post M))))(O)(Co)
order	1	1	3

form score	0	0	0	
function score	0	0	1	
order score	1	0	0	**2**

VIII. Analysis & Scoring G-E Nov sentence 1

ST Nov G sterne S1 Die mikroskopischen Spuren von Glyzin wurden in einer Probe von Partikeln nachgewiesen, welche die Nasa-Sonde 'Stardust' vom Schweif des Kometen Wild 2 im Januar 2004 eingefangen hatte.			
Inf. units	a;b(c)	d;g;n	e(f)((h)(j(k))(l)m)
form	NP(PP)	VP(lex,past, passive)	PP(PP)(RS(NP)(PP (NP))(PP)(VP))
function	S(Attr)	P	A(Attr)(AttrS(S)(A (Attr))(A)(P))
order	1	2	3

info: a=mikroskopisch; b=Spuren; c=Glyzin; d=passive; e=Probe; f=Partikel; g=nachweisen; h=Sonde etc.; j=Schweif; k=Komet etc.; l=Jan.; m=einfangen; n=past

SK0801 Nov G-E S1
In the sample of particles that the NASA orbiter `Stardust' caught in the train the (sic) comet Wild 2 back in January 2004, there have been found microscopic traces of glycine.

ST inf. units	a;b(c)	d;g	e(f)((h)m(j(k)(l))
form	NP(PP)	VP(lex,present, passive, perfective)	PP(PP)(RCl(NP) (VP)(PP(PP))(PP))
function	Cs(postM)	P	A(postM)(postM(S)(P)(A(postM))(A))
order	4	3	1

form score	1	0.5	1	
function score	0	1	1	
order score	0	0	0	**5**

SK0803 Nov G-E S1
The microscopic traces of Glyzin were found in a sample of some particles, which NASA probe `Stardust' had caught from the tail of the comet Wild 2 in January 2004.

ST inf. units	a;b(c)	d;g;n	e(f)((h)m(j(k))(l))
form	NP(PP)	VP(lex,past,passive)	PP(PP)(RCl(NP)(VP) (PP(PP)(PP))
function	S(postM)	P	A(postM)(postM(S)(P)(A(postM))(A))
order	1	2	3

form score	1	1	1	
function score	1	1	1	
order score	1	1	1	**9**

SK0810 Nov G-E S1
Microscopic traces of glycine have been discovered in a particle sample taken by the NASA's `Stardust' spacecraft from the tail of the comet Wild 2 in January 2004.

ST inf. units	a;b(c)	d;g	f;e(m(h)(j;k)(l))
form	NP(PP)	VP(lex,present, passive, perfective)	PP(RCl(PP)(PP(PP))(PP))
function	S(postM)	P	A(postM(A)(A(postM))(A))
order	1	2	3

form score	1	0.5	1	
function score	1	1	1	
order score	1	1	1	**8.5**

SK0817 Nov G-E S1
Scientists have discovered microscopic traces of glycine in a sample taken from the nucleus of the comet Wild 2 in January 2004 and returned by NASA spacecraft `Stardust'.

ST inf. units	a;b(c)	g	e(m(k)(l)(h))
form	NP(postM)	VP(lex;present, perfective)	PP(RCl(PP(PP))(PP))(RCl(PP))
function	O	P	A(postM(A(postM))(A))(postM(A))
order	3	2	4

form score	1	0.25	1	
function score	0	1	1	
order score	0	1	0	**5.25**

SK0818 Nov G-E S1
In January 2004, the Nasa probe `Stardust' has captured microscopic traces of Glycine from the tail of the comet Wild 2.

ST inf. units	a;b(c)	x	l / h / j;k / m
form	NP(PP)	0	PP / NP / PP(PP) / VP
function	O(postM)	0	A / S / A(postM) / P
order	4	0	1;2;5

form score	1	0	0	
function score	0	0	0	
order score	0	0	0	**1**

SK0820 Nov G-E S1
Microscopic traces of glycine were detected in a sample of particles, which the NASA probe `Stardust' captured from the tail of the comet `wild 2' in January 2004.

ST inf. units	a;b(c)	d;g;n	e(f)((h)m(j;k)(l))
form	NP(PP)	VP(lex,past,passive)	PP(PP)(RCl(NP)(VP)(PP(PP)(PP))
function	S(postM)	P	A(postM)(postM(S)(P)(A(postM))(A))
order	1	2	3

form score	1	1	1	
function score	1	1	1	
order score	1	1	1	**9**

SK0829 Nov G-E S1

The microscopic traces of Glycine were found in particles, which `Stardust', the probe of Nasa, captured from the comet's tail Wild 2 in January 2004.

ST inf. units	a;b(c)	d;g;n	f((h)m(k;j)(l))
form	NP(PP)	VP(lex,past,passive)	PP(postM(NP)(VP)(PP)(PP))
function	S(postM)	P	A(postM(S)(P)(A)(A))
order	1	2	3

form score	1	1	1	
function score	1	1	1	
order score	1	1	1	**9**

SK0833 Nov G-E S1

Microscopic traces of glycerine have been found in a sample of particles captured by the NASA probe `Stardust' from comet Wild 2's tail in January 2004.

ST inf. units	a;b(c)	d;g	e(f)(m(h)(k;j)(l))
form	NP(PP)	VP(lex,present, passive,perfective)	PP(PP)(RCl(PP)(PP)(PP))
function	S(postM)	P	A(postM)(postM(A)(A)(A))
order	1	2	3

form score	1	0.5	1	
function score	1	1	1	
order score	1	1	1	**8.5**

SK0848 Nov G-E S1

The microscopic traces of glycine have been detected in a probe of particles which had been collected by the NASA spacecraft `Stardust' from the tale of comet Wild 2 in January 2004.

ST inf. units	a;b(c)	d;g	e(f)(m(h)(j;k)(l))
form	NP(PP)	VP(lex,present, passive,perfective)	PP(PP)(RCl(PP)(PP)(PP))
function	S(postM)	P	A(postM)(postM(A)(A)(A))
order	1	2	3

form score	1	0.5	1	
function score	1	1	1	
order score	1	1	1	**8.5**

IX. Analysis & Scoring G-E Nov sentence 2

ST Nov G sterne S2 Die Sonde hatte sich damals in einer Entfernung von 320 Millionen Kilometern von der Erde befunden.				
Inf. units	a	b,c,h	d	e(f,g)
form	NP	VP(lex,past,perfective)	AvP	PP(PP)
function	S	P	A	A(Attr)
order	1	2	3	4

info: a=Sonde, b=past, c=perfective, d=damals, e=Entfernung, f=320 Mio. km, g=Erde, h=sich befinden

SK0801 Nov G-E S2
Back then, the distance between the orbiter and the earth was 320 million kilometers.

ST inf. units	(a)	b	d	e (...g) / f
form	(PP) in NP	VP(past)	AvP	NP(PP) / NP
function	(postM) in S	P	A	S(postM) / Cs
order	2	3	1	4

form score	0	1/3	1	0	
function score	0	1	1	0	
order score	0	0	0	0	**3.33**

SK0803 Nov G-E S2
Back then, the probe was 320 millions of kilometers away from the earth.

ST inf. units	a	b	d	(f)g
form	NP	VP(past)	AvP	(NP)PP
function	S	P	A	(preM)A
order	2	3	1	4

form score	1	1/3	1	0	
function score	1	1	1	1	
order score	0	0	0	1	**7.33**

SK0810 Nov G-E S2
The spacecraft was at 320 million kilometers from the earth.

ST inf. units	a	b	x	f,g
form	NP	VP(past)	0	PP(PP)
function	S	P	0	A
order	1	2	0	3

form score	1	0.33	0	1	
function score	1	1	0	1	
order score	1	1	0	0	**7.33**

SK0817 Nov G-E S2
At the time, the spacecraft had been 320 million km from the Earth.

ST inf. units	a	b,c	d	f(g)	
form	NP	VP(past,perfective)	PP	NP(PP)	
function	S	P	A	A	
order	2	3	1	4	
form score	1	0.66	0	0	
function score	1	1	1	1	
order score	0	0	0	1	**6.66**

SK0818 Nov G-E S2
At the time, the probe was located at a distance of 320 millions of kilometers from the earth.

ST inf. units	a	b,h	d	e(f,g)	
form	NP	VP(past,lex)	PP	PP(PP)	
function	S	p	A	A	
order	2	3	1	4	
form score	1	0.66	0	1	
function score	1	1	1	1	
order score	0	0	0	1	**7.66**

SK0820 Nov G-E S2
The probe was then located 320 million. kms away from the earth.

ST inf. units	a	b,c,h	d	(f)g	
form	NP	VP(past,lex)	AvP	(NP)AvP	
function	S	P	A	A	
order	1	2	3	4	
form score	1	0.66	1	0	
function score	1	1	1	1	
order score	1	1	1	1	**10.66**

SK0829 Nov G-E S2
The probe's distance to earth was 320 million kilometers.

ST inf. units	(a)	b	x	e(g) / f	
form	(GP) in NP1	VP(past)	0	NP1(PP) / NP2	
function	(preM) in S	P	0	S(postM) / Cs	
order	1	2	0	3	
form score	0	0.33	0	0	
function score	0	1	0	0	
order score	1	1	0	0	**3.33**

SK0833 Nov G-E S2

At this time, the probe was at a distance of 320 million kilometres from planet Earth.

ST inf. units	a	b	d	e(f,g)
form	NP	VP(past)	PP	PP(PP)
function	S	P	A	A
order	2	3	1	4

form score	1	0.33	0	1	
function score	1	1	1	1	
order score	0	0	0	1	**7.33**

SK0848 Nov G-E S2

At that time, the probe had been located at a distance of 320 million kilometers from the Earth.

ST inf. units	a	b,c,h	d	e(f,g)
form	NP	VP(past,perfective,lex)	PP	PP(PP)
function	S	P	A	A
order	2	3	1	4

form score	1	1	0	1	
function score	1	1	1	1	
order score	0	0	0	1	**8**

X. Analysis & Scoring E-G Beg sentence 1

ST Beg E whales S1
Recently, a US judge banned the American Navy from testing a similar system to that which the MoD is keen to introduce.

inf. units	a	b	c;l	d	e(f;g((h)(j;k))
form	AvP	NP	VP(lex,past)	NP	PCl(NP(PP(RCl(NP)(VP)(AjP)))
function	A	S	P	O	A(O(postM(postM(S)(P)(Cs)))
order	1	2	3	4	5

info: a=recently; b=judge, c=ban; d=Navy; e=testing; f=similar; g=system; h= MoD; j=keen; k=introduce; l=past

SK0802 Beg E-G S1
Vor kurzem kam ein US-Richter zum Schluss, dass die Amerikanische Marine mit ihrem Sonarsystem, ähnlich demjenigen von Verteidigungsministerium, keine Tests durchführen dürfe.

ST inf. units	a	b	l	(d)	(g(f(h)))(e)
form	PP	NP	VP(past)(SubS)	(NP) in SubS	(PP(AjP(PP)))(NP) in SubS
function	A	S	P(AttrS)	(S) in AttrS	(A(Attr(Attr)))(O) in AttrS
order	1	3	2	4	4

form score	0	1	0.50	0	0	
function score	1	1	0.50	0	0	
order score	1	0	0	1	0	**6**

SK0806 Beg
Vor Kurzem verbot ein amerikanischer Richter der amerikanischen Marine ein Sytstem (sic) zu testen, welches demjenigen ähnlich ist, das das amerikanische Verteidigungsministerium einführen will.

ST inf. units	a	b	c;l	d	(g)e(f((h)(k;j)))
form	PP	NP	VP(lex,past)	NP	InfS(O)(RS(AjP(RS(S)(VP)))
function	A	S	P	O	OS(O(RS(Präd)(RS(S)(P)(P))))
order	1	3	2	4	5

form score	0	1	1	1	0	
function score	1	1	1	1	0	
order score	1	0	0	1	1	**10**

SK0808 Beg

Das britische Verteidigungsministerium plant, neue Echolotsysteme einzuführen. Doch erst kürzlich wurde es der amerikanischen Marine verboten Tests mit ähnlichen Systemen durchzuführen, [...]

ST inf. units	a	x	c;l	d	(e)(f)g/h/j/(g)k
form	AvP	0	VP(lex,past, pass)	NP	InfS(NP)(PP)/NP/VP/InfS(NP)
function	A	0	P	O	OS(O)(A)/S/P/OS(O)
order	S2:2	0	S2:3	S2:5	S2:6/S1:1;2;3

form score	1	0	0.67	1	0	
function score	1	0	1	1	0	
order score	0	0	0	0	0	**5.67**

SK08012 Beg

Ein amerikanischer Richter sperrte kürzlich mit seinem Urteil die Tests der amerikanischen Marine, wobei ein System, ähnlich dem, das das britische Verteidigungsministerium einführen möchte, getestet werden sollte.

ST inf. units	a	b	c;l	(d)	e(g(f(h)(k;j)e)
form	AvP	NP1	VP(lex,past)	(NP) in NP2	NP2(NP)(RS(NP(AjP(RS(NP)(VP))))(VP))
function	A	S	P	(Attr) in O	O(Attr)(AttrS(S(App(AttrS(S)(P))))(P))
order	3	1	2	5	5

form score	1	1	1	0	0	
function score	1	1	1	0	0	
order score	0	0	0	0	0	**6**

SK0835 Beg

Kürzlich hat ein amerikanischer Richter der US-amerikanischen Marine verboten, ein ähnliches System zu testen, welches das Verteidigungsministerium unbedingt vorstellen möchte.

ST inf. units	a	b	c	d	(f;g)e((h)(kj))
form	AvP	NP	VP(lex,pres., perfective)	NP	InfS(NP(RS(NP)(VP)))
function	A	S	P	O	OS(O(RS(S)(P)))
order	1	3	2	4	5

form score	1	1	0.33	1	0	
function score	1	1	1	1	0	
order score	1	0	0	1	1	**10.33**

SK0837 Beg

Kürzlich untersagte ein amerikanischer Richter der American Navy ein ähnliches System zu testen, wie das, welches das englische Verteidigungsministerium (MoD) einführen will.

ST inf. units	a	b	c;l	d	(f;g)e((h)(k;j))
form	AvP	NP	VP(lex,past)	NP	InfS(NP(KonjP(RS(NP)(VP))))
function	A	S	P	O	OS(Attr(AttrS(S)(P)))
order	1	3	2	4	5

form score	1	1	1	1	0	
function score	1	1	1	1	0	
order score	1	0	0	1	1	**11**

SK0838 Beg

Kürzlich hat ein amerikanischer Richter der US Navy verboten, ein System zu testen, das demjenigen ähnlich ist, welches MoD, das amerikanische Verteidigungsministerium einzuführen plant.

ST inf. units	a	b	c:l	d	(g)e(f(h)(k;j))
form	AvP	NP	VP(lex,past, perfective)	NP	InfS(NP(RS(AjP(RS(NP)(VP)))))
function	A	S	P	O	OS(AttrS(AttrS(S)(P)))
order	1	3	2	4	5

form score	1	1	0.67	1	0	
function score	1	1	1	1	0	
order score	1	0	0	1	1	**10.67**

SK0843 Beg

Kürzlich hat ein amerikanischer Richter der US-Marine verboten, ein System zu testen, welches Ähnlichkeiten zu einem System aufweist, welches das Britische Verteidigungsministerium gerne einführen würde.

ST inf. units	a	b	c	d	(g)e(f;g((h)(j;k)))
form	AvP	NP	VP(lex,pres., perfective)	NP	InfS(NP(RS(NP(PP(RS(NP)(VP))))))
function	A	S	P	O	OS(O(AttrS(O(Attr(RS(S)(P))))))
order	1	3	2	4	5

form score	1	1	0.33	1	0	
function score	1	1	1	1	0	
order score	1	0	0	1	1	**10.33**

SK0856 Beg

Kürzlich verbot ein amerikanischer Richter der US Navy, ein System zu testen, das Ähnlichkeiten hat mit demjenigen, das das //Ministry of Defence// unbedingt einführen will.

ST inf. units	a	b	c;l	d	(g)e(f((h)(j;k)))
form	AvP	NP	VP(lex,past)	NP	InfS(NP(RS(NP(PP(RS(NP)(VP))))))
function	A	S	P	O	OS(O(AttrS(O(Attr(AttrS(S)(P))))))
order	1	3	2	4	5

form score	1	1	1	1	0	
function score	1	1	1	1	0	
order score	1	0	0	1	1	**11**

XI. Analysis & Scoring E-G Beg sentence 2

ST Beg E whales S2 The judge concluded that the booming sounds could damage marine life, […]			
inf. units	a	b,c	(d)e(f)
form	NP	VP(lex,past)	NCl(NP)(NP)
function	S	P	O(S)(O)
order	1	2	3

a=judge, b=conclude, c=past, d=booming sounds, e=could damage, f=marine life

SK0802 Beg
Der Richter schloss mit der Begründung, die dröhnenden Geräusche könnten die Meerestiere gefährden.

ST inf. units	a	b,c	(d)e(f)
form	NP	VP(lex,past)	PP(V2S(NP)(NP))
function	S	P	A(AttrS(S)(O))
order	1	2	3

form score	1	1	0	
function score	1	1	0	
order score	1	1	1	**7**

SK0806 Beg
Der Richter kam zum Schluss, dass das dröhnende Geräusch das Meeresleben zerstören kann.

ST inf. units	a	b,c	(d)(f)e
form	NP	VP(lex,past)(SubS)	SubS(NP)(NP)
function	S	P(AttrS)	AttrS(S)(O)
order	1	2	3

form score	1	1	1	
function score	1	1	0	
order score	1	1	1	**8**

SK0808 Beg
[...] da das Gericht der Auffassung war, dass die dröhnende (sic) Laute den Meerestieren schadet.

ST inf. units	x	c	(d)(f)e
form	0	VP(past) in SubS1	SubS2(NP)(NP) in SubS1
function	0	AS	AttrS(S)(O) in AS
order	0	6	6

form score	0	1/2	0	
function score	0	0	0	
order score	0	0	0	**0.5**

SK08012 Beg
Der Richter schloss mit dem Argument, dass die dröhnenden Geräusche das Leben im Meer gefährden,

ST inf. units	a	b,c	(d)(f)e
form	NP	VP(lex,past)	InfS(NP)(NP) in PP
function	S	P	AttrS(S)(O) in A
order	1	2	3

form score	1	1	0	
function score	1	1	0	
order score	1	1	1	**7**

SK0835 Beg
Der Richter *beschloss,* dass die dröhnenden Geräusche das Unterwasserleben gefährden könnte, [...]

ST inf. units	a	b,c	(d)(f)e
form	NP	VP(lex,past)	SubS(NP)(NP)
function	S	P	O(S)(O)
order	1	2	3

form score	1	1	1	
function score	1	1	1	
order score	1	1	1	**9**

SK0837 Beg
Der Richter erklärte, dass das dröhnende Geräusch das Leben im Meer schädigen könnte,

ST inf. units	a	c	(d)(f)e
form	NP	VP(past)	SubS(NP)(NP)
function	S	P	O(S)(O)
order	1	2	3

form score	1	1/2	1	
function score	1	1	1	
order score	1	1	1	**8.5**

SK0838 Beg
Der Richter kam zum Schluss, dass die donnernden Geräusche die Meereslebewesen in Mitleidenschaft zeihen (sic) könnten.

ST inf. units	a	b,c	(d)(f)e
form	NP	VP(lex,past)(SubS)	SubS(NP)(NP)
function	S	P(AttrS)	AttrS(S)(O)
order	1	2	3

form score	1	1	1	
function score	1	1	0	
order score	1	1	1	**8**

SK0843 Beg

Der Richter sagte, dass die lauten Töne das marine Leben zerstören könnten; [...]

ST inf. units	a	c	(d)(f)e
form	NP	VP(past)	SubS(NP)(NP)
function	S	P	O(S)(O)
order	1	2	3

form score	1	1/2	1	
function score	1	1	1	
order score	1	1	1	**8.5**

SK0856 Beg

Der Richter kam zum Schluss, dass der dröhnende Lärm Meereslebewesen schädigen könnte, [...]

ST inf. units	a	b,c	(d)(f)e
form	NP	VP(lex,past)(SubS)	SubS(NP)(NP)
function	S	P(AttrS)	AttrS(S)(O)
order	1	2	3

form score	1	1	1	
function score	1	1	0	
order score	1	1	1	**8**

XII. Analysis & Scoring E-G Nov sentence 1

ST Nov E stars Astronomers are predicting a dazzling display of shooting stars tonight as the Perseid meteor shower reaches a peak in activity.					
inf. units	a	b	(c)d(e)	f	g;h;j;k
form	NP	VP(lex)	NP(PP)	AvP	Acl(NP)(VP)(NP (PP))
function	S	P	O(postM)	A	A(S)(P)(O (postM))
order	1	2	3	4	5

info: a=astronomoers; b=predict; c=dazzling; d=display; e=shooting stars; f=tonight; g=Perseid meteor shower; h=reach; j=peak; k=activity

SK0802 Nov
Astronomen rechnen für heute Nacht mit einem überwältigenden Spektakel von Sternschnuppen, da der Perseiden-Meteoritenschauer gerade seinen Höhepunkt erreicht.

ST inf. units	a	b	c;d;e	f	(g)(j)h
form	NP	VP(lex)	PP(PP)	PP	SubS(NP)(NP) (VP)
function	S	P	O(Attr)	A	A(S)(O)(P)
order	1	2	4	3	5

form score	1	1	0	0	0	
function score	1	1	1	1	1	
order score	1	1	0	0	1	**10**

SK0806 Nov
Astronomen haben für heute Nacht ein funkelndes Schauspiel an Sternschnuppen vorausgesagt, da der Meteorstrom der Perseiden heute seinen Höhepunkt erreichen wird.

ST inf. units	a	b	c;d(e)	f	(g)(j)h
form	NP	VP(lex, past, perfective)	NP(PP)	PP	SubS(NP)(NP) (VP)
function	S	P	O(Attr)	A	A(S)(O)(P)
order	1	2	4	3	5

form score	1	0.33	1	0	0	
function score	1	1	1	1	1	
order score	1	1	0	0	1	**10.33**

SK0808 Nov
Astronomen sagen für kommende Nacht ein funkelndes Spektakel von Sternschnuppen voraus, da der Perseiden-Regen seinen Höhepunkt erreicht.

ST inf. units	a	b	c;d(e)	f	(g)(j)h
form	NP	VP(lex)	NP(PP)	PP	SubS(NP)(NP) (VP)
function	S	P	O(Attr)	A	A(S)(O)(P)
order	1	2	4	3	5

form score	1	1	1	0	0	
function score	1	1	1	1	1	
order score	1	1	0	0	1	**11**

SK08012 Nov

Astronomen künden für heute Nacht ein Sternschnuppen-Feuerwerk an. Ausgelöst soll es von dem Perseiden-Meteorstrom, der zu dieser Zeit höchste Aktivität aufweist.

ST inf. units	a	b	e;d.	f	g((j;k))
form	NP	VP(lex)	NP	PP	PP(RS(NP))
function	S	P	O	A	A(AttrS(O))
order	1	2	4	3	S2:4

form score	1	1	1	0	0	
function score	1	1	1	1	1	
order score	1	1	0	0	0	**10**

SK0835 Nov

Astronomen sagen für heute Abend ein umwerfendes Schauspiel von Sternschnuppen voraus, da der Meteorschauer Perseid seinen Aktivitäts-Höhepunkt erreicht.

ST inf. units	a	b	c;d(e)	f	(g)(k;j)h
form	NP	VP(lex)	NP(PP)	PP	SubS(NP)(NP) (VP)
function	S	P	O(Attr)	A	A(S)(O)(P)
order	1	2	4	3	5

form score	1	1	1	0	0	
function score	1	1	1	1	1	
order score	1	1	0	0	1	**11**

SK0837 Nov

Astromnomen (sic) sagen für heute Abend einen umwerfenden Sternschnuppenregen voraus, da der Perseiden-Regen den Höhepunkt seiner Aktivität erreicht.

ST inf. units	a	b	c;d;e	f	(g)(j;k)h
form	NP	VP(lex)	NP	PP	SubS(NP)(NP) (VP)
function	S	P	O	A	A(S)(O)(P)
order	1	2	4	3	5

form score	1	1	1	0	0	
function score	1	1	1	1	1	
order score	1	1	0	0	1	**11**

SK0838 Nov

Für den heutigen Abend versprechen uns die Astronomen ein fantastisches Spektakel: Der Meteorstrom der Perseiden erreicht den Höhepunkt seiner Aktivität und der Abendhimmel ist mit Sternschnuppen übersät.

ST inf. units	a	b	c;d.	f	g/h/j;k/...e...
form	NP	VP(lex)	NP	PP	NP/VP/NP/ ...AjP(PP)
function	S	P	O	A	S/P/O/ ...Präd(Attr)
order	4	2	5	1	S2:1;2;3;6

form score	1	1	1	0	0	
function score	1	1	1	1	0	
order score	0	1	0	0	0	**8**

SK0843 Nov

Für heute Abend künden Astronomen ein einzigartiges Schauspiel von Sternschnuppen an, da der Perseiden-Meteorstrom sein Maximum an Aktivität aufweist.

ST inf. units	a	b	c;d(e)	f	(g)(j;k)
form	NP	VP(lex)	NP(PP)	PP	SubS(NP)(NP)
function	S	P	O(Attr)	A	A(S)(O)
order	3	2	4	1	5

form score	1	1	1	0	0	
function score	1	1	1	1	1	
order score	0	1	0	0	1	**10**

SK0856 Nov

Astronomen sagen für heute Nacht unzählige Sternschnuppen aus dem Meteorenschauer der Perseiden voraus, da dessen Aktivität zu diesem Zeitpunkt seinen Höhepunkt erreichen soll.

ST inf. units	a	b	e	f	(g)/(k)(j)h
form	NP1	VP(lex)	NP2(PP)	PP	(PP) in NP2/ SubS(NP)(NP)
function	S	P	O(Attr)	A	A(S)(O)
order	1	2	4	3	5

form score	1	1	0	0	0.00	
function score	1	1	0	1	0.75	
order score	1	1	0	0	1	**8.75**

XIII. Analysis & Scoring E-G Nov sentence 2

ST Nov E stars S2
The celestial light show is one of the highlights of the astronomical calendar and this year is expected to [be] one of the best in recent history.

inf. units (1)	(a)b	c(d)	e	f,g	h(j)
form	(AjP)NP	NP(PP)	NP	VP(lex, pass)	NP(PP)
function	(preM) S1	Cs1(postM)	S2	P2	Cs2(postM)
order	1	3	4	5	6

inf. units (2)	(a)b	c(d)	e	f,g	h(j)
form	(AjP)NP	NP(PP)	NP	VP(lex, pass)	NP(PP)
function	(preM)S	Cs(postM)	A	P2	Cs(postM)
order	1	3	4	5	6

a=celestial, b=light show, c=highlight, d=astronomical calendar, e=this year, f=expect, g=passive, h=best, j=recent history

SK0802 Nov
Die natürliche Lichtshow am Nachthimmel ist eines der Highlights im astronomischen Kalender, dieses Jahr gehört voraussichtlich zu den besten der jüngeren Geschichte.

ST inf. Units (1)	b(a)	c(d)	e	f	h(j)
form	NP(PP)	NP(PP)	NP	AvP	PP(NP)
function	S1(Attr)	Präd-S1 (Attr)	S2	A	Präd-S2 (Attr)
order	1	3	4	6	7

form score	0	1	1	0	0	
function score	1	1	1	0	1	
order score	1	1	1	0	0	**9**

SK0806 Nov
Diese Sternenlichtershow ist einer der Höhepunkte im astronomischen Kalender und soll ausserdem eine der besten der letzten Jahre sein.

ST inf. Units (2)	b	c(d)	x	f	h(j)
form	NP	NP(PP)	0	VP(mod)	NP(NP)
function	S	Präd(Attr)	0	P2	Präd(Attr)
order	1	3	0	4	6

form score	0	1	0	0	0	
function score	1	1	0	1	1	
order score	1	1	0	0	1	**8**

SK0808 Nov
Das Sternschnuppenspektakel ist einer der Höhepunkte des astronomischen Kalenders und dieses Jahr soll es eines der besten werden in der jüngsten Geschichte.

ST inf. Units (2)	b	c(d)	e	f	h(j)
form	NP	NP(NP)	NP	NP(mod)	NP(PP)
function	S	Präd(Attr)	A	P2	Präd(Attr)
order	1	3	4	5	7

form score	0	0	1	0	1	
function score	1	1	1	1	1	
order score	1	1	1	1	0	**11**

SK08012 Nov
Die Lichtshow am Himmel ist eines der Highlights im astronomischen Kalender und dieses Jahr soll eines der besten der jünsten Vergangenheit.

ST inf. Units (1)	b(a)	c(d)	e	f	h(j)
form	NP(PP)	NP(PP)	NP	VP(mod)	NP(NP)
function	S1(Attr)	Präd-S1 (Attr)	S2	P2	Präd-S2 (Attr)
order	1	3	4	5	6

form score	0	1	1	0	0	
function score	1	1	1	1	1	
order score	1	1	1	1	1	**12**

SK0835 Nov
Die himmlische Lichtshow ist eines der Highlights des astronomischen Kalenders und dieses Jahr soll es die schönste/beste der jüngsten Geschichte werden.

ST inf. Units (2)	(a)b	c(d)	e	f	h(j)
form	(AjP)NP	NP(NP)	NP	VP(mod)	NP(NP)
function	(Attr)S	Präd(Attr)	A	P2	Präd(Attr)
order	1	3	4	5	7

form score	1	0	1	0	0	
function score	1	1	1	1	1	
order score	1	1	1	1	0	**11**

SK0837 Nov
Das Lichtspektakel am Himmel ist eines der Highlights im Astronomischen Kalender, und in diesem Jahr soll es eines der besten sein.

ST inf. Units (2)	b(a)	c(d)	e	f	h
form	NP(PP)	NP(PP)	PP	VP(mod)	NP
function	S(Attr)	Präd(Attr)	A	P2	Präd
order	1	3	4	5	7

form score	0	1	0	0	0	
function score	1	1	1	1	1	
order score	1	1	1	1	0	**10**

SK0838 Nov

Diese himmlische Lichtshow ist ein Höhepunkt im astronomischen Kalender und dieses Jahr dürfte in dieser Hinsicht eines der ereignisreichsten der jüngeren Vergangenheit sein.

ST inf. Units (1)	(a)b	c(d)	e	f	h(j)	
form	(AjP)NP	NP(PP)	NP	VP(mod)	NP(NP)	
function	(Attr)S1	Präd-S1 (Attr)	S2	P2	Präd-S2 (Attr)	
order	1	3	4	5	7	
form score	1	1	1	0	0	
function score	1	1	1	1	1	
order score	1	1	1	0	0	**11**

SK0843 Nov

Die himmlische Lichtshow ist eines der Highlights des astronomischen Kalenders und dieses Jahr verspricht eines der besten der jüngsten Vergangenheit zu werden.

ST inf. Units (1)	(a)b	c(d)	e	f	h(j)	
form	(AjP)NP	NP(NP)	NP	VP(lex, active)	InfS(NP (NP))	
function	(Attr)S1	Präd-S1 (Attr)	S2	P2	OS(Präd-S2 (Attr))	
order	1	3	4	5	6	
form score	1	0	1	1/2	0	
function score	1	1	1	1	0	
order score	1	1	1	1	1	**11.5**

SK0856 Nov

Die himmlische Lichtshow ist eines der Highlights des astronomischen Kalenders und die diesjährige Show soll eine der besten seit langem werden.

ST inf. Units (2)	(a)b	c(d)	(e)	f	h	
form	(AjP)NP	NP(NP)	(AjP) in new NP	VP(mod)	NP(PP)	
function	S1(Attr)	Präd-S1 (Attr)	(preM) in S2	P2	Präd-S2 (Attr)	
order	1	3	4	5	6	
form score	1	0	0	0	1	
function score	1	1	0	1	0	
order score	1	1	1	1	1	**10**

XIV. List of transfer scores for each sentence

The final transfer score for each sentence (S1 and S2 of each translated text) was calculated by dividing the number of points given in the scoring by the highest number of points possible for that sentence. For example, SK0801's score for S1 in her Beg text was: 2.17 / 9 = 0.074.

	G-E Beginner transfer score S1	**G-E Beginner transfer score S2**	G-E Beginner added scores	**G-E Novice transfer score S1**	**G-E Novice transfer score S2**	G-E Novice added scores
SK0801	0,074	0	0,07	0,527	0,277	0,804
SK0803	0,241	0	0,24	1	0,61	1,61
SK0810	0,592	0,444	1,04	0,944	0,61	1,554
SK0817	0,444	0,111	0,56	0,583	0,555	1,138
SK0818	0,416	0,444	0,86	0,111	0,638	0,749
SK0820	0,592	0,833	1,43	1	0,88	1,805
SK0829	0,185	0,333	0,52	1	0,277	1,277
SK0833	0,111	0	0,11	0,944	0,61	1,554
SK0848	0,407	0,222	0,63	0,944	0,666	1,61

	E-G Beginner transfer score S1	**E-G Beginner transfer score S2**	E-G Beginner added scores	**E-G Novice transfer score S1**	**E-G Novice transfer score S2**	E-G Novice added scores
SK0802	0,33	0,777	1,107	0,66	0,6	1,26
SK0806	0,66	0,888	1,548	0,68	0,533	1,213
SK0808	0,37	0,055	0,425	0,73	0,733	1,463
SK0812	0,4	0,777	1,177	0,66	0,8	1,46
SK0835	0,68	1	1,68	0,73	0,733	1,463
SK0837	0,73	0,944	1,674	0,73	0,666	1,396
SK0838	0,68	0,888	1,595	0,53	0,733	1,263
SK0843	0,68	0,944	1,651	0,66	0,766	1,426
SK0856	0,73	0,888	1,618	0,58	0,666	1,246

XV. List of times taken to translate each sentence

The following list shows the times (in seconds) taken to translate each sentence that were determined by watching the Camtasia recordings.

	Sentence 1	Sentence 2
G-E group		
SK0801 Beg	61	102
SK0801 Nov	292	59
SK0803 Beg	98	143
SK0803 Nov	355	83
SK0810 Beg	25	279
SK0810 Nov	393	91
SK0817 Beg	70	233
SK0817 Nov	201	84
SK0818 Beg	65	246
SK0818 Nov	476	70
SK0820 Beg	151	152
SK0820 Nov	493	190
SK0829 Beg	83	258
SK0829 Nov	336	50
SK0833 Beg	285	217
SK0833 Nov	306	82
SK0848 Beg	177	280
SK0848 Nov	425	65
E-G group		
SK0802 Beg	307	150
SK0802 Nov	111	129
SK0806 Beg	208	60
SK0806 Nov	304	297
SK0808 Beg	355	108
SK0808 Nov	298	242
SK0812 Beg	321	268
SK0812 Nov	265	151
SK0835 Beg	192	80
SK0835 Nov	177	189
SK0837 Beg	328	187
SK0837 Nov	346	245
SK0838 Beg	221	83
SK0838 Nov	306	168
SK0843 Beg	301	77
SK0843 Nov	107	80
SK0856 Beg	175	76
SK0856 Nov	341	67