Changing conventions in English-German translations of popular scientific texts*

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This contribution summarizes results of the project Covert Translation, where we investigated the influence of Anglophone communicative conventions on German via translation. Our hypothesis was that the prestige of English as a *lingua franca* and the growing number of translations from English into German leads to a decline in “cultural filtering”, i.e. a diminishing tendency of translators to adapt conventional Anglophone norms to German norms. In this way, English-German translations may introduce linguistic variation to certain target language registers, with Anglophone usage norms also spreading to non-translated German texts. We will here review a number of project studies using a corpus consisting of (1.) English popular scientific texts, (2.) their translations into German, and (3.) comparable non-translated German texts. These studies show that English-German translations are characterized by a considerable degree of source language ‘shining-through’, which has, however, only in one case led to Anglophone communicative norms spreading to non-translated German texts. We conclude that, for the popular science genre, translation-induced influence of English on German is a marginal phenomenon.

*Keywords*: English, German, language change, communicative conventions, translation, source language interference

1. Introduction

Globalized and internationalized communication in many areas of contemporary life is today leading to an ever increasing demand for texts that are at the same time meant for members of different linguistic and cultural communities. Such texts are either produced simultaneously in these different communities as what has been called ‘comparable texts’, or they are translated ‘covertly’ (House 1977/1981, 1997), mostly from

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English, the dominant lingua franca. Comparable texts are texts on similar topics which, despite being produced in differing environments, belong to the same genre and essentially fulfill the same function. As opposed to an overt translation, where the original text is left unchanged as much as possible given the necessary switch into another language, a covert translation (House 1977/1981, 1997, 2010) is a translation in which the communicative purpose of the original is maintained via the use of a so-called ‘cultural filter’ used to adapt an original text to conventionalized expectation norms of the new target audience. In view of the importance of English as a global lingua franca in many influential domains of contemporary life, it is reasonable to assume that such cultural filtering in covert translation and comparable text production may now be in a process of change. This is the hypothesis we investigate in our project “Verdecktes Übersetzen – Covert Translation”.

The general assumption underlying the project is that the dominance of the English language in today’s global communication leads to variation and change of indigenous communicative norms of German (and other languages) in both covert translations from English and comparable original texts such that an adaptation to Anglophone norms results. More concretely, we hypothesize that adaptations to Anglophone communicative norms can be located along dimensions of empirically established communicative preferences (see Section 3 below). An influence of English on German texts would manifest itself in quantitative and qualitative changes in the use of certain linguistic items and structures in German translations and comparable texts in genres where Anglophone dominance is particularly noticeable, such as in the areas of popular science or business.

In this paper, we present research from our project that has been carried out on the popular science genre. The article is structured as follows: In the next section, we present the project corpus of popular scientific texts. Section 3 introduces the reader to the above-mentioned English-German differences in communicative preferences as they manifest themselves in the popular science genre. Section 4 then discusses four case studies featuring different linguistic phenomena. Finally, Section 5 gives a summary and some conclusions.

2. Corpus

All studies presented below were carried out using the project’s popular science corpus. This corpus is a unidirectional translation corpus consisting of:

1. The project started in July 1999 and was funded for 12 years by the German Science Foundation (Deutsche Forschungsgemeinschaft, DFG) as part of the Collaborative Research Center on Multilingualism (Sonderforschungsbereich 538 “Mehrsprachigkeit”) at the University of Hamburg. We gratefully acknowledge this generous support. Since its inception, Juliane House has been principal investigator of the project. Current research associates are Viktor Becher and Svenja Kranich. In previous project phases, Claudia Böttger, Julia Probst, Nicole Baumgarten und Demet Özçetin were members of the research team.

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Table 1. Structure and size of the popular science corpus

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>English originals</td>
<td>26 texts 42,497 words</td>
<td>38 texts 122,866 words</td>
</tr>
<tr>
<td>German translations</td>
<td>26 texts 37,830 words</td>
<td>38 texts 113,420 words</td>
</tr>
<tr>
<td>German originals</td>
<td>19 texts 82,480 words</td>
<td>32 texts 100,648 words</td>
</tr>
</tbody>
</table>

1. English originals
2. Their German translations
3. German originals

All texts in the corpus are popular scientific magazine articles that have appeared in publications such as *Scientific American* or *Spektrum der Wissenschaft* (see Baumgarttn 2007 for a more detailed presentation of the corpus). Most importantly, the corpus features two ‘time-frames’: One part of the texts contained in the corpus were published between 1978 and 1982, while the remaining texts were published between 1999 and 2002. This ‘micro-diachronic’ structure of the corpus allows us to track diachronic changes in translation habits (English originals → German translations) and monolingual language use (German originals). Table 1 gives a summary of the structure of the corpus and provides details on the size of the individual subcorpora.

As the table shows, the individual corpus parts differ substantially in terms of word count (the total word count being approximately 500,000). This is why we will here limit ourselves to presenting percentages and normalized frequencies in the studies to be discussed.

3. Popular scientific writing: A contrastive perspective on the genre in English and German

In this section, we present some contrastive results on general tendencies in communicative styles in English and German, followed by findings about the way these differences manifest themselves in the genre of popular science.

Overall, the same contrasting tendencies could be observed in different types of English and German discourse, spoken and written. It is crucial, in this context, to firmly base one’s observations on detailed qualitative and quantitative studies, in order to avoid creating “scientifically manufactured stereotypes”, a tendency that Ehlich (2000: 69) has noted for some contrastive work on styles of scientific discourse (he names e.g. Galtung 1985, Clyne 1987). The observations we present are grounded in substantial contrastive multi-genre research conducted over the past thirty years.
(summary in House 1996, 2006, 2009). A series of German-English contrastive discourse and pragmatic analyses comparing oral and written discourse in original and translated versions focused on such phenomena as opening and closing phases, discourse structures, discourse strategies and discourse markers, politeness and directness in the realization of speech acts and speech act sequences. These analyses resulted in the postulation of a set of dimensions of culturally determined and empirically established communicative preferences such as preferred foci on the interpersonal versus the ideational meta-function of talk (sensu Halliday, see, e.g., Halliday & Matthiessen 2004), and on informational vagueness versus specificity. Concretely, English speakers were found to give preference to more addressee-oriented, implicit and indirect ways of expression and to using more verbal routines, whereas German speakers were found to show a tendency towards a more pronounced content-orientation, explicitness, directness and the use of situation-anchored ad-hoc formulations. Thus, English speakers tended to be more interactional and involved in their communicative style as opposed to the more transactional and detached communicative style found to be preferred in discourse by German speakers.

Contrastive studies on genre conventions in popular science are few, even fewer than studies dealing with professional science communication. While tendencies may be the same (e.g. English texts tend to be more interpersonal than German texts in both text types), one should not neglect the basic communicative differences between popular and professional scientific writing. As far as author-reader interaction is concerned, one can say that in scientific writing for peers, authors have the goal to "give the impression of being very knowledgeable in the field ..., want[ing] to be recognized or accepted as experts" (Cecchetto & Stroińska 1997: 148). For authors of scientific texts for interested laymen, on the other hand, being recognized or accepted as an expert is secondary and only relevant in so far as it promotes the primary, more commercial goal, i.e. producing texts that people enjoy reading (so much that they are willing to pay money for reading them). It is thus essential for the popular science genre that texts are perceived not only as informative, but also as pleasurable reading. Striking the right tone, constructing an author-reader relationship perceived as appropriate by the reader (based on his/her previous communicative experience and genre expectations) may therefore be considered even more important in popular scientific texts than in scientific writing for peers.

Let us now look at the way the differences in communicative preferences between English and German are acted out in popular scientific writing in the two languages. Baumgarten, House & Probst (2001) have found that authors of English popular scientific articles tend to make an effort to establish a symmetrical relationship between author and addressee and to simulate interaction with the reader. The reader is often

2. Contrastive studies of professional scientific communication have been presented e.g. by Clyne (1987, 1991), Taylor & Tingguang (1991), Mauranen (1993), Duszak (1994), Kreutz & Harres (1997), and Fandrych & Graefen (2002).
addressed directly and drawn into the scenes described in the text, as in the following example from the *Scientific American*:

(1) a. **EngOrig:** Suppose you are a doctor in an emergency room and a patient tells you she was raped two hours earlier. She is afraid she may have been exposed to HIV ... Can you in fact do anything to block the virus from replicating and establishing infection?  

This opening passage of an article on HIV-infections is translated into German for *Spektrum der Wissenschaft* as follows:

(1) b. **GerTrans:** In der Notfallaufnahme eines Krankenhauses berichtet eine Patientin, sie sei vor zwei Stunden vergewaltigt worden und nun in Sorge, dem AIDS-Erreger ausgesetzt zu sein ... Kann der Arzt überhaupt irgend etwas tun, was eventuell vorhandene Viren hindern würde, sich zu vermehren und sich dauerhaft im Körper einzunisten?  

**Gloss:** 'In the emergency room of a hospital, a patient reports having been raped two hours ago and now being in worry about having been exposed to the Aids virus. Can the doctor do anything at all that would prevent possibly present viruses from replicating and establishing themselves permanently in the body?'

This translation can be understood as governed by the aim to adapt the American English original to the reading habits of the German target audience. Note that changes have been made in particular concerning the degree of addressee-involvement: The German reader is no longer asked to imagine himself or herself one of the agents of the scene presented. Instead, the scene in the hospital is presented in the German version ‘from the outside’, the addressee not asked to actively engage with what is presented (Baumgarten et al. 2001).

Based on observations such as these, quantitative studies were conducted to verify the presumed tendencies. For this purpose, we have looked at linguistic phenomena associated with the area of author-reader interaction. Thus we have examined the use of personal pronouns and connectives, linguistic means that can be employed to produce more interaction in a text. Furthermore, we have investigated the field of hedging, in particular the use of epistemic modality, since epistemic modal marking can help present opinions brought forward in a text as less definite, thus leaving more room for the addressee’s own judgment. These phenomena are commonly associated with writer-reader interaction. They have been investigated, among others, by Hyland (1996, 2002, 2005) and Hunston & Thompson (2001). Other phenomena to do with writer-reader interaction include mood switches (alternations of statements, imperatives, and rhetorical questions), parenthetical

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3. All the examples presented in this paper are taken from our project corpus of popular scientific texts described in Section 2.
constructions, in which the writer comment on his/her text, functional sentence perspective, mental processes, discourse markers (Bührig & House 2004, 2007, House 2011) as well as evaluative lexis (see, e.g., Böttger 2007).

As stated above, our basic assumption is that English-German translations in the field of popular science tend to allow more and more imports of conventions and norms from the English source texts, which then even find their way, in some cases, into comparable German, monolingually produced texts. In this section, we will now first look at the results produced by the analysis of the earlier English and German comparable texts in our corpus from the time-frame 1978–1982, to find out which basic contrasts can be established.

First of all, in the domain of textual cohesion, Baumgarten (2007) has analyzed the use of the coordinating conjunctions and ~ und in sentence-initial position. When used sentence-initially, And and Und support an informal, interaction-oriented style reminiscent of spoken discourse: Information is presented in an incremental, non-hierarchical way (Fabricius-Hansen 1999) and the semantic-pragmatic relation between two sentences linked by And/Und is left underspecified and has to be inferred by the addressee (Posner 1980). As would have been predicted from the above-mentioned general findings, this interactional stylistic device is more typical of the English popular scientific texts: In the 1978–1982 part of the corpus, 3.1 tokens per 10,000 words can be found in the English originals, whereas the German originals only contain 0.9 tokens per 10,000 words.

Becher, House & Kranich (2009) present results on the sentence-initial use of the conjunctions but ~ aber ~ doch in our popular science corpus. This use is interesting for the present purpose because it often simulates interaction between author and reader. A typical example is presented below:

(2) Still, for some it may seem disturbing that life, certainly in its physical incarnation, must come to an end. But to us, it is remarkable that even with our limited knowledge, we can draw conclusions about such grand issues.

In this example, the sentence-initial but encodes the transition from one opinion to another, a rhetorical move that has been called Claim-Response Pattern (Hoey 2001). The author first presents one opinion assigned to an unspecified group of people, which he assumes the reader shares. In the second part, the author moves on to present a counter-position to the widely-held opinion presented before. In this way, an interactional structure reminiscent of interaction in spoken dialogue is created. The use of

4. An interesting study of the importance of explicit cohesive markers in popular science has been presented by Myers (1991). He shows that science writing for specialist audiences can rely on the profound background knowledge of the audience, which helps them to infer relations between statements that might appear completely unrelated to a layperson (similar results are obtained by Koskela 1997). Writers of popular scientific articles, by contrast, need to rely to a much greater extent on the explicit encoding of relations between the states of affairs they present. One means of achieving this is the use of conjunctions (Myers 1991: 22).
sentence-initial concessive conjunctions such as But, Aber and Doch typically creates such interaction-simulating patterns. As we would expect from the general insights into English-German communicative contrasts, the frequency of these items in the first time-frame of our data is as follows: Sentence-initial But occurs much more frequently in the English texts from 1978–1982, with 32.6 tokens per 1,000 sentences, than sentence-initial Aber and Doch in the German texts of the same time frame. The combined frequency of the latter two conjunctions in the German texts is only 9.0 per 1,000 sentences (Becher et al. 2009: 143).

Baumgarten (2008) has investigated the use of the personal pronouns we ~ wir. Her results for the early part of the corpus show clear differences between English and German along the predicted lines: English originals from 1978–1982 contain 27.5 tokens of we per 10,000 words, while German originals from this time-frame contain only 17.7 tokens of wir per 10,000 words (Baumgarten 2008: 417). The difference can be taken as evidence for the less personal nature of the German texts: the German texts encode the agents of the research process described in the text much less frequently than their English counterparts.

In the functional domain of epistemic modality, we have also found some interesting contrasts between the English and the German originals, which can be linked to the different communicative preferences in the two linguacultures. Broadly speaking, epistemic modal markers serve the purpose of marking that the speaker is not fully certain that the proposition encoded by the clause is true (see, e.g., Palmer 2001: 8, Van der Auwera, Schalley & Nuyts 2005: 201 and Verstraete 2007: 17). In discourse, these items can be used to create a more ‘dialogic’ text (White 2003), since alternative positions are implicitly acknowledged (see also Kreutz & Harres 1997: 186).

One can distinguish two main motivations for using epistemic modal markers in discourse: The first type expresses content-oriented caution (the author does not have enough information to be sure whether the proposition is true). The second type reflects reader-oriented caution (the author does feel sure that the proposition is true, but uses the modal marker in order to leave more room for other opinions; Hyland 1996). This second type of use can be seen as a hedging device, i.e. an element that allows the speaker to weaken the force of a proposition (Markkanen & Schröder 1997: 7, Mauranen 1997: 115–116). An example of this type is presented below:

(3) In the past few decades, however, they [viz. biologists] have largely ignored one important property of organisms which, it now seems, may well play a significant part.

In this example, the author presents new results which go counter to previous beliefs held by the scientific community. The use of the epistemic modal combination may well is probably motivated not only (or not mainly) by the lack of full information about the facts, but also or predominantly by the wish to present a statement that contradicts the opinion of important scientists in a more mitigated way. Since English text conventions tend to make more use of such indirect as well as addressee-oriented
strategies (see Section 3), we expected to find overall more epistemic modal markers in the English texts. We assumed that the content-oriented need for caution is the same in the English and German popular scientific texts in our corpus (as they deal largely with very similar topics), but we hypothesized that the reader-oriented use is more typical of English discourse, leading to an overall higher frequency of epistemic modal markers in our English originals.

To test this idea, all linguistic markers that serve the purpose of marking a proposition as only possibly or probably true had to be counted manually, since there are so many different linguistic devices that can fulfill this purpose (e.g. modal verbs such as may, modal adverbs such as presumably, ad-hoc combinations such as there is evidence to indicate that ..., etc.). We thus extracted a mini-corpus of 320 sentences per sub-corpus which made the manual analysis feasible, representing a total of a little more than 85,000 words. The hypothesis was borne out: English originals in the first time-frame exhibit a frequency of 22.8 epistemic modal markers per 10,000 words, while German originals from the same time period contain only 7.1 epistemic modal markers per 10,000 words (Kranich 2011: 91).

A further cross-linguistic difference can be seen in the use of modal markers of high and of low modal strength. Markers of low modal strength present statements as possibly true, markers of high modal strength as probably true (see Kranich 2009, 2011 for more detail). A marker of low modal strength, such as perhaps, leaves more room for other opinions than a marker of high modal strength, such as probably, which is why markers of low modal strength represent more effective hedges than markers of high modal strength (compare Perhaps you have made a mistake vs. Probably you have made a mistake). In accordance with our expectations, the proportion of markers of low modal strength in the English texts is much higher than in the German texts: Markers of low modal strength make up for 53.5% of all epistemic markers in English, whereas in the German texts, they only amount to 26.8% (Kranich 2011: 91). Again,

5. This result is in accordance with results obtained by Kreutz & Harres’ (1997) small-scale study of academic writing in English and German, where they also found that the German texts in their corpus contained very few hedges. Their result was surprising in so far as they analyzed texts from the same corpus used by Clyne (1991), who stated that the German texts in the corpus contained more hedges than the English texts. However, Clyne extended the concept of hedging to include, in addition to epistemic modal markers, such de-personalizing constructions as impersonal constructions, reflexive constructions and agentless passives, which can be presumed to be much more common in German than in English academic writing (Fabricius-Hansen 2000). Kreutz & Harres (1997: 189) actually note in their detailed analysis of a smaller sample of the texts used by Clyne (1991) that such impersonal constructions as e.g. kann + passive do not normally function as hedges in the German texts. This shows that it has an impact on the results of a study how far one extends the rather fuzzy concept of hedging (see also Clemen 1997: 242). This is why we have chosen to concentrate on epistemic modal expressions, which are easier to define and to isolate from a text in a reliable and replicable way.
Table 2. Pragmatic contrasts between English and German original popular scientific texts as seen from the frequency of selected linguistic items (1978−1982)^7

<table>
<thead>
<tr>
<th></th>
<th>Personal Pronoun</th>
<th>Sentence-initial</th>
<th>Sentence-initial</th>
<th>Epistemic modal markers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>we ~ wir</td>
<td>and ~ und</td>
<td>but ~ aber ~ doch</td>
<td></td>
</tr>
<tr>
<td>English Originals</td>
<td>27.5</td>
<td>3.1</td>
<td>32.6</td>
<td>22.8</td>
</tr>
<tr>
<td>German Originals</td>
<td>17.7</td>
<td>0.9</td>
<td>9.0</td>
<td>7.1</td>
</tr>
<tr>
<td>Conclusions</td>
<td>English texts are more personal.</td>
<td>English texts simulate spoken interaction more.</td>
<td>English texts simulate spoken interaction more.</td>
<td>English texts are more dialogic.8</td>
</tr>
</tbody>
</table>

this confirms the view that English texts tend to be more addressee-oriented, in this case by leaving more room for alternative views.

The contrastive results for the popular scientific texts from 1978–1982 are summarized in Table 2.

4. Popular scientific writing in translation and its influence on the German genre

4.1 The case of And ~ Und

In Section 3 we have seen that – as a consequence of English-German differences in communicative conventions – the sentence-initial use of and was much more frequent in the first time-frame of our corpus than the sentence-initial use of und (see Table 2). This raises the questions of (1.) how English-German translators deal with sentence-initial and and und, and (2.) whether any diachronic trends are discernible. The following table compares the frequency of And in the English original texts with the frequency of Und in the English-German translations and shows how frequencies have changed over the investigated time-span (Baumgarten 2007: 153):

6. The frequencies are normalized on the basis of 10,000 words, except the frequencies for But ~ Aber ~ Doch, which are normalized on the basis of 1,000 sentences.

7. Our results were not tested for statistical significance. As we can see in Section 4, the only case where Anglophone influence seems to have occurred is the case of But/Aber/Doch. However, it is impossible to prove that the quantitative and qualitative changes in the use of these conjunctions – although remarkable – are actually due to influence from English. Significance testing would not make this situation any better, since statistical tests by themselves cannot prove the existence of an assumed causal link (see Dallal 2007). They can only show that a particular distribution pattern is non-random.

8. We use the term dialogic in the sense of White (2003) and White & Sano (2006).
Table 3. Frequency of sentence-initial and und (normalized on the basis of 10,000 words)

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>English originals (And)</td>
<td>3.1</td>
<td>4.5</td>
</tr>
<tr>
<td>German translations (Und)</td>
<td>2.3</td>
<td>6.3</td>
</tr>
<tr>
<td>German originals (Und)</td>
<td>0.9</td>
<td>3.1</td>
</tr>
</tbody>
</table>

The relatively small increase in the use of sentence-initial and evidenced in Table 3 “suggests that And is already a comparatively stable and established feature of the register”. In contrast, the frequency of sentence-initial und has almost tripled, which “indicates that the use of Und is more of an innovation whose place in the register is not yet fixed” (Baumgarten 2007: 153f). The question now is of course where the “innovation” of sentence-initial und comes from: is it an ‘import’ from the English source texts, or is it simply due to a development internal to the target language genre, a kind of diachronic change in translation norms?

Unfortunately, the results of Baumgarten’s study do not allow a definite answer to this question. On the one hand, the figures presented in Table 3 suggest that English-German translators have aligned their use of Und to the use of And, at least as far as frequency is concerned. On the other hand, translators have clearly overshot the mark, with Und being even more frequent than And in the second time-frame (6.3 vs. 4.5 occurrences per 10,000 words). This means that translators have inserted Und in places where And does not appear as a source text trigger. In a qualitative analysis of the translation relation between And and Und, Baumgarten found that “only about 25% of the English And’s are actually translated by a German Und.” Moreover, “80% of the translational occurrences of Und are not motivated by their source texts” (2007: 160f). Thus, it is not clear to what extent English-German translators were actually influenced by the English source texts in their use of sentence-initial und.

Turning to the frequency of Und in the German originals, we do note a considerable increase in frequency over time (from 0.9 to 3.1 occurrences per 10,000 words) – a possible sign of Anglophone influence. However, as Baumgarten (2007: 154–160) shows, Und in the non-translated German texts is used in part for different rhetorical purposes than And/Und in the English originals and German translations. Thus, “the uses of And and Und seem to differ altogether too much to be seen as a direct import of an English register feature into the German sister register” (Baumgarten 2007: 166).

4.2 The case of But ~ Aber ~ Doch

The results obtained for the concessive conjunctions but, aber and doch in sentence-initial position turned out to be much clearer than those obtained for And ~ Und. In Section 3, we have seen that in the corpus texts from the years 1978–1982, but was used
much more frequently in sentence-initial position than *aber* and *doch* taken together (see Table 2). From this, one should expect that English-German translators applying a cultural filter do not render every instance of *But* as *Aber* or *Doch*, but come up with other translational equivalents more in line with the communicative norms of German. Indeed, Becher et al. (2009) found three principal ways of translating *But* into German in the investigated corpus: an English-German translator may directly render *But* as *Aber* or *Doch* (4), choose a sentence-internal connective such as *jedoch* (‘however’) instead (5), or drop the conjunction altogether (6). See the following examples:

(4) **EngOrig:** Something must have drained away its [sc. the sun’s] angular momentum. *But* what?
*GerTrans:* Irgendwann muß sie den Drehimpuls verloren haben. *Aber* wie?
Gloss: ‘At some point it must have lost the angular momentum. *But* how?’

(5) **EngOrig:** *But* that scenario is now thought to contradict observations …
*GerTrans:* Dieses Szenario scheint *jedoch* den Beobachtungen zu widersprechen.
Gloss: ‘This scenario, *however*, seems to contradict the observations.’

(6) **EngOrig:** *But* what caused these calamities in the first place …?
*GerTrans:* Wie kam es zu der erstaunlichen Klima-Instabilität …?
Gloss: ‘How did the astonishing climate instability come about?’

The English source text sentences in the above examples are characterized by a high degree of interaction: in (4), *But* marks the second part of a Claim–Response pattern (see example (2), above); in (4) and (6), the sentence-initial conjunction marks the Question part of a Question–Answer pattern. The translators of (4) through (6) have dealt very differently with the interactional effect of *But*. While the translator of (4) has fully retained the interactional style of the English original by translating *But* as *Aber*, the translator of (5) has toned down the degree of interactionality by choosing a less colloquial, sentence-internal connective (*jedoch*). Finally, the translator of (6) chose not to use a translational equivalent of *But* at all.

In order to find out how the translation strategies evidenced in the above examples compare in terms of frequency, let us first look at the overall frequency of *But* and *Aber/Doch* in our corpus of English-German translations:

**Table 4.** Frequency of sentence-initial *but*, *aber* and *doch* (normalized on the basis of 1,000 sentences)

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>English originals (<em>But</em>)</td>
<td>32.6</td>
<td>32.6</td>
</tr>
<tr>
<td>German translations (<em>Aber, Doch</em>)</td>
<td>22.7</td>
<td>30.1</td>
</tr>
<tr>
<td>German originals (<em>Aber, Doch</em>)</td>
<td>9.0</td>
<td>19.8</td>
</tr>
</tbody>
</table>
Table 4 (taken from Becher et al. 2009: 143) leads to a number of interesting observations. First of all, we can see that, like the use of *And*, the sentence-initial use of *But* seems to be a relatively stable feature of the English popular science genre. The sentence-initial use of *aber* and *doch* in the German translations, on the other hand, shows considerable diachronic variation, namely an increase in frequency by 32.5% (from 22.7 to 30.1 occurrences per 1,000 sentences). This increase suggests that “shining-through”⁹ (Teich 2003) has become more prominent over time, i.e. English-German translators have increasingly translated *But* as *Aber* or *Doch*, not making use of the alternative translation strategies evidenced in (5) and (6). As Table 5 (taken from Becher et al. 2009: 144) shows, this is indeed the case.

From Table 5, we can see that in the first time-frame, only 26.8% of all occurrences of *But* have been translated as *Aber* or *Doch*, with almost half of all occurrences (46.4%) having been rendered as a (less interactional) sentence-internal connective such as *aber, jedoch* or *allerdings* ‘however’. In 17.9% of all cases, *But* does not have a translational equivalent at all in the German target text. These figures show that translators have applied a strong cultural filter in the first time-frame. The second time-frame, however, presents a very different picture. Here, *But* → *Aber/Doch* has become the new default translation strategy (applied in 47.4% of all cases), and only in 36.2% has a sentence-internal connective been chosen as a translation of *But*. The omission of *But* has become marginal (7.2%). These figures make it clear that the increasing frequency of *Aber* and *Doch* in the English-German translations which we saw in Table 4 is actually due to a marked increase in source language shining-through.

Let us now return to Table 4. The most interesting finding to be gleaned from this table concerns the frequency of *Aber* and *Doch* in the German original texts. We already saw from Table 2 (Section 3) that *But* occurs more than three times more

<table>
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<tr>
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<tbody>
<tr>
<td><em>But</em> → <em>Aber/Doch</em></td>
<td>26.8%</td>
<td>47.4%</td>
</tr>
<tr>
<td><em>But</em> → <em>aber, (je)doch, allerdings</em></td>
<td>46.4%</td>
<td>36.2%</td>
</tr>
<tr>
<td><em>But</em> → &lt;null&gt;</td>
<td>17.9%</td>
<td>7.2%</td>
</tr>
<tr>
<td><em>But</em> → &lt;other&gt;</td>
<td>8.9%</td>
<td>9.2%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

---

⁹. We use the term *shining-through* as a cover term for various interference phenomena relating to the transmission of source language features into the target text in the process of translation. These features may either be typological (i.e. structures not typical of the target language are taken over from the source language) or related to register (i.e. structures or overall frequencies of constructions that are characteristic of a certain register in the source, but not in the target language, are adopted in the translated text) (Teich 2003).
frequently in the English originals than do *Aber* and *Doch* in the German originals (32.6 vs. 9.0 occurrences per 1,000 sentences). We can now see from Table 4 that this English-German usage contrast has considerably diminished over time due to a remarkable increase in frequency of *Aber/Doch* in the German original texts by 119.8% (from 9.0 to 19.8 occurrences per 1,000 words). Comparing this to the frequency of *Aber* and *Doch* in the English-German translations, which has been anomalously high right from the start, we get the impression that the German originals have aligned their use of sentence-initial *aber* and *doch* to the English-German translations over time.

To check the plausibility of this interpretation, a qualitative analysis was carried out in which the use of *Aber* and *Doch* in the German originals was compared with the use of these items in the English-German translations and with the use of *But* in the English originals. The result of the analysis was that *Aber* and *Doch* are used in the German originals for the same purposes as in the translations, which supports our assumption that German popular science authors are influenced by translations from English in producing their texts. See the following examples:

(7) **GerOrig:** Gewiss sind unter den Lockstoffen für bestäubende Insekten auch Monoterpene. *Aber* das kann nur ein Nebeneffekt sein ...

Gloss: ‘Certainly, among the attractants of pollinating insects are also monoterpens. But that can only be a side-effect ...’

(8) **GerOrig:** ... eine Folge von sehr vielen Einzelanweisungen ... Erst deren Ausführung in ihrer Gesamtheit erweckt den geschilderten Eindruck. *Aber* wer ist es, der diese Einzelanweisungen ausführt?

Gloss: ‘... a sequence of very many single orders. Only their execution in their entirety gives rise to the described impression. *But* who is it that carries out these single orders?’

In (7), *Aber* is used as a marker of the Claim–Response pattern, while in (8) the conjunction is used to signal a Question–Answer pattern. As the examples illustrate, German popular science authors tend to use sentence-initial concessive conjunctions for the same purposes as both English authors of popular science texts and the English-German translators of these texts. We take this observation as evidence for our project hypothesis, i.e. for the assumption that authors of German popular scientific texts were influenced by translations from English in their use of sentence-initial *aber* and *doch* as markers of interactionality and spokenness. An interesting question for further research would be whether German authors have only adopted the more frequent use of the conjunctions, or if they have also taken over the translations’ rhetorical structure, which would be evident from a generally more frequent use of highly interactional patterns such as Claim–Response and Question–Answer.
4.3 The case of \textit{we} $\sim$ \textit{wir}

Table 6 shows the frequency of the personal pronoun \textit{we} and its German equivalent \textit{wir} in the investigated corpus (figures taken from Baumgarten 2008: 417).

In the German translations, we can see a similar trend as in \textit{Aber} and \textit{Doch}, the frequency of \textit{wir} increasing in the second time-frame (from 13.2 to 31.0 occurrences per 10,000 words), possibly in an adaptation to the English original texts. Indeed, as Baumgarten (2008: 418) shows, shining-through has increased in the investigated time-span, with a rising number of occurrences of \textit{we} being translated as \textit{wir}, which suggests than English-German translators’ application of a cultural filter has decreased.

However, the frequency of \textit{wir} in the German originals does not fit into the picture. First of all, we note that in the first time-frame, the frequency of \textit{wir} in the translations is lower than the frequency of the pronoun in the German originals. Baumgarten explains this as a result of “normalization” (or “conservatism”), i.e. translators’ hypothesized “tendency to exaggerate features of the target language and to conform to its typical patterns” (Baker 1996: 183).

But what about the second time-frame? In the texts from 1999–2002, the frequency of \textit{wir}, having risen to 36.3 occurrences per 10,000 words, is even higher than the frequency of \textit{we} in the English originals (33.8). This makes it seem improbable that the German originals have aligned their usage of \textit{wir} to Anglophone conventions, especially since the frequency of \textit{wir} in the German translations, despite the increase noted above, is still lower than the frequency of the pronoun in the German originals. While the figures for \textit{But} $\sim$ \textit{Aber} $\sim$ \textit{Doch} (Table 4) suggest that the English-German translations have, as it were, dragged the German originals behind them with respect to their more frequent use of \textit{Aber} and \textit{Doch}, the trend seems to be the other way round in the case of \textit{wir}. It seems that, in this case, the German translations have followed the German originals in their more frequent use of \textit{wir}, not vice versa.

This interpretation of the data is corroborated by additional analyses of the textual functions of \textit{wir} carried out by Baumgarten (2008). For example, Baumgarten classified all occurrences of \textit{we} and \textit{wir} in the corpus according to their referential range. As the following examples illustrate, depending on the context of utterance, the reference of \textit{we}/\textit{wir} may be reader-exclusive (9) or reader-inclusive (10):

\begin{table}[h]
\centering
\begin{tabular}{|l|c|c|}
\hline
\hline
English originals (\textit{we}) & 27.5 & 33.8 \\
German translations (\textit{wir}) & 13.2 & 31.0 \\
German originals (\textit{wir}) & 17.7 & 36.3 \\
\hline
\end{tabular}
\caption{Frequency of \textit{we} and \textit{wir} (normalized on the basis of 10,000 words)}
\end{table}
(9) With help from state biologists, we obtained water samples in 1991 during a kill of about one million Atlantic menhaden in the Pamlico Estuary.

(10) We must also become more proactive in addressing the state of our waterways ...

In (9), we refers to the author of the magazine article in question and her research group (reader-exclusive reference), while in (10) (taken from the same text) the reference of we includes the reader.

What is interesting about the reader-exclusive and reader-inclusive uses of we and wir is that they are distributed very unevenly across the individual parts of the investigated corpus: while reader-inclusive uses are more frequent than reader-exclusive uses in both the English originals and their German translations, the German originals are characterized by a predominance of reader-exclusive uses, and this tendency holds across the two time-frames. This fundamental difference in we/wir usage between English originals and their German translations on the one hand and German originals on the other hand – which does not change in the course of the investigated timespan – suggests that German authors were not inspired by the translations in their diachronically increasing use of wir. A possible alternative explanation for German authors’ increasing use of wir would be a (language- and genre-internal) trend towards more colloquial ways of expression – a hypothesis that lends itself to further investigation including a comparison with German reference corpora.

4.4 The case of epistemic modal markers

The use of epistemic modal markers is, as we have seen in Section 3, another area where there are considerable differences between English and German. The English-German translations exhibit some shining-through in this area, both with regard to the overall frequency of epistemic modal markers and with regard to the proportions of markers of low and high modal strength. The following figure summarizes the findings:

![Figure 1. Epistemic markers of low and high modal strength in the popular science corpus](image-url)
Figure 1 (taken from Kranich 2011: 92) shows several things: First, one can note that German originals consistently use fewer epistemic modal markers than English originals. At the same time, one can observe a change in genre conventions in the English originals over the two time-frames. English texts of the earlier time-frame make use of these markers to a much greater extent than is the case in the texts in the later time-frame. It will not be possible to explain this difference within the scope of the present article. Let us here instead concentrate on the differences between English and German originals and the English-German translations evidenced by Figure 1.

It is evident that German originals of both time-frames make less use of epistemic modal markers overall and particularly of markers of low modal strength. The translations show two clear effects of ‘registerial shining-through’ (Teich 2003: 146), i.e. they exhibit frequency distributions more typical of the genre in the source language culture than of the genre in the target language culture. The first shining-through effect is the overall higher frequency. The second shining-through effect lies in the more frequent use of epistemic modal markers of low modal strength (such as vielleicht ‘maybe’, könnte ‘might’) than of markers of high modal strength (such as wahrscheinlich ‘probably’) in the German translations, whereas the distribution is reversed in the German originals.

However, as is also evident from Figure 1, in this respect one can see no trend of increasing adoption of source language features in the translations (which our hypothesis would have predicted). In fact, German translated texts in the first time-frame use over three times as many epistemic modal markers as the German originals, while they only make use of 31% more epistemic modal expressions in the second time-frame.

The same trend is apparent in an investigation of the translations of English modal verbs (Kranich 2011). Investigating the German translations of all English modal verbs with epistemic function, Kranich (2011: 88–91) has shown that translation choices that can be seen as an adaptation to German norms (namely leaving out the modal marker or choosing one of higher modal strength) have in fact become more frequent in the second time-frame. In the domain of epistemic modal marking, Anglophone norms are thus not increasingly adopted in the English-German translations (see also Becher et al. 2009: 130–137).

5. Summary and conclusions

The following table summarizes the findings presented in this paper.

The overview in Table 7 shows that shining-through is a common phenomenon in English-German translations of popular scientific texts. In three of the four phenomena investigated, clear evidence for source-language shining-through was found. Although translators obviously do not take over source language expressions uncritically, but make adaptations (e.g. they sometimes use sentence-internal connectives instead of sentence initial but, or translate epistemic modal markers of low modal strength

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Table 7. Shining-through and contact-induced changes in translated and non-translated German popular scientific texts

<table>
<thead>
<tr>
<th>Shining-through effects in translations</th>
<th>Impact on German originals</th>
<th>Conclusions German original texts become</th>
<th>Epistemic modal markers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Pronoun</td>
<td>Sentence-initial</td>
<td>Sentence-initial</td>
<td>German original texts become more personal, but change is not due to translations.</td>
</tr>
<tr>
<td>we ~ wir</td>
<td>and ~ und</td>
<td>but ~ aber ~ doch</td>
<td></td>
</tr>
<tr>
<td>YES</td>
<td>UNCLEAR</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>NO</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>

with markers of high modal strength), they still make a number of translation choices that lead to features in the translated text which make it different from target language texts produced monolingually. We can therefore conclude that German popular scientific texts translated from English are indeed more interactional than German original texts in this genre.

As far as our other main hypothesis is concerned, namely that German original texts in the genre of popular science will also increasingly adopt Anglophone conventions, we find, however, that the evidence to support this view is not very strong. Only the case-study on the sentence-initial concessive conjunctions (But, Aber, Doch) furnishes results that clearly support the hypothesis. In this case, the English-German translations appear indeed to pave the way for an overall change in conventions in the German genre of popular scientific writing, leading to a higher degree of interaction in the original German texts as well. As far as epistemic modal markers are concerned, on the other hand, we see absolutely no evidence that the German original texts adopt a more interpersonal style.

Results with respect to the use of sentence-initial and ~ und and the personal pronouns we ~ wir are somewhat less clear. The German originals do in fact become more interactional, increasingly using both sentence-initial und and the personal pronoun wir. However, the functions attributed to these two linguistic items differ remarkably from the functions of English and and we. English influence on German text conventions via English-German translations is therefore not likely. A more indirect type of Anglophone influence might be a more plausible explanation. Over the last decades, a general trend in English (both British and American) texts towards increased informality
and colloquiality, as well as interaction can be observed (Mair 2006). This trend can be linked to general cultural processes, such as the democratization of knowledge and a growing taste for informality in interaction. It seems reasonable to assume that the same overall societal processes are at work in German society as in the UK and the USA. These cultural-societal trends may be influenced by the prestige of Anglophone (particularly US-) culture, so that the trends we see in the German original texts in our corpus might be said to be caused by the presence of the prestigious Anglophone model in a rather indirect way. And it may well be that the effect on German originals shown in our research are simply due to the exposure of German writers to texts written in English, which may be even more important than translated literature from English into German, i.e. it may be English originals, not their German translations which are influencing German writers’ language. This may also explain why in some cases the phenomena investigated occur more frequently in the German originals than in the English originals: the German writers may be over-adapting, as it were, to Anglophone norms.

As far as the impact of English-German translations on changes in German genre conventions is concerned, we can only conclude that its role is rather marginal, as it can only be clearly established for one out of four features investigated.

References


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