RAF, *DNA* and *CAPTCHA*: English acronyms in German and Swedish translation

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This study investigates acronyms in English originals and their translations into German and Swedish, comparing forms, functions and distributions across the languages. The material was collected from *the Linnaeus English-German-Swedish corpus* (*LEGS*) consisting of original and translated popular non-fiction. From a structural point of view, acronyms most often occur as independent noun heads (*When IBM introduced* […]) or as premodifiers in a noun phrase (*PGP encryption*). Due to morphosyntactic differences, English acronym premodifiers often merge into hyphenated compounds in German translations (*UN-Klimakonvention*), but less frequently so in Swedish. The study also discusses explicitation practices when introducing source-culture specific acronyms in the translations. German translators explain and elaborate more than Swedish translators and they do so in the German language. Swedish translators, however, use English to a greater extent, suggesting that Swedish readers are expected to have better knowledge of English than German readers.

Keywords: acronyms, abbreviations, translation, explanation practices, explicitation, LEGS, compounds, premodifiers, English/German/Swedish

1. Introduction

Acronyms are prevalent and ever more frequent in English (Xu *et al*., 2007; Leech *et al*., 2009: 212), German (Kobler-Trill, 1994) and Swedish (Sigurd, 1979: 7; Nübling and Duke, 2007: 231), a development mirroring the increasing societal prominence of science/technology and politics/business outside specialised domains (Kobler-Trill, 1994: 200). For translators, however, acronyms may pose a challenge, especially when they are strongly tied to the source-language culture (Ingo, 2007: 121–122). In spite of this, very little research has been carried out on acronyms from a translation perspective.

Examples (1)–(3) illustrate some of the variation in the translation strategies for acronyms in the data from the Linnaeus University English-German-Swedish corpus (LEGS). In the text where (1) occurs, both the English original and the Swedish translation consistently use the acronym, while the German translation sometimes uses the acronym and sometimes, as in (1b), opts for the spelt-out, explicit form.

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(1) a. The *RAF* began flying over Germany, […] (LEGS; EN original)
b. *Die Royal Air Force* nahm Flüge über Deutschland auf […] (GE translation)
"The Royal Air Force took up flights over Germany"
c. *RAF* började fälla flygblad […] (SW translation)
"RAF began dropping leaflets"

Acronyms may also be well known in both the source and the target cultures, and such examples are unlikely to cause problems for translators. Some internationally established acronyms may even be more recognisable than their spelt-out forms (Nuopponen and Pilke, 2016 [2010]: 63), as *DNA* in (2).

(2) a. *DNA* tests (EN original)
b. *DNA*-Tests (GE translation)
c. *DNA*-tester (SW translation)

Other instances, however, are more complex and less straight-forward. In (3), the English original itself includes a spelt-out variant of the acronym in brackets. The German translation in (3b) is highly explicit, keeping the English explanation and also adding a German version. The Swedish translation in (3c) instead resorts to a rephrased Swedish version of the original explanation.

(3) a. Complete the CAPTCHA (Completely Automated Public Turing test to tell Computers and Humans Apart), […] (EN original)
b. Dann muss ich nur noch den CAPTCHA durchlaufen (den „Completely Automated Public Turing test to tell Computers and Humans Apart", also den „vollautomatischen öffentlichen Turingtest zur Unterscheidung von Computern und Menschen") […] (GE translation)
"i.e. the "completely-automated public Turing-test for distinction between humans and computers"'
c. Fyll i captcha-rutan (ett robotfilter för att skilja människor från datorer), […] (SW translation)
"fill in the captcha-box (a robot-filter to distinguish humans from computers)"

As illustrated in (1)–(3) above, English acronyms occur in different syntactic contexts and as such may function as noun phrase heads and as premodifiers.[1] In German and Swedish, acronyms may also be used independently as heads (as in (1c)) or – a typical solution – integrated into compound nouns as in (2b) and (2c). Another important feature of acronyms concerns their reference, involving different semantic categories. They may thus refer to, for instance, organisations, as in (1), or denote medical or technical terms, as in (2) and (3).

In view of the observed grammatical and semantic flexibility of acronyms in originals and translations and the different options facing translators, this paper investigates both acronym use in English original non-fiction and preferences concerning the translation strategies in German and Swedish target texts. More specifically, it will address the following questions:

- What semantic categories and syntactic functions of acronyms occur in English popular non-fiction and how do these relate to German and Swedish translation correspondences?

[1] Needless to say, the status of 'compounds' or noun sequences in English has been the subject of much discussion (e.g., Giegerich, 2004). In this paper we treat a structure such as *DNA tests* as consisting of a head noun and a noun premodifier, i.e. a noun sequence.

- How are English acronyms introduced and explained in German and Swedish translations?

- What effect, if any, do semantic categories and type frequency differences have on the choice of translation correspondences?

In the following, the term 'acronym' covers both short forms read out as words, or 'true acronyms' (e.g., *NATO* from *North Atlantic Treaty Organization*), and 'initialisms', which are read out letter by letter (e.g., *UK* from the *United Kingdom*) (see Gale, 2007).[2]

The paper is structured as follows. Section 2 gives a brief overview of previous translation-oriented observations on acronyms. This is followed in section 3 by a description of the trilingual corpus used, and the data retrieval methods. Section 4 presents the results, regarding both source-text and target-text usage.

2. Background

The question how acronyms can or should be translated is rarely addressed in translation studies. Ingo (2007: 121–122), however, acknowledges that acronyms can be challenging for translators for a number of reasons. First of all, the translator must pay attention to target-language conventions as when the target-language acronym (*UN* for *United Nations*) is different from the source-language acronym (cf. *FN* for *Förenta Nationerna* in Swedish) or the source-language acronym (Ge. *BRD*) lacks a corresponding acronym in the target language (Sw. *Västtyskland* [West Germany]). In addition, Betancourt Ynfiesta, Treto Suárez and Fernández Peraza (2015: 95) point out that the existence of more than one referent for an acronym may cause difficulties. An example is *AA*, for which the *Oxford English Dictionary* lists five different meanings: *administrative assistant*, *Alcoholics Anonymous*, *anti-aircraft*, *Associate of Arts* and *Automobile Association*.[3] This acronym underlines Ingo's (2007: 121) point that "what you gain in brevity and space, you lose in clarity" [our translation]. Ingo (2007: 123) makes an additional remark which clearly suggests the need for more in-depth studies. When encountering culture-specific acronyms, such as acronyms referring to political parties, the translator has to make additions in the translation to make it understandable for the target reader. However, Ingo does not elaborate further on this.

From a syntactic-morphological point of view, prior observations on contrastive differences are again limited in nature. For instance, Magnusson (1987: 91) suggests that *US-* in German compounds (*der US-Botschafter* ['the US-ambassador']), common in German journalese, should preferably be translated into a Swedish adjective (*den amerikanska ambassadören* ['the American ambassador']). A more extensive corpus study by Ström Herold and Levin (2019: 842) indicates that acronyms are frequently used as premodifiers in English (*WTO ruling*) and are also common as left-hand elements in German compounds (cf. also Fleischer and Barz, 2012: 283), but less so in Swedish. Their frequent use as premodifiers in English can be attributed to their syntactic flexibility. In contrast to the spelt-out form (**Organization for Security and Cooperation in Europe monitors*), the one-word format readily allows premodification (*OSCE monitors*) (cf. Fleischer 1997: 189).

[2] Apart from the typical true acronyms and initialisms, there are some rare hybrid forms which are partly read as words and partly as individual letters, such as *PNAC* (/ˈpɪːnæk/; the *Project for a New American Century*).
[3] A further example is the acronym *CAR*, for which Ehrmann *et al.* (2013: 238) identify ten different referents in their news corpus.

The observations presented above indicate the fragmentary state of current knowledge. Nevertheless, they will serve as useful starting points for our corpus study on English acronyms in translation. Section 3 describes the material and methods used.

3. Material and method

The primary data, comprising 1,699 acronyms from English source texts and their German and Swedish translation correspondences, was collected from the LEGS corpus (Ström Herold and Levin, 2018; 2019), a trilingual translation corpus consisting of popular non-fiction books written in one of the languages and translated into the other two. Genres covered include popular science, biography and history books. This study is based on ten English original texts sampled from the beginning of each book. Each author and translator is represented only once each to avoid any translator or author biases. The English originals were all published in the 2010s and comprise 543,000 words. A main advantage of LEGS is that it allows the comparison of two target languages, which means that target-language-specific preferences can be studied.

The choice of material was guided by both availability and suitability for the given research questions. The most technical genres such as hard-core natural sciences, where one would also expect a high acronym density (cf. Mair, 2006: 62), are generally not translated from English to other languages. The more popularised LEGS genres are those being widely translated today and, as seen in the present study, acronyms are a quite prevalent here as well. A key difference between hard-core and popularised genres is that the latter addresses a broader audience, which means that translators need to consider factors relating to the target readers' degree of knowledge. Thus, the translation strategies for acronyms will most likely reflect not only structural preferences between the target languages but also pragmatically motivated differences relating to target-culture adaptations.

The acronyms were retrieved from the corpus using a script written in Python. When operationalising the retrieval algorithm, we took care to be inclusive of rare occurrences with lower-case letters such as *fMRI* (*functional Magnetic Resonance Imaging*) and with numbers such as *BRCA1* (*Breast Cancer 1*) by defining acronyms as items with at least two consecutive capital letters, which may contain one or more full stops (e.g., *U.S.A.*). The forms with and without full stops were treated as one type, e.g. *USA* and *U.S.A.* We did not include abbreviations such as *APR* (*April*) and *DR* (*Doctor*) on the grounds that they are shortened forms of words and not acronyms in the true sense. Altogether 212 unique acronyms were identified in the primary data.

To examine possible effects of acronym frequencies on explanation practices in translations, we obtained the occurrences of these acronyms in contemporary English, using their relative frequencies in Google Books (UK).[4] A Livecode script was written to run an API call to the Google Ngram Viewer for each acronym in the date range 1990 to 2000. The mean frequency of each acronym during this ten-year period was calculated in order to establish how common the acronym was in written British English. The frequencies were divided into three frequency bands that were used to determine the extent to which the translators' likelihood of explaining acronyms could be accounted for by the frequencies of the acronyms they encountered.

[4] Although the composition of Google Books is sometimes criticised for bias in favour of non-fiction writing (see Pechenick *et al.*, 2015), this does not complicate the comparison in the present case as the LEGS corpus itself comprises exclusively non-fiction texts.

4. Results

Section 4.1 begins with an overview of the distributions of semantic categories identified in the English originals. 4.2 discusses the different syntactic functions in originals, 4.3 focuses on the distributions of translation correspondences in translations, and, finally, 4.4 analyses explanations and language choice in translations.

4.1 Semantic categories and their distributions in English originals

In the material, we identified five major semantic categories from the 1,699 English acronyms (31/10,000 words): 1) measure, 2) medical, 3) organisation, 4) place, 5) technical, and 6) other. Table 1 provides an overview of these categories with examples from LEGS.

Table 1. Semantic acronym categories identified in LEGS.

Category	Examples
measure	*BCE*; *IQ*
medical	*ADHD*; *DNA*
organisation	*ANZAC*; *IBM*
place	*UK*; *US*
technical	*GPS*; *WMD*
other	*CEO*; *OMFG*

The 'measure' category comprises types that potentially occur as units with numbers (e.g., *c. 1700 BCE*). 'Medical' and 'technical' acronyms refer to terminology within these two specialised domains, such as the names of diseases or technical devices. The 'place' category comprises few types, some of which are highly frequent, that refer to toponyms as exemplified in the table. The 'organisation' category includes the names of companies and various national and international organisations. Culture-specific acronyms are mostly found in the final category and, as will become evident below, these pose the main challenge for translators because they often lead to different kinds of adaptions in translations, such as using a cultural equivalent, a functional equivalent (i.e., a generalising paraphrase) or using notes or glosses (see Newmark, 1988: 82–83; 92). The miscellaneous category 'other' comprises mainly business terms and internet slang.

Figure 1 shows the token frequencies of the semantic categories exemplified in Table 1. As also found by Leech *et al.* (2009: 212), the largest category of acronyms involves names of organisations. Place names, which were disregarded by Leech *et al.*, form the second largest group in terms of tokens, while the remaining categories are rarer.

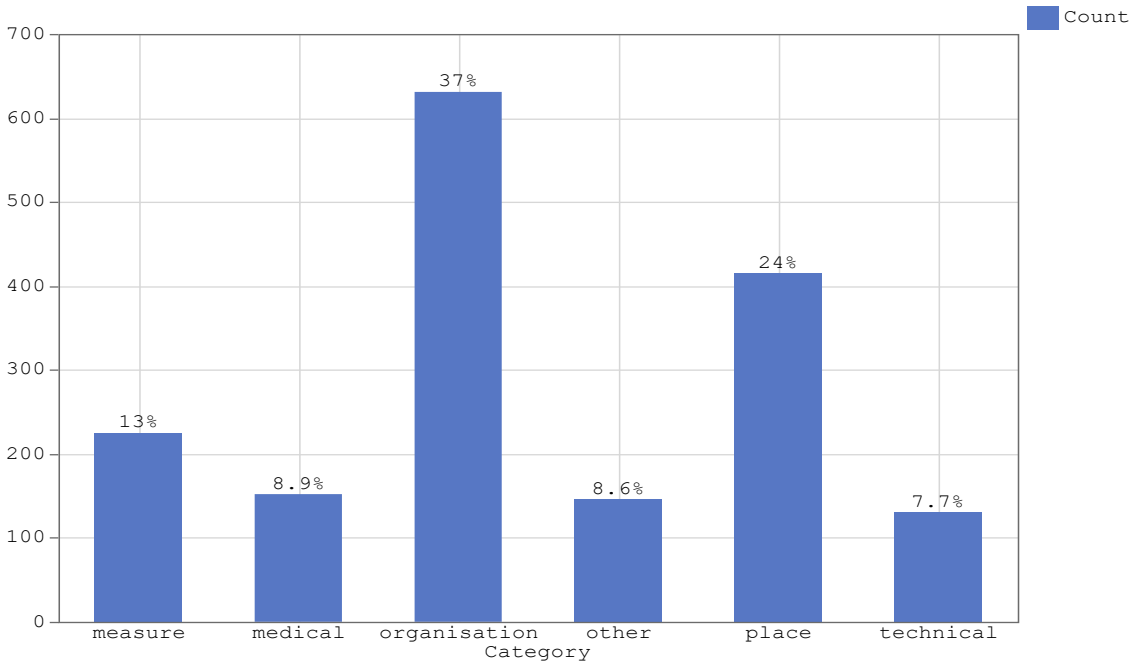

Figure 1. Distribution of semantic acronym categories in LEGS.

The individual acronym type distributions produce a partly different picture, as illustrated in Figure 2 below. To begin with, organisations not only represent the largest number of tokens, but also comprise by far the largest number of types with 107 unique types out of the 212 in the whole dataset. The technical (31 types) and medical (n=19) categories are also reasonably numerous, while place names (n=4)[5] and measures (n=5)[6] comprise very few types but are rather frequent in token counts.

[5] The four types are *UK*, *US*, *USA* and *(Washington) DC*.
[6] The five types are *BCE*, *CE*, *GDP*, *IQ* and *BP* (Before Present).

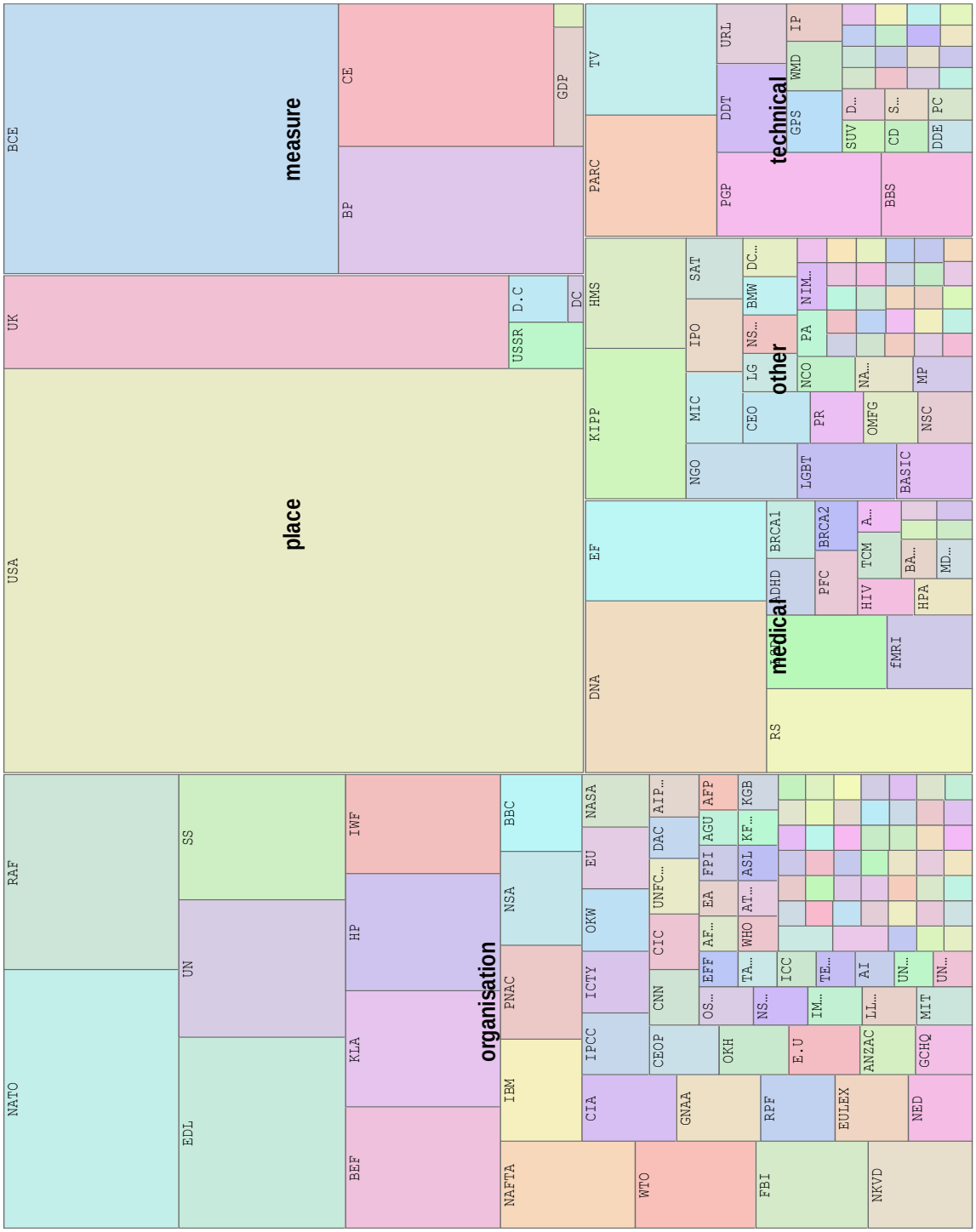

Figure 2. Relative frequencies of individual acronym types by semantic category in LEGS.

The LEGS data thus show that there are considerable frequency differences across semantic categories and acronym types. The two largest semantic categories, organisations and places, differ greatly in their type distributions, and, as will be seen in the next section, also in their syntactic functions.

4.2 Syntactic functions of acronyms in English originals

In the English originals, acronyms fulfil two major and three minor syntactic functions, the two most frequent being noun phrase heads and premodifiers, and the three rarer being

postmodifiers, genitives and compounds. The two major functions, noun-phrase heads and premodifiers, are exemplified in (4) and (5) below:

(4) the military-industrial complex (*MIC*) (EN original)

(5) *EDL* supporters (EN original)

The three minor functions are rare or restricted in use. What we have termed 'postmodifiers' can be seen in (6). Most of these involve two specific time-denoting acronyms: *CE* (*Common Era*) and *BCE* (*Before Common Era*). Even rarer are genitives[7] (as in 7) and compounds (as in 8), in which the acronyms typically are hyphenated with *ed*-participles.

(6) the third century *CE* (EN original)

(7) *CIC's* vision (EN original)

(8) The *U.K.*-based Tax Justice Network (EN original)

Figure 3 presents the syntactic functions of acronyms in correlation with semantic categories. Noun-phrase head is the most common function in the corpus, but, as seen in the mosaic plot below, there are differences between the semantic categories.

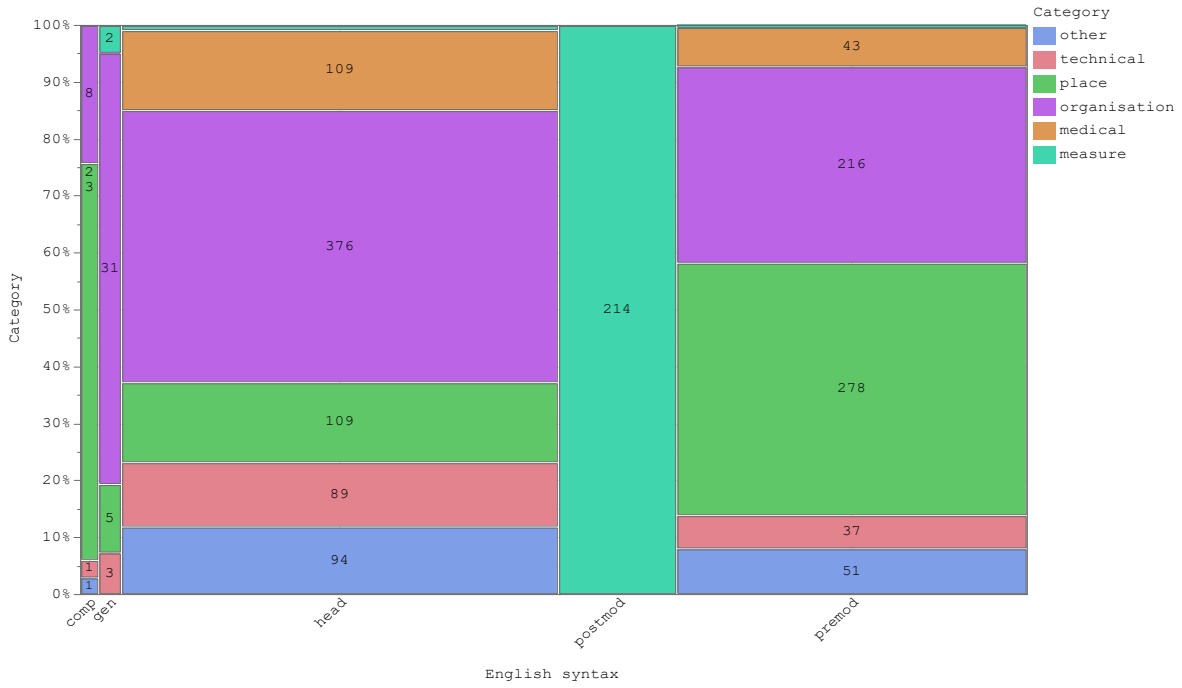

Figure 3. Syntactic functions and semantic categories of acronyms in English originals in LEGS.

Organisations are more strongly associated with heads (e.g., *When IBM introduced…*) than the place category, which in turn is more strongly associated with the premodifying function. However, the predominance of organisations among heads is much stronger than the predominance of place names among premodifiers. The differences between heads and premodifiers are partly explained by the highly frequent *US* and *UK*, which are typically used as premodifiers (e.g., *U.S. billionaires*), and partly by organisations also being rather frequent as premodifiers (e.g., *FBI agents*; *the former ICTY prosecutor*). From the frequent use of acronyms as premodifiers, it is evident that English writers readily exploit the syntactic

[7] As noted by one reviewer, both the category premodifier and genitive are in pre-head position, but due to their different forms and functions we keep them separated.

flexibility of the condensed acronyms (Fleischer, 1997: 189). Finally, as indicated above, the category of postmodifiers only comprises acronyms of measurement (e.g., *in the 50s CE*).

So far, the results have focused mainly on the LEGS source texts. In the following, the German and Swedish structural correspondences will be correlated with the originals. The findings shed light both on the translation process and language-specific tendencies.

4.3 German and Swedish correspondence types

The most notable finding is that about two-thirds of the English acronyms are kept in the German and Swedish translations.[8] The remaining third contains correspondences that lack an acronym altogether, instead being replaced by a spelt-out version or semantic equivalents, as will be described below.

In the German and Swedish translations, we identified nine different correspondence types. Most of these involve retaining an acronym in some form, while others rephrase the acronym in some way. First of all, (9) below exemplifies the use of acronyms as noun-phrase heads, a syntactic function that is quite frequent in translations (as also in the source language). Example (10) illustrates acronyms occurring as parts of German and Swedish hyphenated compounds (cf. Ström Herold and Levin, 2019). Similarly, Izwaini (2005: 85–86) proposes that the complex nature of English noun phrases with premodifying acronyms lead to them often being directly translated into Swedish (e.g., *OLE DB consumer* > *OLE DB-konsument*). Other categories are less frequent, such as (11) which illustrates the rare usage of acronyms in the genitive in translations. Target-language postmodifiers, given in (12), are also rare and only used to render English postmodifiers. A small number of acronyms are borrowed as premodifiers as parts of names as in (13).

Head

(9) a. According to the *FBI* (EN original)
b. Laut *FBI* (GE translation)
c. Enligt *FBI* (SW translation)

Compound

(10) a. the *fMRI* scanner (EN original)
b. einem *fMRT*-Gerät (GE translation)
c. en *fMRI*-skanner (SW translation)

Genitive

(11) a. he *NKVD's* interrogation system (EN original)
b. das Verhörsystem *des* [gen.] *NKWD* (GE translation)
c. *NKVD:s* [gen.] förhörsväsen (SW translation)

Postmodifier

(12) a. about 2500 *BCE* (EN original)
b. Omkring 2500 *f.Kr.* (SW translation)

Premodifier

(13) a. the battleship *HMS* Royal Oak (EN original)
b. das Schlachtschiff „*HMS* Royal Oak" (GE translation)

Apart from these five types that occur in both originals and translation, we identified four additional correspondence types that are exclusive to the translations: 1) semantic equivalents,

[8] Of the 1,699 English instances, 1,127 (66%) are rendered as acronyms in German and 1,147 (68%) in Swedish.

2) spell-outs, 3) prepositional phrases, and 4) omissions. The instances classified as semantic equivalents involve cases where translators have used conventionalised German and Swedish equivalents which are not acronyms, a strategy also noted by Ingo (2007: 121). This is exemplified in (14) by the English *NCOs* (short for *non-commissioned officers*) and its established Swedish non-acronym correspondent *underofficerare*. Spell-out refers to cases where the translations use the full underlying form of the acronym. This is illustrated in (15) where the German correspondence *Bruttosozialprodukt*[9] is the equivalent of the English acronym. The key difference between semantic equivalent and spell-out is that spell-outs consist of the full form of an acronym, while semantic equivalents are generalised, typically more culture-independent, term correspondents not related to the constituent parts of an acronym.

Semantic equivalent

(14) a. Recruits were constantly insulted and beaten by their *NCOs* (EN original)
b. *Underofficerarna* förolämpade och misshandlade ständigt rekryterna (SW transl.)
"under-officers"

Spell-out

(15) a. Nauru's entire *GDP* (EN original)
b. das *Bruttosozialprodukt* Naurus (GE translation)
"Nauru's Gross Domestic Product"

The two remaining translation correspondence types not attested in the source texts are paraphrases with prepositional phrases and omissions. A translation into a postmodifying prepositional phrase is given in (16). In omissions, as in (17), all information regarding the acronym is lost in the translation.

Prepositional phrase (PP)

(16) a. under strict *IAEA* supervision (EN original)
b. under strikt övervakning av *IAEA* (SW translation)
"supervision by IAEA"

Omission

(17) a. Similar shell middens exist all over the world from the *UK* to Australia, […]. (EN original)
b. Ähnliche Schalenhaufen gibt es überall auf der Welt Ø, […]. (GE translation)
"all over the world Ø"

The correspondence types show both differences and similarities in their distributions across the German and Swedish target texts. As illustrated in the radar plot in Figure 4 below, the main difference relates to compounds and to a lesser extent noun-phrase heads, semantic equivalents and spell-outs.[10]

[9] According to duden.de there is a German acronym, *BSP*, for this compound noun, but searches in the the DWDS corpus (dwds.de) indicate that it is not in regular use.

[10] Given the shared inventory of available structures in both target languages, we treat the adopted translation correspondence types as a classification problem and use the Kappa coefficient to assess symmetry; 0 indicates complete lack of agreement and 1 indicates complete agreement. The overall Kappa coefficient for agreement across the whole table shows moderate symmetry (K=0.48, se=0.013). Calculating Kappa for each target-language structure, we get the order from highest to lowest as postmodifier (K=0.74, se=0.05), head (K=0.40, se=0.02), compound (K=0.320, se=0.106), genitive (K=0.27, se=0.013), and premodifier (K=0.21, se=0.022).

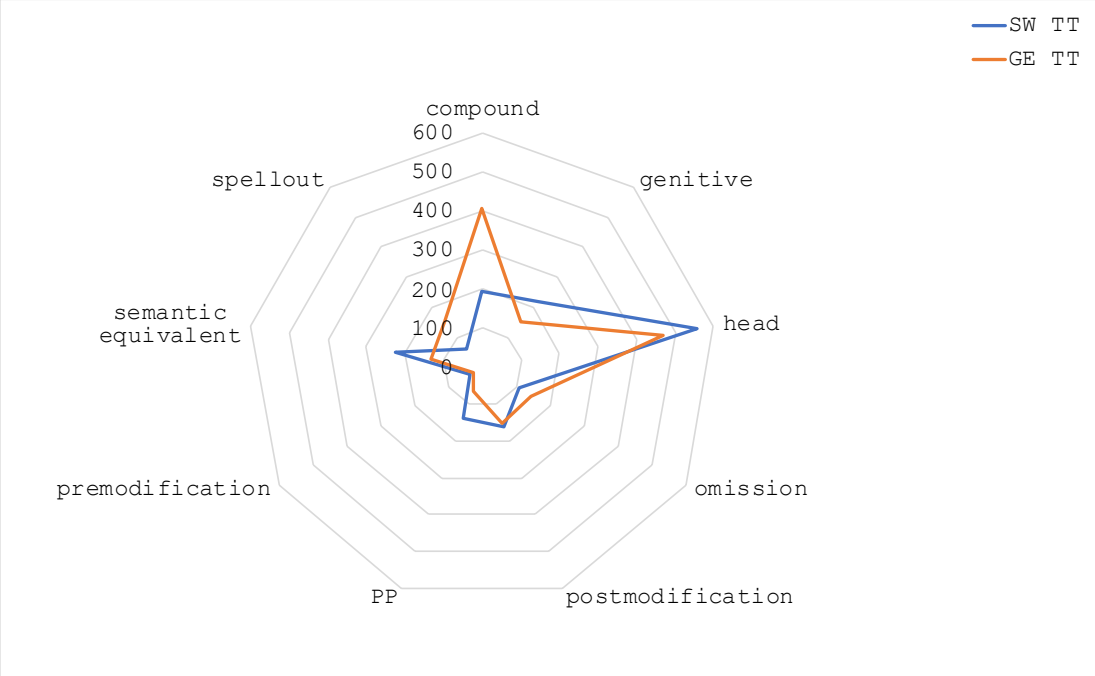

Figure 4. Distributions of correspondence types in German and Swedish translations in LEGS.

The stronger German preference for compounds was also found in Carlsson's investigation (2004: 75, 138) of German and Swedish newspaper language, and also Ström Herold and Levin's (2019) study on English proper noun premodifiers in German and Swedish translation. In contrast to the German compound affinity, Swedish more heavily relies on noun-phrase heads and semantic equivalents. In search for explanations for the target-language differences seen above, we divided all instances according to the semantic categories presented in Table 1 (measure, medical, organisation, place, technical and other) and the translation correspondences. The results are presented in Figure 5.

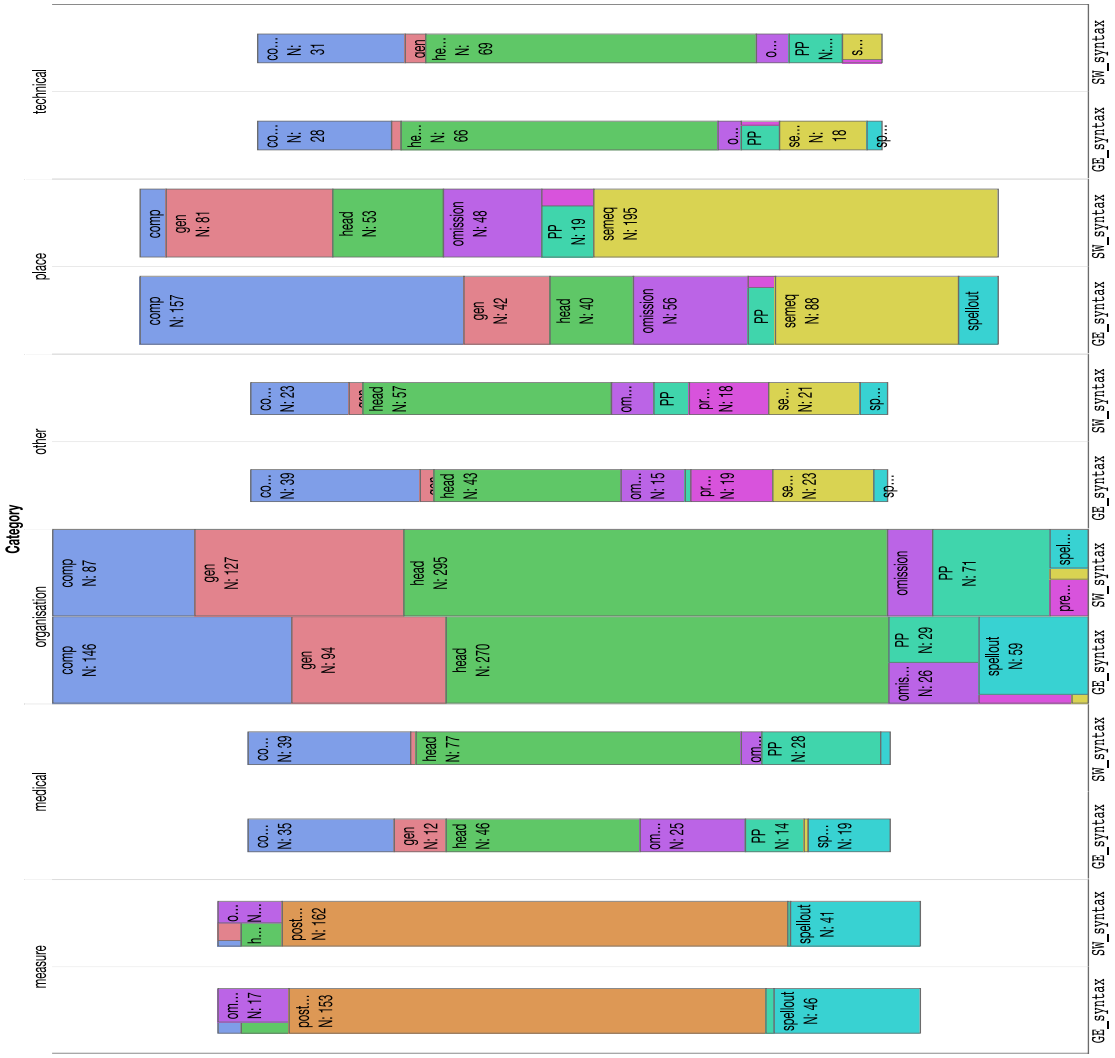

Figure 5. Distributions of correspondence types in German and Swedish translations by semantic category in LEGS.

The figure shows that the main differences between German and Swedish relate to organisations and places. German compounds are particularly frequent with acronyms referring to places and organisations, one strong factor being the frequent compounds with *US* (e.g., *der US-Comedian*; *US-Politiker*). Organisation name compounds also occur in German (e.g., *NATO bombing* > *NATO-Bombardement* (GE); but cf. *Natos bombkampanj* (SW) 'NATO's bombing campaign'), but to a lesser extent. The Swedish predilection for semantic equivalents is partly the reverse of the German *US*- compounds, as many of these involve the adjective *amerikansk* for English *US* (e.g., *den amerikanska komikern* 'the American comedian'), the translation option suggested by Magnusson (1987: 91). The slightly greater preference for spell-outs in German translations may be a reflection of a general tendency in our material for German translators to use more explicit correspondences than Swedish translators. This was exemplified above in (1) where the English acronym *RAF* was spelt out by the German translator while the Swedish translator opted for the acronym only. In other cases, the German translations contain translated spell-outs while Swedish retains the English acronym, as in the medical example *the PFC* > *der präfrontale Kortex* (GE); *PFC* (SW).

Thus far the focus has been structural preferences in originals and target texts. The findings regarding correspondence types, in particular spell-outs, have also touched upon the degree of explicitness in translation. This theme will be explored further in section 4.4.

4.4 Acronyms and explicitation

As discussed above, acronyms may be highly culture-specific (Ingo, 2007: 123), and consequently readers of translations cannot always be expected to be familiar with them. In such cases, translators have a range of options at their disposal, many of which are more explicit than the original expressions. Section 4.4.1 discusses how and to what extent acronyms are introduced and explained in translations, and 4.4.2 focuses on language choice in these explicitations.

4.4.1 *Introducing and explaining acronyms*

To facilitate comprehension, translators may opt to insert explanations with different degrees of explicitness (see, e.g., Blum-Kulka, 2004 [1986]). In (18), the German translator adds a contextual clue, the hypernymic descriptor *Studierfähigkeitstests*, putting the acronym *SAT*[11] in brackets. This is an efficient and unobtrusive way for a translator to enhance readability.

(18) a. […] their children's *SAT* verbal and quantitative scores, […]. (EN original)
b. […] die Punktwerte ihrer Kinder im verbalen und mathematischen Teil *des Studierfähigkeitstests (SAT)*. (GE translation)
"study-aptitude-test.GEN"

In other cases, a contextual clue is already given in the original which is then transferred to the translation. This is seen in (19), where *U.S.* gives rise to *amerikanischen* in the German translation.

(19) a. In 2007, *the three major U.S. networks – CBS, NBC,* and *ABC* – ran 147 stories on climate change. (EN original)
b. 2007 brachten *die drei großen amerikanischen Fernsehgesellschaften – CBS, NBC* und *ABC* – 147 Beiträge über den Klimawandel. (GE translation)
"the three big American TV-companies"

Although the cultural distances between the Anglophone world and Germany and Sweden may be surmised to be relatively small, the LEGS data reveal significant differences in explanation practices in German and Swedish translations. In general, German translators explain acronyms more often than Swedish ones and they do so predominantly in German, while, in comparison, Swedish translators use more English in their explanations. These tendencies are exemplified in (20):

(20) a. But another aspect […] has been […] surrendered to *the United States National Security Agency (NSA)* […]. (EN original)
b. Darüber hinaus wurde […] ein weiterer Aspekt […] an *die US-amerikanische Nationale Sicherheitsagentur (NSA)* abgetreten, […]. (GE translation)
"the American national security-agency (NSA)"
c. Men ännu en aspekt […] har […] överlämnats till *USA:s National Security Agency (NSA)* […]. (SW translation)

If we consider instances where there is no explanation provided in the English original, such as a descriptor introducing the acronym as in (19), we find 209 added explanations in the German translations as opposed to only 95 in the Swedish. This difference is highly

[11] Acronym for *Scholastic Aptitude Test*.

significant.[12] The larger proportion of explicitation (Blum-Kulka, 2004 [1986]) in German translation is due to German readers being less likely to be familiar with the English language and Anglophone culture than Swedish readers are.[13] The overall inclination for German translators to avoid English more than Swedish ones might also be related to the differences in status of the languages. The status of German is higher than Swedish, as reflected in more texts being translated from the former language (cf. UNESCO's *Index Translationum*), and thus German translators seem to "dare" to introduce more changes in translations than Swedish ones do (Levin and Ström Herold, this volume).

The following examples illustrate the strategy of adding target-language explanations, sometimes in both translations and sometimes in only one. The target-language explanation can be a more or less direct translation of the original English full form, as in (21) where the English acronym *RSPB* (for *The Royal Society for the Protection of Birds*) is explained using the respective target languages, or a more descriptive paraphrase, as in the added German apposition in (22b). In (22c), the Swedish translator transfers the source-text acronym with no additional explanation.

(21) a. […] one which had been developed by the *RSPB* for monitoring birds' nests. (EN original)
b. […] ein von der *RSPB (Königliche Gesellschaft für Vogelschutz)* entwickeltes System zur Beobachtung von Vogelnestern. (GE translation)
"royal society for bird-protection"
c. […] ett som hade utvecklats av *RSPB (Kungliga fågelskyddssällskapet)* för att övervaka fågelbon. (SW translation)
"royal bird-protection-society"

(22) a. In 1990, the *NSPCC* estimated there were 7,000 known images of child pornography in circulation. (EN original)
b. 1990 schätzte die *NSPCC, ein britischer Kinderschutzverein*, die Zahl der in Umlauf befindlichen Fotos mit Kinderpornografie auf 7.000. (GE translation)
"a British child-protection-agency"
c. År 1990 uppskattade *NSPCC* att det fanns 7000 kända barnpornografiska bilder i omlopp. (SW translation)

The correlations between the semantic categories of the acronyms and the likelihood of translators furnishing them with explanations in the target texts are given in Table 2.

Table 2. German and Swedish explanation likelihood by semantic category (* denotes a statistically significant difference between German and Swedish TTs for that semantic category).

	German explanation				**Swedish explanation**			
	no		**yes**		**no**		**yes**	
Semantic category	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**
Measure	80	180	20	45	80.89	182	19.11	43
Medical*	69.74	106	30.26	46	89.47	136	10.53	16
Organisation*	78.13	493	21.87	138	85.58	540	14.42	91
Other	66.44	97	33.56	49	72.6	106	27.4	40
Place*	93.73	389	6.27	26	100	415	0	0
Technical	90	117	10	13	90.77	118	9.23	12

[12] χ^2=46.4, df=1, p=***

[13] See, e.g., the *First European Survey on Language Competences: Final Report* (2012) where Swedish pupils' English skills were the highest in all the countries surveyed.

German and Swedish translations are quite similar when it comes to explaining measure acronyms, technical acronyms and acronyms of the class 'other', but there is a significant preference for explanations in German translations with medical acronyms, organisation acronyms and place acronyms.[14] These trends will be discussed and exemplified in the next section.

4.4.2 *Language choice in explicitations*

Based on our data, we further classified the explanations into four different subtypes (apart from no explanation) based on the language(s) the explanation is written in: i) English, ii) target language, iii) target language with a contextual clue, and, finally, iv) mixed languages, meaning that both English and the target language are used in the explanation part. These different explanation strategies will be discussed in more detail below, but first a quantitative overview in Table 3:

Table 3. Language choice in explanations by semantic category (* denotes a statistically significant difference between German and Swedish TTs for that semantic category).[15]

	Semantic category					
German TT	**measure**	**medical***	**organisation***	**other**	**place***	**technical**
English	0	2	49	2	0	1
mixed languages	1	1	4	9	0	2
no explanation	180	106	493	97	389	117
target language	44	27	73	29	20	4
target language + contextual cue	0	16	12	9	6	6
Swedish TT						
English	1	4	43	7	0	1
mixed languages	0	1	8	5	0	1
no explanation	182	136	540	106	415	118
target language	41	8	28	19	0	4
target language + contextual cue	1	3	12	9	0	6

Looking at the different ways of explaining the acronyms, we see that the strategies are largely similar in German and Swedish, with the use of English explanations and mixed languages being substantially the same. In both the German and Swedish translations explanations in English are predominantly used for organisation acronyms. Notably, German translations contain nearly three times more target-language explanations of organisation acronyms than Swedish translations. Looking closer, however, it becomes apparent that this observation is

[14] The independence of the choice of explication type was tested for each semantic category using Pearson's chi-squared test and the effect size using phi; in the present study we consider each instance of translation as an independent occurrence. The significance levels were: measure (χ^2=0.01, df=1, p=ns), medical (χ^2=14.9, df=1, p=***, phi=0.23), organisation (χ^2=11.29, df=1, p=***, phi=0.09), other (χ^2=1.03, df=1, p=ns), place (Fisher's exact p=***, phi=0.17), and technical (χ^2=0, df=1, p=ns).

[15] The independence of the choice of explication type was tested for each semantic category using Pearson's chi-squared test except for measure and place, for which Fisher's exact test was used due to cell counts of zero; the effect size is expressed as Cramér's V. The significance levels were: measure (Fisher's p=ns), medical (χ^2=23.6 df=4, p=***, V=0.27), organisation (χ^2=23.9, df=4, p=***, V=0.13), other (χ^2=6.4, df=4, p=ns), place (Fisher's exact p=***, V=0.17), and technical (χ^2=0.3, df=4, p=ns).

somewhat misleading, because 22 out of the 73 occurrences are translations of the same acronym, *BEF* (for *British Expeditionary Force*), exemplified in (23).

(23) a. […] he wasted no time in turning his attention back to the war and the advance of the *BEF* into Belgium. (EN original)
b. […] wandte er sich, ohne Zeit zu verlieren, wieder dem Krieg und dem Vormarsch *des Britischen Expeditionskorps* nach Belgien zu. (GE translation)
"the British expeditionary-corps"

Similarly, 13 out of 26 occurrences of the medical acronym *EF* (*Executive Function*) are spelt-out in German:

(24) a. Children need *EF* to resist temptations beyond marshmallows […]. (EN original)
b. Kinder benötigen *die Exekutiven Funktionen*, um auch anderen Versuchungen als Marshmallows zu widerstehen […]. (GE translation)
"the executive functions"

These cases often involve examples where the English original includes a spell-out, i.e. a full form of the acronym which is directly transferred into both translations without further explanation:

(25) a. *The Internet Watch Foundation (IWF)* is a UK-based organization […]. (EN original)
b. *Die Internet Watch Foundation (IWF)* ist eine Organisation mit Sitz in Großbritannien […]. (GE translation)
c. *Internet Watch Foundation (IWF)* är en organisation med bas i Storbritannien […]. (SW translation)

However, we also find cases where the translator adds a spelt-out English version of the acronym not present in the original. Many of these cases are culture-specific, as in the following example where the addition clarifies the meaning of the letters. It should be noted that the strategy presupposes some knowledge of English from the Swedish readers.

(26) a. […] supported by a wide range of religious groups but opposed by the *ACLU*. (EN original)
b. […] som stöddes av ett brett spektrum av religiösa grupper men motarbetades av *American Civil Liberties Union (ACLU)*. (SW translation)

Mixed-language explanations are much rarer than English explanations in both the German and Swedish translations, the German in (3b) above being one of the exceptions. Another highly explicit way of rendering the acronym is given in (27) below, where the Swedish translation stacks three different versions of the organisation name: in Swedish, spelt out in English and as an English acronym.

(27) a. Meanwhile, *the British Expeditionary Force (BEF)* was preparing its departure for France […]. (EN original)
b. Under tiden förberedde sig *brittiska expeditionsstyrkan, British Expeditionary Force (BEF)* […]. (SW translation)
"the British expeditionary-force"

This overly explicit and rather cumbersome translation is likely the result of two conflicting objectives: the translator's loyalty towards the source text and a wish to bring the source text closer to the new target-text readers. In this particular case, the acronym does not recur again in the Swedish translation and, thus, could be deemed to be superfluous, making it a candidate for omission.

As mentioned in connection with (19), target-language clues may have a correspondence in the English original, but they may also be added to the target text. The latter alternative is

seen in the German version in (28b) where the hypernym *Programmiersprache* has been added, while the Swedish translator adheres more closely to the English source text.

(28) a. He did a great version of *BASIC* […]. (EN original)
b. Er erstellte eine großartige Version der *Programmiersprache BASIC* […]. (GE translation)
"the programming language BASIC"
c. Han skrev en jättebra version av *BASIC* […]. (SW translation)

Finally, we will consider those exceptional cases where a translator reduces the degree of explicitness. Some of these depend on the source text being more explicit than may be deemed strictly necessary. One example is seen in (29), where the English original for the second time after several pages re-introduces the German acronym *OKH*, which stands for *Oberkommando des Heeres* ('the army high command'). The German translator here only retains the acronym while omitting the descriptive paraphrase. The fact that the acronym was spelt out previously – in both original and translation – and the fact that the acronym is likely to be more recognisable to the German target audience make the use of the bare acronym a feasible choice for both languages here.

(29) a. *The army high command, the OKH,* was instructed […]. (EN original)
b. *Das OKH* erhielt Weisung, […]. (GE translation)

However, the main observations in this section still hold true: German translators add more explanations than Swedish ones do, and they do so predominantly in their first language.

4.4.3 *Acronym frequency and explanations*

As discussed at the beginning of section 4, acronyms vary widely when it comes to how frequent they are in a language, and how generic or specialised they are in meaning. Intuitively, we would expect the less common and more specialised acronyms to require explicitation more than the common and generic ones.

To examine the relationship between an acronym's real-world frequency and the translators' strategy in our data, we obtained the frequencies of the acronyms from Google Books (UK) following the procedure introduced in section 3. Figure 6 shows the frequencies of the acronyms on a log10 scale.

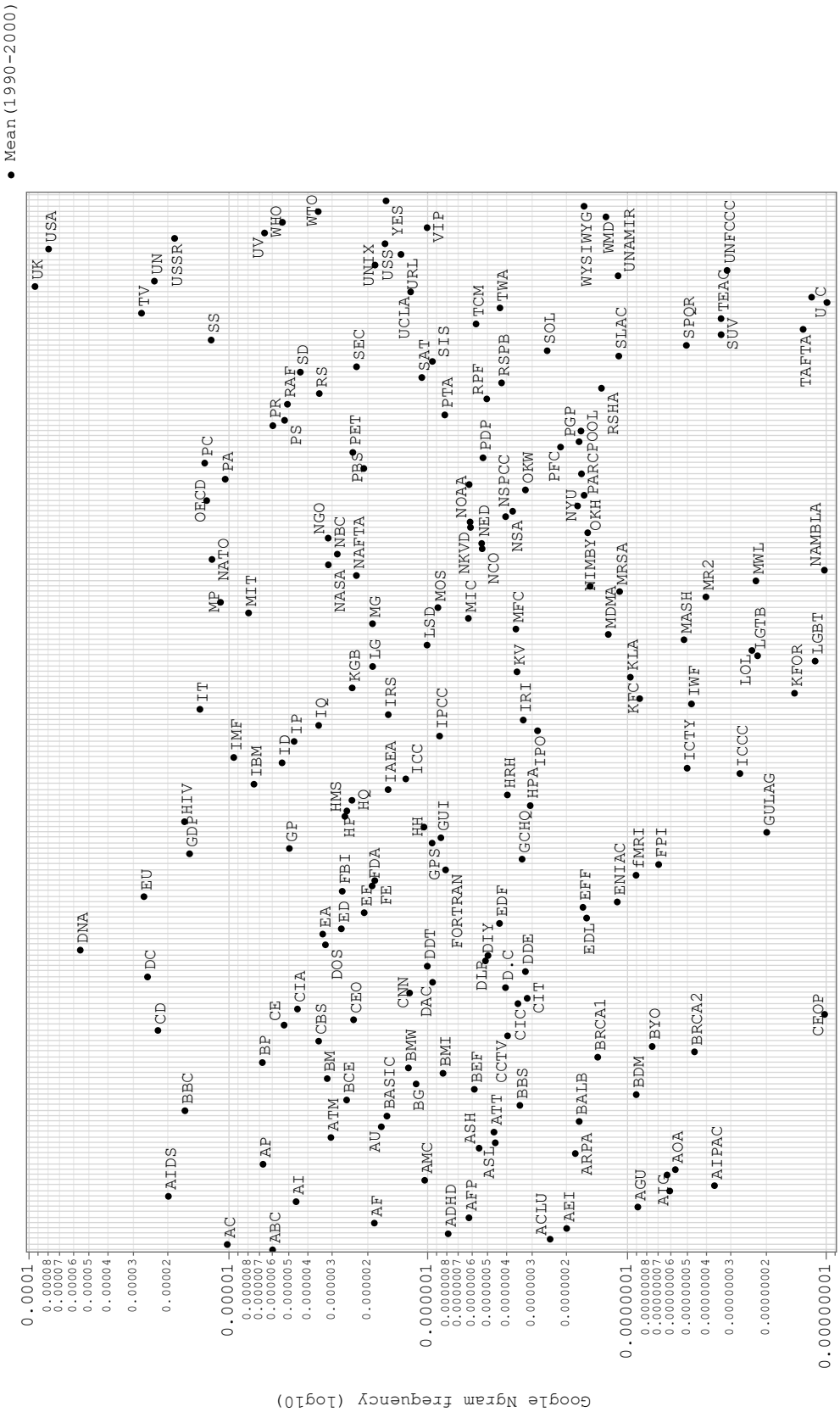

Figure 6. Frequencies in Google Books (British, 1990–2000) of the acronyms in LEGS.

The natural steps of the log10 scale can be used as a heuristic method for categorising the acronyms into three frequency bands. At the top in the first band, with frequencies ranging

from 0.0001 to 0.001, we find very common acronyms such as *DNA*, *BBC*, *NATO* and *OECD*. In the second band (0.00001 to 0.00001), we see *GP*, *IMF*, *NASA* and *WTO*, still acronyms that most mature competent readers would recognise. In the third band (0.0000001 to 0.000001), we find most of the medical and technical acronyms, which readers are increasingly unlikely to know unless they are previously familiar with the specific field. The three frequency bands were turned into a categorical variable with the levels COMMON, MODERATE and RARE.

Figure 7 shows that the proportion of instances where the translators explain the acronyms agrees with the hypothesis that rare items are more likely to be explained. The values show the number of acronyms that were explained and not explained; in some cases, the same acronym was explained several times, but multiple instances are conflated here simply as 'explanation'. The differences between the German and Swedish translators are not statistically significant in any of the bands.[16]

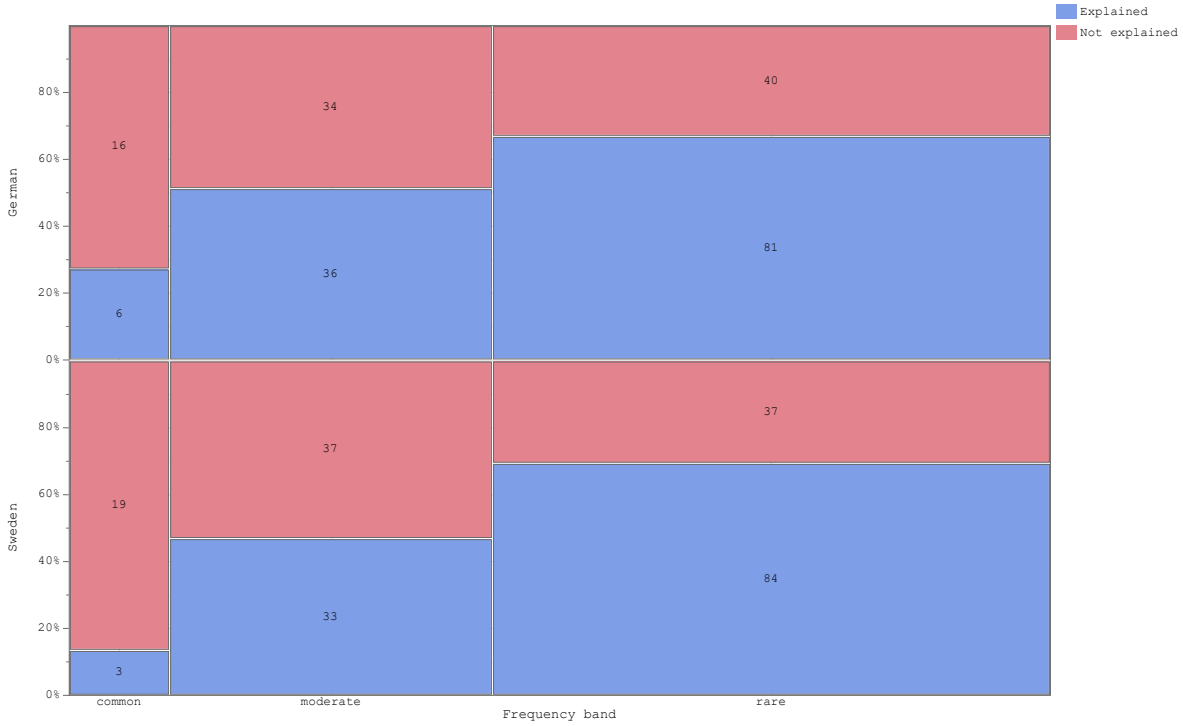

Figure 7. German and Swedish translators' choice to provide an explanation in relation to the frequency of the acronym in contemporary written English texts.

When we turn to the breakdown of explanation types based on the frequency bands of the acronym, we find a partly different picture, as seen in Figure 8:

[16] The independence of the choice between explanation and no explanation was tested using Pearson's chi-squared test. The results show no statistically significant differences between German and Swedish translations: common acronyms χ^2=0.56, df=1, p=ns; moderate acronyms χ^2=.011, df=1, p=ns; rare acronyms χ^2=3.51, df=1, p=ns.

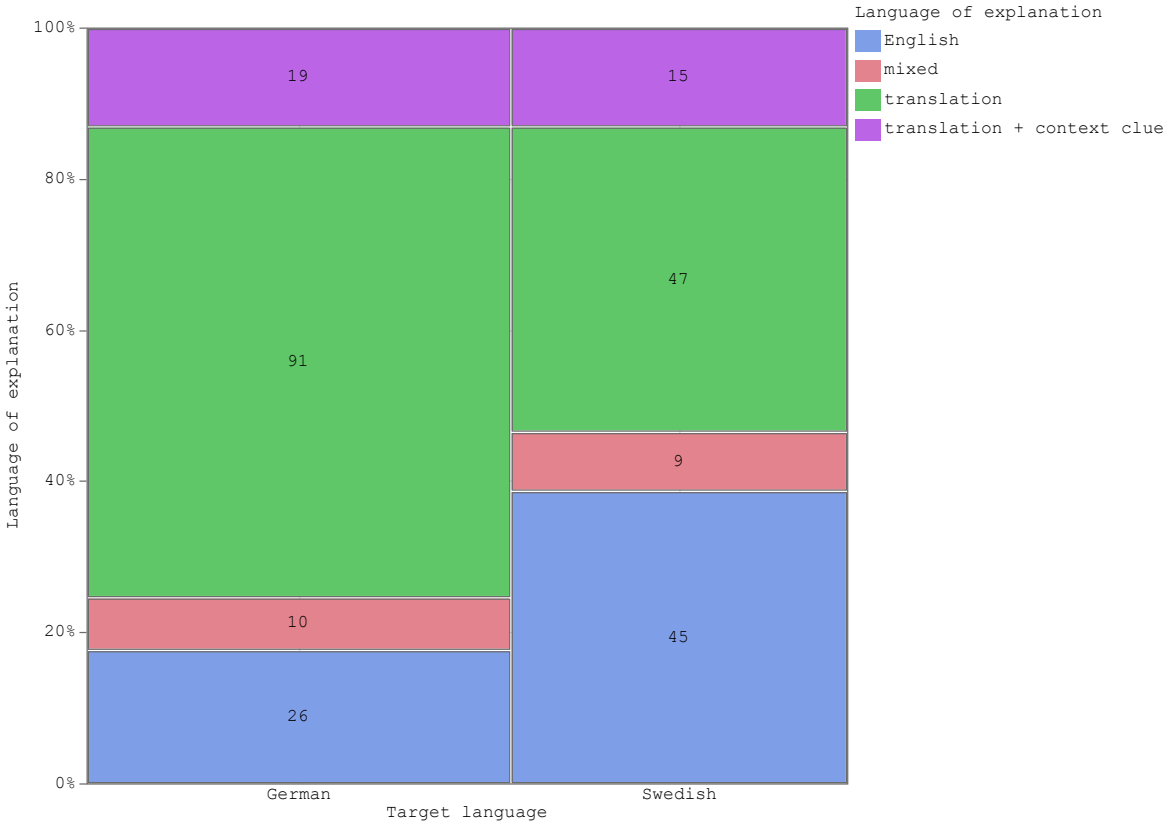

Figure 8. Language used in explanations of RARE acronyms.

German and Swedish translators use the different explanation types equally when it comes to COMMON and MODERATELY rare acronyms.[17] However, when it comes to RARE acronyms, Swedish translators show equal preference for translated explanations and for using English, while German translators show a clear preference for translations.[18]

This section has shown different techniques for introducing and explaining acronyms in texts. The original may already contain contextual clues, such as a hypernym introducing the acronym, which the translators can make use of, meaning that no additional explanations are necessary. In other cases a hypernym may be added by translators, combined with a direct transfer of the acronym, in order to facilitate comprehension. This section has also shown that the frequency of the English acronyms in general has some effect on explanation practices in translations.

5. Conclusions

The present study investigated how German and Swedish translators of English non-fiction texts approach acronyms. The primary data consist of 1,699 acronyms retrieved from the trilingual translation corpus LEGS. The acronyms were categorised into five main semantic categories based on their domain of use. The relative sizes of these categories verified earlier findings by Leech *et al.* (2009).

The first research question concerned the syntactic functions that acronyms fulfil in the source and target texts. The three languages all belong to the Germanic family of languages, which means that similar syntactic functions are available in all three languages. A cross-

[17] Common acronyms χ^2=0.07, df=3, p=ns; moderate acronyms χ^2=2.52, df=3, p=ns.
[18] Rare acronyms χ^2=16.42, df=3, p=***, Cramér's V=0.25.

tabulation of semantic categories and syntactic functions in the source texts revealed substantial correlations, the most notable being organisation acronyms frequently being used as noun phrase heads while place acronyms more often are used as premodifiers.

Turning to the target texts, the same functions were observed in both translation subcorpora, allowing symmetrical comparison between the two. The data reveal that German and Swedish translators largely rely on the same set of correspondence types, but some language-specific differences were also observed. In particular, the German translators favour compounds more than the Swedish translators (cf. Ström Herold and Levin, 2019), while the Swedish translators are slightly more inclined to using noun phrase heads and prepositional phrases as correspondences. It would be fruitful to perform a follow-up study of German and Swedish source texts as this may reveal language-specific preferences for, e.g., acronyms in compounds. This may in turn explain some of the function-related differences observed here.

The second research question focused on explanation practices in the translations. The German translators include clarifying explanations somewhat more than their Swedish counterparts − 22% against 13% − with the breakdown being more or less similar across the semantic categories. We also analysed the language choices of these explicitation strategies, observing that the use of the target language was the primary preference in both languages. A notable finding is nevertheless that the preference for using the target language in German is even stronger than in Swedish, which instead incorporates more English material.

Finally, the third research question addressed the extent to which the frequency of the acronyms in contemporary English might explain the need for explicitation. A comparison with frequencies in Google Books predictably showed that rare acronyms are explained more often than moderately common or common acronyms, with the German translators showing strong preference for translations while the Swedish translators also used explanations in English to a notable extent.

The overall findings of the study show that German and Swedish translators largely use similar strategies when translating acronyms. However, there were also some significant differences, which may at least in part be explained by how familiar German and Swedish readers are expected to be with English acronyms. It is also likely that the status differences between the languages play a role here (see UNESCO's *Index Translationum*). Regarding language choice, which was a prominent feature in this study of acronyms, a broader investigation on multi-lingual practices in texts would be a welcome contribution in the future. What kinds of foreign elements are included, adapted or translated in both originals and translations? Another avenue of acronym research could more strongly emphasise the contrastive aspect by comparing practices in originals to determine if there are differences in how languages introduce acronyms in texts, or if there are universal strategies.

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