
The translation challenges of premodified noun phrases in simultaneous interpreting from English into Italian

A corpus-based study on EPIC

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Abstract & Keywords

English:

This paper examines the handling of complex noun phrases in simultaneous interpretation into Italian of English speeches in the electronic corpus EPIC (European Parliament Interpreting Corpus). The complex noun phrases analysed in this study are noun phrases with two or more premodifying items included in the following categories: nouns, adjectives, adverbs, cardinal numbers and genitives. The aim is to extract complex noun phrases from a large sample of authentic English speeches and compare them with their corresponding translation into Italian in order to study the strategies used by interpreters. The initial hypothesis was that complex noun phrases pose a translation challenge in simultaneous interpreting from English into Italian because of structural and lexical diversities and memory overload. This hypothesis was partially confirmed in that strings where information was changed or deleted represent 45 per cent of the cases. In most cases, however, interpreters were able to adopt effective translation strategies.

Keywords: simultaneous interpreting, complex noun phrases, noun strings, corpus-based interpreting studies, strategies, premodifying items, european parliament

1. Introduction

The topic of this study is the translation of complex noun phrases in simultaneous interpreting from English into Italian. Complex noun phrases are common in English, a language in which attributive adjectives are placed before the noun they modify (Quirk et al. 1985: 402). In this study the term *complex noun phrases* indicates structures where the noun head is preceded by two or more modifiers placed next to one another or linked by the conjunctions *and*, *or* and *but*.

Handling complex noun phrases in simultaneous interpreting from English into Italian is a challenge as modifiers normally follow the noun head in Italian, thus taxing working memory. This issue has already been discussed in the graduation thesis of Barbafrina (2003), who carried out an experiment with 10 interpreting students: they undertook a simultaneous interpreting exercise from English into Italian of a text to which long sequences of adjectives were added. Students tended to omit these sequences, especially when these did not change the overall meaning of the source text. Moreover, the high information density of the strings of modifiers brings about specific processing constraints due to memory overload. As Gile pointed out in his Effort Models' tightrope hypothesis (1997), interpreters have to coordinate various efforts and if one effort requires too many attentional resources interpreting performance may suffer from it.

Two studies tackled the same issue for two different language pairs: English into Hebrew and Polish into Italian. Shlesinger (2003) dealt with the memory overload in the translation of noun strings in simultaneous interpreting into Hebrew of English texts delivered at different speeds. Her hypothesis was that a slower presentation rate overloaded the interpreters' working memory more than a faster one. To test it, she carried out an experiment with 16 professional interpreters who interpreted six texts where strings of adjectives were added. Every text was interpreted twice (three weeks apart), once at 120 and the other at 140 wpm. The effect of presentation rate was in the predicted direction: a consistently better performance at a higher presentation rate, when there is less time for unrehearsed items to decay. Nevertheless, observed differences in performance were statistically non-significant. The other study is the doctoral dissertation of Cappelli (2014). Aiming to find out the strategies adopted by interpreters at the European Parliament to translate long strings of nouns from Polish into Italian, she observed that interpreters tend to omit some parts that can be inferred from the context.

The present paper is based on the author's graduation thesis (Ghiselli 2015), which was inspired by the widespread perception among interpreting students that the translation of complex noun strings from English into Italian requires increased cognitive effort. This study is corpus-based and includes the analysis of complex noun phrases extracted from original English speeches contained in an electronic corpus and their simultaneous interpretations into Italian. The corpus is the *European Parliament Interpreting Corpus* (EPIC) (Sandrelli et al. 2010; Russo et al. 2012). The available metadata are specified in the transcript header of every text in the corpus. These are a sequence of fields providing information about the speaker (gender, country, mother tongue, political function and group) and about the speech (date, id number, language, type, duration, timing, text length, number of words, speed, words per minute, source text delivery, topic, specific topic).

The aims of the research were, firstly, to identify the strategies used by EU interpreters to translate complex noun strings and, secondly, to characterise the extent to which these strategies were influenced by speed and mode of delivery. In the EPIC corpus the speed of delivery can be *low* (< 130 w/m), *medium* (130–160 w/m) and *high* (> 160 wpm). The mode of delivery of the text is labelled *impromptu*, *read* or *mixed* (Monti et al. 2005). The hypothesis is that the translation of complex noun phrases from English into Italian in simultaneous interpreting is difficult to handle in texts delivered quickly and texts read from written notes. Texts delivered quickly present

greater difficulties because of higher cognitive load for interpreters due to time constraints, whilst texts read from written notes have a higher number of noun phrases. Some characteristics of the source text, such as redundancy, familiarity or explicitness, have an impact on the level of difficulty in interpreting it simultaneously (Hönig 2002; Alexieva 1994, 1999). Alexieva (1999) demonstrated that texts with more than one (two, three or even more) implicit predications are difficult to comprehend. She collected data from different sources such as four interpreting classes (50 students), summary writing exercises (60 students), multiple choice listening comprehension tests (65 trainees) and answers elicited from interpreters used as informants. Moreover, almost all the mistakes in interpreting were found in the highly condensed portions of the text, or the parts after them. As far as the mode of delivery is concerned, Hönig (2002) points out that a speech delivered using a prepared manuscript is more difficult than an impromptu speech because the speaker might read it at a very high speed, giving the wrong emphasis and occasionally leaving out words.

The paper will start by describing the materials of the study; then the way in which noun phrases were extracted from the corpus and divided into different categories will be outlined; finally, there will be the discussion of results and some conclusive remarks.

2. Materials and Methods

2.1 Materials

2.1.1 The corpus

The source of the speeches used for this study is the European Parliament Interpreting Corpus (EPIC) (Monti et al. 2005; Sandrelli, Bendazzoli and Russo 2010; Russo et al. 2012). In corpus linguistics a corpus is a large collection of authentic texts in electronic format created according to a set of criteria and is characterised by representativeness, dimension and format (Bowker and Pearson 2002: 9). A very interesting aspect of electronic corpora is the opportunity to perform *semi-automatic searches* thanks to *markup*. Markup is related to the description and explicitation of the structure of a certain text. *Tagging* is related to a more specific level in the texts, that is linguistic and pragmatic aspects (Bendazzoli 2010: 76). *POS-tagging* in particular is a considerable added value for a corpus because it makes it possible to do an automatic search of words in specific linguistic structures (Monti et al. 2005).

EPIC contains transcripts of speeches delivered at the European Parliament in February 2004 in English, Italian and Spanish and the interpretation of each speech into the two other languages involved. It was created by the research group of corpus-based interpreting studies of the then Department of Interdisciplinary Studies in Translation, Languages and Cultures (SITLeC) of the University of Bologna (now Department of Interpreting and Translation) with the aim of studying interpreting strategies and problems related to language pairs. EPIC is structured into *nine sub-corpora*. The comparable analysis carried out for this study is based on two sub-corpora: the sub-corpus of English source speeches (SS) and the corresponding sub-corpus of Italian target speeches (TS). The SS analysed are 81, for a total of 42,705 words.

Part of the EPIC archive was transcribed and is accessible online through the SSLMITDev website. The corpus is tagged, so texts can be automatically retrieved. The taggers used are *Tree Tagger* for Italian and English and *Freeling* for Spanish. They were created for written texts and, therefore, some tags were wrongly assigned in the oral speeches of EPIC. However, generally speaking, tagging was satisfactory, with more than 90% of correct tags in all sub-corpora (Bendazzoli 2010: 131). EPIC can be queried with *simple or advanced queries*. Simple queries can be used to find words or strings of words in context, whereas advanced queries have to be written in the *Corpus Query Processor (CQP)* language and aim at finding occurrences of complex strings of elements (Bendazzoli 2010: 134–35).

2.1.2 Noun phrase modifiers

In English noun phrases consist of a head, normally a noun, and of elements that determine and optionally modify the head or complement another element in the phrase, for example *all those fine warm days in the country last year* (Quirk et al. 1985: 62). The complex noun phrases analysed here are noun phrases with two or more premodifying items from the following categories: adjectives, cardinal numbers, adverbs, nouns and genitives.

All the adjectives included in this study have an attributive function, meaning that they occur between the noun they modify and the determiner, as in *an ugly painting* (Quirk et al. 1985: 402–3). The intensifier *very* and the premodifiers *more* and *most* can have both the function of determiners and of adjectives (Collins English Dictionary, <http://www.collinsdictionary.com/dictionary/english/more?showCookiePolicy=true> and <http://www.collinsdictionary.com/dictionary/english/most?showCookiePolicy=true>, 21 April 2016) and have been counted as part of noun strings. Many adjectives in English have the same suffixes as participles in *-ing* or *-ed* and are called *participial adjectives*, for example: *his surprising views; the offended man* (Quirk et al. 1985: 413). Gerunds and present participles have been included in the study because, in the attributive function, they qualify the head of the noun phrase. In the noun strings of this study, adverbs having the function of adjective modifiers are included, as in *very vibrant poultry industry* (org-en text 4). Normally adverbs that premodify an adjective have the function of *intensifiers* and are used with an adjective having comparative and superlative forms (Quirk et al. 1985: 445). Genitives are most often used for possessions, relationships and physical characteristics, especially when the first noun refers to a person or animal, or to a country, organisation or other group of living creatures (Swan 2005: 440). Descriptive genitive (for example: *a women's college*= *a college for women*) acts as modifier and has a *classifying role* similar to that of noun modifiers and some adjective modifiers (Quirk et al. 1985: 327).

In Italian, the adjectival phrase can have different functions. It has an *attributive function* when it is in a noun phrase before or after the name that defines the phrase. Adjectives can be in a prenominal or in a postnominal position: in the noun phrase the adjective follows the name in the unmarked case and it precedes it in the marked one (Renzi et al. 2001: 439–40). An adverb can modify an adjective and it normally precedes it. In Italian the noun has inflection for gender (masculine/feminine) and number (singular/plural). Nouns are the grammatical heads of the noun phrase that influence the gender and number agreement of the other elements and of the predicate.

If the position of adjectives in respect of the noun is taken into account, they behave similarly in English and in Italian (Rosato 2013: 31). Compared to English, Italian has a “mirror image” post-nominal ordering: in English the noun head is at the end, whereas in Italian it is at the beginning of the noun phrase. For example, *dry red*

wine becomes *vino rosso secco*. If we consider the distance of adjectives from the noun, we can notice that the noun head has a different position but the adjective order is the same.

2.2 Methods

2.2.1 Extraction of noun phrases from EPIC

The first phase of this corpus study consisted of elaborating search queries from the *Advanced query* interface in EPIC in order to find complex noun phrases. As already stated, EPIC is POS-tagged, so it was possible to perform not only searches by single words but also searches by parts of speech, it was therefore possible to perform an automatic search and then manually select results following inclusion and exclusion criteria. The text numbers mentioned in this article are the *Text ID* numbers that appear on top of the page when opening a search result in SSLMITDev. Every original speech shares the same *Text ID* number with its corresponding interpretation into Italian.

The subcorpus of original English speeches (org-en) was queried by means of three different advanced query expressions. The search parameters were: *find at maximum 10,000 results* (the highest possible option). The *Results set* was *Random set*, that is the visualisation of all the possible results and the *Results per page* option was *no limit*. The aim of the three expressions was to cover all possible kinds of premodified noun phrases.

The first expression, which will be called *expression A*, recalled a noun preceded by at least two modifiers, for example *larger commercial units* (org-en text 1). The tags of all possible modifiers were included in the first two parts of the expression, that is the tags for adjectives, cardinal numbers, nouns, past participle, *-ing* forms, possessive pronouns and adverbs. For the head of the noun phrase all the tags for nouns were used. *Two modifiers + noun* was set as the minimum required length for the strings to be included in the study, but there are also longer strings, which could be identified through the *key word in context (KWIC)* consultation of the corpus. The *context* was of *25 characters* before and after the result.

The second expression, which will be called *expression B*, looked for a noun preceded by two modifiers linked by a coordinative conjunction such as *and*, *or*, *but*, for example *Food and Veterinary Office* (org-en text 7). Premodifiers were searched using the same tags as in *expression A*, the coordinative conjunctions were retrieved through the tag of coordinating conjunctions and, for the noun head, all the tags for nouns were included.

The third expression, which will be called *expression C*, consisted of tags for possessive endings. When this search was performed, it only provided 146 occurrences. Nonetheless, it was decided not to change it by adding further search parameters and results were manually selected. Genitives were taken into consideration only when they were premodifiers of a noun phrase with at least another premodifier, for example *last year's second preparatory committee* (org-en text 27).

An automatic system of data collection was chosen because it was quicker and reliable in terms of including all the potentially relevant results. However, it was just a first phase of the research because while reading the results it was clear that the *Advanced query* function was not able to assess whether noun sequences made sense or not. For this reason, the automatic data extraction from EPIC was followed by a manual selection of results.

To ensure that the manual phase was as objective as possible, a set of inclusion and exclusion criteria for modifiers was drawn up. Adjectives, numbers, nouns, possessives and adverbs were looked up. Determiners (except for possessives) and predeterminers were excluded, as well as results which were considered irrelevant for different reasons, detailed in paragraph 2.2.3.

2.2.2 Inclusion criteria

The modifiers included in the search were all adjectives, cardinal numbers, nouns, past participles and gerunds, possessives and adverbs. For the noun head, all nouns were looked up.

Tags were normally correct, but there were some exceptions: *-ing* and *-ed* forms are always tagged as *VVG (verb gerund/participle)* and *VVN (verb past participle)* respectively. However, these forms are not always verbs, they can also be adjectives, as for instance in: *mounting circumstantial evidence* (org-en text 7) and *internal organised crime* (org-en text 18). In both cases the *-ing* and *-ed* forms are used as adjectives, but they would not have been retrieved from the corpus without the inclusion of the tags *VVG* and *VVN* in the search string.

Compound nouns of countries such as *United States*, or of organisations like *European Union*, were included in search results and treated as two-element items.

There are three kinds of peculiar noun phrases that have been included in the study. The first type includes eight strings retrieved with *expression A* that are more complex versions of *expression B*. An example is the following string from org-en text 7: *its sanitary and its economical dimension*. In this string there is a first modifier (*its sanitary*) + a conjunction (*and*) + a second modifier (*its economical*) + a noun head (*dimension*).

The second type is the case of three complex strings having multiple heads with the same modifiers. Multiple heads with the same modifiers are noun phrases where the same modifier applies to two nouns (Quirk et al. 1985: 1345–46). If there is just one modifier, the structure is not complex and is not in the remit of this study. Using the KWIC visualisation, two results of *expression A* and one result of *expression B* were identified as multiple heads with multiple shared modifiers, to be included in the study. These three strings are: *global and regional peace and security* (org-en text 27), *largest drug dealers and drug producers* (org-en text 37), *clear agreed objectives and positions* (org-en text 75).

The third and last special type of strings is the case of constructions with the preposition *of* used as premodifiers. There are two strings in org-en text 18 and one string in org-en text 28 where a prepositional phrase with *of* is one of the noun modifiers. These two complex constructions were retrieved with *expression A* and included in the results. These three strings are: *nineteen ninety six Hague Protection ehm of Children Convention*, *Chief of Police Task Force*, *Cold War weapons of mass destruction programmes*.

2.2.3 Exclusion criteria

Some exclusion criteria were applied before the string analysis was undertaken, whereas other criteria were developed during data collection. Determiners and predeterminers were excluded from the relevant modifiers because including them would have resulted in a much higher number of hits, the majority of which would not have been relevant. Determiners are elements at the beginning of noun phrases different from adjectives, for example *a*, *this*, *some*, *either*, *every*, *enough*, *several* (Swan 2005: 154). The only determiners that were included

in the study are possessives. Prepositional structures with *of* were excluded, except for those mentioned before (see 2.2.2).

During data collection 14 exclusion criteria were developed:

1. Strings including *-ed* forms having a verbal function: the *-ed* forms that were excluded from the results were past participles preceded by the auxiliary verb *be* to form either the present perfect or the passive or implicit sentences including past participle.
2. Strings including *-ing* forms having a verbal function: *-ing* forms were excluded when they were present participles, gerunds or when they were used after prepositions.
3. Strings including *one's own + noun*: even if *own* is tagged as an adjective, it is solely an intensifier and adds no new information. Strings with *one's own* were included only if, apart from *one's own*, they included also other modifiers, for example: *my own little hairdresser* (org-en text 22).
4. Strings with numbers: in EPIC all the numbers are expressed in words, so they appeared in the results as word strings but were excluded (with the exception of numbers modifying a noun together with other modifiers) because they were not relevant for the study purpose.
5. Strings including time: for example *twelve o'clock* (org-en text 7).
6. Strings with lists: lists are formed by independent words and can be repeated in the same order, so they are not relevant for the present study.
7. Strings with vocatives: vocatives are expressions that speakers use to mention somebody among the public. They are very common at the beginning of EPIC speeches, when the speaker thanks the President of the Parliament or other subjects.
8. Strings including filled pauses: *Tree Tagger* often tags filled pauses as nouns. For this reason, the automatic search extracted a number of irrelevant results, which were excluded manually.
9. Long strings that appear in more than one result: phrases longer than the three-element first search string were retrieved more than once in groups of three elements. For these cases, the first occurrence was counted and the following excluded.
10. Strings containing wrong tags: in some cases results were not relevant because tags were wrong. The corpus tagger often made mistakes when there were truncated words, for example: *parliamentary secretariats a- (and)* (org-en text 12).
11. Strings with untranslatable proper names: these names had just to be repeated by the interpreters and were not relevant for the present study.
12. Strings with hesitations: strings containing repetitions, truncated words and filled pauses were excluded because they were not complex noun phrases. For example: *Lisbon pro- pro- process* (org-en text 71).
13. Strings with rephrasing: cases when the speaker rephrases the sentence, often with the aim of giving a more precise information. For example: *humans nineteen humans* (org-en text 12).
14. Special cases: strings that were excluded but which do not fit into any of the previous criteria. Many of these excluded results include genitives that are not part of a complex noun phrase, such as *girls' schools* (org-en text 33). There are also occurrences of adjacent nouns belonging to different phrases or without mutual relationship. In the KWIC visualisation they appear as in the following example: *situation of the European economy and major guidelines for economic policy and* (org-en text 51).

2.2.4 Noun phrases in relation to speed and mode of delivery

In the EPIC corpus transcript headers contain some information about the speaker and the text, among which two variables were considered interesting for data analysis: speed of delivery and mode of delivery. Text speed was calculated in words per minute and the texts of the corpus are divided into three types according to their speed: *low speed* (< 130 w/m), *medium speed* (130–160 w/m) and *high speed* (> 160 wpm). The mode of delivery of the text was classified as either *impromptu*, *read* or *mixed* (Monti et al. 2005).

Data about noun phrases were matched with speed and mode of delivery. The relation between speed and mode of delivery and the percentage of string words as a share of the overall number of words in every original English text was calculated.

The differential use of translation strategies found in target texts was analysed according to speed and mode of delivery. This analysis was based on two data sets created on the basis of Schjoldager's theoretical model of translation relationships (Schjoldager 1995, see section 2.2.5 below). The first data set cross-classifies Schjoldager's categories with delivery mode and delivery rate. The second data set includes the percentages of strings of every Schjoldager's category compared to the overall number of strings only in the texts having the same speed or the same mode of delivery.

2.2.5 Translational norms in simultaneous interpreting: Schjoldager's categorisation

In order to assess the translation strategies used by interpreters, it was necessary to divide them into categories and the categorisation used was Schjoldager's theoretical model of translation relationships (1995).

Schjoldager explores the potential of Toury's (1980) translational norms in the field of simultaneous interpreting studies. Schjoldager speculates whether Toury's norms can be applied to simultaneous interpreting and to what extent the cognitive complexity of this activity influences the use of translation strategies by interpreters.

Schjoldager identified five main categories, one of which is divided into six subgroups.

A/ Repetition: target-text item bears formal relation with relevant source-text item. Examples:

Eighteen human lives – diciotto vite umane [eighteen human lives] (text 1)

Public health issues – temi di salute pubblica [issues of public health] (text 7)

World Health Organisation – Organizzazione Mondiale per la Salute [World organization for health] (text 11)

Regulatory and supervisory regime – regime normativo e di sorveglianza [regulatory regime and of supervision] (text 43)

Increasingly intensive cooperation – cooperazione sempre più intensa [more and more intense cooperation] (text 76)

B/ Permutation: target-text item(s) is(are) placed in a different textual position from relevant source-text item(s).
Examples:

Pandemic influenza preparedness – preparazione alla pandemia e all'influenza [preparation to pandemic and to influenza] (text 1)

Member State responsibility – lo Stato membro responsabile [the accountable Member State] (text 18)

Its fundamentalist Islamic revolution - integralismo e la rivoluzione isl- islamica [extremism and the islamic revolution] (text 46)

European Union economy – Unione europea e la sua economia [European Union and its economy] (text 65)

Full and unconditional cooperation – piena ehm co- collaborazione senza condizioni [full ehm co-cooperation without conditions] (text 81)

C/ Addition: target-text item constitutes an addition to information given in relevant source-text item. Examples:

Animal health pro- issue – questione anche anche di salute animale [issue also also of animal health] (text 2)

Member States' responsibilities – responsabilità dei vari Stati membri [responsibility of the various Member States] (text 11)

Their long-term economic development - loro sviluppo economico a più lungo termine [their economic development at a longer term] (text 40)

Most competitive economy – principale economia e più competitiva [main and more competitive economy] (text 68)

Considerable symbolic importance - significato simbolico importante notevole [important considerable symbolic significance] (text 74)

D/ Deletion: no target-text item bears direct relation with relevant source-text item.

E/ Substitution: target-text item bears no formal relation with relevant source-text item.

E1/ Equivalent Substitution: source-text item is translated functionally. Example: *Larger commercial units – grandi aziende [large businesses]* (text 1); *Rome two regulations – regolamento Roma due [Rome two regulation]* (text 18); *my last remark – quest'ultima osservazione [this last remark]* (text 25).

E2/ Paraphrastic Substitution: source-text item is translated functionally, but in an expanded and/or segmental way. Example: *negative ehm criminal issue - non è tutto negativo non si parla solo di crimini [not everything is negative, you do not only talk about crime]* (text 22); *new and challenging agenda - ordine del giorno che sia una vera ehm sfida [agenda that would be a real ehm challenge]* (text 24); *newly independent states – nuovi paesi indipendenti nuovi stati indipendenti [new independent countries new independent states]* (text 75).

E3/ Specifying Substitution: source-text item is translated functionally and implicit information is made explicit. Example: *military and security dimensions – dimensione della sicurezza e la soluzione del conflitto [security dimension and conflict resolution]* (text 16); *last few years – ultimo due anni [last two years]* (text 21); *our neighbourhood policy – nostra politica di buon vicinato [our policy of good neighbourhood]* (text 75).

E4/Generalizing Substitution: source-text item is translated functionally, but conveys less information than relevant source-text item. Example: *very worrying aspect – aspetto preoccupante [worrying aspect]* (text 4); *their hard work – lavoro [work]* (text 11); *important Additional Protocol – protocollo aggiuntivo [additional protocol]* (text 28).

E5/ Overlapping Substitution: source-text item is translated functionally, but with a different viewpoint, so that target-text item conveys different information. Example: *FAO-WHO-OIE expert panel – gruppo di esperti di alto livello* (text 1); *two further amendments – due blocchi di emendamenti [two blocks of amendments]* (text 12); *very little progress – qualche progresso [some progress]* (text 30).

E6/ Substitution Proper: target-text item bears little or no resemblance to relevant source-text item. Example: *only ninety inspectors – sforzi enormi da questi ispettori [enormous efforts from those inspectors]* (text 2); *clear scientific leadership – dati scientifici [scientific data]* (text 11); *richest and most prosperous parts – guardate quello che è successo [look at what happened]* (text 62).

The translations of the selected strings were found by comparing the original English text with the corresponding interpretation into Italian using the author's knowledge of both languages. The noun strings were matched this way with their translations and then classified according to Schjoldager's categories.

An effort was made to keep the division of the strings' translations into the different categories as objective as possible. However, some categories cannot always be clearly distinguished and differences of interpretation may occur. Thus, the categories *E1/ Equivalent Substitution*, *E4/ Generalizing Substitution* and *E5/ Overlapping Substitution* contained some items which could, with justification, have been reassigned. A consistent approach was adopted throughout the whole corpus. For example, all the strings where every word of the translation corresponded to the original text with a minor change concerning a singular turned into a plural or vice versa were put into *E1/ Equivalent Substitution*.

3. Results and discussion

3.1 Results

The subcorpus org-en has 42,705 words and 970 strings were retrieved in the study. This corresponds to 3482 words (7.9 % of the words in the subcorpus). The average string length was 3.59 words. The classification of the strings' translations according to Schjoldager's categories is shown in Table 1 and Figure 1.

Strings divided by translation category		
Translation categories	Number of strings	% of total number of strings
A/ Repetition	343	35.36
B/ Permutation	27	2.78
C/ Addition	16	1.65
D/ Deletion	98	10.10
E1/ Equivalent Substitution	93	9.59
E2/ Paraphrastic Substitution	40	4.12
E3/ Specifying Substitution	12	1.24
E4/ Generalizing Substitution	265	27.32
E5/ Overlapping Substitution	40	4.12
E6/ Substitution Proper	36	3.71
Overall number of strings	970	100.00

Table 1: Strings by translation category

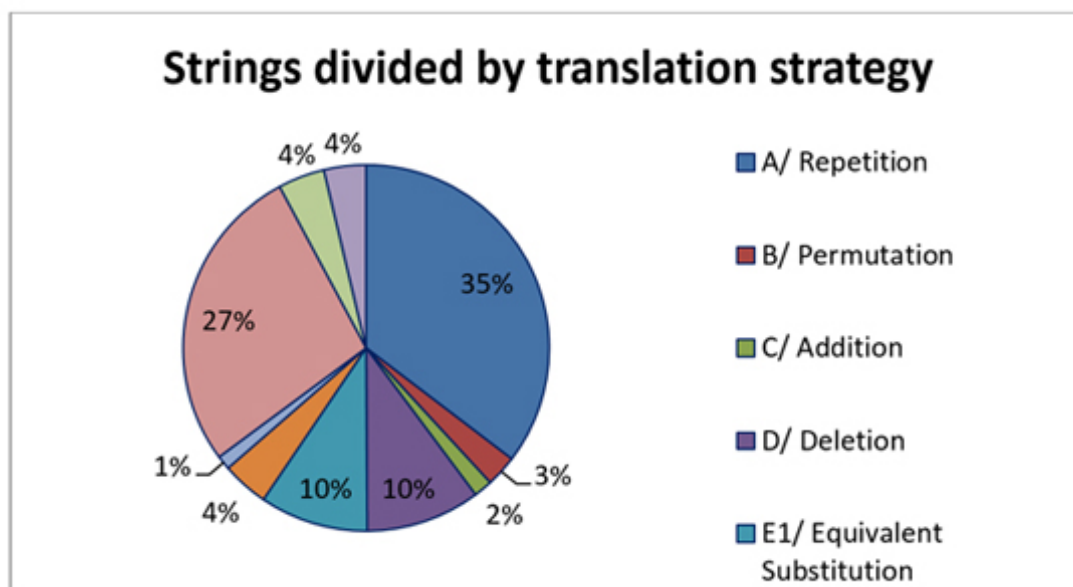


Figure 1: Strings per translation strategy

Schjoldager's categories were divided into two groups. The first group consists of strategies that give evidence of interpreters' control: *A/Repetition*, *B/Permutation*, *C/Addition*, *E1/Equivalent Substitution*, *E2/Paraphrastic Substitution* and *E3/Specifying Substitution*. In the strings belonging to these categories no elements were lost, the elements of the noun phrase appeared in the same order or in a different order as the original text (A and B), they were reformulated (E1 and E2) or even completed and expanded (C and E3). The second group of categories includes problematic strategies, including *D/Deletion*, *E4/Generalizing Substitution*, *E5/Overlapping Substitution* and *E6/Substitution Proper*. In these categories, strings are modified: the original message was completely or partially lost (D and E4) or partially modified or replaced with different elements (E5 and E6).

Category E4 was then analysed more in detail, leading to the identification of two further subcategories: *subcategory one* (strings with modifiers omitted) and *subcategory two* (strings with noun heads omitted). Strings of subcategory one were then divided into four groups: strings with two, three, four or five premodifiers. It appeared that 90 per cent of cases belong to subcategory one and only 10 per cent to subcategory two. The percentage of omissions of modifiers is similar in the four groups and equal to 57 per cent.

3.2 Discussion

The hypothesis was that read texts were denser and therefore had more complex noun phrases, an issue that had already been considered by Hönig (2002) and Alexieva (1994, 1999). In this study, complex noun phrases are strings where the noun head is preceded by two or more modifiers placed next to one another or linked by the conjunctions *and*, *or* and *but*.

The most used translation strategy was *A/Repetition* (see Chart 1), which is noteworthy, as it is a successful outcome, because it shows that the interpreter has fully understood the message in the source language and then correctly and exhaustively reproduced it in the target language. In general, 55 per cent of the results belong to one of the successful strategies (categories A, B, C, E1, E2 and E3); the remaining 45 per cent displayed a more

problematic strategy (categories D, E4, E5 and E6). It can thus be concluded that interpreters at the European Parliament handle complex noun phrases rather well.

Some omissions in category *E4/ Generalizing Substitution* were associated with a substantial loss of information. A recurrent strategy to compensate for this loss is replacement of premodifiers with more general expressions such as indefinite or demonstrative adjectives, for example: *two ongoing EC assistance programmes – altri programmi [other programs]* (text 1) and *its traditionally long historic record – questo questa lunga storia di progresso [this this long record of progress]* (text 46). Other omissions do not imply a substantial loss of information instead: 36 premodifiers omitted in strings belonging to category E/4 are possessives and, among them, in 30 cases the possessive is the only premodifier omitted. In some cases possessives in Italian would have been redundant, as in the following example from text 66: *our common prosperity – prosperità comune [common prosperity]*. Another trend is the omission of references to Europe, like the acronym *EU*, the nouns *Europe* and *European Union* and the adjective *European*. Taking the context into account, the plenary sitting of the European Parliament, those references are often already clear to the listener. The strategy of omitting context-deducible elements confirms the results both of Cappelli's PhD thesis (Cappelli 2014) and of Barbafiga's graduation thesis (Barbafiga 2003). As mentioned in the introduction, Cappelli's study dealt with the interpretation of complex noun strings in a different language pair, namely Polish into Italian. She analysed interpreted speeches at the European Parliament and found that in 41 per cent of cases some elements of the noun phrases were missing, but these omissions could be inferred by the context. Barbafiga carried out a study about the simultaneous interpreting of long sequences of adjectives in the same language pair considered in the present study, that is English into Italian, with advanced students of interpreting at the University of Bologna. Students tended to omit problematic items, especially when they did not change the overall meaning of the source text, and few sequences were translated completely and correctly. Thus, Barbafiga's results support the assumption upon which her study and the study described in this paper are based: long sequences of elements indeed represent a potential problem for interpreters in simultaneous interpreting. In EPIC, in contrast to Barbafiga's study, there are some omissions but the majority of strings are translated completely and correctly.

It may be hypothesised that interpretation of complex noun phrases improves with the acquisition of strategies via experience. This might be an interesting research question for a comparable study adopting the novice versus expert paradigm. Applying strategies is in fact crucial in simultaneous interpreting and there are several studies on this topic. Sunnari (1995), for instance, argues that interpreting exhaustively may not always be the best choice. Expertise means knowing what can be left out without losing key ideas of the text. Eliminating redundancy, for example, is a strategic choice showing expertise. By applying certain mental operations (macrorules) to the source language message (microstructure) during comprehension, interpreters should be constructing the macrostructure of what they hear. Riccardi (2005) distinguishes between skill-based and knowledge-based strategies in simultaneous interpreting. Skill-based strategies are governed by stored patterns of automatic responses whose application is triggered by the recognition of a well-known stimulus within the communicative event. Knowledge-based strategies are conscious and come into play when actions must be planned on-line because no automatic response is found or because something has caused a momentary memory overload. Bartłomiejczyk (2006) carried out an experiment about interpreting strategies and directionality with English and Polish, including retrospective remarks of the interpreters, and she identified 21 interpreting strategies. Liu (2008) describes expertise in simultaneous interpreting as the result of well-practised strategies in each of the comprehension, translation and production processes and the interaction among these processes, which are specific to the needs of the task of simultaneous interpreting. Kader and Seubert (2015) distinguish between macro-strategies, that include planning and expectations before the assignment, and micro-strategies, which are related to speech-inherent issues.

3.2.1 Strings in relation to speed and mode of delivery

The data presented in this study confirm the hypothesis that read texts have more complex noun phrases. A further important observation is that impromptu speeches have a much lower percentage of strings found in speeches delivered in both read and mixed modes. On average, complex noun phrases in terms of word count represent 7.9 per cent of the text in the subcorpus org-en. The percentages for each subgroup of mode of delivery, by contrast, were 4.18 per cent (impromptu), 9.52 per cent (read) and 8.23 per cent (mixed).

Speeches delivered at low speed are handled well by interpreters: 60.87 per cent of performances belong to categories of successful interpretation. Complete omissions accounted for 2.48 per cent of all source strings and the most used strategy was *A/Repetition* (42.86 per cent). Moreover, *B/Permutation* was observed in 29.63 per cent of the cases in these texts. Interpreters thus seemed to have enough time both to translate and to reorganise the phrase elements in a different order. In speeches delivered at medium speed, 58.89 per cent of the occurrences belonged to the categories of successful interpretation. *A/Repetition* (35.45 per cent) is the most frequently used strategy, but the percentage of *D/Deletion* was three times the rate found in texts delivered at a low speed (8.97 per cent). *A/Repetition* was also the most used strategy in texts delivered at high speed (31.53 per cent). Source texts with high delivery rates are the only group for which the percentage of problematic strategies (51.43 per cent) is higher than that of successful strategies (48.57 per cent). Moreover, this group had the highest percentage of *D/Deletion* (15.06 per cent). It is noteworthy that more than half of the occurrences of *D/Deletion* (54.08 per cent) and of *E6/ Substitution Proper* (55.56 per cent) were found in texts delivered at high speed.

In summary, the percentage of *A/Repetition* decreases as delivery speed increases, whereas the percentage of *D/Deletion* of strings increases as delivery speed increases. The initial hypothesis that complex noun phrases are more difficult to handle in fast speeches was confirmed by the study data. This finding contrasts with the findings of Shlesinger (2003) in her study of memory overload in the translation of noun strings in simultaneous interpreting from English into Hebrew. Shlesinger observed important, even if statistically non-significant, differences in performance, with more modifiers retained in texts presented at a higher speed. Possible explanations of the discrepancy may be that Shlesinger's analysis is based on experimental data and that it focuses on adjectival modifiers, reporting on retention of those modifiers only, without considering the omissions of the noun head. When Shlesinger talks about the materials she used, she points out that, in terms of ecological validity, the materials for such a study should ideally be taken from an existing corpus of actual conference presentations. This was not possible in her case, because her study required clearly delineated, accurately constructed strings, unlikely to occur in naturalistic speech. For the present study, it was possible not only to consider adjectival modifiers but also to access EPIC, a validated corpus-based resource of real speeches. Moreover, different parameters for speed were used in the two studies. Speed of delivery at the European

Parliament is on average higher than what is found at a conference because speakers are allotted very short time slots to deliver their speeches. In Shlesinger's experiment, the high delivery rate was set at 140 wpm, whereas in EPIC original English speeches the average delivery rate of high speed texts is 180 wpm. It can be argued that, if the delivery rate is so high, other difficulties add to memory overload, for example a greater effort to coordinate listening and speaking, leading to a very challenging translation of complex noun phrases.

4. Conclusions

The initial hypothesis that complex noun phrases in English are a challenge for interpreters translating into Italian was only partially confirmed in the data analysis from EPIC. If we consider the whole subcorpus of original English speeches, the percentage of strings belonging to Schjoldager's problematic categories is 45, less than half of the occurrences. On the other hand, 45 per cent is quite high, so it can be said that, even if interpreters at the European Parliament handle complex noun phrases well in the majority of cases, occurrences of incomplete or wrong translations are also rather common. The most common translation strategies are complete and correct translations and generalisations, with 35 per cent and 27 per cent of the occurrences respectively. Less frequent strategies are additions (1.6 per cent) and specifications (1.2 per cent): this is unsurprising as complex noun phrases are already dense and adding more information is often not feasible.

Therefore, the translation of complex noun phrases is challenging and special attention in training and practice of simultaneous interpreting is recommended. For example, the control of Ear-Voice-Span (EVS) is a crucial issue. Van Dam (1989) describes a set of beginner exercises which include distance exercises to avoid tailgating the speaker and keeping the optimum start-up distance, which corresponds to approximately one meaning unit behind the speaker at the beginning of each new sentence. EVS has to vary during the task and a balance should be struck between understanding the message before speaking and not overloading working memory.

Kader and Seubert (2015) include flexible EVS in micro-strategies and write that complex passages, such as lists, demand a short EVS, whereas more abstract ideas require a longer one. According to Liu (2008), experts use semantic-based processing strategies to free up mental resources. In this way the interpreter is able to anticipate the upcoming information based on the context that is provided. One semantic processing strategy is expert interpreters' ability to perceive and distinguish the importance of the input material and to pay more attention to the overall conceptual framework of the source speech, which may also contribute to their ability to segment the input material into bigger chunks during the process of translation.

Among Bartłomiejczyk's (2006) strategies, compression might be useful in the case of complex noun phrases. Compression means summarising a longer fragment with a shorter phrase, which is supposed to convey the same meaning, but expressed in a more concise and general way. This strategy is similar to Kader and Seubert's condensing strategy (2015). According to Riccardi (2005), with increasing expertise the primary focus of control moves from the knowledge-based (conscious) to the skill-based (automatic) level, providing for a well-balanced allocation of cognitive resources.

Translating complex noun phrases in simultaneous interpreting from English into Italian is a challenge for many interpreters, but only limited research has been previously undertaken on this topic. This study is offered as a contribution based on real data coming from a specific setting, the European Parliament. The study includes various types of modifiers and focuses on the number of omissions and on retentions and their translation. Another aspect that has not been investigated and that could be interesting for a more fine-grained approach is whether there are differences between the different types of modifiers, for instance whether the adjectival modifiers are more vulnerable to deletion than the nominal ones. Another further development is analysing what exactly is omitted and to what extent. It stands to reason, for instance, that the omission of the head noun is much more harming to the general understanding than the omission of a modifier. Research with more data and in other domains is needed to develop a better understanding of the difficulties posed by noun strings. Further research questions may also include the difference between the novice and the expert interpreters' approach and whether a high-level of expertise in a specific field, acquired thanks to specialised studies and experience in that sector, has a positive impact on the handling by interpreters of the complex noun phrase terms belonging to that field. Skill-based strategies seem to be the hallmarks of expertise and flexible EVS makes it possible to keep the optimum start-up distance and adopt more semantic-based processing strategies. Starting from this consideration, a hypothesis for further research may be that students benefit from automatising as many linguistic expressions as they can and should focus on improving working memory, so that they will have more cognitive resources to keep an EVS that allows them to make the more appropriate strategic choice when translating complex noun phrases.

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