Journal of Audiovisual Translation

Specialised Vocabulary in Subtitling Science Documentaries

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Citation: Vyzas, T. (2022). Specialised Vocabulary in Subtitling Science Documentaries. *Journal of Audiovisual Translation,* *5*(1), 48–72. https://doi.org/10.47476/jat.v5i1.2022.152

Editor(s): J.L. Kruger

Received: May 6, 2020

Accepted: May 28, 2021

Published: April 5, 2022

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Abstract

This article describes an exploratory study which tries to shed light on audiovisual translation considered as specialised translation through two English language health-themed documentaries with Greek subtitles. The aim is to highlight the way English specialised vocabulary is translated into Greek.

After a brief overview of the main aspects of interlingual subtitling and the general features of documentaries, the focus moves onto the translation of science documentaries as specialised texts. The methodology is based first on the formal characteristics of the specialised vocabulary identified, and second on a translation strategies model by means of which the translation of the specialised vocabulary is studied. The findings are discussed with emphasis on the specifics of the equivalences provided, in order to proceed to an overall account of the translation.

Key words: audiovisual translation, subtitling, science documentary, terminology, specialised vocabulary, translation strategies.

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1. Introduction

Despite the increasing interest in audiovisual translation (AVT), especially as far as fiction films are concerned since the 1990s (Van Hove, 2017/2018; Lozano & Matamala, 2009), science documentary translation has attracted less attention. It was not until the beginning of this century that science documentaries began to be regarded as instances of specialised discourse with emphasis on their popularising aspect (Espasa, 2004; Matamala, 2009a, 2009b, 2010; Hanoulle et al., 2015a, 2015b; Ortiz Boix, 2016; Hanoulle, 2017; Zhou & Zhang, 2019).

This article offers an exploratory descriptive study of audiovisual translation considered as specialised translation through two English language health-themed documentaries with Greek subtitles. As the emphasis is placed on specialised vocabulary, the aim is to cast light on the way English terms are translated into Greek in these films.

After succinctly presenting the basic characteristics of interlingual subtitling as well as the main features of documentaries, the study focuses on the translation of science documentaries as specialised texts. The methodology used consists of two components corresponding to the stages of the study: first, the model used for the presentation of the morpho-syntactical and formal characteristics of the specialised vocabulary that is extracted and studied, and second the model of translation strategies through which the translation of the specialised vocabulary is analysed. Finally, the comments on the findings will highlight the specifics of the equivalences provided, in order to provide a brief account of the way specialised vocabulary is translated.

2. Interlingual Subtitles as AVT

Subtitles are used in order to facilitate the viewers' comprehension of the verbal information of a film, and this is especially true for interlingual subtitles (Koolstra et al., 2002).

More concretely, it could be said that interlingual subtitling is a type of translation in a polysemiotic medium: something originally expressed in oral form in the source language is presented on the screen in the form of one or more lines of written text (Gottlieb, 1994). Meaning is supposed to be retrieved by audiences through the interplay between image and sound as well as between verbal and non-verbal elements found in films. All these constituents contribute to the "translation" of the message (Espasa, 2004, p. 190). However, the role of subtitling remains fundamental as it transfers the lexical and syntactic features of most of the verbal information, representing an important part of the cognitive content of the film.

3. Documentaries

3.1. General Characteristics of Documentaries

Etymologically speaking, the term *documentary* encompasses the idea of furnishing "evidence or information" (Winston, 2008, p. 14). As Grierson (in Hardy, 1966, p. 36–37) explained, "The documentary is nothing more than a creative treatment of actuality," while McLane (2012) specifies that documentaries are more functional and versatile than fiction. This "hybrid nature" (Espasa, 2004, p. 186) makes it difficult to rigorously define documentaries, as they constitute a "fuzzy concept" (Matamala, 2009b, p. 93).

As an informative type of discourse, through visualisation, documentaries are addressed to various audiences whose members have differing degrees of specialisation, constituting a democratic form of culture and mass communication means of spreading knowledge and raising awareness among people (Juel, 2006). This way "traditional oppositions between academic knowledge, folk traditions, and popular belief" are repudiated (Kahana, 2008, p. 1–2). Specialisation is always present (Matamala, 2010) as various scientific issues are popularised by science documentaries, with viewers expecting "a readily comprehensible product" (Matamala, 2009b, p. 100). Therefore, science documentaries can be considered as specialised multimodal texts.

3.2. Science Documentary Subtitling as Specialised Translation

As instances of specialised discourse, science documentaries comprise a certain number of terms, with specialised vocabulary and phraseology providing the immediate context. Term frequency, variation and synonymy are major characteristics of all this lexical content, which is in conceptual relation with at least one field of specialty, representing an important part of the cognitive content of the film as of any scientific text (Cabré, 1998; Kočourek, 1991). However, in texts of a lesser degree of specialisation like science documentaries, terms and specialised vocabulary can oscillate from very specialised to rather popularised forms (Kočourek, 1991). As specialised translation depends on the communication circumstances, the accurate transfer of the cognitive content through specialised vocabulary, which definitely requires domain knowledge, might prove complicated, as term systems and knowledge systems often vary by language and culture (Gerzymisch-Arbogast, 2008; Kočourek, 1991). This search for term equivalences, which is a cognitive task per se, has a definite impact on translation as a broader cognitive process, requiring step-by-step choices and decisions, such as "making inferences, solving complex problems, and restructuring information" (Faber & Ureña Gómez-Moreno, 2012, p. 78). It should be explained that, in AVT, translators have to deal with very different topics, hence it is difficult for them to have domain knowledge in all fields (Gambier, 2012) or, as Matamala (2009b) indicates, very few AV translators have any domain knowledge. This explains the numerous difficulties that AV translators are confronted with when translating documentaries: identifying terms, understanding terms, finding equivalents, dealing with denominative variation,

choosing between *in vivo* (spontaneously while communicating) and *in vitro* (in lexicography) terminology, overcoming the absence of an equivalent, dealing with ambiguity and handling obscure equivalents for lay audiences (Matamala, 2010).

4. Corpus Study

4.1. Brief Presentation of the Documentaries

The two films studied were, unfortunately, the only English-speaking medical-themed documentaries available by the Hellenic Broadcasting Corporation (ERT). The first one is a forty-five-minute film entitled *Programmed to be fat* (*PF* as abbreviation) concerning aspects of obesity and was produced by Dreamfilm Productions and the Canadian Broadcasting Corporation in 2011. The second one, entitled *Lethal Fake Medicine* (*LM* as abbreviation), is a fifty-two-minute film of Danish production in 2016, concentrating on the way fake medicine is produced, sold and distributed to hospitals, and highlighting the impact on patients' health. In both documentaries, which were translated by two different translators-subtitlers, specialised vocabulary from other fields is also present. Given that both films belong to ERT and have been on television several times both in the morning and during prime time, presumably, the target audience is the general public, who wish to obtain reliable information about these specific health matters.

4.2. Methodology and Findings

For each film, the material provided by ERT consisted of the audiovisual file followed by two written scripts—that is, the transcripts of oral texts—the first one with the original text in English and the second one comprising the Greek subtitles and voice-over parts. These are called source script texts (SST) and constitute the material from which the specialised vocabulary was taken. Both the vocabulary extraction from the SSTs and the matching with the equivalents used in the subtitled part of the Greek script version (GSV) were done manually. For both documentaries the study only concentrated on the subtitled part and strictly no other kind of translation—such as voice-over—was studied, in an effort to treat everything on an equal footing. The visual material was not taken into account either.

The identification of terms and specialised vocabulary constitutes the first stage of the study. As far as the scientific areas involved, the terminology and specialised vocabulary used in the films come mainly from the medical (anatomy and physiology) and related fields like pharmacy, biochemistry and chemistry (*PF*: 134 terms, *LM*: 62 terms), while medicine trade names and names of pharmaceutical companies (*PF*: 1, *LM*: 11), names of hospitals (*PF*: 1, *LM*: 1), organisations (*PF*: 1, *LM*: 6), as well as of a research project (*PF*: 1) and a police operation (*LM*: 1) are also encountered. The rest of the specialised vocabulary includes legal, administrative and law enforcement terminology

(*LM*: 39), as well as a small number of economic terms (*LM*: 12), computer science terms (*LM*: 5) and structural engineering terms (*PF*: 5). Finally, transdisciplinary vocabulary, that is, vocabulary common in most scientific fields, has also been detected, e.g. “research project,” “study groups,” “testing protocol” (*PF*: 5). In order to identify all English specialised vocabulary and check the degree of specialisation of the respective translations, language resources (dictionaries, medical texts and terminology data bases) have been consulted, all of them listed in the references at the end of this article.

From a formal point of view, the criteria for the extraction of English terms and specialised vocabulary are morpho-syntactical and structural. The focus is on:

i) one-word units, comprising medical terms (nouns and adverbs), trade names and abbreviated forms, e.g. “obesity,” “post-natally,” “Tributyltin,” “heparin,” “Avastin,” “INTERPOL,” “D.E.S.” (*PF*: 65, *LM*: 46) and

ii) multi-word units according to the model proposed by Daille (2017).

More specifically, the basic model which concerns two-word units consists of the following patterns (N=noun, A=adjective, P=preposition):

a) N+N: “side effect,” “cancer medication,” “undercover agent,” including one based on an eponym: “Petri dish”;

b) A+N: “reproductive system,” “marine invertebrates,” “counterfeit medicine,” “heavy metal,” some of which comprise abbreviated forms, e.g. “pharma crimes,” “legit pharmacy”.

The extended model used for multi-word terms comprises the following patterns:

a) A+A+N: “national regulatory authority,” “active pharmaceutical ingredient”;

b) A+N+N: "fetal origins theory,” “low dose experiments,” “European web pharmacy”;

c) N+A+N: “endocrine disrupting chemical”;

d) N+N+N: “Domain name registrars” and;

e) N+P+N: "infringement of copyright”.

Combined, thus longer, forms have also been identified: “normal birth weight range,” “increased risk of hypertension,” “phenomenon of catch-up growth,” “obesity study of estrogen-treated mice,” “calories in calories out,” “over the counter weight-loss medication,” “re-programming lab animals before birth.”

Furthermore, some of the terms which do not fully comply with the above patterns include as part of their structure:

a number: “LD50,” “Type 2 diabetes,”

a letter: “Bisphenol A,” “Bisphenol S”;

a number and a letter: “2D barcode reader.”

Finally, segments including verb forms beside terms have also been studied: we “tested Tributyltin,” “we treated pregnant females,” “it was labelled Altuzan,” “buying medicines online,” “had been diagnosed with lung cancer,” “develop a drug,” “DNA is being expressed.”

Concerning the second and most important stage, that of translation strategies, which are defined as “potentially conscious” procedures for solving translation problems (Krings, 1986, p. 268), for both films, Van Hove’s model (2017/2018, p. 48) was used. Based on the elaboration of previous models, it comprises eighteen translation strategies and appears to be the most comprehensive one, which explains its use for the present study.

Hereinafter, Van Hove’s model is presented and explained briefly. For each strategy, the number of cases for each film appears in brackets followed by two English-Greek examples from the corpus (often more than one subtitles in each example preceded by the corresponding SST), unless only one was detected. The respective time points are also given in brackets. The specialised vocabulary studied is in bold. Back translation (BT) of the sentence segments is always provided.

a) OFFICIAL EQUIVALENT: The target text (TT) term is the official equivalent of the source text (ST) term. This strategy concerns registered names of chemical substances and chemical products like pesticides as well as brand names of medicines and pharmaceutical companies (*PF*: 11 cases; *LM*: 21, most of which with numerous reoccurrences):

(1) *PF* (10:05:56)

SST:
Around the same time, a California biologist was studying the effects on sea life of a marine pesticide called **Tributyltin**.

GSV:
Την ίδια περίοδο ένας Καλιφορνέζος βιολόγος εξέταζε τις επιπτώσεις που είχε στη θαλάσσια ζωή ένα θαλάσσιο παρασιτοκτόνο το **Tributyltin**.

BT:
The same period, a Californian biologist was studying the effects that a marine pesticide called **Tributyltin** had on sea life.

(2) *LM* (00:23:23:18)

SST:
This is a painkiller: **Voveran SR** of **Novartis**.

GSV:

Αυτό το παυσίπονο είναι το **Voveran SR** της **Novartis**.

BT:
This painkiller is **Voveran SR** of **Novartis**.

b) RETENTION: The ST term is kept in the subtitle, but does not exist in the target language (*PF*: 3; *LM*: 1):

(1) *PF* (10:05:33)

SST:
Retha Newbold was studying reproductive changes caused by an estrogen replacement drug called **D.E.S.**

GSV:
Η Ρίθα Νιούμπολντ μελετούσε τις αναπαραγωγικές μεταβολές που προκαλούσε ένα υποκατάστατο οιστρογόνου, το **DES**.

BT:
Retha Newbold was studying the reproductive changes that an estrogen replacement drug caused, the **DES.**

(2) *LM* (00:50:10:10)

SST:
But for instance this group, I am a part of, **EFPIA**.

GSV:
Για παράδειγμα, εγώ είμαι μέλος της **EFPIA**.

BT:
For instance, I am a member of **EFPIA**.

c) LOAN TRANSLATION: The ST word is incorporated into the TT, for they are cognates (*PF*: 9; *LM*: 1, all with numerous occurrences):

(1) *PF* (10:19:26)

SST:
500 **micrograms** of Bisphenol A is able to be wiped off a person's hand after just holding a receipt.

GSV:
Πεντακόσια **μικρογραμμάρια** Δισφαινόλης Α μπορούν να περάσουν στο χέρι κάποιου απλώς έχοντας κρατήσει μια απόδειξη.

BT:
Five hundred **micrograms** of Bisphenol A can pass on someone's hand by simply holding a receipt.

(2) *LM* (00:38:17:10)

SST:
…this box already exists in the data package from the **pharmaceutical** company.

GSV:
…αν το συγκεκριμένο κουτί υπάρχει ήδη στο πακέτο δεδομένων της **φαρμακευτικής** εταιρείας.

BT:
…if the particular box already exists in the data package of the **pharmaceutical** company.

It should be explained that although *φάρμακον* is a word of ancient Greek origin, the modern semantic content of *φαρμακευτικός-ή-ό* is a semantic loan from the French "pharmaceutique."

d) LITERAL TRANSLATION: The ST term is translated literally into the TT, but slight changes may occur (e.g. plural to singular, noun to adjective) (*PF*: 127; *LM*: 101):

(1) *PF* (10:06:40)

SST:
The pesticide had somehow turned a part of the **reproductive system** into fat cells.

GSV:
Το παρασιτοκτόνο είχε αλλάξει μέρος του **αναπαραγωγικού συστήματος** σε λιποκύτταρα.

BT:
The pesticide had changed a part of the **reproductive system** into fat cells.

(2) *LM* (00:33:18:14)

SST:
Then our mum had a **reaction** and got sick doing an **infusion of medication**.

GSV:
Κάποια στιγμή, όμως, η μητέρα μας παρουσίασε μια **αντίδραση** και αρρώστησε κατά την **έγχυση του φαρμάκου**.

BT:
Sometime, however, our mother displayed a **reaction** and got ill during the **infusion of the medication**.

e) EXPLICITATION: The TT term is more explicit than the ST term (*PF*: 1; *LM*: 3):

(1) *PF* (10:24:44)

SST:
They eat the same amount of the same types of food as their **unexposed relatives**.

GSV:
Τρώνε την ίδια ποσότητα ίδιων τροφών με **ποντίκια που δεν είχαν εκτεθεί στο χημικό**.

BT:

They eat the same quantity of same foods as **rats which had not been exposed to the chemical**.

(2) *LM* (00:27:59:01)

SST:
…we had made some **undercover purchases**.

GSV:
Είχαμε κάνει διάφορες **αγορές, ως μυστικοί πράκτορες**…

BT:
We had made various **purchases, as undercover agents**…

f) GENERALISATION: The ST term is translated with a broader and more general TT term (*PF*: 8; *LM*: 1):

(1) *PF* (10:28:22)

SST:
So that yields levels of cotinine, which is the major metabolite of nicotine in the **serum of the rat**…

GSV:
Αυτό αποφέρει επίπεδα κοτινίνης που είναι ο βασικός μεταβολίτης της νικοτίνης στο **αίμα του ζώου**.

BT:
This yields levels of cotinine, which is the major metabolite of nicotine in the **blood of the animal**.

(2) *LM* (00:34:09:24)

SST:
The **FDA** raided the doctor's office two weeks later.

GSV:
Η **Υπηρεσία** έκανε έφοδο στο γραφείο της γιατρού έπειτα από δύο βδομάδες.

BT:
The **Service** made a raid to the office of the doctor after two weeks.

g) COMPLETION: An ST ellipsis/acronym is completed in the subtitle (*PF*: none; *LM*: 13):

LM (00:38:08:23)

SST:
…your pharmacist takes out the box he goes through the **2D barcode reader**, and…

GSV:
…ο φαρμακοποιός περνά το κουτί από τη **συσκευή ανάγνωσης ραβδοκώδικα** και…

BT:

… the pharmacist passes the box from the **reading barcode device** and…

h) PARAPHRASE: The ST term is explained with a paraphrase (*PF*: 10; *LM*: 5):

(1) *PF* (10:09:18)

SST:
…we tried to get a **weight loss effect type of toxicity** which is the weight loss, but we only got weight gain.

GSV:
Είπαν ότι προσπάθησαν να έχουν ένα **είδος τοξικότητας που να οδηγεί σε μείωση βάρους**. Αντίθετα, είδαν αύξηση βάρους.

BT:
They said they tried to have **a sort of toxicity which leads to a reduction of weight**. On the contrary, [they] saw an increase of weight.

(2) *LM* (00:25:55:14)

SST:
And to get information of the day to day **modus operandi** of these people is very risky.

GSV:
…και η συλλογή πληροφοριών σε καθημερινή βάση για το **πώς λειτουργούν** αυτά τα άτομα κρύβουν μεγάλους κινδύνους.

BT:
…and the collection of information on [a] daily basis about **how** these persons **function** hides great risks.

In the *LM* example, the Latin expression is more suitable for academic contexts in Greek.

i) COMPENSATION: A TT term is used where none was used in the ST (*PF*: 1; *LM*: 5):

(1) *PF* (10:16:57)

SST:
No one likes to look at themselves in the mirror with **blubber** hanging everywhere.

GSV:
Σε κανέναν δεν αρέσει να βλέπει το **λίπος** να κρέμεται.

BT:
To no one appeals to see the **fat** hanging.

(2) *LM* (00:05:58:04)

SST:
We have calculated that 50 percentage **of what** you buy on the internet is fake.

GSV:

Το 50% των **φαρμάκων** που αγοράζουμε απ' το διαδίκτυο είναι πλαστά.

BT:
The 50% **of the medicines** that we buy from the Internet are fake.

j) LEXICAL RECREATION: The ST term is translated with a neologism in the TT (*PF*: 1 semantic neologism with sixteen occurrences; *LM*: none):

PF (10:29:10)

SST:
There are about 20 chemicals suspected of being **Obesogens**.

GSV:
Υπάρχουν 20 χημικά που μάλλον συγκαταλέγονται στα **ογκογόνα**.

BT:
There are 20 chemicals which rather belong to [those] **producing volume**.

It should be underscored that the unique example of lexical recreation, which concerns 16 occurrences of the term "obesogen(s)," corresponds to the Greek term *ογκογόνο-α*. This term is not usually employed in this sense: in Greek medical literature, it is related to cancer entities.

k) TRANSPOSITION: The ST term is translated with a different TT term, retaining the same function and meaning (*PF*: 14, including one term unit rendered in two different ways without any difference in meaning; *LM*: 4):

(1) *PF* (10:00:29)

SST:
Scientists studying obesity have begun to suspect that there's something more at play here than just **calories in, and calories out**.

GSV:
Επιστήμονες που μελετούν την παχυσαρκία υποψιάζονται ότι συμβαίνει κάτι βαθύτερο απλώς από την **προσθήκη και αποβολή θερμίδων**.

BT:
Scientists who study the obesity suspect that happens something more profound than just the **addition and loss of calories**.

(2) *PF* (10:36:32)

SST:
It looks to me as if it's a much more complex issue than **calories in**, **calories out**.

GSV:
Είναι πολύ πιο περίπλοκο ζήτημα από **πρόσληψη ή καύση θερμίδων**.

BT:
It is a much more complex issue than **intake or burning of calories**.

Presumably, this difference is a matter of choice.

(3) *LM* (00:29:33:22)

SST:
Some of the drugs are just **sugar pills** but many of these medicines can be very dangerous.

GSV:
…κάποια μπορεί να είναι **ψευδοφάρμακα** αλλά πολλά φάρμακα μπορεί να είναι επικίνδυνα.

BT:
…some can be **fake medicines** but many medicines can be dangerous.

l) ADAPTATION: The ST term is freely translated and the context of the TT is needed (*PF*: 15; *LM*: 12):

(1) *PF* (10:16:38)

SST:
In the fattest country in the world, the United States, 14 percent of cancers in men and 20 percent in women are estimated to be caused by **being too heavy**.

GSV:
Στην πιο υπέρβαρη χώρα του κόσμου, στις ΗΠΑ το 14% των καρκίνων σε άντρες και 20% σε γυναίκες εκτιμάται ότι προκαλείται από το **πάχος**.

BT:
In the fattest country in the world, the USA, 14 percent of the cancers in men and 20 percent in women are estimated that are caused by **fat**.

(2) *LM* (00:10:53:03)

SST:
People generally don't just drop dead, when they take a **drug that does not have the therapeutic benefit**.

GSV:
Οι άνθρωποι δεν πεθαίνουν στη στιγμή όταν παίρνουν ένα **μη θεραπευτικό φάρμακο**.

BT:
The people do not die in a moment when taking a **non-therapeutic medicine**.

m) DEICTICS: Deictic methods are used to translate the ST term (*PF*: 1; *LM*: none):

(1) *PF* (10:07:11)

SST:
Industry **toxicologists** found it hard to believe that he could trigger reproductive problems in lab mice with doses of Bisphenol A thousands of times smaller than what those **toxicologists** considered safe.

GSV:

Οι βιομηχανικοί **τοξικολόγοι** αμφέβαλαν ότι μπορούσε να προκαλέσει αναπαραγωγικά θέματα σε πειραματόζωα με μικρές δόσεις BPA. Δόσεις χιλιάδες φορές μικρότερες από αυτές που οι **ίδιοι** θεωρούσαν ασφαλείς.

BT:
Industrial **toxicologists** doubted that [he] could cause reproductive problems in lab animals with small doses of BPA. Doses thousands of times smaller than these that **themselves** were considering safe.

Cohesion is enhanced through reference in the subtitle as there is no repetition of the noun.

n) UNDERSPECIFICATION: The ST term is only partially translated (*PF*: 18; *LM*: 6, including four for medical and related terms, two for non-medical terms, one of which concerns the same term):

(1) *PF* (10:13:13)

SST:
The theory says subtle effects on the fetus that cause **low birth weight**, can also lead to disease.

GSV:
Έτσι, μικρές αλλαγές στο έμβρυο που προκαλούν **χαμηλό βάρος** οδηγούν και σε διάφορες παθήσεις.

BT:
This way, small changes in the fetus that cause **low weight** lead also to different diseases.

(2) *LM* (00:08:30:23)

SST:
My father-in-law was buying from a **cloak Canadian online pharmacy**.

GSV:
Ο ίδιος ο πεθερός μου αγόραζε **φάρμακα από μια καναδική ιστοσελίδα**.

BT:
My father-in-law himself was buying **medicines from a Canadian webpage**.

“Cloak” has not been rendered whatsoever.

o) INADEQUATE EQUIVALENT: An unsuccessful version of transposition (*PF*: 1; *LM*: none):

PF (10:13:17)

SST:
The recognition that low birth weight was associated with increased blood pressure, increased incidence of stroke, increased incidence of death from heart disease, and then an **increased incidence of obesity**, of Type 2 diabetes.

GSV:

Είδαμε ότι το χαμηλό βάρος κατά τη γέννα σχετίζεται με υψηλή πίεση, αυξημένο ποσοστό εγκεφαλικών και θανάτων από καρδιακή νόσο. Επίσης, **σχετίζεται με παχυσαρκία** και διαβήτη τύπου δύο.

BT:
We saw that the low weight at birth is related to high pressure, increased percentage of strokes and deaths from heart disease. Moreover, it is **related to obesity** and diabetes type 2.

p) OMISSION: The ST term is omitted in the subtitle (*PF*: 8; *LM*: 7):

(1) *PF* (10:13:15)

SST:
The initial work was around cardio vascular disease, **heart disease**.

GSV:
Η αρχική δουλειά επικεντρώθηκε στην καρδιαγγειακή πάθηση.

BT:
The initial work was concentrated on cardiovascular disease.

(2) *LM* (00:25:41:14)

SST:
Now you have to go to another **jurisdiction** and police station.

GSV:
Τότε θα πρέπει να πας σε άλλο αστυνομικό τμήμα.

BT:
Then you will have to go to another police station.

"Cardiovascular disease" is explained as "heart disease" in English, but there is no need for an equivalent explanation in Greek, as *καρδιαγγειακή πάθηση* is in everyday use.

q) ABBREVIATION: The ST term is translated with an abbreviation or acronym (*PF*: 5 one of which concerns three occurrences of the same term; *LM*: none) obviously for brevity reasons:

PF (10:07:42)

SST:
And when the animals got to puberty the **Bisphenol A** animals were significantly heavier than the animals that had not been treated with **Bisphenol A**.

GSV:
Όταν τα ζώα έφτασαν στην εφηβεία τα ζώα με **BPA** ήταν πολύ πιο βαριά από τα ζώα που δεν τους είχε χορηγηθεί **BPA**.

BT:

When the animals reached the puberty the animals with **BPA** were much heavier than the animals that had not been administered **BPA**.

r) TERM-TO-NON-TERM: The ST term is translated with a TT non-term (*PF*: 1; *LM*: none):

PF (10:13:38)

SST:
Okay, any questions about **breathing** at all?

GSV:
Κάποια ερώτηση για τις **ανάσες**;

BT
Some question about the **breaths**?

Considering the *PF* film, apart from the cases already presented, it must be pointed out that various strategies, such as official equivalent (OE), loan (LN), literal translation (LT) and transposition (TP) may coexist in the same sentence:

(10:32:15)

SST:
Our **DNA** is not being **mutated** by these **chemicals**, but **the way that DNA is being expressed**, and the **proteins** that are being formed during **development**, are changing due to **exposure to these chemicals**.

GSV:
Το **DNA** (OE) μας δεν **μεταλλάσσεται** (LT) λόγω των **χημικών** (LT). Όμως, ο **τρόπος έκφρασης του DNA** (TP+OE) και οι **πρωτεΐνες** (LN) που παράγονται κατά την **ανάπτυξη** (LT), αλλάζουν εξαιτίας της **έκθεσης στα χημικά** (LT).

BT:
Our **DNA** is not being **mutated** due to the **chemicals**. However, the **way of expression of the DNA** and the **proteins** that are produced during the **development**, change because of the **exposure to the chemicals**.

Apart from the model used and as far as variations for the term *obesity* (22 occurrences) are concerned, it has always been translated as *παχυσαρκία*. The adjective *obese* has been rendered twice as *παχύσαρκος* and once, rather unexpectedly, as *υπέρβαρος*, adjective otherwise used as equivalent to *overweight* throughout the film:

(10:01:34)

SST:
One in six people is **obese**.

GSV:
Ένας στους έξι είναι **παχύσαρκος**.

BT:
One in six is **obese**.

(10:24:44)

SST:
All of the ones I tested that did cause the animals to be light at birth, yeah, they all ended up being **obese**.

GSV:
Όσα ζώα εξέτασα που ήταν πιο αδύνατα στη γέννα πράγματι κατέληξαν **υπέρβαρα**.

BT:
All animals I examined which were slimmer at birth indeed ended up being **obese**.

The lay term "fat cell(s)"[1] (13 occurrences) has always been literally translated as *λιποκύτταρ-ο/-α*, which is a medical term used in everyday life as well. However, there is a certain multiplicity concerning the translation of *fat*. When used: i) as a noun, it is either translated literally as *πάχος* ("fat," "findings of fat") or *λίπος* ("fat," "body fat," "fat of fish"), or adapted as *λιπαρά* ("high fat diet") or *βάρος* ("fat-inducing qualities"); ii) as an adjective in "fat offspring," it is literally translated as *παχείς*:

(10:05: 40)

SST:
I wasn't paying attention to body mass, body **fat**.

GSV:
Δεν έδινα προσοχή στη μάζα σώματος ή στο σωματικό **λίπος**.

BT:
I wasn't paying attention to the body mass or the body **fat**.

(10:34:40)

SST:
Dioxins are long living and are carried in the **fat** of fish.

GSV:
Οι διοξίνες είναι ανθεκτικές και βρίσκονται στο **λίπος** ψαριών.

BT:
The dioxins are resistant and are found in the **fat** of fish.

(10:37:49)

1 Given the popularising character of the documentary, as more easily comprehensible "fat cell(s)" is preferred to academic terms like "adipocyte" or "adipose cell," or "lipocyte."

SST:
Some studies show that animals given both a high **fat** diet and a low dose of an Obesogen, will get fatter and more diabetic, than…

GSV:
Μελέτες δείχνουν ότι ζώα που τούς χορηγήθηκε διατροφή υψηλή σε **λιπαρά** αλλά και χαμηλή δόση ογκογόνων απέκτησαν διαβήτη και πάχυναν πιο πολύ από…

BT:
Studies show that animals that were administered a diet high in **fat** but also a low dose of obesogens got diabetes and got fatter than…

(10:14:58)

SST:
If the mice produce **fat** offspring, should we be worried for human babies?

GSV:
Αν τα ποντίκια γεννούσαν **παχείς** απογόνους θα έπρεπε να ανησυχήσουμε για τα ανθρώπινα μωρά;

BT:
If the mice gave birth to **fat** offspring, should we be worried for human babies?

The derivative "fattening" followed by a noun ("fattening effects," "fattening qualities") has been paraphrased with the use of the prepositional phrase *στο βάρος* (=in the weight). Here the translator had to choose among a) the lay equivalent *πάχος*, b) the term *λίπος/λιπο-*, which belongs to both the specialised and the general Greek vocabulary, and c) the lexical choice of *βάρος*, a word that can be used in the same context.

(10:26:28)

SST:
And one researcher is tracking down the **fattening qualities** of a very common natural substance.

GSV:
Μία ερευνητής έχει βρει τις **επιπτώσεις στο βάρος** μιας κοινής, φυσικής ουσίας.

BT:
One researcher has found the **effects on the weight** of a common natural substance.

Another translation worth commenting on is that of the term "blood" as either a one-word term or as part of multi-word terms. In most cases, "blood" is used in both general and specialised language as its Greek equivalent *αίμα*. Both "blood" and "bloodstream" have been translated as *αίμα* – in the second case we have underspecification – while in "increased blood pressure" the equivalent used is again underspecified as *υψηλή πίεση* (=high pressure) but this lay term is clear in Greek:

(10:08:13)

SST:
…all three can disrupt the system of glands that releases hormones into our **bloodstream**.

GSV:
Και τα τρία διαταράσσουν το σύστημα αδένων που απελευθερώνουν ορμόνες στο **αίμα** μας.

BT:
All three disrupt the system of glands that release hormones into our **blood**.

(10:13:13)

SST:
The recognition that low birth weight was associated with **increased blood pressure**, increased incidence of stroke…

GSV:
Είδαμε ότι το χαμηλό βάρος κατά τη γέννα σχετίζεται με **υψηλή πίεση**, αυξημένο ποσοστό εγκεφαλικών και θανάτων…

BT:
We saw that the low weight at the birth is related to **high pressure**, increased percentage of strokes and deaths…

On the other hand, "sea" and "marine," used as synonyms, though in different two-word terms ("sea life," "marine pesticide"), are both literally translated as *θαλάσσιος*. Similarly, the two-word terms "side effect" and "adverse effect" have both been literally rendered by *παρενέργεια* as well as both "weed killer," a lay term, and "pesticide" have been literally translated as *παρασιτοκτόνο*, a specialised term:

(10:05:56)

SST:
Around the same time, a California biologist was studying the effects on **sea life** of a **marine pesticide** called Tributyltin.

GSV:
Την ίδια περίοδο ένας Καλιφορνέζος βιολόγος εξέταζε τις επιπτώσεις που είχε στη **θαλάσσια ζωή** ένα **θαλάσσιο παρασιτοκτόνο** το Tributyltin.

BT:
During the same period a Californian biologist was examining the effects that a **marine pesticide** the Tributyltin had on the **sea life**.

(10:29:10)

SST:
They can be in hundreds of everyday products, from electronics casings and dental glues to cleaners and **weed killers**.

GSV:
Απαντώνται σε πολλά καθημερινά προϊόντα. Από θήκες ηλεκτρονικών συσκευών και οδοντιατρικές κόλλες μέχρι καθαριστικά και **παρασιτοκτόνα**.

BT:
They are found in many everyday products. From casings of electronic devices and dental glues to cleaners and **pesticides**.

The anatomy and physiology terms of Greek origin like "pancreas," "protein," "endocrine," "hormone," "diabetes," "metabolism," or "estrogen," either as one-word terms or as components of multi-word terms, have been rendered literally with their Greek cognates-equivalents respectively.

As regards the substances, the official commercial names like "Tributyltin" have been transferred unchanged through the official equivalent strategy. In the cases of "Bisphenol A" and "Bisphenol S," "Bisphenol" as such has been rendered four times with the official equivalent *Δισφαινόλη* followed by "A" or "S" respectively; subsequently, these two-word terms have been rendered by the acronyms "BPA" and "BPS" respectively, perhaps for brevity reasons. However, "Bisphenol A" was rendered with a twofold translation as *Δισφαινόλη Α ή* "BPA" the first time, obviously in order to familiarise viewers with the acronym "BPA":

(10:06:52)

SST:
…Fred Vom Saal was studying a chemical called **Bisphenol A**.

GSV:
…Φρεντ Βομ Σάαλ μελετούσε ένα χημικό ονόματι **Δισφαινόλη Α** ή **BPA**.

BT:
…Fred Vom Saal was studying a chemical called **Bisphenol A** or **BPA**.

(10:40:12)

SST:
Because people want **BPA** free products, they're using **Bisphenol S** as a replacement for **BPA** and the problem is **BPS** & **BPA** are both estrogenic chemicals and there's no reason to think that **Bisphenol S** is going to be a lot safer than **BPA**.

GSV:
Οι άνθρωποι θέλουν προϊόντα χωρίς **BPA**. Έτσι, χρησιμοποιούν **Δισφαινόλη S** σαν υποκατάστατο της **BPA**. Το πρόβλημα είναι ότι η **BPS** και η **BPA** είναι οιστρογονικά χημικά. Δεν υπάρχει λόγος να πιστεύουν ότι η **BPS** πρόκειται να είναι λιγότερο ακίνδυνη από την **BPA**.

BT:

> The people want products without **BPA**. So, [they] use **Bisphenol S** as [a] replacement of **BPA**. The problem is that the **BPS** and the **BPA** are estrogenic chemicals. There's no reason for them to think that **Bisphenol S** is going to be less risky than **BPA**.

Some more examples of two-word terms: "developmental exposures," "precautionary principle," have been translated as *περιβαλλοντικές εκθέσεις* (TP) and *αρχή της προφύλαξης* (LT) respectively.

Finally, non-health related terms like "European Union" and "EU" have both been rendered with their official equivalents *Ευρωπαϊκή Ένωση* and *ΕΕ* respectively.

In the *LM* documentary, not unexpectedly, apart from the examples appearing earlier in this text, there are combinations of strategies, e.g. explicitation (EX), OE and LT:

(00:09:25:11)

> SST:
> This is a case involving **counterfeit Avastin**, which is a **cancer medication**.
>
> GSV:
> Επρόκειτο για ένα **σκεύασμα απομίμησης του Avastin** (EX+OE) ενός **αντικαρκινικού φαρμάκου** (LT).
>
> BT:
> This was about a **preparation of imitation of Avastin**, of an **anticancer medicine** (LT).

or completion (CO) and LT:

(00:11:41:16)

> SST:
> She was given for the most part **legitimate cancer drugs**.
>
> GSV:
> Κατά κύριο λόγο, έλαβε **αγωγή με νόμιμα** (CO) **αντικαρκινικά φάρμακα** (LT).
>
> BT:
> For the most part, she received **treatment with legitimate anticancer medicines**.

The second observation concerns synonymous high frequency English – more or less specialised – terms which have been translated identically. "Drug," "medication," "medicine, pharmaceuticals," alternatively used in the original, have been literally rendered as *φάρμακ-ο/-α*, as this is the most common Greek term. However, "pill(s)," rendered three times as *χάπι(α)*, has once been translated as *φάρμακο* through generalisation. It should be noted that "drug" has been used once in the sense of "narcotic," again literally translated as *ναρκωτικό*.

The adjectives "fake" ("fake drugs," "fake pills") and "counterfeit" ("counterfeit drugs"), always found in collocations, have been rendered literally as *πλαστό* with only one exception where

"counterfeit Avastin" is translated through explicitation as *σκεύασμα απομίμησης* "Avastin" as the translator presumably tried to provide additional information.

Furthermore, different but semantically similar terms like "lab animals" and "lab mice" were both translated, through literal translation and generalisation respectively, with the same Greek term *πειραματόζωα*.

"Tumour," "infusion," "heparin" have always been literally and accurately translated as *όγκος, έγχυση, ηπαρίνη* respectively, while "paracetamol" has been rendered as *παρακεταμόλη* through loan translation.

As far as names are concerned, "European Federation of pharmaceutical industries and associations" has been officially translated as *Ευρωπαϊκή Ομοσπονδία Φαρμακευτικών Βιομηχανιών και Ενώσεων*. The long name BEEP Hematology and Oncology became *ογκολογική κλινική* (=oncological clinic) through underspecification, retaining however all the necessary information. As for the unique eponym "Petri dish" (*PF*), it was translated through literal translation and transcription of the name as *τρυβλίο Πέτρι*. The registered names of medicines like "Avastin", "Altuzan", "Viagra" as well as brand names like "Pfizer" and "Abbott" have remained unchanged. The only exception is "GlaxoSmithKline", mentioned for the second time as "Glaxo" in the English script; however, probably in order to avoid confusion, the translator preferred to render it again as "GlaxoSmithKline". Conversely, two other official names though not commercial ones, those of "Interpol" and "Europol", have been rendered with their OE *Ιντερπόλ* and *Ευρωπόλ*. The acronym "FDA" has always been rendered, through completion and explicitation, in its supposed-to-be full Greek form as *Υπηρεσία Ελέγχου Φαρμάκων*, which does not correspond completely to "Food and Drug Administration." Focusing on the medical context, the translator provided a more explicit equivalent by adding *Ελέγχου* (=of control).

Finally, among the small number of legal, mainly law enforcement terminology, most of them have been literally translated, like "pharmaceutical trafficking" as *λαθρεμπόριο φαρμάκων*, "detective" as *ερευνητής,* "raid" as *έφοδος*, and one through paraphrasing, that is, "cybercrime specialists" *as ομάδα ειδικευμένη στο ηλεκτρονικό έγκλημα*, without any concept alteration. The economic term "payment processors" was translated as *εταιρείες επεξεργασίας πληρωμών* (=companies processing payments) through completion. Here is a comprehensive example:

(00:04:20:12)

> SST:
> I am a special agent with the **FDA**'s office of criminal investigations and I manage an elite **crew of agents that are cybercrime specialists** and their primary job is investigating internet **pharmaceutical trafficking** networks.
>
> GSV:

Είμαι πράκτορας της αμερικανικής **Υπηρεσίας Ελέγχου Φαρμάκων**. Διευθύνω μια **ομάδα ειδικευμένη στο ηλεκτρονικό έγκλημα** που ερευνά δίκτυα **λαθρεμπορίου φαρμάκων** στο διαδίκτυο.

BT:
I am an agent of the American **Service of Control of Drugs**. I manage a **team specialised in cybercrime** which investigates networks of **trafficking of pharmaceuticals**.

5. Discussion and Concluding Remarks

The translation strategies are summarised in table 1 to make it easier to follow the conclusions drawn from the translation of the two science documentaries. Both the absolute frequency (AbsFr) and the relative frequency (RelFr) of each strategy are presented. All occurrences and renderings of each term have been recorded.

Table 1

Absolute Frequency (AbsFr) and Relative Frequency (RelFr) of Strategies for Each Film

Translation strategy	PF	%	LM	%
	AbsFr	RelFr	AbsFr	RelFr
Official equivalent	24	6.26	25	8.39
Retention	3	0.77	2	0.67
Loan translation	26	6.80	17	5.70
Literal translation	228	59.65	198	66.44
Explicitation	1	0.25	3	1.01
Generalisation	8	2.08	1	0.34
Completion	0	0	13	4.36
Paraphrase	10	2.60	5	1.68
Compensation	1	0.25	5	1.68
Lexical recreation	16	4.18	0	0
Transposition	14	3.65	4	1.34
Adaptation	15	3.90	12	4.03
Deictics	1	0.25	0	0
Underspecification	18	4.70	6	2.01
Inadequate equivalent	1	0.25	0	0
Omission	8	2.08	7	2.35
Abbreviation	8	2.08	0	0
Term-to-non-term	1	0.25	0	0
	382	100.00	298	100.00

Source: Author's own elaboration

As follows from the figures above, the use of strategies differs between the films, which could be attributed to each translator's choices. Nonetheless, the dominant strategy was, by far, that of literal translation (59.65% in *PF*, 66.44% in *LM*) followed by the strategies of loan translation and official equivalents. The use of these three strategies, as well as that of retention which was much less employed, suggests that long stretches of the Greek translations are as close as possible to the respective original text fragments (73.48% in *PF*, 81.20% in *LM*). In *PF* the three main strategies are followed by those of underspecification, lexical recreation and adaptation, while in *LM* by the strategies of completion, adaptation, and omission. Four strategies, those of deictics, lexical recreation, inadequate equivalent, and term-to-non-term, were not at all employed in *LM*, while in the *PF* film the strategies of explicitation, compensation, deictics, inadequate equivalent, and term-to-non-term were only used once. Finally, the strategy of completion was not employed in *PF*, while its use rate in *LM* was rather modest (4.32%). Strategies like transposition, omission, abbreviation, and the use of deictics were not extensively used altogether and their choice seems to indicate that language imperatives, such as avoidance of redundancy, greater cohesion or adequate use of Greek in general, were taken into consideration. What is more, when the abbreviation strategy was resorted to, the abbreviated form was clearly connected with the unabbreviated one so that misunderstandings were avoided. As far as the translation of official names (chemical substances, products, medicines, pharmaceutical companies, organisations and scientific projects) is concerned, they constitute a special category altogether, as they were rendered mainly through the strategy of official equivalents as expected, but retention, generalisation, completion, explicitation, and abbreviation were also employed. As regards loan translation, it was a strategy not always easy to distinguish from literal translation, as English terms originating from the Greek language had to be retranslated into Greek.

As illustrated by the examples (see 4.2), in some cases the same instances of specialised vocabulary were translated by means of different strategies on a case-by-case basis, which confirms that all strategies are context-dependent and work in a complementary way. However, in most cases, the recurrent English terms were rendered in the same way, which corroborates terminological and lexical stability, thus coherence in the subtitles (Cabré, 1998).

The subtitles of both films were prepared with a popular audience in mind, which was mainly achieved by means of underspecification, explicitation, completion, generalisation, and term-to non-term translation. However, their instances in the subtitles are not always in line with the popularisation principle, as for example, some lay English terms had to be rendered with more or less specialised equivalents, as there was no alternative. Nonetheless, in the cases of explicitation, and completion, which were statistically few, the additional information detected did not seem to have any other effect than facilitate the intelligibility of the subtitles.

As already mentioned, the text of subtitles is inescapably reduced to essentials. However, as a brief overall assessment, in both films, no matter what the strategy was in each case, the cognitive content of specialised language did not seem to be compromised. On the contrary, it was transferred into the subtitles, offering a readily comprehensible product without any loss of information.

Finally, it must be reminded that the purpose of this article was to record the findings obtained by scrutinising two science documentary translations. This study did not claim to be representative as the corpus was very small. Instead, it was meant to outline some aspects of subtitling. The extent to which subtitling constraints or other reasons might have incited the subtitlers-translators to choose each strategy in each case cannot be estimated. To this purpose, a large-scale study, based on discourse analysis of the whole text, translators' interviews and subtitle particularities, should be conducted.

Acknowledgments

Many thanks to the Hellenic Broadcasting Corporation (ERT, Doc 856/15-5-18) for their immediate response and cooperation.

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