A STUDY ON THE TRANSLATION OF ENGLISH COMPUTER TEXTS IN VIETNAMESE EQUIVALENTS

Nghiên cứu việc dịch tài liệu tiếng Anh chuyên ngành vi tính trong tài liệu tiếng Việt tương đương

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Supervisor: Assoc.Prof. PhD. Le Hung Tien
By: Vu Thi Thu Thuy – M.A. 11

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Vu Thi Thu Thuy
This thesis focuses on the translation of English computer texts in Vietnamese equivalents. Specifically, it is more concerned with the translation of some typical syntactic and lexical features in English texts, that is relative clauses, -ed participle clauses and passive structure and computing terminologies.

The study starts with the theoretical background which elaborates on the notion of translation, translation equivalence as well as translation methods and procedures. Simultaneously, characteristics of technical texts are touched upon, which leads to the discussion of computer texts with their typical features like computing terminologies and other discourse features such as relative clauses, -ed participle clauses and passive structure. A detailed investigation and examination of the translation of computer terminology and relative clauses, -ed participle clauses and passive structure is carried out, from which the translation procedures are extracted. Implication for translating computer texts will only be based on the results of the study.
ABBREVIATIONS

SL: source language
TL: target language
ST: source text
TT: target text
N: noun
Adj: adjective
V: verb
IT: Information Technology
ESP: English for Specific Purposes
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PART A: INTRODUCTION

1. Rationale

In the College of Technology, Vietnam National University, Hanoi, English is a compulsory subject and an essential tool for students of different majors such as Computer Science, Electronics and Communication, Nuclear Physics etc. to move forward, becoming most up-to-date with scientific and technological advances in today’s world.

It is recognized that the students majoring in technology often have to deal with specific and technical documents in English, i.e. reading comprehension or translation tasks for study purposes, so as to keep themselves well-informed of the field. To many students, doing translation of specialized documents is a difficult and demanding task since there are too many pitfalls in producing a good translation.

As an English teacher in charge of teaching computing English to students of information technology, I am fully aware of students’ difficulties in doing translation of English computer texts, which are consequences of inadequate knowledge of English and misunderstanding of the purpose of translation.

There have been many discussions on various aspects of language and language learning which all aim to be beneficial to language learners, facilitating their understanding of the language so that they can master it more easily. Among those are the study by Van Chu Thi Phuong (2004) on collocations in the English textbook on Electronics and Telecommunications, Phuong Nguyen Thi Mai (2004) on discourse features in written documents on Information Technology, Bac Nguyen Thi (2004) on the translation of Electronics and Telecommunications terminologies, and so on.
Inspired by the situation and previous studies, I have decided to carry out a study on the translation of English computer texts into Vietnamese as a contribution to the field of ESP in general, and to the understanding of translation strategies applied in computer texts in particular, thus hoping to raise awareness concerned with the translation of computing English.

2. Aims of the study

The study is aimed at

- Pinpointing the prominent factors affecting the translation of computing English, that is computing terminologies and certain significant syntactic features of computer texts such as relative clauses, –ed participle clauses and passive structure
- Identifying the translation strategies applied in the translation of computing terminologies and some outstanding syntactic features of computer texts by observing and investigating a number of English computer texts and their translation.
- Spotting some translation problems in the study corpus, thus giving suggested translation for such problematic translation.

In general, it is expected that the thesis would provide ESP teachers, IT students and translators of English for Computing with some ideas about ways of dealing with English computer texts, thus reducing the pitfalls or problems that may arise during the course of their work.

3. Scope of the study
This study is carried out on the basis of what has been explored in the study entitled “Typical discourse features in written documents on Information Technology and implications in teaching ESP at the faculty of technology, VNU-Hanoi” by Phuong Nguyen Thi Mai (2004). Phuong has realized that the discourse features of English computer texts involve both syntactic and lexical ones. The former includes the outnumber of complex sentence structure (55%), the use of relative clauses (57%) and –ed participle clauses (13%) as post modification while the latter embraces highly technical terms and sub-technical terms beside general vocabulary. Within the scope of this thesis, only typical discourse features of computer texts are put under investigation, which comprise the terminologies, syntactic features such as complex sentences with relative clauses, -ed participle clause and passive structure. Likewise, the study will spot some translation problems existing in the study materials. Finally, suggestions for translating computer texts will only be made on the basis of the results of the study.

4. Methods of the study

This is a descriptive study since the aim of the study is to analyze and pinpoint the common translation strategies used in the translation of English computer texts into Vietnamese. In order to accomplish the thesis, a flexible combination of methods is employed, which embraces reference to publications, collection, categorizing and analyzing of data, and description of result.

5. Design of the study

Since the ultimate aim of the study is to identify the translation strategies applied in the translation of English computer texts into Vietnamese, the study is started with the identification of subjects and data collection in the first place. The subjects of the study

Within the time limit and scope of the study, it is hard to produce statistic data on the frequency of translation strategies applied in the translation of computer texts so the collection of data is only expected to cover the outstanding translation samples according to the features under study, that is computing terms, relative clauses, -ed participle clauses and passive structures for investigation and analysis. Also, interviews with IT professions, ESP teachers and IT students are conducted to get information on the choice or preference of a translation strategy to evaluate its significance and impacts on the translation of computing documents in general, which will bring more light to the data analysis and discussion.

Review of relevant literature is necessary, which provides the theoretical background for the study as it deals with the central concepts in translation incorporating translation theory, translation equivalence, translation methods and procedures, technical translation and translation in the field of computer technology.

Afterward, investigation of the study corpus is carried out to come up with translation strategies which appear significant throughout computer texts. Analysis and discussion are made to bring about a more insightful look into those translation patterns,
which may induce the issue of appropriateness in the choice of translation strategies applied in some particular cases.

PART B: DEVELOPMENT

CHAPTER I: LITERATURE REVIEW

I.1. Translation theory

I.1.1. Definition

The study of translation has been dominated by the debate about its status as an art or a science. Different linguists have put the definition of translation in various ways, among which the followings stand out.

“Translation is the expression in another language (or target language) of what has been expressed in another, source language, preserving semantic and stylistic equivalences” (Marlone, 1988).

Translation means “the replacement of a text in one language (SL) by an equivalent in another language (TL)” (Catford, 1965).

In spite of the differences in these definitions, there are still common features which can be realized as the notion of movement between languages, content and the responsibility to find equivalents that preserve the attributes or characteristic features of the original text.

It is such an idea of equivalence that we are going to discuss hereafter.

I.1.2. Translation equivalence
Equivalence is well-recognized as a central concept in translation theory, which postulates a relation between SL text and TL text. The followings are some elaborate approaches to translation equivalence.

Nida (1964) strongly advocates dynamic equivalence rather than formal equivalence. As he puts it, formal equivalence means closest possible match of form and content between ST and TT, or a means of providing some degree of insight into the lexical, grammatical or structure form of a source text. Meanwhile, dynamic equivalence is the principle of equivalence of effect on reader of TT or the same effect on the TL receivers as the source text has on the SL receivers.

Newmark, P. (1995) terms Nida’s dynamic equivalence as “equivalence response” or “equivalent effect”, and holds that “the overriding purpose of any translation should be to achieve “equivalent effect”, i.e. to produce the same effect (or one as close as possible) on the readership of the translation as was obtained on the readership of the original”. This, according to Newmark, should be considered the desirable result, rather than the aim of any translation except for two cases: (1) if the purpose of the SL text is to affect and the TL translation is to inform (or vice versa); (2) if there is a pronounced cultural gap between the SL and the TL text.

Koller (1979) presents five types of equivalence as follows.

1. Denotative equivalence: This orients towards the extralinguistic content transmitted by a text.

2. Connotative equivalence: This respect indicates that individual expressions in the textual context do not only have a denotative meaning but also additional values which mean various or synonymous ways of expressions.
3. Text-normative equivalence: This has to do with text-type specific features or text and language norms for given text types. To put it another way, the SL and TL words are used in the same or similar context in their respective languages.

4. Pragmatic equivalence: This means translating the text for a particular readership, i.e. the receiver to whom the translation is directed, and to whom the translation is tuned in order to achieve a given effect.

5. Formal equivalence: This aims to produce an “analogy of form” in the translation by exploiting the formal possibilities of the TL or even by creating new forms if necessary.

Baker, M. (1992) approaches the concept of equivalence differently by discussing the notion of non-equivalence at word level and above word level, grammatical equivalence, textual equivalence, and pragmatic equivalence.

- Non-equivalence at word level means that the target language has no direct equivalent for a word which occurs in the source text. Common problems of non-equivalence then involve such cases as culture-specific concepts, the SL concept is not lexicalized in the target language, the SL word is semantically complex, the SL and TL make different distinctions in meaning, the TL lacks a superordinate, the TL lacks a specific term (hyponym), differences in physical or interpersonal perspective, differences in expressive meaning, difference in form, differences in frequency and purpose of using specific forms, the use of loan words in the source text.
Non-equivalence above word level is closely related to the differences in the collocational patterning of the SL and TL, which create potential pitfalls and can pose various problems in translation.

Grammatical equivalence is more concerned with the differences in the grammatical structures of the SL and TL, which often result in some change in the information content of the message during the process of translation. This change may take the form of adding to the target text information which is not expressed in the source text. This can happen when the TL has a grammatical category which the SL lacks. Likewise, the change in the information content of the message may be in the form of omitting information specified in the source text. If the TL lacks a grammatical category which exists in the SL, the information expressed by that category may have to be ignored.

Textual equivalence is achieved through the realization of cohesion, or cohesive devices such as reference, substitution, ellipsis, conjunction and lexical cohesion from the source text into the target text.

Pragmatic equivalence is realized by means of studying and translating coherence and implicature from the SL to the TL.

It is Baker’s ideas on the notion of equivalence that is of great importance and interest to the study of this thesis since he has drawn out most common problems relating to the issue and presented various strategies to deal with them, which shed light on our investigation.

1.1.3. Translation methods and procedures
The central problem of translating has always been whether to translate literally or freely. Newmark, P. (1995) points outs that differences in the emphasis (SL or TL) have resulted in a variety of translation methods and procedures, which shall be discussed hereafter.

**1.1.3.1. Word-for-word translation**

According to Newmark (1995), this is often demonstrated as interlinear translation, with the TL immediately below the SL words. The SL word-order is preserved and the words translated singly by their most common meaning, out of context. For example, “Viruses are something to worry about, but not a lot” – “Có một vài điều dễ lo lắng về các virus, nhưng không nhiều”. *(Source: Oxford English for Computing, p93. NXB LĐXH 2002)*

According to this method, cultural words are translated literally. The main use of word-for-word translation is either to understand the mechanics of the SL or to construe a difficult text as a pre-translation process.

**1.1.3.2. Literal translation**

The SL grammatical constructions are converted to their nearest TL equivalents but the lexical words are again translated singly, out of context. As a pre-translation process, this indicates the problems to be solved.

As Vinay, J.P. and Darbeinet, J. (1958) puts it, “literal translation or word-for-word translation is defined as one where the resulting TL text is grammatically correct and idiomatic, but where the translator has not needed to make any changes other than those that are obviously required by the TL grammar itself”. For example, “the sooner, the
better” (càng sớm càng tốt), ray of hope (tia hy vọng), school of thought (trường phái tư tưởng) etc.

Literal translation is most commonly found in translation between closely related languages, such as French – Italian, and especially among those having a similar culture.

I.1.3.3. Faithful translation

As Newmark (1995) sees it, a faithful translation attempts to reproduce the precise contextual meaning of the original within the constraints of the TL grammatical structures. It “transfers” cultural words and preserves the degree of grammatical and lexical “abnormality” (deviation from SL norms) in the translation. It attempts to be completely faithful to the intentions and the text realization of the SL writer. For example, “Scientists have also emulated the flexibility of an octopus where the tentacles can conform to the fragile objects of any shape and hold them with uniform, gentle pressure. A variation of this design can be used to handle animals, turn hospital patients in their beds, or lift a small child”. – “Các nhà khoa học cũng đã mô phỏng tính mềm dẻo của một con mực nói các xúc tu có thể phù hợp với các đồ vật dễ vỡ ở bất kỳ hình dạng và giữ chúng đồng bộ, áp lực nhẹ. Một sự thay đổi của những thiết kế này có thể được dùng để điều khiển các loại vật, chuyển các bệnh nhân tại bệnh viện vào các giường của họ hay nâng một đứa trẻ nhỏ” (Source: Oxford English for Computing, p147. NXB LĐXH 2002).

I.1.3.4. Semantic translation

Semantic translation differs from faithful translation only in as far as it must take more account of the aesthetic value of the SL text. Further, it may translate less important cultural words by culturally neutral third or functional terms but not by cultural
equivalents and it may make other small concession to the readership. For example, “BP on the moves – BP liên tục phát triển”, “Toshiba - vườn tôi tương lai”.

### 1.1.3.5. Adaptation

This is the freest form of translation which is mainly used for plays and poetry; the themes, characters, plots are usually preserved, the SL culture converted to the TL culture and the text written. As Vinay, J.P. and Darbeinet, J. (1958) see it, this procedure is used in cases when the situation to which the message refers does not exist at all in the TL and must thus be created by reference to a new situation, which is judged to be equivalent. This is thus the concern of situational equivalent. For example, “May and December – Gái tô mà lấy chồng già”, “It’s all Greek to me – Tôi hiểu mô tê gì cả”.

### 1.1.3.6. Free translation

In Newmark’s view, free translation reproduces the matter without the manner, or the content without the form of the original. Usually, it is a paraphrase much longer than the original, a so-called “intralingual translation”, often prolix and pretentious, and not translation at all. For example,

“Tạo hoá gây chi cuộc chí trường
Đến nay thảm toát máy tinh sương” (Bà Huyện Thanh Quan)

“How many stars have fled, how many misty seasons gone!” (The wife of the Sub prefect of Thanh Quan)


### 1.1.3.7. Idiomatic translation
This reproduces the message of the original but tends to distort nuances of meaning by preferring colloquialisms and idioms where these do not exist in the original. For example, “make a mountain out of a molehill - viếc bé xé ra to”, “life circle – sinh lão bệnh tử”.

**I.1.3.8. Communicative translation**

Communicative translation attempts to render the exact contextual meaning of the original in such a way that both content and language are readily acceptable and comprehensible to the readership. For example,

“Một dèo, một dèo, lại một dèo

Khen ai khéo tác cảnh choeo leo” (Hồ Xuân Hương)

“A gap, a pass and still another pass

Praise to the sculptor of this land of sweet suspense”


**I.1.3.9. Transference**

Transference (emprunt, loan word or transcription) is the process of transferring a SL word to a TL text as a translation procedure, which means the same as Catford’s transference that relates to the conversion of different alphabets: e.g. Russian, Greek, Arabic, Chinese etc. into English. The word then becomes a “loan word”. For example, “Internet” (Internet), “bowling” (bowling), quota (quota), etc.

The things that are normally transferred are names of all living and most dead people, geographical and topographical names including newly independent countries, names of periodicals and newspapers, titles of as yet translated literary works, plays, films; names
of private companies and institutions, names of public or nationalized institutions, unless they have recognized translation; street names addresses etc. The argument in favor of transference is that it shows respect for the SL country’s culture. The argument against it is that it is the translator’s job to translate, to explain.

According to Baker (1992), translation by the use of loan words is not only because the concepts are not lexicalized or unknown in the TL culture, but sometimes because they sound more modern, smart or high-class. The loan word can be followed by an explanation and then can be used on its own when it is repeated throughout the text.

I.1.3.10. Naturalisation

This procedure succeeds transference and adapts the SL word first to the normal pronunciation, then to the normal morphology (word forms) of the TL. For example, “seminar” (xe mi na), “cow boy” (cao bòi), (virus) vi rút, ghê băng (banc in French), laser( la ze), etc.

I.1.3.11. Cultural equivalent

According to Newmark (1995), this is an approximate translation where a SL cultural word is translated by a TL cultural word. For example, “yard” is meant “thưới (đo)”. The main purpose of this procedure is to support another translation procedure in a couplet.

I.1.3.12. Functional equivalent

This common procedure, applied to cultural words, requires the use of a culture-free word, sometimes with a new specific term; it therefore neutralizes or generalizes the SL word. Since it is a cultural componential analysis, it is the most accurate way of
translating a cultural word. This procedure is also used when a SL technical word has no TL equivalent. For example, “macro” in computing English has no equivalent in Vietnamese and thus is explained as “một danh sách các lệnh, các cú nhân phím, hoặc các hành động khác vốn đã được lưu và được đặt một tên gọi” (Source: Word processing and spreadsheet software, p 59 – Come to the world of microcomputer).

I.1.3.13. Descriptive equivalent

In translation, descriptive sometimes has to be weighed against function, for example, “samurai” is described as “the Japanese aristocracy from the eleventh to the nineteenth century”; its function was to “provide officers and administrators” (Newmark, 1995). Description and function are essential elements in explanation and therefore in translation.

I.1.3.14. Synonymy

Newmark (1995) states his purpose of using the word “synonym” to mean a near TL equivalent to an SL word in a context, where a precise equivalent may or may not exist. This procedure is used for a SL word where there is no clear one-to-one equivalent, and the word is not important in the text, particularly for adjectives or adverbs of quality (which in principle are “outside” the grammar and less important than other components of a sentence). A synonymy is only appropriate where literal translation is not possible and because the word is not important enough for componential analysis.

A translator cannot do without synonymy; he has to make do with it as a compromise, in order to translate more important segments of the text, segments of the meaning, more accurately; but unnecessary use of synonyms is a mark of many poor translations. For example, “For linework and picture placing, an 8-bit colour monitor is perfectly
adequate, as you can still define colours for print even if you can’t show them on the screen” – “Để hình vẽ nét và sắp xếp bức tranh, một màn hình 8 bit màu hoàn hảo đầy đủ trong lúc bạn vẫn có thể định rõ các màu dễ in thấm chí nếu bạn không thể biểu diễn chúng trên màn hình” (Source: Oxford English for Computing, p205. NXBLDXH 2002).

I.1.3.15. Through-translation

As Newmark (1995) points out, this is the literal translation of common collocations, names of organizations (e.g. acronyms of international organizations such as UNESCO, NATO, IMF), the components of compounds, also known as calque or loan translation, for example, “the White House” is translated into Vietnamese as “Nhà Trắng”. Normally, through translations should be used only when they are already recognized terms.

I.1.3.16. Shift or transposition

A “shift” (Catford’s term) or “transposition” (Vinay and Darbelnet) is “a translation procedure involving a change in the grammar from SL to TL” (Newmark, P. 1995). Transposition, according to Newmark (1995), is the only translation procedure concerned with grammar, and most translators make transpositions intuitively. There are four types of “shift”. The first type of change may be from singular to plural or in the position of adjective, which is automatic and offers the translator no choice. This is clearly seen in the case of Vietnamese versus English grammar. For example, “a white horse” will be “một con ngựa trắng”, which involves automatic change of word order in the noun phrase; or “glasses”/ spectacles” means “kính đeo mặt” which automatically neglects the plural form of the original version but does not affect the meaning of the words in TL.

A second type of shift is required when an SL grammatical structure does not exist in the TL. Here are always options for translators, for example, the English gerund offers
many choices when is is to be translated such as verb-noun, a subordinate clause, a noun-infinitive or an infinitive in some other languages. For example, “On hearing his death…” (Khi biết tin anh ấy mắt…/ Khi biết tin về cái chết của anh ấy…”).

The third type of shift is the one where literal translation is grammatically possible but may not accord with natural usage in the TL. As Vinay and Darbelne (1958) see it, transposition means the replacing of one word-class by another, without changing the meaning of the message and there are six transpositions of this type between French and English as (1) SL verb, TL noun, for example, “essaie – attempt”; (2) SL conjunction, TL indefinite adjective, for example, “dès que – any”; (3) SL clause, TL noun group, for example, “dès qu’on essait – any attempt”; (4) SL verb group, TL verb, for example, “est aux prises – involve”; (5) SL noun group, TL noun, for example, “des contradictions – inconsistencies”; (6) SL complex sentence, TL simple sentence.

These cases are also sometimes seen between English and Vietnamese. For example, “After his arrival…”- Sau khi anh ấy đến …”, which shows a change of SL noun into TL clause, or “My father wanted to live in a room in the outbuilding like my mother, but my wife wouldn’t hear of it. This saddened my father.”- “Cha tôi muốn ở một phòng dưới đây nhà ngang giống như mẹ tôi. Vợ tôi không chịu. Cha tôi buồn.” (Source: Nguyen Huy Thiep, Tuong ve huu – “The General Retires” in “The Other Side of Heaven”, 1995), which reflects the use of TL adjective in place of SL verb.

The fourth type of transposition is the replacement of a virtual lexical gap by a grammatical structure. For example, the word “seminar” in English can be explained by a phrase or sentence in Vietnamese “hội họp để thảo luận hoặc nghiên cứu một đề tài riêng
Nevertheless, in Newmark’s view, certain transpositions appear to go beyond linguistic differences and can be regarded as general options available for stylistic consideration. Thus, a complex sentence can normally be converted to a coordinating sentence, or to two simple sentences, for example, “My father wanted to live in a room in the outbuilding like my mother, but my wife wouldn’t hear of it.” - “Cha tôi muốn ở một phòng dưới dãy nhà ngang giống như mẹ tôi. Vợ tôi không chịu.”

I.1.3.17. Modulation

The term “modulation” was coined to define “a variation through a change of viewpoint, of perspective and very often of category of thought” (Vinay and Darbelnet, 1958). Modulation procedures include positive for double negative, part for the whole, abstract for concrete, cause for effect, one part for another, reversal of terms (or conversive term in Nida’s word), active for passive, space for time, intervals and limits, change of symbols. Of these procedures, active for passive and vice verse is a common transposition, mandatory when no passive exists, advisable when a reflexive is normally preferred to a passive. Examples of this procedure are “It’s not unlikely that - Có vẻ như là” (positive for double negative) or “He is supposed to finish his assignment before this Monday - Anh ta phải hoàn thành bài tập trước thứ hai tôi” (active for passive).

I.1.3.18. Recognized translation

This means the use of the official or the generally accepted translation of any institutional term. If appropriate, gloss can be added, which would indirectly shows the translator’s disagreement with the official version. For example, UNDP (United Nation
Development Program) has its accepted translation as Chương trình phát triển Liên Hợp Quốc, or “Uỷ ban dân tộc” is officially translated as State Committee of Ethnic Minority Affairs.

**I.1.3.19. Compensation**

This is said to occur when loss of meaning, sound effect, metaphor or pragmatic effect in one part of a sentence is compensated in another part, or in a contiguous sentence. For example, “As John Perkins sat there in his tiny living-room, he began to understand why he felt so sad. He knew that Katy was necessary to his happiness. His love for her had been dulled by the routine of married life, and now he was shaken by the loss of her presence. It was like the old saying “One never misses the water until the well is dry” – “Khi John Perkins ngồi trong phòng khách nhỏ bé của mình, anh mới hiểu tại sao mình cảm thấy buồn. Anh biết rằng Katy thật cần thiết cho hạnh phúc của anh. Tình yêu của anh đối với cô đã bị sự đơn điệu của đời sống hôn nhân làm lừa mờ đi, và bây giờ sự vắng mặt của cô đã làm anh bang hoàng. Nó giống như câu châm ngôn “Lúc cần mới thấy quý” (Source: Phương pháp dịch Anh-Việt - English-Vietnamese translation methods, p73. NXB Tré).

**I.1.3.20. Reduction and expansion**

In Newmark’s view, these are rather imprecise translation procedures, which the translator practices intuitively in some cases and purposefully in others. For each, however, there is at least one shift involved. For example, “voltage stabilizer - bơ ồn định điện áp → ồn áp”.

**I.1.3.21. Couplets**
Newmark (1995) presents that couplets, triplets, quadruplets combine two, three or four translation procedures for dealing with a single problem. For example, the term “hacker” is transferred into Vietnamese as “hacker”, which is accompanied with a descriptive equivalent as “a person who illegally gains access to and sometimes tampers with information in a computer system”.

In his opinion, these procedures are particularly common for cultural words, if transference is combined with a functional or a cultural equivalent. Quadruplets are only used for metalingual words; thus the sentence “The nominal –ing clause, a participle clause, occurs in the subject position” might also be translated by way of transfer, explain, produce a translation label or give an example with TL literal and functional translations.

I. 2. Technical translation and computer texts

I.2.1. Technical translation

Newmark (1995) approaches technical translation by distinguishing technical translation from institutional translation, “technical translation is one part of specialized translation; institutional translation, the area of politics, commerce, finance, government etc, is the other”. Also, “technical translation is seen potentially non-cultural, therefore “universal”, since the benefits of technology are not confined to one speech community. In principle, the terms should be translated; institutional translation is cultural, so the terms are transferred unless concerned with international organizations.

Sofer (1991), however, comes to discuss technical translation in comparison with literary translation by saying “the main division in the translation field is between literary and technical translation”. As he puts it, “one way of defining technical translation is by
asking the question, does the subject being translated require a specialized vocabulary, or is the language non-specialized? If the text being translated includes specialized terms in a given field, then the translation is technical."

Though the two authors have approached technical translation differently, they share a common view on “specialized terms”, which constitutes specialized translation.

A significant problem in technical translation is the distinction between technical and descriptive terms. The original SL writer may use a descriptive term for a technical object for three reasons (1) the object is new, and has not yet got a name; (2) the descriptive term is being used as a familiar alternative, to avoid repetition; (3) the descriptive term is being used to make a contrast with another one. In addition, as Newmark claims, where an SL technical term has no known TL equivalent, a descriptive term should be used.

Terms can be highly technical or sub-technical (Kennedy, C. & Bolitho, R. (1984). Highly technical terms account for an intrinsic part of the learning of the discipline itself. To understand these terms, the user might need to understand their theory. For example, such terms as transistor (trans-zi-to, bóng bán dân), cathode ray (tia ca tót), etc., if appear without more detailed explanations, may be problematic to a translator who has no knowledge of the subject.

Meanwhile, sub-technical terms are words which are not specific to a subject speciality but occur regularly in scientific and technical texts, e.g. isolate, recognize, accumulate, reflected etc. It is the case of sub-technical terms that is related to neologisms “defined as newly coined lexical units or existing lexical units that acquire new sense”, for example, “resolution” has its normal meaning as “the quality of being firm and determined or a firm decision to do or not to do something” (quyết tâm), but its
specialist meaning in computing is “the process of separating something or being separated into parts” (dõ phân giải). The reason that leads to the arrival of neologisms is that new objects and processes are continually created in technology, especially the field of computing, which requires new words to express the concepts. Newmark (1995) elaborates on neologisms by pinpointing out its ten categories which should be handled by different translation procedures.

1. *Old words with new sense:* These words tend to be non-cultural and non-technical. They are usually translated either by a word that already exists in the TL or by a brief functional or descriptive term. Existing collocations with new senses may be cultural or non-cultural: if the referent (concept or object) exists in the TL, there is usually a recognized translation or through translation. If the concept does not exist or the TL speakers are not yet aware of it, an economical descriptive equivalent has to be given.

2. *New coinages:* The main source of new coinages is brand or trade names, for example, “Persil”, “Oxo”, “Bacardi” etc. and these are usually transferred unless the product is marketed in the TL culture under another name, or the proper name may be replaced by a functional or generic term, if the trade name has no cultural or identifying significance, e.g. “Revlon” may be translated into “lipstick”, or “fashionable American”.

3. *Derived words:* The great majority of neologisms are words derived by analogy from ancient Greek and Latin morphemes usually with suffixes such as -ismo, -ismus, -ija etc. naturalized in the appropriate language. Now that this word-forming procedure is employed mainly to designate (non-cultural) scientific and technological rather than cultural institutional terms, the advance of these internationalisms is widespread, and these words normally have naturalized suffixes.
4. Abbreviations: Abbreviations have always been common types of pseudo-neologisms, probably more common in French than in English (fac, philo, sympa, huma). Unless they coincide (prof, bus) they are written out in the TL.

5. Collocations: New collocations (noun compound or adjective plus noun) are particularly common in the social sciences and the computer language. The computer term are give their recognized translation – if they do not exits, the translator has to transfer them if they appear important and then add a functional – descriptive term – the translator does not have the authority to devise his own neologism.

6. Eponyms: Eponyms are any words derived from a proper name (therefore including toponyms) (Newmark, 1995), are a growth industry in Romance languages and a more modest one in English media. When they refer directly to the person, they are translated without difficulty but if they refer to the referent’s ideas or qualities, the translator may have to add these. When derived from objects, eponyms are usually brand names, and can be transferred only when they are equally well known and accepted in the TL.

7. Phrasal words: New ‘phrasal words’ are restricted to English’s facility in converting verbs to nouns and are translated by their semantic equivalents. Note that phrasal words: (a) are often more economical than their translation; (b) usually occupy the peculiarly English register between ‘informal’ and ‘colloquial’, whilst their translations are more formal.

8. Transferred words: Newly transferred words keep only one sense of their foreign nationality; they are the words whose meanings are least dependent on their contexts. (Later, if they are frequently used, they change or develop additional senses, and can
sometimes no longer be translated back ‘straight’ into their languages of origin). They are likely to be ‘media’ or ‘product’ rather than technological neologisms.

9. Acronyms: This is an increasingly common feature of all non-literary texts, for reasons of brevity or euphony. In science, the letters are occasionally joined up and become internationalisms (e.g. laser), requiring analysis only for a less educated TL readership. Acronyms are frequently created within special topics and designate products, appliances and processes, depending on their degree of importance: in translation, there is either a standard equivalent term or, if it does not yet exist, a descriptive term. Acronyms for institutions and names of companies are usually transferred. When acronyms are as important in the SL as in the TL, they may be different in both languages, e.g. MAOI (monoamine oxidase inhibitors) becomes IMAO in French.

10. Pseudo-neologisms: These occur where a generic word stands in for specific words. These are words that move unsteadily on the edge of language, that may stay or vanish depending on the real or artificial needs of their users; many of them not yet “processed” by language and therefore extra-contextual – others, designating new objects and processes, are assured of their place.

1.2.2. Computer texts

It is a matter of fact that information technology is a specialized area of life, thus computer texts certainly bear the same phenomena of technical translation. Followings are the discussion of some most outstanding features of computer texts, which have been pinpointed in Phuong (2004) and which will lay the foundation for the investigation of translation strategies which will be in focus in the next part of the study.
I.2.2.1. Computing terminology

According to Sofer (1991), computer literature during the past years has grown phenomenally. Translating computer subjects present both an opportunity and a challenge. The opportunity is working in a fast-growing field. The challenge is that computer subjects are changing and growing daily, and last year’s computer dictionary is near-obsolete this year. In other words, the terms keep appearing as new concepts and objects arrive. This has more than one reason. The first reason has to do with neologisms in the SL. The second reason is that even a specific term in a specialized area may still have their different meanings in general English and in various other technologies, which is really a pitfall in translation.

Computing terms, in our observation, fall into two types: single and compound terms.

I.2.2.1.1. Single terms

Single terms are made up of one word, a verb or a noun, and involve a number of neologisms which can be new coinages or acronyms.

It is not very difficult to pinpoint examples of verbs as single terms in computer documents, e.g. transmit, transfer, synchronize, modulate, detect, upgrade, download, post, install, boot, execute, connect, format, compress, convert, extract, click, scan, refresh, input, operate, monitor, etc. It should be noted that though these are the verbs frequently used in computing, they are also seen in other fields such as Electronics and Telecommunications (Bac Nguyen Thi, 2004), then bearing other meanings rather than the meaning in the field of computing, for example, post (gui - thông báo - lên) in the
Internet context means (gửi thư) in general or install (cài đặt) in the context of computer software installation means (lắp đặt) in the case of other equipment installation.

Also, single terms in the form of a noun are quite a few, e.g. monitor, processor, storage, computer, data, mouse, document, modem, case, fax, microphone, program, application, directory, folder, file, byte, bit, cookie, tool, font, protocol, statement, resolution, terminal etc. Among these words, there are highly technical terms such as byte, bit, cookie, protocol, modem, processor, directory which may require explanations for a layman to understand the concepts fully. There are also terms which not only bear its specialized meaning but also a more general meaning as in the case of application - trình ứng dụng (a program designed to perform a particular task), or terminal - thiết bị đầu cuối (an apparatus, usually consisting of a keyboard and a screen, that connects the user with a computer system); these terms also have meanings as “a formal request for something/ the action or an instance of putting or spreading something onto something else” – application - đơn xin/ sự áp dụng , “a place or building where journeys by train or bus begin or end” – terminal – ga cuối.

New coinages arrive when a new concept are transferred to other cultures which have not yet invented specific term for the new object, for example, transistor (tran-zi-to), laser (laze), menu (menu), byte (byte), card (card), hacker (hacker), laptop (laptop), etc. New coinages are seen very popular in the Vietnamese translation of English computer text, which signifies certain translation procedures that will be discussed in detail later on in this study.

Acronyms (words formed from the initial letters of words that make up a term or a proper name) in computing terms are numerous and appear at a high frequency. The
study corpus sees a large number of acronyms which appear frequently. They may refer to an object like RAM (Random access memory), ROM (Read only memory), CPU (central processing unit), CD (compact disk), HDD (high density disk), LED (light-emitting diode), IC (integrated circuit), USB (universal serial bus), or corporations working in the field such as IBM, DELL, MAC, COMPAQ, etc. In other cases, they refer to standards or program languages like IEEE 1394 (Institute of Electrical and Electronics Engineers), SCSI (Small Computer System Interface), MIDI (Musical Instrument Digital Interface), COBOL (Common Business Oriented Language), FORTRAN (Formula Translator), SQL (Structured Query Language), etc. (Source: Come to the world of microcomputer- Statistics Publishing House 2002). The appearance of such acronyms is sometimes taken for granted in the translation of English computer text. It seems that the translator has had some assumption of readers’ understanding of those acronyms because they should have come across such acronyms somewhere else before, within the book or chapter.

1.2.2.1.2. Compound terms

The development of computer technology entails increasing occurrence of terms, especially compound terms to describe new concepts or new objects, which requires that readers have understanding of the formation and structure of compound terms so that they can really get benefit from what they deal with.

A compound term is in fact a compound noun, which, according to Collin Cobuild (1990), is a fixed expression which is made up of more than one word (N + N or Adj + N) and which functions in the clause as a single noun.
It is a matter of fact that in compound nouns, the exact relationship between the words depends on the particular expression, but all these expressions have one thing in common: the last word in the chain says what the thing is, while the preceding word or group of words describes the thing, which is termed “classifier”. This order is opposite in Vietnamese. For example,

\[
e.g.1. \quad \text{Network configuration information} \quad e.g.2. \quad \text{A logarithm table}
\]

\[
\begin{array}{ccc}
1 & 2 & 3 \\
Thông tin cấu hình mạng & Bảng lô ga rỉ
\end{array}
\]

According to Boeckner, K and Brown, P.C. (1993), it is important to be able to recognize how compound nouns are formed in order to understand what they mean. For instance, the first noun or group of nouns can tell us what the second noun is made of, what it is for, or what it is part of.

- **Fibre-optic cable** (Cable made of fibre optics) Cáp sợi quang
- **An address bus** (A bus dedicated to address information) Bus địa chỉ
- **A monitor screen** (The screen of a monitor) Màn hình

In other cases, the preceding adjective, which may be in primary, present participle, or past participle form, modifies a noun to create compound terms such as **binary number** (số nhị phân), **hierarchical database** (cơ sở dữ liệu phân cấp), **symmetric multiprocessing** (đa xử lý đối xứng), **operating environment** (môi trường điều hành), **active window** (cửa sổ hiện hành), **word processing software** (phần mềm xử lý văn bản), **computer-based training** (dào tạo trên máy tính), etc.

Notably, the syntactic relations of the compounding elements can be explained by means of paraphrases. For example,
A silicon chip (a chip made of silicon)

Một mạch điện từ silic (Một mạch điện từ làm bằng silic)

A monitor screen (the screen of a monitor)

Màn hình màn hình (Màn hình của một màn hình)

A visual display unit (a unit that gives a visual display of information on a screen)

Bộ hiển thị (Một bộ phận cho phép hiển thị thông tin lên màn hình)

(Source: Oxford English for Computing, p 155. NXB LĐXH)

It is seen that the number of computing compound terms is ever-increasing because of the need to express concepts which are completely new or have some relations to an existing concept (a single term), which deserves careful examination in translation so that proper translation procedures or strategies are to be adopted to transfer their meanings to another language appropriately.

I.2.2.2. Syntactic features

As pointed out by Phuong Nguyen Thi Mai (2004), the typical syntactic features of IT texts are much related to sentence structures which are further categorized into complex sentence structure, which is often patterned as one main clause followed by an dependent clause such as a relative clause, or an –ed participle clause, and passive structure. As stated in the aims of the study, we now would like to look into the concepts of relative clause, –ed participle clause, and passive structure in English and Vietnamese before investigating their translation strategies in computer texts in the next chapter.

I.2.2.2.1. Relative clauses as post modifications
As far as English grammar is concerned, a relative clause (sometimes called an adjectival clause) is “a subordinate clause that gives more information about someone or something mentioned in the main clause” (Collin Cobuild, 1990).

The translation of relative clauses from English into Vietnamese poses quite a few problems to most Vietnamese readers. They tend to resort to the word “mà” to create the connection between ideas expressed by the main and subordinate clauses in a complex sentence. Almost all linguists of Vietnamese (Nguyen Anh Que, Diep Quang Ban, Hoang Trong Phien etc.) have come to the same conclusion that this grammatical category does not exist in Vietnamese, and “mà” is not the equivalent of relative pronouns in English. The translation of such clauses from English into Vietnamese is thus considered a difficult and sophisticated task that requires the attention and expertise of the translator.

Ngoc Phan (1995) in an article on the translation of relative clauses into Vietnamese suggests a principle: “translate a relative clause according to the semantic meaning of the relative pronoun in context but not to the syntactic structure of the clause or sentence”. Simply put, the meanings of relative pronouns should be taken into consideration when it is translated into Vietnamese and the translator can use any Vietnamese equivalents to express this category. He also emphasizes the translator’s expertise in doing a translation since there may be more than one way to transfer the ideas of a relative pronoun into Vietnamese. For example, the translator can add some fillers such as mà, là, và etc., use apposition or break a complex sentence into simple sentences or a coordinating complex sentence, provided that the translation version sounds natural or “Vietnamese”.

Minh Nguyen Thuy (2001) explores the same topic by suggesting some translation approaches to deal with relative clauses in English such as by means of attribute which
may or may not be accompanied by fillers like mà, nó, khi, lúc etc.; by means of
apposition – noun or noun phrase which modifies the noun that comes before; or by
breaking up a complex sentence into independent simple sentences or a compound
sentence providing that there is a loosen structure between the clauses in the complex
sentence and there will be no loss of meaning after separation.

Though the two researchers have not looked closely into the translation of relative
clauses under the perspective of translation procedures and strategies, their investigation
and suggestions really inspire the author of this study to proceed with an investigation
into the concept and its realization in computer texts.

It has been pointed out by previous studies that relative clauses represent a significant
syntactic feature of English computer texts. According to our observation, they are
mostly used to give explanation or definition to a concept or a term that they modify or
imply a comment or further information concerning the idea stated in the preceding
clause. For example,

**e.g.1.** Two basic types of monitors are used with PCs. The first is the typical
monitor *that you see on a desktop computer, which looks a lot like a television
screen and works the same way* (Output devices, p10. Come to the world of
microcomputer).

**e.g.2.** A CRT monitor contains a shadow mask, *which is a fine mesh made of
metal*, fitted to the shape and size of the screen (Output devices, p14. Come to the
world of microcomputer).

It seem that it is not very difficult to understand a relative clause in English, the
translation of that clause, however, is really a problem since it conversely affects the
reader’s understanding as an awkward translation would hinder the ideas in the SL text to be transferred smoothly and naturally into the TL text.

1.2.2.2. –ed participle clause and passive structure

–ed participle clause or adjectival participle clause is in fact a passive structure, which, if written in full form, will start with a relative pronoun and “to be” auxiliary verb in the corresponding form to the noun modified by the relative pronoun. This adjectival participle clause, as the name suggests, is used to describe or define a noun that comes before it. Passive structure is often used to maintain the theme or topic of a paragraph and –ed participle clause or adjectival participle clause follows the same principle since it helps the noun which it modifies maintains the role as the subject (hidden) in the subordinate clause. For example,

**e.g.1.** The information *presented to the machine* is the input. (1) (English for Computer Science, p50)

Thông tin *cung cấp cho máy* gọi là đầu nhập.

**e.g.2.** Unlike system programs, software packages are sold by various vendors and are not necessarily by the computer manufacturer. They are a set of program designed to perform certain applications which conform to internationally accepted rules, irrespective of the particular specifications of the user. (2) (English for Computer Science, p 375)

Khác với chương trình hệ thống, bộ chương trình phân mềm có bán ở nhiều hãng khác nhau, không nhất thiết phải do hãng chế tạo máy cung cấp. Đây là một tập hợp chương trình *được thiết kế nhằm thi hành virtues ứng dụng nhất định*, tuân
thú theo các nguyên tắc được toàn thể giới công nhận, bất chấp như câu cử thể của người dùng.

In (1), the word “information” is still the hidden subject of the –ed clause that comes after, which can be fully written as “which is presented to the machine”. As the –ed participle clause, in fact a passive structure, now works as an adjectival clause, we know what kind of information is considered the input.

In (2), “a set of programs” is the hidden subject of the –ed clause that follows, which can be rewritten in full form as “which are designed to perform certain applications” – a passive structure again – and we also have clearer information about software packages.

For the benefit of reading comprehension, this reconstruction helps readers be sure of the grammatical category used in the sentence and its purpose so as to take in the information as it is intended.

In another case, most often, a passive structure may appear in its full form as “Subject + to be + past participle”. This structure often appears in simple sentences or clauses of compound sentences in computer texts when the subject is mentioned for the first time. A passive structure involves the change of focus from an active structure. In active structure, the subject is the agent responsible for performing the action. In passive structure, the subject if the affected entity, and the agent may or may not be specified. In other words, the person or thing affected by an action, which would be the object of the verb in the active form in an active structure, becomes the subject of the verb in the passive form; while the performer of an action (the agent) – the subject of the verb in an active structure – becomes verb complement, complement of the preposition “by” or is omitted.
In accounts of processes and scientific experiments, the passive is commonly used and no agent is mentioned because the focus is on what happens, not on who or what makes it happen. This is done to give the impression of objectivity and to distance the writer from the statements made in the text. However, as Baker (1992) sees it, “the more pervasive a structure becomes in a given context, the more difficult it becomes for speakers and writers to select other structures to depict event differently”.

There are two contradictory views on the issue of passive structure. One view holds that there is not such a structure in Vietnamese because the verb form in Vietnamese does not have distinctive forms as to passive and active voice. The other claims that passive structure does exist in Vietnamese and such a structure is formed by means of filler “bị, được” and word order. We go for the ideas from Quang Ban Diep (2004: 150) that passive meaning in Vietnamese is created by two conditions. First, there exists either “bị” or “được”. Second, there is the presence of an (S – V) structure in which the verb is transitive and the noun working as its subject must be different from the one preceding the filler “bị, được” or the subject of the verb here may be absent. In other words, passive structure appears when we deal with transitive verbs, that is when we use the object of the transitive verb as the subject of a new sentence which receives or takes in the action from the transitive verb, for example, “Giáp được (thầy) khen”- “Giap is praised (by his teacher)”. According to Quang Ban Diep (2004), the subject of a passive structure is the element which holds a certain shade of meaning in its relation with the transitive verb which comes after “bị, được”, and there is always an active sentence corresponding to a passive sentence.
Another structure which is also resorted to in the translation of passive structure in English is \( do + (S - V) \), (Ngu Phap Tieng Viet, 1983: 263). According to Tu dien tieng Viet 2004, “\( do \)” is used to “express the idea that the thing/ person which/ who is going to be mentioned is the agent of the action or something/ someone of decisive influence to the thing which has been talked about”. Simply put, \( do + (S - V) \) works as noun complement for the noun that comes just before. This is not considered a passive structure because it does not convey expressive meaning as well as does not accept a verb phrase that may follow; still, it can be used to translate English adjectival participle clause when the agent of the action is present.

CHAPTER II: THE STUDY

II.1. Subjects of study and collection of data

II.1.1. Subjects of study

From the aims of the study, the identification of subjects to be studied is carried out, which are mainly the books published by Statistics Publishing House, an outstanding publisher of bilingual technical books which are highly appreciated for their quality by the reader. They are twelve volumes entitled “Come to the world of microcomputer”, each elaborates on an aspect of the computing world like processing data, computer graphics and design, output devices, multimedia and application, presentation and database management software, internet and life and so on. The team of translators responsible for these books is CADASA of CADASA College of Information
Technology and Foreign Languages, Ho Chi Minh city, and the chief editor is Hung Nguyen The. All the books start with the same preface which introduces the importance of information technology, the purpose of the books and the intention of the translators who claim to have tried to stick to the meaning and intention of the SL texts to facilitate the comparison between languages but still managed to bring out a translation of decent standard.

Another book, which is also from Statistics Publishing House (2002), is “English for Computer Science” in English-Vietnamese. Different from the previous twelve volumes, which are taken as reference books in the field of information technology, “English for Computer Science” is a textbook on information technology with reading passages concerned with computer-related topics and reading tasks. The Vietnamese translation is provided by VN-Guide, edited by MA. Long Le Phung, and BA. Hang Do Le.

The study also takes in a textbook published in English-Vietnamese by the Publishing House of Labor and Social Affairs (NXB LĐXH), which is entitled “Oxford English for Computing”, translated by Thanh Le, to increase the variety of sources for data collection and analysis.

Last but not least, a very important subject that contributes to the study is the interviewee including IT professors, IT engineers, ESP teacher and IT students of College of Technology, VNU-Hanoi. Their ideas on an interpretation of word, phrase or clause do provide the author of the study with precious information on the translation of computer texts.

II.1.2. Collection of data
Due to the limit of time, the collection of data was carried out by book observation which means investigating the study materials, pinpointing the features to be examined and categorizing them for future analysis and description. Also, short interviews are conducted to collect opinion and ideas on the choice or preference of a translation strategy, which will bring light to the discussion during the analysis of data thereafter.

It is hard to come up with exact statistical data on the frequency or the number of occurrence of each translation strategy pattern from the whole study corpus within the time limit and scope of this study, so this study is only expected to be accomplished with the translation samples of strategy patterns which appear significant throughout the investigation.

Analysis and description of data brings about the strategy patterns applied in the translation of computer texts, which cover computing terminologies as a significant feature, relative clauses, -ed participle clauses and passive structures because of their highly frequent occurrence in computer texts, as discussed previously.

II.2. Findings and discussion

II.2.1. Translation of computing terms

II.2.1.1. Translation of single terms and neologisms by transference procedure (the use of loan words)

It is observed that this strategy is becoming increasingly popular together with the development of computing field. It is a matter of fact that new words appear to name new concepts. However the new concepts do not appear at every culture at the same time; rather they appear first in a certain culture and then are transferred to other cultures in one way or another that may fall into the following categories.
**Category 1: Terms referring to modern concepts that are not lexicalized in the TL.**

The new concepts in English may not have a proper equivalent in Vietnamese. In this case the new concepts are borrowed into Vietnamese, called loan-words. It is easily accepted by professionals who are used to the concepts in their work, but it may sound strange to those who lack professional knowledge of the field. For example:

<table>
<thead>
<tr>
<th>English terms</th>
<th>Loan-words in Vietnamese</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palmtop</td>
<td>Palmtop /pa:lm top/</td>
</tr>
<tr>
<td>Touchpad</td>
<td>touchpad /tʃ t pæd/</td>
</tr>
<tr>
<td>Tracker ball</td>
<td>Tracker ball /traːkə b l/</td>
</tr>
<tr>
<td>Cache</td>
<td>Cache /kæ/</td>
</tr>
<tr>
<td>Clip art</td>
<td>Clip art /klip aːrt/</td>
</tr>
<tr>
<td>Internet</td>
<td>Internet /intənet/</td>
</tr>
<tr>
<td>Macro</td>
<td>Macro /mækrəʊ/</td>
</tr>
<tr>
<td>Web</td>
<td>Web /web/</td>
</tr>
<tr>
<td>Hacker</td>
<td>Hacker /hækə/</td>
</tr>
</tbody>
</table>

It is seen from the above examples that Vietnamese lacks technical terms for the new concepts coming from English, thus the use of loan-words is increasing in the field of computing. However, it is also seen that in computer texts, when a new concept appears and is borrowed into Vietnamese, it is often accompanied with an explanation to clarify the loan word, or a functional-descriptive equivalent, which can be right after the loan words, in the form of footnote, at the end of a chapter or at the end of the book to help readers who may not be professional to really understand the concept. Examples are plentiful in the study corpus.
<table>
<thead>
<tr>
<th>English terms</th>
<th>Vietnamese equivalents</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Macro</strong></td>
<td>một danh sách các lệnh, các cử nhân phẩm, hoặc các hành động khác với đã được lưu và được đặt một tên gọi. (Word processing and spreadsheet software, p 59. Come to the world of microcomputer)</td>
</tr>
<tr>
<td><strong>Baseline</strong></td>
<td>đường cơ sở - trong ấn loát, đây là mức thấp nhất mà các ký tự có thể đạt tối (không kể phần kéo dài của các ký tự). (Word processing and spreadsheet software, p 19. Come to the world of microcomputer)</td>
</tr>
<tr>
<td><strong>Plug-in</strong></td>
<td>Plug-in. Một thành phần phần mềm được gắn thêm vào trình duyệt Nestcape Navigator. Thành phần gắn thêm này cho phép trình duyệt thu xuất và thực thi các tập tin được những vào trong các tệp liệu HTML trong những dạng thác mà bình thường trình duyệt không nhận được chẳng hạn như nhiều tập tin hoạt ảnh, video và âm thanh. (Computer graphics and design, pp65. Come to the world of microcomputer)</td>
</tr>
<tr>
<td><strong>Cookie</strong></td>
<td>một tập tin nhỏ chứa đựng các thông tin xác lập. Cookie có kích thước nhỏ, dưới 4 byte. (Internet and life, p37. Come to the world of microcomputer)</td>
</tr>
<tr>
<td><strong>Hub</strong></td>
<td>Trong một mạng máy tính, hub là một thiết bị ghép nối các đường truyền thông tại một vị trí trung tâm, cung cấp một nơi kết chung tới tất cả các thiết bị trên mạng. (Processing data, p43. Come to the world of microcomputer)</td>
</tr>
</tbody>
</table>

*Category 2: Terms referring to concepts that are technically lexicalized in Vietnamese*
There are cases in which Vietnamese does have a technical term for a certain concept, yet the English term is still preferred. In other words, there exist two Vietnamese equivalents for the same concept. For example,

<table>
<thead>
<tr>
<th>English terms</th>
<th>Vietnamese</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Loan-word</strong></td>
<td><strong>Vietnamese term</strong></td>
</tr>
<tr>
<td>Trigger</td>
<td>Tri-gô</td>
</tr>
<tr>
<td>Menu</td>
<td>Me nu</td>
</tr>
<tr>
<td>Mainframe</td>
<td>mainframe</td>
</tr>
<tr>
<td>Scan</td>
<td>scan</td>
</tr>
<tr>
<td>File</td>
<td>file</td>
</tr>
<tr>
<td>Server</td>
<td>server</td>
</tr>
<tr>
<td>Multimedia</td>
<td>multimedia</td>
</tr>
<tr>
<td>E-mail</td>
<td>e-mail</td>
</tr>
<tr>
<td>Robot</td>
<td>robot</td>
</tr>
<tr>
<td>Shortcut</td>
<td>Shortcut</td>
</tr>
</tbody>
</table>

(Source: Come to the world of microcomputer, Statistics Publishing House)

We realize that most translation of English computer texts under study try to transfer English computing terms into Vietnamese by providing their nearest equivalent (Vietnamese word). Still, sometimes two equivalents (multimedia, đa phương tiện) are seen in a translation of the same term (multimedia), e.g. “The amazing computer”, p31. & “Multimedia”, p11 – “Come to the world of microcomputer”.

We have also had discussions with those who are professional in the field (colleagues, specialists, students of IT) about the fact that there exist two equivalents in Vietnamese to
an English term and come up with an explanation that the Vietnamese term is often used when the user has little knowledge of the specialized field while the loan-word is more preferable to those who have some knowledge of the field and professionals, stating that the loan-word best conveys the meaning of the new concept and the use of loan words sounds smarter and high-class.

Interestingly, in the translation of computer texts under study, it is seen that loan-words often appear in its original form when used in Vietnamese computer texts, which reflect transference procedure. We infer that the translator may have assumed that the reader should have some basic knowledge of English as he/she is dealing with computer which actually uses English statements and instructions to operate, thus the loan words are just transferred into Vietnamese but not naturalized, which may induce different pronunciations depending on the reader’s proficiency of English. As we understand it, various pronunciations of loan-words in Vietnamese sometimes cause confusion to those who produce the correct pronunciation of those loan words. Thus, we would like to leave a question open to debate, that is, should the translator add the correct, standard pronunciation of the loan-words in their translation to avoid this problem?

**Category 3: Terms that are measuring units**

In the field of computing, terms as measuring units are quite a few, which are most often related to physical variables (e.g. capacity, size, etc.) and are always transferred into Vietnamese in their same form in the SL texts. For example,

<table>
<thead>
<tr>
<th>English term</th>
<th>Vietnamese equivalents</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>bit</em></td>
<td><em>bit</em></td>
</tr>
<tr>
<td><strong>byte</strong></td>
<td><strong>byte</strong></td>
</tr>
<tr>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td><strong>Kilobyte (Kb)</strong></td>
<td><strong>Kilobyte (Kb)</strong></td>
</tr>
<tr>
<td><strong>Megahertz (MHz)</strong></td>
<td><strong>Megahertz (MHz)</strong></td>
</tr>
<tr>
<td><strong>gigaflop</strong></td>
<td><strong>gigaflop</strong></td>
</tr>
<tr>
<td><strong>inch</strong></td>
<td><strong>inch</strong></td>
</tr>
</tbody>
</table>

*Source: The amazing computer, p 17. Come to the world of microcomputer*

This transference is automatic and offers the translator no choice. The measuring units are seen in their full form in their first appearance of a text and then used in their abbreviated forms (if there is) throughout the rest part of a text.

**Category 4: IT acronyms**

Acronyms appear at a high frequency in English computer texts. Often they are about designated products, devices, processes, standards and international institutions within the field of computing. These acronyms often appear without their full explanation and are borrowed into Vietnamese translation. For example,

<table>
<thead>
<tr>
<th>English terms</th>
<th>Vietnamese equivalents</th>
<th>English terms</th>
<th>Vietnamese equivalents</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU</strong></td>
<td>CPU</td>
<td><strong>IBM</strong></td>
<td>IBM</td>
</tr>
<tr>
<td><strong>CRT</strong></td>
<td>CRT</td>
<td><strong>Mac</strong></td>
<td>Mac</td>
</tr>
<tr>
<td><strong>GIF</strong></td>
<td>GIF</td>
<td><strong>LCD</strong></td>
<td>LCD</td>
</tr>
<tr>
<td><strong>LAN</strong></td>
<td>LAN</td>
<td><strong>SCSI</strong></td>
<td>SCSI</td>
</tr>
<tr>
<td><strong>WAN</strong></td>
<td>WAN</td>
<td><strong>IEEE</strong></td>
<td>IEEE</td>
</tr>
<tr>
<td><strong>MIDI</strong></td>
<td>MIDI</td>
<td><strong>MS-DOS</strong></td>
<td>MS-DOS</td>
</tr>
</tbody>
</table>


Of course, these acronyms often do have their meanings since each letter stands for a meaningful word. For example, **WAN** stands for *Wide Area Network - Mạng dien rộng* (Networks and data communication, p25. Come to the world of microcomputer), **SCSI**
stands for Small Computer System Interface - Giao diện hệ thống máy tính nhỏ (Processing data, p45. Come to the world of microcomputer). Interestingly, while an acronym is treated as a single term, its explanation or full form is taken as a compound term, which shall be discussed in details in the section of compound term. Still, acronyms are acknowledged as meaningful units which are used in their original forms in Vietnamese computer texts although there are Vietnamese equivalents for them. For example,

<table>
<thead>
<tr>
<th>English terms</th>
<th>Vietnamese equivalents</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU (central processing unit)</td>
<td>CPU (đơn vị xử lý trung tâm)</td>
</tr>
<tr>
<td>CRT (cathode ray tube)</td>
<td>CRT (ống tia âm cực)</td>
</tr>
<tr>
<td>GIF (Graphic Interchange Format)</td>
<td>GIF (đẳng thức đô hoa trao đổi)</td>
</tr>
<tr>
<td>LAN (local area network)</td>
<td>LAN (mạng cục bộ)</td>
</tr>
<tr>
<td>WAN (wide area network)</td>
<td>WAN (mạng điện rộng)</td>
</tr>
<tr>
<td>LCD (liquid crystal display)</td>
<td>LCD (màn hình tinh thể lỏng)</td>
</tr>
<tr>
<td>PC (personal computer)</td>
<td>PC (máy tính cá nhân)</td>
</tr>
</tbody>
</table>

Particularly, in some cases, when English acronyms are transferred or borrowed into Vietnamese, they are accompanied by generic classifiers that clearly denote their categories or meanings. For example,

<table>
<thead>
<tr>
<th>English terms</th>
<th>Vietnamese equivalents</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIDI</td>
<td>giao thức MIDI</td>
</tr>
<tr>
<td>BMP</td>
<td>đẳng thức BMP</td>
</tr>
<tr>
<td>MS-DOS</td>
<td>hệ điều hành MS-DOS</td>
</tr>
<tr>
<td>Linux</td>
<td>hệ điều hành Linux</td>
</tr>
</tbody>
</table>
Fortran     ngôn ngữ Fortran
CD           dĩa CD
DSL          công nghệ DSL
Toner        mực toner

It is understood that the translator should have some knowledge of computers and
information technology to handle these general classifiers. Otherwise, the reader may be
left unsure about the nature of the acronyms when they are used independently without a
noun indicating its category.

**II.2.1.2. Translation of single terms and neologisms by naturalization procedure**

As stated in the theoretical background, there exists a small distinction between
transference and naturalization: naturalization is the procedure that succeeds transference
and adapts the SL word to the normal pronunciation and morphology of the TL. In the
context of computing, loan words can be transcribed into Vietnamized pronunciation and
morphology. For example,

<table>
<thead>
<tr>
<th>English</th>
<th>Vietnamese</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRT</td>
<td>CRT /si:/ /a:/ /ti:)</td>
</tr>
<tr>
<td>IC</td>
<td>IC /ai/ /si:/</td>
</tr>
<tr>
<td>CPU</td>
<td>CPU /si:/ /pi:/ /ju:)</td>
</tr>
<tr>
<td>Transistor</td>
<td>tran zi to</td>
</tr>
<tr>
<td>Video</td>
<td>vi dõi ô</td>
</tr>
<tr>
<td>Virus</td>
<td>vi rút</td>
</tr>
<tr>
<td>Compact disk (CD)</td>
<td>dĩa com-pác or dĩa CD /si:/ /di:/</td>
</tr>
</tbody>
</table>
It is recognized that this translation procedure is sometimes easy to notice with the Vietnamese pronunciation sometimes put in brackets next to the loan-word. In some other cases, it is hidden. As we understand it, it is very likely that the translator assumes that naturalization will automatically be adopted when readers come across such terms. Naturalization is said to be a preference in many cases for it may be easier for Vietnamese readers to use and memorize the term which has somewhat sounded very Vietnamese, which may be taken to be the stimulation for the use of loan-word in translation of computing English.

II.2.1.3. Translation of compound terms by transposition procedure

Compound terms are translated by means of transposition which involves the automatic change in word order from SL to TL. This is the most common strategy applied automatically to all types of compound terms presented in computer texts. The compound terms are translated backwards because of the different word order between English and Vietnamese. For example,

- **Archive files**
  - ** Vietnamese**: các tệp tin lưu trữ
- **Network database**
  - ** Vietnamese**: cơ sở dữ liệu mạng
- **Data exchange format**
  - ** Vietnamese**: định dạng trao đổi cơ sở dữ liệu
- **Photo-manipulation program**
  - ** Vietnamese**: chương trình chỉnh sửa ảnh
- **Image quality**
  - ** Vietnamese**: chất lượng hình ảnh
- **Graphics file**
  - ** Vietnamese**: tệp tin đồ họa
- **Access time**
  - ** Vietnamese**: thời gian truy xuất
- **File compression**
  - ** Vietnamese**: nén tệp tin
- **Processing scheme**
  - ** Vietnamese**: các cơ chế xử lý
This procedure is considered quite easy since the translator just needs to examine the structure of a compound term, identifying the head noun and its modifiers or the division between the elements in the group and then change the order of those elements into their corresponding word order in Vietnamese. Often the translator has no choice but to comply with Vietnamese word order.

However, sometimes, English terms are seen in bracket accompanying their translated version. For example,

**e.g.1.** Video toàn động *(full-motion video)* là dạng video mà trong đó các hình ảnh được hiện thị ở tốc độ 30 khung hình *(frame)* mỗi giây. Do áo giấc của mặt người nên chúng ta cảm thấy sự chuyển động trọn tru. Một dạng video khác có tên gọi là video khung hình tĩnh *(freeze-frame video)*, trong đó các hình ảnh chỉ thay đổi một lần sau mỗi vài giây. *(Internet and life, p33. Come to the world of microcomputer)*

**e.g.2.** Tộc hoạt só *(number crunching)* là một thuật ngữ lóng chỉ khả năng tính toán các khối lượng dữ liệu lớn ở tốc độ cao *(Word processing and spreadsheet software, p41. Come to the world of microcomputer)*.

It is understood in this case that the translation may sound ambiguous or awkward and thus the presence of SL term seems a safe solution helping the reader understand the concept to the full while leaving it open to more appropriate translation that would arrive later on.
In other cases, especially with multiple nouns or terms in the form of nominal groups another type of transposition is applied, which is the replacement of a virtual lexical gap by a grammatical structure, say, the “rank-shift” procedure in Catford’s term (1965). A term of such a group is seen to correspond to a clause in Vietnamese. The understanding of such a group can be facilitated by means of paraphrases which is helpful to the translation. For example,

- **Computer – aided design** = design which is aided by computer = thiết kế với sự trợ giúp của máy tính
- **A document-image-processing program** = a program which processes images of documents) = **chương trình xử lý hình ảnh tài liệu**
- **A batch processing program** = a program which processes data in batches = **chương trình xử lý theo lô**
- **Pen-based computer** = a computer which uses a pointing device like a pen as an input device = máy tính sử dụng bút viết


A more dramatic case where rank-shift procedure is clearly reflected is when the concept expressed in English has not been technically lexicalized in Vietnamese, which is increasingly common, especially in the aspect of Internet where new coinages arise constantly. To clarify the meaning of a new term, often semantically complex, explanation or paraphrase is seen a necessity, in other words, an SL term may be both
transferred and explained by a TL phrase, clause or even sentences (functional-descriptive equivalent). For example,

<table>
<thead>
<tr>
<th>English</th>
<th>Vietnamese</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web master</td>
<td>một người hay một nhóm chịu trách nhiệm thiết kế và duy trì một Web site (Internet and life, p27. Come to the world of microcomputer)</td>
</tr>
<tr>
<td>Web site</td>
<td>một tập hợp các trang Web có liên quan (Internet and life, p25, Come to the world of microcomputer)</td>
</tr>
<tr>
<td>Internet relay</td>
<td>một cách thông dụng để những người sử dụng Internet trao đổi thông tin với nhau trong thời gian thực (Internet and life, p51. Come to the world of microcomputer)</td>
</tr>
<tr>
<td>chat (IRC)</td>
<td>Card modem - loại modem lắp trong, giá rẻ, hiện nay thường được lắp vào khe cắm PCI trên bo mạch chính của máy PC. (Processing data, p51. Come to the world of microcomputer)</td>
</tr>
</tbody>
</table>

The explanation of a term is found right after the term itself or at the footnote of the page where the term appears, which is convenient for the reader to make reference to. According to our observation, this translation strategy pattern stands out in reference books which are intended to give the reader with insightful information on computer-related concepts to facilitate their understanding of the field. The translator sometimes explains for his/her use of a loan-word, which shows that he/she is very careful in word-choice to bring out an equivalent for a new computing term, e.g. Proceesing data, p25; Computer graphics and design, p45. (Come to the world of microcomputer. Statistics Publishing House 2002).
II.2.1.4. **Compound terms consisting of “N + agential N” are translated with transposition procedure by the use of a generic classifier.**

This strategy is commonly used with compound terms indicating names of computer components, equipment/devices, or program, and notably prominent in the translation of compound terms with the last noun ending in -er/-or. Since the grammatical category of suffixes is not present in Vietnamese, new elements of Vietnamese (generic classifiers) such as cái, bộ, thanh, thiết bị, chương trình, tiện ích etc. are added to help identify the concept. For example,

<table>
<thead>
<tr>
<th>English terms</th>
<th>Vietnamese equivalents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spell checker</td>
<td>tiến ích kiểm tra lỗi chính tả</td>
</tr>
<tr>
<td>Video monitor</td>
<td>bộ hiển thị video</td>
</tr>
<tr>
<td>Surface modeler</td>
<td>chương trình tạo mô hình bề mặt</td>
</tr>
<tr>
<td>Disk controller</td>
<td>bộ kiểm soát bề mặt</td>
</tr>
<tr>
<td>Display adaptor</td>
<td>cực màn hình</td>
</tr>
<tr>
<td>Scan converter</td>
<td>thiết bị chuyển đổi dòng quét</td>
</tr>
<tr>
<td>Linkage editor</td>
<td>bộ soạn thảo liên kết</td>
</tr>
<tr>
<td>Laser printer</td>
<td>máy in laze</td>
</tr>
<tr>
<td>Bar code reader</td>
<td>máy đọc mã vạch</td>
</tr>
<tr>
<td>Word processor</td>
<td>trình xử lý văn bản</td>
</tr>
<tr>
<td>Color separation</td>
<td>bàn tách màu</td>
</tr>
</tbody>
</table>

(Source: *Come to the world of microcomputer, Statistics Publishing House, 2002*)

This translation strategy is useful in dealing with one type of non-equivalence, that is, a grammatical structure does not exist in TL. In other words, the transposition procedure
is also resorted to in this case, which proves its prevalence in the translation of computing
terms from English into Vietnamese.

**II.2.1.5. Translation of compound terms by both transference and naturalization
procedures (couplets)**

On investigating compound terms, transference and naturalization procedures are
extracted. As stated in the theoretical background, there exists a small distinction between
transference and naturalization: naturalization is the procedure that succeeds transference
and adapts the SL word to the normal pronunciation and morphology of the TL.

Compound terms in computer texts are seen to be both transferred and naturalized. For
example,

<table>
<thead>
<tr>
<th>English</th>
<th>Vietnamese</th>
<th>English</th>
<th>Vietnamese</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parity bit</td>
<td>bit chẩn lề</td>
<td>Context menu</td>
<td>menu báo cánh</td>
</tr>
<tr>
<td>Video monitor</td>
<td>bộ hiện thị video</td>
<td>Fax modem</td>
<td>modem fax</td>
</tr>
<tr>
<td>Laptop computer</td>
<td>máy tính laptop</td>
<td>Web page</td>
<td>trang web</td>
</tr>
<tr>
<td>Clipart graphics</td>
<td>đồ họa Clipart</td>
<td>Bus network</td>
<td>mạng bus</td>
</tr>
<tr>
<td>Cache memory</td>
<td>bộ nhớ cache</td>
<td>Mesh topology</td>
<td>tôpô mặt lưới</td>
</tr>
<tr>
<td>Load module</td>
<td>módun tài</td>
<td>Cathode ray tube</td>
<td>ông tia catổt</td>
</tr>
<tr>
<td>Logarithm table</td>
<td>bảng lôga</td>
<td>Laser printer</td>
<td>máy in laze</td>
</tr>
</tbody>
</table>


This translation strategy is a preference to many specialists since the loan-words are
partially Vietnamized but they still bear the distinctive meaning of the English concept,
which may be distorted by the non-equivalence in translation, thus are easy to remember
and pronounce or use.
II.2.2. Translation of relative clauses by transposition procedure

As previously discussed in the theoretical background, relative clauses are seen as a strange grammatical category which does not exist in Vietnamese language. Thus, the translator somehow has to manage to transfer the meaning denoted by relative clauses into Vietnamese, which clearly reflects the use of transposition – the only translation procedure concerning with grammar. Since the transposition procedure involves several types, we would like to present our investigation on the translation of relative clauses in computer texts according to specific realization of this translation procedure.

II.2.2.1. Translation of relative clauses by replacing word class

The idea of relative pronouns does not exist in Vietnamese, neither do relative clauses. Thus, equivalents of English relative pronouns are not available in Vietnamese; instead, it is seen that the translator of computer texts has resorted to sort of fillers or linking devices such as mà, vón, nội áy, khi đó, tài đó etc. to compensate for this gap.

A relative pronoun modifies the preceding noun and is directly affected by the role of this noun in sentence structure, which consequently has an impact on its translation into Vietnamese. Particularly, when the noun of the main clause means the object of the verb in the relative clause, “mà” is adopted to create cohesion in the translated sentence.

For example,

**e.g.1. The fundamental technique that computer networks use to ensure fair access to shared network resources is known as packet switching** (English for Computer Science, p477).

*Kỹ thuật cơ bản mà mạng máy tính dùng để đảm bảo phân phối truy cập tài nguyên mạng dùng chung một cách công bằng chính là chuyển gói.*
**e.g.2.** The smallest number of phosphor dots that the gun can focus on is called a **pixel**, a contraction of the term **picture element** (Output devices, p13. Come to the world of microcomputer).

*Số lượng đóm phốt phô nhỏ nhất mà khẩu súng này có thể tập trung vào gọi là một điểm ảnh, từ rút gọn của thuật ngữ thành tổ hình ảnh.*

It is seen that “mà” tends to be used in explanation, which is denoted by a clause structure – S+V, following the noun it modifies. The use of “mà” in the above cases proves to be very effective since it makes the ideas of the sentence go smoothly and ensures the relation of the meaning indicated by the relative clause with other parts of the sentences.

Similarly, “vôn” is also frequently used when the relative clause is intended to describe or define the characteristic of the preceding noun which means the subject of the relative clause.

For example,

**e.g.1.** The first part is hardware – the physical, electronic and electromechanical devices that are thought of and recognized as “computer”.

*(English for Computer Science, p81)*

*Thiết nhất là phần cứng – những thiết bị vật lý, điện tử, và cơ điện von trực xem là “máy tính”.*

**e.g.2.** A CRT monitor contains a shadow mask, which is a fine mesh made of metal, fitted to the shape and size of the screen. (Output devices, p15.

*Một bộ hiển thị CRT còn chứa một mặt nạ bóng, von là một mặt lưới mịn làm bằng kim loại, vừa vẩn với hình dạng và kích thước của màn hình.*
Apparently, when readers come across such translation they should understand that the phrase or clause following “vôn” modifies the noun which precedes this filler.

When the noun of the main clause expresses the time or space at/in which the event in the relative clause takes place, and the relative clause is introduced by “where”, there may appear such words as nội mà, khi, lúc, tại dó/ đây, trong dó, acting as linking devices which replace the relative pronoun and create sentence coherence. For example,

**e.g.1.** *CPU is the “brain” of the computer, the place where data is manipulated.*

(Processing data, p17. Come to the world of microcomputer)

**CPU là “bộ não” của máy tính, nội mà các dữ liệu được thao tác.**

**e.g.2.** *… In line printer, the character set to be printed is on a cylinder where each segment has the full set of characters in raised form around its edge…*

(English for Computer Science, p287)

**Trong máy in dòng, bộ ký tự in được ngay trên vật như có mố phân đoạn đều có môt bộ ký tự đầy đủ nổi lên xung quanh rìa.**

**e.g.3.** *To facilitate processing, two things are needed: random access and speed. The former means that any part of the memory may be read, or accessed, equally quickly. This is made possible by the system of addresses in primary memory, where the storage locations are like a series of tiny compartments, each having its own address.*

(English for Computer Science, p187)

**Để việc xử lý được dễ dàng, đôi hồi hai điều: truy cập ngẫu nhiên và tốc độ. Truy cập ngẫu nhiên nghĩa là có thể đọc, tức truy cập, mọi phần của bộ nhớ với tốc độ nhanh như nhau. Điều này là khả thi nhờ có hệ thống địa chỉ trong bộ**
nhỏ chính, tài đầy các vị trí lerreur trong như một đầy ngắn nhỏ xấu, mỗi ngắn có địa chỉ riêng.

It should be emphasized that mà, vón, nói mà, khi, lúc, tài dò/ đầy, trong dò are not the equivalents of English relative pronouns, as discussed in the theoretical background. Instead, they are only the words substituting the idea of the relative pronoun or relative clause in the sentence, making the sentence more cohesive and coherent.

II.2.2.2. Translation of relative clauses by zero linking device

There are cases when the relative pronoun is essential in SL, say, when it precedes a verb conjugated in simple form and acts as the subject of the relative clause. However, when it is transferred into a TL, Vietnamese in this context, it becomes non-essential and thus ignored in translation. Simply put, the sentence containing a relative clause is translated without reference to the relative pronoun present (zero linking device).

e.g.1. In the 1970s, there was a further development which revolutionized the computer field. This was the ability to etch thousands of integrated circuits onto a tiny piece (chip) of silicon, which is a non-metallic element with semiconductor characteristics (English for Computer Science, p204).

Vào những năm 1970, một bước phát triển khác đã cách mạng hóa lĩnh vực máy tính. Đó là khả năng khắc hàng ngàn mạch tích hợp lên một mảnh silic nhỏ xấu (gọi là chip), là chất phi kim loại có đặc tính bán dẫn.

e.g.2. Draw programs are vector-based graphics programs that are well suited for work when accuracy and flexibility are as important as coloring and special effects. (Computer graphics and design, p 38. Come to the world of microcomputer)
Các chương trình về hình là những chương trình xử lý dữ liệu vector rất thích hợp cho các công việc xử lý chính xác và linh hoạt cũng quan trọng như là việc tô màu và các hiệu ứng đặc biệt.

e.g.3. ... At each intersection where the wires crossed, there was a small ferrite ring called a core, hence the name “core memory”, which was capable of being either magnetized or demagnetized (English for Computer Science, p204).

Tại mỗi giao điểm có một vòng fe rít nhỏ gọi là lõi (do vậy mà có tên “bộ nhỏ lõi tư”) có khả năng được từ hóa hoặc bị từ hóa.

e.g.4. The first generation of computers, which used vacuum tubes, came out in 1950. Univac I is an example of these computers, which could perform thousands of calculations per second (English for Computer Science, p28).

Thế hệ máy tính đầu tiên dùng đèn chân không ra đời năm 1950. Univac I là ví dụ về loại máy tính này, có thể thực hiện hàng ngàn phép tính trong một giây.

e.g.5. COBOL, which is written using English statements, deals with problems that do not involve a lot of mathematical calculations (English for Computer Science, p374).

COBOL, được viết bằng tiếng Anh, giải quyết các vấn đề ít liên quan đến phép tính toán học.

It is seen that the case of zero linking device is most prevalent in the translation of relative clauses in computer texts. Sometimes, a comma appears to separate the ideas expressed by the relative clause but in many other cases, this punctuation mark seems unimportant; the relative clause in English is now recognized as a verb phrase, adjective
phrase or noun modifier. The use of such words as mà, von, seems impossible here since they may lead to a lengthy and incoherent translated version.

II.2.2.3. Translation of relative clauses by means of apposition

Apposition is the symmetrical positions of two nouns that are equal in terms of grammar category to indicate a certain qualititative relationship. Apposition is expressed by means of noun or noun phrase which modifies the preceding noun. The use of apposition in the translation of relative clauses is seen in the examples hereafter.

**e.g.1.** An algorithm can be described by a flowchart, which may be stated in terms of a sequence of precise sentences, or a block diagram (English for Computer Science, p327).

Cô thể biểu diễn thuật ngữ bằng lưu đồ, lưu đồ này được diễn tả dưới dạng một chuỗi câu lệnh chính xác, tức so đó khối.

**e.g.2.** Most computers are not connected directly to the Internet. Rather, they are connected to smaller networks that connect to the Internet backbone through gateways (Internet and life, p17. Come to the world of microcomputer).

Đa phần các máy tính đều không nối kết trực tiếp tới Internet. Thay vào đó, chúng được nối kết tới các mạng nhỏ hơn, và các mạng này nối kết tới xương sống Internet thông qua các cổng nối.

**e.g.3.** Near the back of a monochrome or grayscale monitor housing is an electron gun. The gun shoots a beam of electrons through a magnetic coil, which aims the beams at the front of the monitor’s screen (Output devices, p13. Come to the world of microcomputer).
Năm sát phía sau vô bộc của một bộ hiện thị đơn sắc hoặc bộ hiện thị thang độ xám là một khẩu sung điện tử. Khẩu sung này bắn một tia điện tử đi qua một cuộn dây từ tính và cuộn dây này lại tia điện tử hướng thẳng vào màn hình.

It is observed that apposition is adopted when the use of linking devices such as mà, vón, nơi mà, khi, lúc, tại dó/ đây, trong dó is impossible and the relative pronoun means the subject of the non-defining relative clause, then the relative pronoun is realized by the meaning of the noun it modifies regardless of the role of that noun in previous clause of the same sentence.

II.2.2.4. Translation of relative clauses by syntagmatic change

Complex sentences with relative clauses are broken into simple independent sentences or two independent clauses of a compound sentence when there is a loosen structure between the clauses in the sentences and the separation does not affect sentence’s meaning. For example,

**e.g.1.** Many windows also provide scroll bars with scroll arrows and scroll boxes, which enable you to view the different parts of the program or file that do not fit in the window (The operating system and user interface, p15. Come to the world of microcomputer).

Những cửa sổ còn cung cấp các thanh trượt với các mũi tên trượt và các hộp trượt, chúng cho phép bạn xem những phần khác nhau của chương trình hay tập tin vốn có kích thước lớn hơn cửa sổ.

**e.g.2.** Two basic types of monitors are used with PCs. The first is the typical monitor that you see on a desktop computer, which looks a lot like a television
screen and works the same way (Output devices, p11. Come to the world of microcomputer).

Có hai loại bộ hiển thị cơ bản được sử dụng với các máy tính cá nhân.

Trước tiên là một bộ hiển thị điện hình mà bạn thường thấy đi kèm với một máy tính để bàn. Nó tương tự giống một TV và hoạt động theo cơ chế tương tự.

Syntagmatic change is frequently seen in the translation of non-defining relative clauses, especially those beginning with “which” to say something about the whole situation described in the main clause.

For example,

*e.g.*1. You interact with your computer’s resources by activating the icons that represent the resources, which is done most easily by using a pointing device, such as a mouse (The operating system and user interface, p113. Come to the world of microcomputer).

*Bạn tương tác với các tài nguyên trên máy tính của mình bằng cách kích hoạt các biểu tượng đại diện cho các tài nguyên đó, và điều này được thực hiện một cách dễ dàng nhất bằng cách sử dụng một thiết bị di chuột, chẳng hạn như một con chuột.*

*e.g.*2. *... Therefore, a magnetic bubble memory can store information at a greater density than existing memories, which makes it suitable for micros* (English for Computer Science, p205).

*Vì thế, bộ nhớ hạt từ có thể lưu trữ thông tin ở mật độ lớn hơn các bộ nhớ hiện có; điều này khiến nó phù hợp với máy vi tính.*
Sometimes, the presence of a relative clause in a complex sentence also leads to a change in the grammatical structure of the sentence in TL language since it may result in an absurd translation if the SL grammatical structure is preserved in word for word translation procedure. For example,

**e.g.1.** The majority of graphics programs allow the user to create images from scratch, building simple lines and shapes into complex graphics. But you do not always start from scratch; it is common to begin with an existing image, which you can edit or enhance using graphics software (Computer graphics and design, p21. Come to the world of microcomputer).

Đại đa số các chương trình đồ họa cho phép người sử dụng tạo hình ảnh mới từ ban đầu, đưa ra các đường thẳng và hình học đơn giản vào trong các hình đồ họa phức tạp. Nhưng không phải lúc nào bạn cũng tạo mới mọi thứ từ ban đầu, việc ban đầu bằng một hình ảnh có sẵn, rồi chỉnh sửa hay nâng cao chất lượng của nó thông qua phần mềm đồ họa là rất bình thường.

**e.g.2.** Before data can be transferred across a network it must be divided into packets. Each packet contains a header that specifies the computer to which the packet should be delivered; the destination is specified using a number known as the computer’s address (English for Computer Science, p477).

Trước khi truyền thông ngang qua mạng, dữ liệu phải được chia nhỏ thành gói. Mỗi gói chứa đoạn đầu định rõ máy tính đích sẽ nhận gói; định này được xác định bằng số hiệu gói là địa chỉ.
Sometimes a syntagmatic change takes place when the relative pronoun is preceded by a preposition, the noun to which the relative pronoun refers works as the object of the SL sentence. For example,

- *The success or failure of any computer system depends on the skill with which the hardware and software components are selected and blended* (English for Computer Science, p82).

- **Thành công hay thất bại của mọi hệ thống máy tính phụ thuộc vào kỹ năng lựa chọn và phối hợp các bộ phận cấu thành phần cứng và phần mềm.**

Generally speaking, whether syntagmatic change, a type of transposition procedure, can be applied in the translation of relative clauses, depends much on the translator’s expertise and his/her master of Vietnamese language.

**II.2.3. Translation of –ed participle clauses and passive structure**

–ed participle clause in computer texts, in our observation, is most common in giving definition about an object (process, device, person, or program etc.) or naming it, which is a typical feature of technical and scientific documents. Written in full form, this is also considered a passive structure (*S + to be + -ed participle/past participle*) or a relative clause with its verb used in passive voice. As discussed earlier, passive structure is commonly seen in computer texts: no agent is mentioned because the focus is on what happens, not on who or what makes it happen. This is done to give the impression of objectivity and to distance the writer from the statements made in the text.

Through our investigation, we have come up with following prominent strategies in the translation of –ed participle clauses and passive structure in computer texts.
II.2.3.1. Translation of –ed participle clauses and passive structure by transposition procedure

The first realization of transposition procedure in the translation of –ed participle clauses and passive structure in computer texts is word class replacement. In English, passive voice is reflected in verb form while in Vietnamese it is indicated by the occurrence of such passive words as “bị, được” which precede the verb in the sentence. It is observed that the use of “dược” is more common in computer texts, which is also seen as a new phenomenon in science and technology documents. For example,

**e.g.1.** Computers are machines designed to process, electronically, specially prepared pieces of information which are termed data (English for Computer Science, p50).

*Máy tính là máy được thiết kế để xử lý bằng điện từ những mầu tin đã được chuẩn bị đặc biệt gọi là dữ liệu.*

**e.g.2.** Data is the term used to describe the information represented by groups of on/off switches (Processing data, p9. Come to the world of microcomputer).

*Dữ liệu là thuật ngữ được sử dụng để mô tả thông tin được biểu diễn bởi những nhóm các bộ chuyển mạch bật/tắt.*

**e.g.3.** Network hardware and software offer a way to establish ongoing data communications, generally over media (twisted-pair wire coaxial cable, fibre-optic cable, and so forth) specifically set up for the network and known as dedicated media (Networks and data communication, p57. Come to the world of microcomputer).
Phần cứng và phần mềm mạng cung cấp một cách để thiết lập việc truyền
thông dữ liệu liên tục, thường là trên các phương tiện (dây cáp xoắn, cáp dòng
trực, cáp quang v.v.) được xây dựng đặc biệt cho mạng và được gọi là các
phương tiện dành riêng.

The translator may have made automatic reconstruction of these –ed participle
clauses into their complete form, that is, a relative clause in passive formula (which +to
be + past participle/ Ved) as a pre-translation step so as to distinguish the appearance of –
ed participle here from adjectives of similar form. We may say that the use of “được” to
intend passive meaning is reasonable as we understand that “được” indicates sort of
positive meaning than “bi”. Transposition procedure seems to be applied automatically
here as the verb in the SL texts is transferred into TL texts, accompanied by such a word
that bears a passive meaning. If passive structure is intended to maintain the theme of a
sentence or paragraph, then this strategy has realized that purpose since we see that the
ideas expressed by –ed participle clause is now part of modifier to the noun preceding
and thus smoothly continuing the ideas of the sentence or paragraph.

As discussed earlier, “do” + (S – V) structure can also be used to translate English
participle clause when the agent of the action is present, which is often introduced by
“by” in the SL text. For example,

**e.g.1.** …*The services provided by a particular layer are a product of the network
functions allocated to that layer and are usually built upon services offered by
other layers* (English for Computer Science, p519).
Calculus, another branch of mathematics, was independently invented by both Sir Issac Newton, an Englishman and Leibnitz, a German mathematician (English for Computer Science, p28).

In some other cases, when the agent of the action is present, the translation goes as “được + past participle + by (bởi)”, for example,

**e.g.1.** Professional graphic artists and designers typically use workstations made by Sun MicroSystems and SGI (Computer graphics and design, p13. Come to the world of microcomputer).

E.g.2. Between the release of Windows 95 and Window 98, the computer world’s attention focused on another new operating system, called Linux. In fact, Linux is a new version of UNIX developed by a worldwide cooperative of programmers and is freely distributed by various sources (The operating system and user interface, p17. Come to the world of microcomputer).
Though the two versions are different in word choice: “do” + \((S – V)\) versus “được + past participle +by (bố)”, they share the same intention of referring to the agent of the action, which could be a person or a firm, a device or a program etc. These structures both help to maintain the theme of a sentence or a paragraph as they describe or define the noun to which they have relation in the sentence or paragraph.

Another common case in the translation of –ed participle clauses and passive structure is the hidden passive meaning in the Vietnamese translation. Simply put, the passive word “được” is omitted from the translated sentence and the passive meaning is reflected by the meaning of the past participle in the passive structure. Still, it is somehow understood by the reader that the action here is from a hidden agent, not from the noun preceding it.

For example,

\[\text{e.g.1. Because of the very small size of the chip, and consequently of the circuits etched on it, electrical signals do not have to travel far; hence, they are transmitted faster} \ (\text{English for Computer Science, p204}).\]

\[\text{Do kích thước rất nhỏ của chip và của các mạch \(Ø\) khắc trên nó nên tín hiệu dòng điện không phải đi xa, vì vậy chúng \(Ø\) truyền nhanh hơn.}\]

\[\text{e.g.2. The information presented to the machine is the input; the internal manipulative operations, the processing; and the result, the output} \ (\text{English for Computer Science, p50}).\]
Thông tin Ø cung cấp cho máy gọi là đầu nhập (input); hoạt động thao tác bên trong gọi là xử lý (processing); và kết quả nhận được là đầu xuất (output).

It is interesting to realize that the translator has omitted the passive word “được” intentionally because with the presence of such a word in these cases, the Vietnamese translation would sometimes seem deviated from the intention of the SL sentence. Moreover, most of the time, this phenomenon falls into the case of –ed participle clause rather than a complete passive structure.

II.2.3.2. Translation of –ed participle clauses and passive structure by either transposition or modulation procedure

In the case of a complete passive structure, which is in the form of S + to be + past participle/Ved, which is most commonly found in computer texts to start a new sentence or clause, either transposition or modulation procedure is adopted. Transposition involves several types and the one realized here is word class replacement. Modulation defines a variation through a change of viewpoint, of perspective and very often of category of thought (Vinay and Darbelnet, 1958), among which active to passive voice or vice versa is an outstanding example. In other words, the SL sentence may be translated with either a change in word class or a change in sentence structure – passive to active structure. For example,

**e.g.1.** Personal digital assistants (PDAs) are among the smallest of portable computers. ... PDAs are normally used for special applications, such as taking notes, displaying telephone numbers and addresses, and keeping track of dates or agendas. Many PDAs can be connected to larger computers to exchange data (The amazing computer, p61. Come to the world of microcomputer).
Máy trợ giúp cá nhân ký thuật số (PDAs) là loại máy cầm tay nhỏ nhất.

Các PDA thường được sử dụng cho các ứng dụng đặc biệt, như ghi chép số điện thoại và tìm địa chỉ, xem giờ, ngày tháng hay chương trình nghĩ sự. Nhiều PDA có thể nói được với các máy tính lớn hơn để trao đổi dữ liệu.

**e.g.2.** A large number of peripherals have been developed especially for use in systems built around minicomputers; they are sometimes referred to as miniperipherals. … Since many minis are employed in real-time processing, they are usually provided with operating systems that are specialized for this purpose (English for Computer Science, p119).

Rất nhiều thiết bị ngoại vi được đặc biệt để dùng trong những hệ thống thiết đặt xung quanh máy tính mini; đôi khi người ta gọi chúng là thiết bị ngoại vi cho máy tính mini. ... Vì có nhiều máy tính mini được dùng trong xử lý thời gian thực nên thường thì người ta cung cấp cho chúng những hệ điều hành chuyển được cho mục đích này.

As we see it, sometimes the change in sentence structure, that is, passive in SL to active in TL is not very necessary if the SL sentence can be transferred into TL without any loss of passive meaning that it is intended, for instance, in the previous example “they are sometimes referred to as miniperipherals” can also be translated as “doi khi chúng được gọi là thiết bị ngoại vi cho máy tính mini”; “they are usually provided with...” as “chúng thường được thiết lập/ cung cấp cùng với...”. Still, there are cases when the change in sentence structure is necessary as if the SL sentence structure is preserved, it would sound unnatural in the TL.

For example,
The success or failure of any computer system depends on the skill with which the hardware and software components are selected and blended. A poorly chosen system can be a monstrosity incapable of performing the tasks for which it was originally acquired (English for Computer Science, p82).

In the above example, if the translator applied word for word translation, i.e. translated the SL sentence into TL sentence with maintenance of SL grammatical structure, it would sound unjust or not naturally Vietnamese. For example,

- Thành công hay thất bại của mọi hệ thống máy tính tùy thuộc vào kỹ năng lựa chọn và phối hợp các bộ phận cấu thành phần cứng và phần mềm. Hệ thống lựa chọn tôi có thể trở thành một vật thể vô dụng, không có khả năng thi hành những tác vụ mà người ta đã dành cho nó lúc ban đầu.

Clearly, it is the translator’s expertise of Vietnamese language in deciding when to adopt a passive or active structure for an –ed participle clause or passive structure in English.

II.2.4. Problems in the translation of computer texts

II.2.4.1. Problems in the translation of computing terms

We have presented the common translation procedures used in the translation of computing terms. In this part, we would like to discuss some other aspects relating to this
issue i.e. problems in the translation of computing terms, which include word choice and term translation consistency.

Firstly, word choice involves a great number of sub-technical terms. As said in previous chapter, sub-technical terms are words which are not specific to a subject or a specialized field but are regularly seen in many other fields of life. Problematic translation occurs when the translator has no knowledge of the computing field so he just translates a term with its general meaning, being unaware of its specialized meaning. This is seen as the most common problem of computing term translation in computer texts. For example, infected in general context means bị lây nhiễm, bị nhiễm đục/nhiễm trùng but in the context of computer virus, say, an infected PC it should be translated as bị nhiễm vi rút instead of bị nhiễm đục (Oxford English for Computing, p93. NXB LDXH); pen-based computing should be translated as việc sử dụng máy tính dựa trên cơ sở bút viết rather than việc xử lý dựa vào bút (Oxford English for Computing, p105. NXBLĐXH); expand may means mở rộng but in computing context it is meant nâng cấp to emphasize capacity (dủng lượng) (Oxford English for Computing, p8. NXBLĐXH). Word processing should be việc xử lý văn bản rather than việc xử lý tể (Oxford English for Computing, p8. NXBLĐXH). Printing is meant việc viết từng chữ in hoa tách ròi rather than việc viết bằng tay (Oxford English for Computing, p19. NXBLĐXH). Control in the context of computing means quyền kiểm soát instead of kiểm soát (Oxford English for Computing, p83. NXBLĐXH). Such a translation does not properly transfer the meaning or intention of SL sentence, or it would be misleading, causing dissatisfaction to readers who have some knowledge of the field.
Secondly, it is the translation problem relating to the paraphrases of a computing term or the translation procedure adopted in the translation of computing terms. It is observed that a new term may be accompanied by sort of paraphrases which may be introduced by the word *or*, a comma or a hyphen to explain the meaning of the term more clearly. For example, “If you use a *shared* PC or a *PC that has public access*, such as one in a college PC lab or a library, be very careful about putting floppies into that PC’s drives without a write-protected tab” (Oxford English for Computing, p93. NXBLDXH).

Is it necessary to translate every word that appear in a computer text to transfer the ideas of the text into Vietnamese? If yes, that is word-for-word translation in which the SL word-order is preserved and the words translated singly by their most common meaning, out of context. In Newmark’s words (Newmark, 1995) this translation procedure should only be used as a pre-translation process. In our opinion, when a term is accompanied with a paraphrase which can explain the meaning of the term, then the rank-shift procedure can be used, i.e. the paraphrase can be taken as the explanation for a new term which has not got a properly established translation. Then, the example above should be translated as “Nếu bạn sử dụng một máy tính có sự truy cập chung, ví dụ như máy tính trong phòng máy hay thư viện trường, hãy cẩn thận dùng *lấy chống ghi* trước khi đưa đĩa mềm vào ổ đĩa của máy đó” rather than “Nếu bạn dùng chung một PC chia sẻ hoặc một PC có sự truy cập chung, như là một PC trong một phòng thí nghiệm hay trong một thư viện của trường cao đẳng, phải rất cẩn thận khi nhét các đĩa mềm vào ổ đĩa của PC đó mà thiếu một nhân báo về ghi”.

Finally, consistency in translation also deserves discussion. For example, the word “*type*” can be translated as “dánh, gõ”; “*click*” as “kích, nháp, nháy, bấm, etc.”;
“multimedia” as “multimedia, đa phương tiện” ; “e-mail” as “e-mail or thư điện tử” (The amazing computer, p31. & Multimedia, p11 - Come to the world of microcomputer). It does not appear consistent if the translator keeps changing the Vietnamese equivalent form now and then during a text. In our opinion, the translation may put forward all possible translated versions for a term, then sticks to one version throughout a text or even texts in a book; or may use only one appropriate Vietnamese equivalent for the original term in the TL text. It does not seem a good idea to use one translated version here, another translated version there, which shows inconsistent translation, making the reader confused about the correct translation of a term or concept.

II.2.4.2. Problems in the choice of translation procedure

As previously discussed in the theoretical background, there are a number of translation procedures which a translator may resort to during the course of his work. We have just examined common translation strategies used in the translation of computing term, relative clauses and –ed participle clauses and passive structure in computer texts, appraise their appropriateness, which helps to successfully transfer the information from SL texts into TL texts for the readers’ understanding benefit. Still, throughout certain computer texts, there are cases when inappropriate translation procedures are used, producing awkward translated sentences that may be misleading or hard to understand to the reader. In other words, automatic application of word-for word translation or literal translation has resulted in translation of bad quality. Following are specific cases.

- Use of general meaning for specialized word
**e.g.1.** Improvements in software may allow machines sold in the US to understand not only *printing* but *continuous script* as well (Oxford English for Computing, p19. NXB LDXH).

*Những sự cải tiến trong phần mềm có thể cho phép ngày các máy đã bán ở Mỹ hiểu không chỉ việc viết bằng tay mà còn hiểu chữ viết không dứt quảng tổt.*

We would suggest a different translation as follows

*Những cải tiến trong phần mềm có thể cho phép các máy tính bằng viết (Clipboard) không chỉ hiểu được các chữ in hoa viết rồi mà còn hiểu được cả những chữ viết liên không dứt quảng.*

**e.g.2.** In multi-user environments an operating system *is required to control* terminal operations on a *shared access basis* as only one user can access the system at any moment of time. The operating system *allocates control* to each terminal in turn (Oxford English for Computing, p26. NXB LDXH).

*Một hệ điều hành trong môi trường đa người dùng *được yêu cầu* điều khiển các hoạt động của thiết bị đầu cuối trên một nền tảng truy cập *được chia sẻ* trong khi một người sử dụng có thể truy cập hệ thống tại thời điểm bất kỳ. Hệ điều hành *chỉ định kiểm soát* tới mỗi thiết bị đầu cuối lần lượt.*

Our suggested translation would be as follows

*Trong một môi trường đa người sử dụng, một hệ điều hành được *đưa* để điều khiển các hoạt động tại thiết bị đầu cuối trên một nền tảng truy cập chia sẻ bởi chỉ có một người sử dụng có thể truy cập hệ thống tại một thời điểm bất kỳ. Hệ điều hành phân bổ quyền điều khiển tới mỗi thiết bị đầu cuối lần lượt.*
e.g.3. Management information systems lie at the top of the hierarchy of information needs. The MIS takes the plans and information from the transaction-level systems to monitor the performance of the business as a whole. This provides feedback to aid strategic planning, forecasting, and/or budgeting, which in turn affects what happens at the transactional level (Oxford English for Computing, p113. NXB LDXH).

Các hệ thống thông tin quản lý nằm tại đỉnh của hệ thống cấp bậc của thông tin cần thiết. MIS sử dụng các kế hoạch và thông tin từ các hệ thống bậc giao dịch để giám sát sự tiến hành của công việc như một hệ thống hoàn chỉnh. Điều này cũng cấp sự phản hồi cho việc lập kế hoạch chiến lược, việc dự báo và/hoặc việc dự thảo ngân sách, theo chiều hướng tác động ngược trở lại các hoạt động tại bậc giao dịch...

More appropriate translation would be as follows

Các hệ thống thông tin quản lý (MIS) nằm ở đỉnh của hệ cấp các nhu cầu thông tin. MIS sử dụng các kế hoạch và thông tin từ các hệ thống bậc giao dịch để giám sát toàn bộ hoạt động của doanh nghiệp nói chung. Việc này cũng cấp thông tin phản hồi cho việc lập kế hoạch chiến lược, dự báo hay dự thảo ngân sách và như thế sẽ tác động ngược đến các công việc xảy ra tại bậc giao dịch ...

From the above examples, we see that the translator just translates word for word and does not take into account the specialized meaning of sub-technical words in computing field. This falls into the same category as the problem in the translation of single computing terms, e.g. printing (chữ viết in hoa rồ), control (quyền kiểm soát), allocate (phân bộ), feedback (thông tin phản hồi), hierarchy (hệ cấp). In addition, as said in the previous section on computing terms, the translation of compound terms should go backward from the last noun in the chain to the other preceding nouns. However, the
translator of some computer texts still makes a careless mistake when he does not realize
the existence of a compound term in the structure N+N e.g. information needs (các nhu
cầu thông tin), rather he treats it as a N+V or N + Adj structure in TL (thông tin cần
thiết), thus moving away from the intended meaning of the SL sentence.

- Wrong translation of idiomatic expressions

In other cases, mistranslation falls into idiomatic expressions which sometimes occur
in a computer text. Since idiomatic expressions often have their meanings beyond the
meaning of their constituent words, wrong translation of idiomatic expressions would
result in misleading information, even information that can hardly be understood.
Following are some outstanding examples.

- **e.g.1.** ... monitor the performance of the business as a whole (giám sát sự tiến
hành của công việc như một hệ thống hoàn chỉnh (Oxford English for Computing,
p113. NXB LDXH).

- **e.g.2.** The paperless office is still a dream, but the basic tools are in place (Văn
phòng không giấy vẫn là một giấc mơ, nhưng các công cụ cơ bản được thay thế)
(Oxford English for Computing, p105. NXB LDXH).

- **e.g.3.** Pen-based computing is coming into its own (việc xử lý dữ vào bút đăng di

- **e.g.4.** Simply put, robot hands – like robot legs, or eyes or reasoning powers -
have a long way to go before they can approach what biological evolution has
achieved over the course of hundreds of millions of years (Đơn giản việc đạt cảnh
tay người máy - giống như các chân người máy hay mắt hay khả năng có lý trí –
d Ведь mới con đường dài để đi trước khi họ có thể tiếp cận những cái mà sự tiến
As we see it, the translator in these cases has not realized the occurrence of idiomatic expressions, thus producing a translation of different intention from that of the SL sentences. Taken the context of translation into consideration, *monitor the performance of the business as a whole* should be translated as *giám sát toàn bộ hoạt động của doanh nghiệp*, in place as *đã có mặt/ sẵn*, *Pen-based computing is coming into its own* is meant *Việc sử dụng máy tính dựa trên cơ sở bút viết đã được sáp nhập được danh tiếng của nó*. Although these idiomatic expressions belong to the so-called general language in a text of a specialized topic, they are definitely contributive to the field and really a hindrance to readers’ understanding of a text as a whole if they are mistranslated.

- **Faithful translation in the translation of tenses and aspects**

A faithful translation is seen as an attempt to reproduce the precise contextual meaning of the original within the constraints of the TL grammatical structures. In the context of this study, faithful translation brings about unnatural or confusing translation, especially in the aspects of tenses and aspects, passive structure etc.

The notion of tenses and aspects is a vital part of English grammar but is really a controversial phenomenon in Vietnamese grammar, which has gained much discussion among Vietnamese linguists who have not come to an agreement on the existence of tenses and aspects in Vietnamese. However, it is seen that the notion of time/ tenses and
aspects are sometimes realized in the occurrence of such lexical items as dã, đang, sẽ, văn đang etc. and the context of the sentence or paragraph (Ngữ Pháp Tiếng Việt, 1983). In addition, there are cases when the notion of tenses and aspects are not always transferred directly into the SL by means of lexical items like dã, đang, sẽ, văn đang. Instead, they are sometimes translated by means of compensation procedure, that is, when loss of meaning, sound effect, metaphor or pragmatic effect in one part of a sentence is compensated in another part, or in a contiguous sentence (Newmark, 1995). Similarly, a passive structure may be translated with modulation procedure or transposition, as discussed earlier, but not with a faithful translation procedure which brings awkward sentence that does not sound naturally “Vietnamese”. So, throughout a computer text, more than a translation procedure can be detected because of a variety of discourse features present in it. If the translator can not handle all the translation procedures appropriately, he/she would come up with a clumsy translation or a translation that distorts the original message. For example,

- The program produced after the source program has been converted into machine code is referred to as an object program or object module. This is done by a computer program called the compiler, which is unique for each computer. Consequently, a computer needs its own compiler for the various high-level languages if it is expected to accept programs written in those languages. For example, in order that an IBM RS/6000 may process a program in FORTRAN, it needs to have a compiler that would understand that particular model and the FORTRAN language as well (Oxford English for Computing, p49. NXB LĐXH).
II.2.5. Summary

We have so far looked into the translation of some typical syntactic and lexical features of computer texts, that is relative clauses, -ed participle clause and computing terms from English computer texts into Vietnamese to identify the translation strategies used. We have also spotted some problems relating to the translation of computer texts in general and made suggestions for improvement.
The translation of computing terms involves several translation procedures such as transference, transposition, transference and naturalization. Specifically, transference procedure is applied in the translation of single terms and neologisms, transposition is reflected in the translation of some compound terms, and both transference and naturalization are seen in the translation of some other compound terms.

Regarding the translation of relative clauses, a significant syntactic feature in computer texts, transposition procedure stands out. Though the notion of relative clauses is absent in Vietnamese, the translation of such clauses has been successfully done by various means under transposition procedure such as by replacing word class i.e. replace the absence of a relative pronoun in TL with other linking devices or linking words like mà, nội, trong khi, tài đó, vốn etc. to create the connection of ideas between the main clause and relative or subordinate clauses; by means of zero linking device i.e. the absence of a relative pronoun is taken for granted in the TL and the relative clause is translated as postmodification to the noun it modifies, without referring to any linking words and without any loss of meaning. The translation of relative clause is also seen to have resorted to apposition which means a noun or noun phrase modifying the preceding noun, and syntagmatic change which involves a necessary change of sentence structure so as to transfer the intention of the SL sentences properly and correctly.

Similarly, –ed participle clause and passive structure in English are rendered into Vietnamese by means of transposition procedure in some cases, by either transposition or modulation procedure in others. Transposition procedure used in the context of –ed participle clauses and passive structure is reflected in the occurrence of passive words such as “bị, được” which precede the verb in the sentence or the structure “do” + (S – V)/
“được + past participle + by (bôi)” which are different in terms of wording but similar in their intention of referring to the agent of the action/verb, which could be a person or a firm, a device or a program etc.

Problems in the translation of computer texts give rise to the issues of word choice, consistency in the translation of terminologies throughout a text and the appropriateness of translation procedures used in the translation of some other discourse features of computer texts such as tenses and aspects, idiomatic expressions, general words used in the context of information technology. These problems pose the necessity of revising, correcting and standardizing a number of computer texts.
PART C: CONCLUSION

We have made an attempt to study the translation of English computer texts in Vietnamese equivalents, specifically the translation of the most prominent syntactic and lexical features of English computer texts: relative clauses, -ed participle clauses, passive structure as well as computing terms. The concepts in translation that are relevant to the study have been revised in the literature review to establish the ground for the research. Particularly, translation methods and procedures are of great importance as they are much resorted to, which sheds light on the aspects under investigation during the course of the study. Then, the notions of terms in computing field as well as of relative clauses, -ed participle clauses and passive structure in English and Vietnamese are touched upon to set the ground for the study analysis. Finally, we have come up with the outstanding translation strategies that have been used in the translation of those features according to the aims of the study. In this part, we would like to give a brief summary of the major findings of the current study, bring about some implications for the translation of computer texts and give suggestions for further research.

I. Major findings

1.1. Translation of computing terms

As computer technology develops, new objects or concepts come to life, which accounts for the occurrence of both single and compound terms. It is recognized that the translation of terms in computer texts have made use of several strategies.

Firstly, transference is adopted when there is a lack of standardized equivalent term in the TL for a concept or an object in the SL. This is seen to be an increasingly common
strategy applied to most types of terms, single or compound, in computer texts under
observation. Specifically, transference is reflected in the translation of terms referring to
modern concepts that are not lexicalized in Vietnamese, or that are technically lexicalized
in Vietnamese, terms that mean measuring units or IT acronyms. Transference in this
context involves the use of loan-words or borrowing words which is sometimes
naturalized in the TL.

Secondly, the translation of compound terms is assisted by transposition procedure
which is the automatic change in word order from SL to TL or the use of a generic
classifier which specifies the type or category to which a term belongs. Transposition
procedure is seen to be the most common strategy applied automatically to almost all
types of compound terms presented in computer texts.

Finally, compound terms are also translated by means of both transference and
naturalization procedures which result in an interesting phenomenon in which a
compound term has one component transferred, the other translated into the TL, for
example, “parity bit” (bit chẵn lẻ) or “bitmaps” (các ảnh bitmap) etc.

1.2. Translation of relative clauses

Since the concept of relative clauses does not exist in Vietnamese, translators have to
resort to other means to render this grammatical category from the ST into the TT, which
is brought about by the application of shift or transposition procedure.

The first realization of transposition procedure is replacing word class, which means
the use of linking words like “mà, vón, noi, khi, tài đó, khi ấy” to create the connection
between ideas represented by the main clause and its subordinate or relative clause in a
complex sentence. There are also cases when a sentence containing a relative clause is
translated without reference to the relative pronoun present i.e. without any linking words (zero linking device); the relative clause in English is now recognized as a verb phrase, adjective phrase or noun modifier in the TL sentence.

The second strategy is the use of apposition which is seen as the repetition of a noun or noun phrase that modifies the preceding noun. Apposition is most common in translating non-defining relative clauses, which provides extra information to the noun it modifies.

The application of transposition procedure in the translation of relative clauses is also seen in the syntagmatic change of the TL sentences. Particularly, it is the division of a sentence containing a non-defining relative clause, one beginning with “which” to say something about the whole situation described in the main clause, into simple independent sentences or two independent clauses of a coordinating compound sentence, provided that there is a loosen structure between the clauses in the sentences and the intention of the SL sentence stays the same after separation. The change in the structure of the TL sentences is sometimes necessary as it may result in an absurd translation if the SL structure is preserved. This strategy, in our opinion, depends much on the translator’s expertise and his/ her master of the Vietnamese language.

1.3. The translation of –ed participle clause or passive structure.

It is observed that –ed participle clause is in fact a passive structure which is most popular in giving definition about a thing (process, device, person, or program etc.) or naming it and is a typical feature of technical and scientific documents. The translation of such grammatical categories has made use of transposition and modulation procedure. The former is reflected in the use of passive words like “bi, đa quyết”, sometimes just by the
meaning of the past participle or the verb itself when the passive words are omitted. In other cases, such structures as “do” + (S – V) or “đã + past participle + by (bởi)” can be used to translate English participle clause when the agent of the action is present, which is often introduced by “by” in the SL text. The latter involves a change of viewpoint from passive to active voice, thus resulting in a change of structure from SL to TL, which may be accompanied with an arrangement of information organization in the TL sentences which is aimed to maintain the parallelism of ideas and the theme of the sentence in the TL. This modulation procedure, to our view, also depends much on the translator’s expertise and proficiency of both SL and TL.

II. Implication for the translation of computer texts

From the investigation above about translation procedures it is necessary that there be further consideration for the translation of computer texts. Admittedly, it is prerequisite that the translator has good knowledge of the languages he is dealing with so as to manage them successfully, avoiding awkward mistakes in translation which may arise from common pitfalls of the language such as multi-meanings, complex phrase or sentence structures etc. because of the differences in expressions between languages. In-depth understanding of the TL certainly helps the translation with his choice of words or structures or ways of expressions to transfer the ideas from the SL to the TL smoothly and successfully.

In the context of computer technology, it is important that the translator have professional knowledge of this field before embarking on translating specialized texts. Professional understanding of computers and information technology helps the translator easily follow the flow of ideas presented in a computer text, comprehend it better, and
thus producing translation of good quality. More importantly, this should raise his awareness of the existence of terms including highly technical terms and sub-technical terms, which is the most outstanding discourse feature of computer texts, and which requires consideration and sometimes consultation with specialists for proper transference into TL, whether the terms are translated, borrowed or naturalized in the TL. Besides, the translator of computer texts is recommended to have knowledge of term categories such as single terms versus compound terms, acronyms and abbreviations, etc. and the strategies applied for the translation of such categories into Vietnamese, whether it is transference, transposition, naturalization, rank shift or a combination of several procedures at the same time. In other words, knowledge of translation strategies may be helpful to the course of translation of computer texts, which has been the impetus for this study.

Last but not least, the translator of computer texts has to be aware of some other typical discourse features of English computer texts, such as the use of relative clauses and –ed participle clauses and passive structure, which help to convey the specialized message to all readers. He/she has to be very flexible because during the course of his work he often has to resort to more than one translation procedure for different grammatical or vocabulary categories present in a text. At one time, it may be word for word translation, or transposition; at another time, it could turn out to be transference, naturalization or modulation etc. The translator, thus, has to be careful in making his decision on an appropriate translation strategy so as not to produce unsound sentences which would hinder readers’ comprehension when they deal with the TL version.
In general, as translation involves a number of skills which include text analysis, vocabulary use, grammatical formulation etc. of both SL and TL, the translator has to be a master of such skills, which is considered the most important condition. In addition, in dealing with the specialized field of computer texts, the translator himself should accumulate professional knowledge in order to manage these specialized materials successfully, without deviating from the intention of the SL texts.

III. Suggestions for further research

As computer science has brought undeniable achievements that benefit us human beings, we are more conscious and inquisitive of the advances that have been taking place around us. The translation of computer texts is a way to spread knowledge and thus is of importance, which deserves more attention of linguists and specialists. Due to the time and word limit of the thesis, the author has only investigated the translation of some typical discourse features in English computer texts as well as some remaining problems collected from the study corpus. So, further study should take on other features such as the realization of tenses and aspects, reference, idiomatic expressions from English into Vietnamese or should look into the translation quality from observing and assessing contemporary translation works.

In short, this study is only my first attempt to do an investigation into the translation field, especially in ESP, but I do hope that the study would provide some ideas on the translation of computer texts for me and other teachers and learners, particularly those interested in ESP. Due to the limited time and knowledge, the shortcomings are inevitable in this study, consequently I wish to receive the comments and suggestions from other teachers and those concerned.
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**Study corpus**