

On Nominalization and Translation in English for Science and Technology

Wang Haojing

Sanmenxia Vocational and Technical College, Sanmenxia, Henan, China

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Abstract: The formal written style of language is the main style in English for Science and Technology, which strives for accuracy, amiability, directness, compactness, briefness and clearness. Of EST (short for English for Science and Technology), a large quantity of abstract nouns, especially nominal structures, enjoy popularity as much as possible and have become one of the most remarkable characteristics of EST. At the same time, they also serve as a reason for its difficulty in understanding and translating. Therefore, it is not only the presence of EST features, such as, exact words, terse language, objective expression, clear orderliness and precise content, ect. but also helpful for readers to understand articles to do a good job in EST translation of nominalization. Nominalization mainly refers to the application of abstract nouns that show action or state, infinite verbs functioning as nouns, noun-nouns and prepositions, etc. They include the original sense of agent meaning in the structure, simplifying the narration and structure effectively and bringing a more compact and precise article. This thesis consists of three main parts, studying the nominalization of EST. The first part, beginning with the concept of nominalization, explains the characteristics of nominalization. The second one presents the phenomena of nominalization in EST and analyzes four specific forms of nominalization. The third one illustrates the application and translation of nominalization in EST by some real examples. Through these studies on nominalization in EST, readers and translators can learn more about features of EST and its translation methods and then understand and translate such articles more effectively and better, improving the ability of converting the EST in its corresponding Chinese.

1. Introduction

English for Science and Technology, as one of important English styles, has developed with scientific technologies growing. It involves natural scientific subject of matter, such as science, engineering, medicine and agriculture, etc. And it also includes scientific works, academic papers, experimental reports, teaching presentations or thesis replies and so on, featuring rigorous carefulness, accurate notion, logicity, neat and concise sentences and little change, etc^[1]. Almost all these features are showed by nominal structures.

Nominalization mainly refers to the application of abstract nouns that show action or state, infinite verbs functioning as nouns, noun-nouns and prepositions, etc. The application of

nominalization can simplify the structures of language and make the language more concise and the information more outstanding. This thesis, beginning with the literature review, presents the phenomena of nominalization in EST (short for English for Science and Technology), analyzes four forms of nominalization and illustrates the application and translation of nominalization in EST. It aims at helping readers and translators understand EST better and improve the ability of translators to convert English into Chinese effectively.

2. Literature Review

Narrow sense to say, the so-called nominalization is to replace the verbs with the corresponding nouns when it comes to expressing the notion of action or behaviors^[2]. For example, we can use “the application of force” instead of “to apply force”, “operation of the brake” instead of “the brake operates”.

In the Contemporary English Grammar, R·Quirk attaches importance to nominalization as much as passive tense and treats it as one of the two prominent features of EST. In the following examples:

A: In the morning, they quarreled over pay. (Quirk)

B: The quarrel over pay was the reason for his resignation. (Quirk)

Semantically, “the quarreling over pay” in the sentence B amounts to “they quarreled over pay” in the sentence A.

R Quirk points out that such noun phrase corresponding the sentence structure like “the quarrel over pay” in the sentence B is called nominalization^[3].

3. The Nominalization of EST

The nominalization enjoys much popularity in EST. In the following writing, the article will introduce the nominalization of EST from four main aspects. They are the use of abstract nouns which show action or state, the use of infinite verbs, the use of noun-nouns and the use of prepositions respectively.

3.1 The Use of Abstract Nouns Which Show Action or State

The use of abstract nouns which show action or state, as one of the most popular phenomena in EST, is playing a major and essential role. It includes the application of nominalization of verbs, adjectives and subordinate clauses.

3.1.1 The Nominalization of Verbs

In EST, the nouns deriving from verbs are used widely and they usually consist of verbs and the suffixations “-tion”, “-sion”, “-xion”, “-ment”, “-ance”, “-ence” and so on. These words come from nouns whose roots belong to transitive verbs with transitivity, namely, illocutionary functions of expression of transitive verbs. This kind of nouns is usually along with a prepositional phrase, of which, the nouns just serve as the objects of the nouns with transitivity. For example,

(1a): Television transmits and receives images of moving objects by radio waves.

(1b): Television is the transmission and reception of images of moving objects by radio waves.

In the example (1b), “transmission” and “reception” are just the behavior nouns deriving from “transmit” and “receive” by adding affixations. And “transmission” and “reception” with transitivity have a prepositional phrase “of images”, of which, the word “images” is just the object of “transmission” and “reception”. The nominal structure “the transmission and reception of images” in the example (1b) stresses on the objective fact while the predicate verb in the example

(1a) focuses on the ability of transmitting and receiving. Therefore, this form like the example (1b) is widely used in EST.

3.1.2 The Nominalization of Adjectives

In some situation, the adjectives can also be nominalized. Such as,

(2a) It is doubtful how accurate the results are.

(2b) The accuracy of these results is doubtful.

(3a) Single crystals of high perfection are absolutely necessary for the fabrication of integrated circuits.

(3b) Single crystals of high perfection are an absolute necessity for the fabrication of integrated circuits.

(4a) The electrical conductivity is important in selecting electrical materials.

(4b) The electrical conductivity has importance in selecting electrical materials.

From these examples above, we can find out that the sentences (2b, 3b, 4b), in which the adjectives turns into the corresponding nouns, are more objective with more outstanding information and such sentences appear more in EST.

3.1.3 The Nominalization of Subordinate Clauses

The nouns indicating behavior or state generally belong to abstract nouns. And in literature of EST, a large number of abstract nouns just depend on the logicity and conceptualization of abstract thinking to realize the conciseness, objectivity and concentration. The nominalization of subordinate clauses, in fact, is the concentration of the sentence. For example,

(5a) The earth rotates on its own axis, which causes the change from day to night.

(5b) The rotation of the earth on its own axis causes the change from day to night.

(6a) Archimedes first discovered the principle that water is displaced by solid bodies.

(6b) Archimedes first discovered the principle of displacement of water by solid bodies.

(7a) You can rectify this fault if you insert a wedge.

(7b) Rectification of this fault is achieved by insertion o f a wedge.

In the example (5b), the nominalized structure “the rotation of the earth on its own axis” turns the composite sentence into the simple sentence, making the expressive notion more accurate and strictness. In the example (6b), the nominalized structure “displacement of water by solid bodies”, not only simplifies the appositive clause but also emphasizes on the fact “displacement”. The example (7b) turns the composite clause with two subject-predicate structures into the simple sentence with only one subject-predicate structure, making the sentence structure more concise and rigorous. Besides, the abstract noun “rectification” serves as the subject replacing the personal pronoun “you” with more objective narration as well as more formal and written style of language. Therefore, the method of nominalization can simplify narration and structure and make the article more direct, compact and terse, the expression more objective, the main information more prominent.

3.2 The Use of Infinite Verbs

The use of infinite verbs involves only gerund, whose application can simplify the language of EST. What’s more, its participation forms a lot of specially scientific terms, such as, tapered winding, potential shifting, tailing and so on. Because gerunds can play roles like nouns, they can also serve as attributes of nouns, showing application or action related to the modificatory nouns, such as, plotting scale (a scale for plotting), modulating potentiometer (an instrument for modulating potential), building material (material for building), measuring instruments (

instruments for measuring) and cooling water (water for cooling), etc. All these gerunds simplify the lingual structures and highlight the expression of “documentary”.

3.3 The Use of Noun- Nouns

The use of noun-nouns refers to the phenomenon that before the central noun, there are many unchangeable nouns, which are the center front adjective modifiers, called “Expanded Noun Pre-modifiers”, such as, illumination intensity determination (= determination of the intensity of illumination), power transmission and relay system (= a relay system for power transmission),etc.

Obviously, the use of noun-nouns can simplify the linguistic structure and make the article concise, which is just the requirement of EST featuring narration and deduction. What’s more, nouns, as attributes, usually include the following several situations,

(1). A single noun serves as the attribute of a noun or a nominal phrase, such as, pressure difference, plant safety rules, diskfriction wheel.

(2). A nominal phrases serves as the attribute of a single noun, such as, water pump valve, the iron and steel industry.

(3). Nominal phrases serve as attributes of nominal phrases, such as, low voltage direct current, gear shaft roller bearing, crank shaft bearing oil pipe.

3.4 The Use of Prepositions

In fact, the extensive application of preposition has also become a trend in EST, along with expressing the notion of verbs by nominalization. In EST, the forms “Verb+ Object+ Prep” and “Prep. + Object+ Prep.” are very popular.

(1) The form “Verb+ Object+ Prep.” refers to the idiomized verb phrases whose central word is a noun, such as, “make use of”, “pay attention to”, “put emphasis on”, “keep watch over”, “obtain support from”, “give no evidence of”, “take warning from” and so on.

In these phrases, the notions of verbs lie in the nouns serving as objects. The nouns are the central words of the whole phrases, playing dominant roles while the front verbs “make, pay, put, keep, obtain, give, take”, as “Empty Verbs” just play grammar parts. The application of verb phases centering on nouns can make the predicate verbs more varied, active and moving.

(2) The form “Prep. + Object+ Prep.” refers to the preposition whose central word is a nominal prepositional phrase. It can also express the notion of verbs effectively. For example,

(3) A body is negatively charged when it has electrons in excess of its normal number.

(4) Most experiments at very low temperature are made with the help of liquid helium.

(5) With the use of the increased temperature and pressure, the oil is cracked into lighter or heavier fractions.

According to these four forms of nominalization above and their extensive application in EST, the translators should pay attention to translating the abstract nouns showing action or state into Chinese verbs when translating scientific English literature. Or else, the translators should translate the Chinese verbs into English abstract nouns. Sometimes, the translators even need to add a subject with the finite personal pronoun “you” like the example 7, which fit for the characteristics of EST and English-Chinese thinking and expression habits more.

4. The Translation of Nominalization in English-Chinese Translating Practice

EST texts feature accurate words, concise language, objective expression, clear orderliness and exact content, with strongly special and pragmatic characteristics^[4]. English and Chinese belong to distinct families of languages and they differ vastly from writing habits, figures of speech,

collocations of words and expressions, syntax structures as well as means of expression. So while translating, we should pay attention to their respective features and adopt different methods according to different contexts.

4.1 Resolve Translating Problem from the Perspective of Vocabulary

In the face of EST, a major problem is the numerous difficult and troublesome vocabulary while the tremendous vocabulary lies in the existence of deriving words^[5]. The same word root can derive tens of words, including all kinds of properties. Nominalization is derived from verbs or adjectives, but the same word tends to derive from more than one word, for example, the word “vary” can derive those nouns “variety”, “variation”, “variability”, “varying” and so on. However, as long as we can find the root, we can resolve the vocabulary no matter how complex it is. We take the example as follows,

(1) Some scientists working on the question of extra terrestrial intelligence, myself among them, have attempted to estimate the number of advanced technical civilizations-defined operationally as societies capable of radio astronomy-in the Milky Way Galaxy. Such estimates are little better than guesses. They require assigning numerical values to quantities such as the numbers and ages of stars; the abundance of planetary systems and the likelihood of the origin of life, which we know less well; and the probability of the evolution of intelligent life and the lifetime of technical civilizations, about which we know very little indeed.

This is a paragraph of simple EST. But if we cannot make clear the meanings of several nominalizations in it, it will also bring blockade to our understanding and translation. The italic nouns in this paragraph come from the nominalization of the adjective “intelligent”, the verb “civilize”, the adjective “likely” and the verb “evolve” respectively. If we know their origins, it will be easy to find out their meanings after nominalization. Of course, understanding the meaning merely is not enough, we still need to distinguish from their sources because abstract nouns with different sources are distinct in semantics. In terms of semantics, the abstract nouns coming from verbs usually refer to action or behaviors, also called “gerunds”, while the abstract nouns coming from adjectives refers to the quality or state, also called “predictive nouns”^[6]. We can make it clear by studying some specific facts. For example, in the following example,

(2) This experiment is an absolute necessity in determining the best processing route.

The “necessity” in the original sentence comes from the nominalization of the adjective “necessary”. Such conversion makes the whole sentence more formal and concise as well as the language more written. However, when translating, we should pay attention to turning again the noun “necessity” into the adjective “necessary” instead of “necessity” to make sure that the language is suitable for the Chinese requirement.

4.2 Simplifying the Source Language from the Sentence Structure

EST is more complex than other styles of languages in vocabulary and sentence structure because of its speciality, which brings problems to translation^[6]. Before translating, we can apply the syntax metaphor perspectives of Halliday and Nida’s translating model to resolve the practical problems, that is to say, recovering the complex sentence structure and vocabulary into “agreement forms”, namely, replacing them with corresponding verbs or adjectives. Put it simple, it is to simplify the complex sentences. For example,

(1) Despite the fascination of extending our senses and exploring abstract universes, many researchers see medicine as the most promising short-term application of haptics.

In this sentence, “fascination”, behind of the preposition “despite”, is the nominal form of the verb “fascinate”. It is more formal than the verb “fascinate” and more suitable for the style of EST.

But, if translating it into the Chinese noun directly, it is very difficult to find the corresponding translation. Even if reluctant to translate, it will also show as stiff as a poker and be difficult to be accepted by Chinese readers. If we analyze “fascination”, we can discover that it is “extending our senses and exploring abstract universes” that makes many researchers fascinated. We can turn the noun “fascination” into the Chinese verb supplement phrases. And then we can make out the translation above according to our Chinese habits. An example again,

(2) It will be possible to send a hologram of an ancient relic for distant examination...

In this sentence, the word root of the noun “examination” is the verb “examine”, which is decorated by the adjective “distant”. If we translate it directly, the phrase “for distant examination” will be translated “weileyuanchudejianshan” in Chinese. Obviously, it does not suit for the Chinese habits. We can recover it into the form of verb and then the original sentence will be changed into “It will be possible to send a hologram of an ancient relic to a distant place to be examined (by scientists/experts)”. Consequently, we obtain the translation above that is suitable for the Chinese expressive habits.

5. Conclusion

In EST, there exists a large amount of nominalization, which is the very problem that translators must face when they try to do a good job in translation of EST^[7]. Only if one learns about and commands its characteristics and then suits the remedy to the case, can he find the best methods of translation.

The phenomena of nominalization meet the requirement of EST to express its contents and characteristics, reduce the trouble of making up sentences with verbs and cut down composite sentences. All these make the language of EST texts more terse and fluent. Nominalization is not merely word but phrase which contains a sentence or sub-sentence. An appropriate application can play a concise and comprehensive role in semantics.

From this paper, we know that nominalization mainly refers to the application of abstract nouns that show action or state, infinite verbs functioning as nouns, noun-nouns and prepositions, etc. They include the original sense of agent meaning in the structure, simplifying the narration and structure effectively and bringing a more compact and precise article. This thesis, beginning with the concept of nominalization, explains the characteristics of nominalization, presents the phenomena of nominalization in EST, analyzes four specific forms of nominalization and illustrates the application and translation of nominalization in EST by some real examples, making sure that readers and translators can understand and master the translating methods of EST better.

Through these studies on nominalization in EST, readers and translators can learn more about features of EST and its translation methods and then understand and translate such articles more effectively and better, improving the ability of converting the EST in its corresponding Chinese.

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