

Functional-Semantic Peculiarities of Translating Cybersecurity Terminology

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ABSTRACT

In the modern process of globalization, new inventions and innovative projects in science and technology are being created in the field of information technology, and the issues of their naming and translation into different languages give rise to unique approaches in linguistics and translation studies. Most of these innovations and discoveries belong to the field of information and communication technologies, and the innovations achieved in this field penetrate all aspects of social life in the global community. At the same time, the names of such inventions and discoveries are rapidly penetrating any part of the world and entering linguistics as international terms or being assimilated into the languages of the peoples using these inventions, enriching the vocabulary of that language.

Information and communication technologies are developing rapidly in the world. The use of computer technology, mobile and Internet technologies in various spheres of human activity is expanding, the flow of documents on paper and electronic media is increasing, new technical means (smartphones, communicators, netbooks, etc.) and types of communication (portals, blogs, chat rooms) designed to facilitate and speed up the process of communication are appearing. Each new modification of information technologies affects the process of updating the entire terminological system of information technologies, creating and changing new terminological units. As a result of the processes of interlingual and intercultural interaction, lexical units from different world languages directly and indirectly penetrate into the Uzbek language. The largest percentage of them are scientific and technical terms of the English language, in particular terms from the field of information technologies. In recent years, due to the development of information technology, new fields of knowledge such as information security and cybersecurity have emerged and are developing. Although cybersecurity terminology is a part of information technology, translating the terminology of this field into a foreign language involves a number of difficulties. This article is devoted to the issues of translating English cybersecurity terms into Uzbek and preserving their functional and semantic properties during translation.

KEYWORDS: *term, terminology, terminology, information technology, cybersecurity, translation, equivalent, semantics, source language, target language, change, method, technique, strategy.*

INTRODUCTION

Translation is becoming more and more common in all spheres of life, and with the rapid development of technology and the expansion of scientific and technical information, the importance of scientific and technical

translation has also increased. Also in the era of global computerisation, research into methods of translating cybersecurity terms into English is undoubtedly relevant. Of particular importance in this process is the field of scientific and technical translation.

Philologists, linguists and translation specialists attribute the difficulties in translating scientific and technical terms to such factors as the widespread use of various abbreviations, the dominance of some syntactic changes over others, the use of stylistic meanings in naming terms, and the transfer of a number of terms from other fields to cybersecurity as hybrid terms, which, as a result, increases the semantic load of these terms.

A number of countries have taken measures to protect the spelling and pronunciation of foreign words from appearing in the national language. For example, in China, all borrowed words are translated into Chinese or replaced by their predecessors¹. Translators play an important role in this process.

The fact that the Presidential Decree No. UF-5850 of 21 October 2019 'On measures to radically raise the prestige and status of the Uzbek language as the state language' specifically outlines the issue of 'introducing scientifically sound new words and terms, creating Uzbek alternatives to modern terms and ensuring their uniform use, controlling and coordinating the naming of geographical and other toponymic objects in accordance with regulatory and legal acts' means that there is a lot of work to be done to find and The development of the field of translation studies is of great importance in the realisation of such reforms.

Theoretical foundations of the translation concept. As we know, translation is one of the important spheres of social life. Translation is a bridge between two peoples and two languages. Through translation, people speaking different languages communicate with each other. Information about new objects or subjects created in science and technology is transmitted to other peoples through translation.

According to K.Musaev, translation, a complex form of human activity, is a creative process that consists in recreating a verbal utterance (text) created in one language by means of another language while preserving the unity of its form and content². Indeed, translation is a creative process. The creation of a creative product in one language in another language is the creative product of the creator.

¹ Ли Сяндун. К вопросу о различии лексического заимствования в русском и китайском языках // Русский язык за рубежом. – 2002. – № 1. – С. 60–63.

² Q. Musayev. Tarjima nazariyasi asoslari. "Fan" nashriyoti. Toshkent, 2005 yil. 8-bet.

I. Gafurov emphasises that 'translation is a process of transforming or transferring the speaker's speech, author's work, various documents and information from one language to another and making them understandable in another language'³. Here I. Gafurov and K. Summarising Musaev's views on translation, translation can be defined as the transformation of a written or spoken text from one language into another, taking into account its semantic, linguocultural, pragmatic and linguistic and linguistic features.

A. According to Rohee, 'the process of translation between two languages is the transformation by the translator of a written text in one source language into a written text in the target language and an oral text in one source language into an oral text in the other target language'⁴. According to P. Newmark, 'in rare cases, translation is the transfer of the meaning of a text into another language in the way the author intended it to be translated'⁵.

Therefore, when translating, it is necessary to pay attention to the equivalence of languages, taking into account syntactic, semantic, stylistic, pragmatic and linguocultural features of the source and target languages. We can also see these characteristics of translation in J. Nord's definition of translation. He emphasises that 'translation is a learning process aimed at replacing the source language text with the best equivalent in the target language text, and this requires understanding the syntax, semantics and pragmatics of the target language, as well as analysing this process'⁶.

If we refer to the descriptions and definitions given to translation by scholars, translation can be explained as follows: translation is the process of transferring any words, phrases, texts, etc. in oral or written form from the source text to the target language, taking into account linguistic: syntactic, semantic, stylistic features of the source and target languages, as well as extra-linguistic: linguocultural, pragmatic and cognitive features.

Theoretical foundations of cybersecurity terminology. When translating terms in any field, it is important to first of all pay attention to the main characteristics of terminology in the given field, i.e. derivational, semantic, methodological and cultural aspects of the terms.

The study of cyber security terminology is important for all branches of the state and society, and its study is of interest not only to information technology specialists, but also to all spheres of social life.

Cybersecurity terminology occupies an important terminological layer in the terminological system of the information technology sector. A term is considered a lexical unit of language and is a nomenclature of words and word combinations related to a certain field.

Any term in any field has the properties of unambiguity, clarity, expressiveness, nominativeness and systematicity.

³ G'afurov I. Tarjimon mutaxassisligiga kirish. – T.: Mehridaryo, 2008. –B.5.

⁴ Rojo A. Step by Step: A Course in Contrastive Linguistics and Translation. – Peter Lang, 2009. – P.25

⁵ Newmark P. A Textbook of Translation. – London: Prentice Hall, 1988/1995. – P.5.

⁶ Norton G.P. Some remarks on translation and translators. – Oxford: Oxford University Press. 1984. – P.3.

In the structure of cybersecurity terminology, three main layers of terms are distinguished by the degree of importance: electronic scientific and educational publications, manuals, reference books, technical instructions, coded terms used in electronic dictionaries, terms borrowed from the common language with their new content and additions on the basis of metaphorical and metonymic transfers (inter-network and inter-system assignments) from other areas of scientific knowledge, as well as general technical terms that serve to create terms of information technologies and information technology.

The cybersecurity terminosystem is a set or corpus of terminological units that provide the naming of concepts in the field of information technology knowledge, linked by logical, semantic and other relations.

In terms of logical and semantic structure, cybersecurity terms are divided into terms denoting objects, processes, volumes of information or their units. Cybersecurity terms are divided into semantic groups such as computer device, software, commands, Internet communication, multimedia, types of personal computers, subject of interaction and units. The terminological system of this field is divided into domain terms, termoids and prefixes, and their meanings are more fluid and dynamic than those of terms in other fields, including chemistry or physics. They have the ability to easily transition to new situations.

The systemic characteristics of cybersecurity terms differ from terminology in other fields in that they have inherent characteristics such as internationality of external form, thematic focus, stylistic neutrality in the terminological field, polymorphism, and multifunctionality. International terms are also of particular importance in cybersecurity terminology because they form a significant part of the industry's terminology.

The weighting of allocations in the cybersecurity terminology system is also unique. Typically, absorption rates of absorption are determined by:

- The tendency to eliminate polysemy and homonymy of the source word in the recipient language;
- the need for a detailed explanation of the concept;
- the expression of positive/negative connotative meanings in the target language;
- tendency to form words similar to those of the target language in order to be understood;
- nomination of a new thing, concept or phenomenon;
- the absence of a corresponding concept in the recipient language;
- stylistic impact of the borrowed word on the principle of expressiveness.

The following typology of difficulties related to the practical application of cybersecurity terminology, in particular appropriation terminology, consists of the following:

- Lack of knowledge and skills in this area among ordinary citizens;
- spelling errors in terms directly and indirectly borrowed from the English language;
- errors in the pronunciation of familiar cybersecurity terms;
- the user of the term remains unaware of the basic meaning associated with the borrowed term;
- the occurrence and practical non-reflection of cases of narrowing and broadening of meanings of acquired terms over time;

- there are cases when borrowed terms do not have a neutral meaning, but acquire a stylistically mobile meaning, expressing positive or negative connotations.

Problems of translating cybersecurity terms. According to V. Karaban, 'one of the most difficult processes in translation is the selection of one lexical unit from a number of synonyms. It is also necessary to take into account semantic and stylistic peculiarities of synonyms, which the translator should know well and be able to choose the right variant. In turn, the Ukrainian philologist E.F. Skorokhodko in her work 'Problems of translating technical literature into English' emphasises that 'a large number of special terms in the text, especially newly appearing (neologisms), creates serious difficulties in the practice of translation'. A. Weiss, N. Kireev, I. K. Mironchikov also emphasise that special attention should be paid to neologisms, which cause great difficulties when working with texts related to industrial sources, since most of them are not found in dictionaries⁷. The differences in translation noted above also directly apply to cybersecurity terminology. This is because most cybersecurity terms belong to the field of information technology.

It is possible to study the opinions of many researchers regarding the translation of information technology terminology. Most of them discuss translation problems related to neologisms when translating information technology terms. R. Pronina notes that 'despite the large number of specialised terms in their field, the language of scientific and technical literature contains a large number of commonly used words and expressions, and most commonly used words are polysemous'⁸.

Cybersecurity terms are also considered to be terminology of scientific and technical texts, and translation of such terms can be particularly challenging.

According to D.V. Tabanakova, 'the reason for the difficulty of translating texts, especially those related to information technology, is the translator's use of a large number of information technology terms'. Because word combinations that have no equivalents in information technology texts have no permanent correspondences in Russian (except for descriptive entries in dictionaries)⁹. The use of special terms in Russian-language texts on information technologies can also be found in the Uzbek language. As is known, many terms of information technologies in Uzbek language came into our language directly from English or indirectly from Russian.

R.O. Sindega expresses the following thoughts about information technology terms and their translations: 'A distinctive feature of computer terminology is its metaphorical meaning and emotional appeal, because for the creators and users of the term it emphasises that the field of computer technology is intellectual. For example, the term

'mouse', which refers to the device that controls the movement of the cursor, resembles the creature 'mouse' in appearance. Also, the name of the programme 'Windows' is based on the similarity of the principle of presenting information in the form of Windows on the computer screen. They are used in everyday life not only by computer professionals, but also by people of all ages and professions. 'These features will have to be taken into account in translation.'¹⁰ Therefore, similar features and problems of translation are applicable to the translation of cyber security terms.

Having analysed the opinions and comments expressed regarding the translation of cybersecurity terms, we felt it necessary to focus on the following important aspects:

First, in order to correctly define the words represented by a term, it is necessary to know the field of science and technology to which the term refers;

Secondly, although a term is associated with a well-defined concept, a specific meaning and described, it cannot be considered as a separate semantic unit, as there may be a number of terms with a specific technical meaning. Their spiritual content must vary according to the field in which they are used;

Finally, to properly understand and translate terms, it is also necessary to know the morphological structure of terms, the semantics that distinguishes them from commonly used words, the main types of expressions, and the peculiarities of their structure and usage.

Methods of translation of cybersecurity terms. In translation studies, the methods used to translate small text fragments are described by the terms 'translation methods', 'translation tools', 'translation procedures' and 'translation transformations'. In particular, Vigner and Darbelnier and P. Newmark treat these concepts as translation processes, while E. Aznaurova, L. Barkhudarov, V. Komissarov and N. Kambarov argue that they are translation transformations. Molina and Urtardo Albir and M. Ordudar use the term 'translational transformations' to refer to these concepts. Based on the ideas of E. Aznaurova, L. Barkhudarov, V. Komissarov and N. Kambarov, we have applied the term 'translational transformations' to translation methods aimed at transforming small units of the text.

L. Barkhudarov subdivides the transformations used in the translation process into four types¹¹: 1) change of location; 2) exchange of words; 3) addition of words; 4) omission of a word.

V. Komissarov divides translation transformations into three main types: lexical, grammatical and lexico-grammatical¹². Lexical transformations: 1. Transcriptional and transliteration transformations. 2. Calculative transformation. 3. Lexico-semantic exchange (refinement, generalisation, modulation), transformation. Grammatical

⁷ Скороходко Э.Ф. Вопросы перевода английской технической литературы. – К.: Киевский университет. 1963. – 91.

⁸ Пронина Р.Ф. Пособие по переводу ангийкой научно-технической литературы: учебник. – М.: Высшая школа. 1989. – 156 с.

⁹ Табанкова В.Д. Прологомены к денотативной модели перевода компьютерных терминов. В.Д. Табанкова// ноземнмови в навлачных закладах. – 2003 – №. 1. – С. 45-50 Синдега Р.Е.

¹⁰ Особливості перекладу англомовної терміносистеми галузі комп'ютерних наук та інформаційних технологій // Нова філологія збірник наукових праць. – Запоріжжя: ЗНУ. 2009. – № 34. – С. 307-310.

¹¹ Бархударов Л.С. Язык и перевод. – М.: ИМО, 1975. – С.190.

¹² Комиссаров В. Теория перевода. – М.: ИМО, 1990. – С. 172

transformations: 1. Transformation by syntactic analogy (literal translation). 2. Transformation that changes the structure of a sentence (splitting or combining sentences). 3. Grammatical substitutions (replacing a word-form, part of speech or parts of speech). Complex lexico-grammatical transformations: 1. Antonymic translation transformation. 2. Explication (explanation of the content) of the transformation. 3. Compensatory transformation.

In general, translation studies actively use the following translation techniques when translating lexical units of the text, in particular terms:

- word borrowing. In this process, a word is directly transferred from one language to another;
- calque. A foreign word or phrase is translated into another language and becomes part of that language. In this case, a word-for-word translation is performed to create an equivalent word in the target language using the unique features of the lexical unit in the source language;
- transposition. This involves changing the word order, i.e. the verb is changed to a noun and the noun to a preposition¹³. In the process of translation, a verb in the source language may change to a noun in the target language. This process also involves grammatical changes of the source language in the target language. Including (1) changing the singular to plural, (2) the need for conversion if a certain structure of the source language does not exist in the target language, (3) a verb in the source language is changed to a noun in the target language, a noun that was originally plural is changed to singular, and so on...;
- modulation. A change of a lexical unit in terms of comprehension (cognitive transformation). Transposition occurs when grammatical categories are changed, whereas modulation occurs when cognitive categories are changed. It occurs when information from the source text is reproduced in the target language text according to the current standards of the target language, since the terms in the source and target languages may not coincide. Vigneault and Darbelnier proposed eleven types of modulation: change from concept to precision, cause to effect, transformation to result, parts to whole, geographical change and others. The change from Chinese carcass to Indian carcass is an example of geographical change¹⁴.
- Intrawai and Scavi studied this process in detail and concluded that it was a more effective procedure than others. In their opinion, other processes should be included here;
- equivalence. This is when a completely different alternative expression is used for the same situation, such as lexical units, terms, proverbs or idiomatic expressions;
- cultural equivalence. In this case, the translator replaces

a cultural word in the source language with a cultural word in the target language;

- descriptive equivalence. In this transformation, the meaning of a word denoting a lexical unit is explained in several words;
- functional equivalence. In this case, a word in the lexicon of the target language is replaced by a word that fulfils the same function in the lexicon of the source language and corresponds to the style of the text;
- formal equivalence or linguistic equivalence. In this case, each word is translated separately;
- adaptation. In this type of conversion, changes are usually made to the term to create a text that is more appropriate for a particular audience or the translator's specific goals. In this case, the translator adapts the text to the reading audience;
- compensating for an omitted word. A lexical unit or stylistic effect of information in the source text is not exactly in its place in the translated text, but is recreated and figuratively expressed elsewhere in the text;
- concentration. This transformation involves expressing a concept in the source language with a concept in the target language that has a more general meaning;
- dissolution. This involves expressing a concept in the source language with a concept in the target language that has a broader meaning;
- amplification. This is the use of more meaningful concepts to fill syntactic and lexical gaps in the target language;
- narrowing (economy). This transformation is close to the concept of linguistic economy in linguistics and is designed to explain expression with fewer lexical units;
- reinforcement. This transformation is a variant of expansion;
- condensation. This transformation is a variant of tapering transformation;
- explanation of meaning. In this case, the original lexical unit is replaced in the translated text by a fuller explanation or a word combination with a clarifying meaning;
- implicit meaning (implication). Implicit truth is the use of context to convey hidden meaning in order to clarify explicit information in the text. This transformation is the main criterion of the pragmatic side of translation¹⁵;
- generalisation. It consists in replacing a word with a narrow meaning in the original with a broad, generalising word in the target language¹⁶;
- concretisation. Replacing a word or phrase that has a broad meaning in the original translation with a word that has a more specific meaning;
- Changing the word order (inversion). This involves

¹³ Lucía M, Hurtado A. Translation Techniques Revisited: A Dynamic and Functionalist Approach. – Meta: Translators' Journal, vol. 47, № 4. 2002. – pp. 498-512.

¹⁴ Scavée, P, Intravaia, P. Traité de stylistique comparée. Analyse comparative de l'Italien et du Français. – Bruxelles: Didier, 1979.

¹⁵ Sirojiddinov Sh. Odilova G. Badiiy tarjima asoslari. – T.: Mumtoz so'z, 2011. – B.39.

¹⁶ Rahimov G'. Tarjima nazariyasi va amaliyoti. – T.: O'zbekiston milliy ensiklopediyasi davlat ilmiy nashriyoti, 2016. – B.132.

moving a word or phrase out of a sentence or paragraph and interpreting it in the target language as if it were in the original;

- antonymous translation. In this case, an affirmative thought in the original is expressed in a negative form in the target language or vice versa;
- transcription. In transcription, the word of the source language is reproduced in the target language according to its direct pronunciation;
- transliteration. In this case, the word of the source language is recreated in the target language according to its graphical form;
- Addition of words (Addition). This transformation is used when grammatical and semantic components are not formally expressed in the source textual language;
- Omission. This transformation is applied when grammatical reduction of certain forms of two languages is required;
- Adaptation of word status to the features of another language (naturalisation). In this transformation, there is a process of assimilation of new words in the language, that is, the translator adapts the source word

first according to its usual pronunciation and then according to the usual morphology of the target language. This transformation can be considered synonymous with transcriptional and transliteration transformations;

- Paraphrase. It explains the meaning of a word with cultural connotations. In this transformation, the explanation is broader and more detailed than descriptive equivalence;
- Harmony of Transformations (Couplets). In this case, the translator uses two or more different transformations simultaneously in the translation process;
- Notes. Notes are mainly concerned with lexical units that have no equivalents, national realities and lacunas and are provided in translations at the bottom of a page, at the end of a chapter or in the last pages of a book in order to provide the target language reader with more complete information.

The translation techniques highlighted above are used to reflect the functional-semantic features of translating English cybersecurity terms into Uzbek. It is reasonable to translate the following cybersecurity terms from English into Uzbek according to their meaning (see Table 1).

Table 1.

Term	Meaning	Uzbek translation	Method used
Adware	Advertising application which shows the user unsolicited advertising. Often it acquires information about behaviour. Note: the application may be installed without user knowledge or consent or may be pushed to the user under licencing conditions of other software	Reklama dasturi	Creative equivalence
Active threat	Any threat of an intentional change in the state of a data processing system or computer network. Threat, which would result in messages modification, the inclusion of false messages, false representation, or service denial.	Faol tahdid	calque
Accreditation	The official management decision of a competent representative of an organisation, to authorise the operation of the information system and the explicit acceptance of risks (including the strategic, economic or reputational ones) which ensue to the organisation from the agreed security measures.	Akreditatsiya	borrowing
Normal operation	Operation where the entire set of algorithms, security functions, services or processes are available or configurable.	Me'toriy operatsiya	Semi-calque
Botnet	Software for the remote control of bots, which run on infected computers. The software ensures that the cracker can access the computing power of many machines simultaneously.	Botni masofadan boshqarish dasturi	Descriptive equivalence
Crack	Unauthorised infringement of programme or system security protection, its integrity or system of its registration/activation.	Dastur xavsizligi yoki uning yaxlitligini ruxsatsiz buzilishi	Notes
Dialler	The harmful programme which connects the computer or smartphone of the user to the Internet by a commuted line using a very expensive service provider	Zararli dastur	addition

Conclusion

Today, the penetration of cybersecurity terminology into all aspects of public life necessitates extensive research on this terminology, its theoretical foundations, and its practical significance. Studying terminology in this field from linguistic, translational, and cultural perspectives provides significant assistance in understanding and correctly interpreting terms in this area.

Thus, the key parameters in the translation process are not only selecting the appropriate option to convey the meaning

of the source text but also the ability to align knowledge, logic, context, and understanding when choosing a synonym. When translating English cybersecurity terms into Uzbek, various translation techniques are actively employed, such as equivalence, paraphrasing, word borrowing, semi-paraphrasing, figurative equivalents, notes, and word additions.

The translation of term combinations allows for identifying the logical connection between these symbols through detailed semantic analysis of individual term elements,

taking into account the content of the source text. To determine the meaning correctly, it is advisable to refer to the context and additional literature in the original language, search for an equivalent in the target language, and consult dictionaries and supplementary literature in the target language.

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