# АКТУАЛЬНІ ПРОБЛЕМИ ЛІНГВІСТИКИ ТА ЛІНГВОКУЛЬТУРОЛОГІЇ

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## THE LANGUAGE PECULIARITIES OF MODERN ENGLISH SCIENTIFIC AND TECHNICAL LITERATURE STYLE

The article presents an attempt to trace some language peculiarities of modern English scientific and technical literature style which influence mainly the specific character of its rendering into Ukrainian. The author analyses the linguistic features of scientific and technical literature, the peculiar language constructions and the ways of their translation.

*Key words: scientific and technical style, the genre of scientific writing terms and professional knowledge, science vocabulary, purely scientific phraseology, impersonal constructions, scientific and technical translation.*

There exists a variety of styles as there are numerous human activities in the world. People always need to use the language to write about results of their efforts obtained from the research work which are expected to be represented in a fair, objective and responsible way. A scientific writer expects to analyze his results in the discussion section, but he should do this in a clear and fair manner. He may present his own interpretation of the results but should also highlight any opposing explanations or views.

Scientific and technical style is applied when certain scientific knowledge or information obtained from scientific research has to be conveyed. The style of science creates the fundamental part of the non-fiction style executing informative function. The technical style is used in writing guidance, manual, and instructions for installation, specific characteristics and requirements, books as guides.

During the last decades the scientific and technical styles have been split into a lot of new and more specialized styles as a result of technology and higher specialization.

The genre of scientific writing is mostly represented in the written form of the language (scientific articles, monographs or textbooks) but it may also be found in its oral form (in scientific reports, lectures, discussions at conferences, etc); sometimes this style has some features of colloquial speech.

There are different types of the texts used in scientific and technical style:

– Scientific and technical literature itself (books/monographs, articles, conferences, symposiums, lectures, or similar event papers, presentations);
– Educational scientific and technical literature (manuals, books, reference books, theses, dissertations);
– Popular scientific literature;
– Technical documents;
– Technical advertisements and patents.

Scientific and technical style has some distinctive characteristics where the most important is the use of terms and professional knowledge [1, p. 18]. Nowadays every branch of science has its own terminology. All information is represented in an objective, precise and clear way.

Clarity is an important part of scientific style [5, p. 21]. It can be achieved by using simple language choices in scientific writing as these help to improve the ease with which scientists will be able to understand. Sentences are not long and don't contain too many clauses. If a sentence is too long it is divided into several smaller ones. The words in the sentences and linking words are repeated to lead a reader through the smaller sentences and how they relate to each other. Every extra word gives the reader something extra to read and understand. The more words are used the greater the chance that there will be a mistake or that the reader will misunderstand something.

It's also worth saying that scientific writing is formal writing [3, p. 34]. This means that the words and language constructions which are used in speaking to someone, writing an email, or even writing for a website should not be used. No contacted verbs should be used representing spoken English verbs in a written from.

– *The experiments won't be finished in this class.* – incorrect.
– *The experiments will not be finished in this class*. – correct.

The verb 'will not' has been contacted to 'won't' in the first sentence. This shouldn't be used in scientific writing.

Technical and scientific texts are different from other texts in the vocabulary, grammar, syntax, and the way of presenting materials.

In general the science vocabulary consists of a great number of common used every-day words and moreover of a wide layer of words with written-bookish stylistic colouring, and a wide range of special terms. To common every-day words we can refer those words used both in oral and written speech such as: *to work – працювати, to know – знати, place – місце, new – новий, obviously – очевидно, etc*. General vocabulary is applied in scientific and technical texts having its direct referential meaning, that is, the words which are used in scientific and technical style will always tend to be used in their primary logical meaning [4, p. 63]. Hardly a single word will be found here which, in contrast to the belles-lettres style, is used in more than one meaning. There will be no words with contextual meaning. Even the possibility of ambiguity is avoided. Furthermore terms are coined so as to be self-explanatory to the greatest possible degree.

But in spite of this a new term in scientific prose is generally followed (or preceded) by an explanation. Likewise neutral and common literary words used in scientific prose will be explained, even if their meanings are only slightly motivated, either in the context by a parenthesis or attributive phrase or in a foot-note.

Thus it could be concluded that the scientific and technical vocabulary consists of the extensive use of scientific terminology; the presence of charts, tables, diagrams, maps, mathematical, physical, chemical and other signs; the usage of abstract, mainly foreign words; the usage of purely scientific phraseology (*by all means; as far as; in spite of; on the ground that; due to; to put into effect; now and again*); abbreviations, formulae and signs.

The scientific and technical style also differs from other literary styles in the usage of specific grammar forms, constructions and tenses [3, p. 45]. It can be vary in:

1) the terms of language means, the constructions of the gerund and participle used to make the text more condense and precise;
2) the usage of parentheses;
3) the impersonal manner of representing material, impersonal constructions.

Impersonality is required to preserve the character of the style which should be "invariant to all observers". Impersonality can be achieved by the usage of passive constructions, general pronoun *we*, mostly a third-person style, abstract nouns formed from verbs and adjectives.

The usage of Passive Voice suppresses the author's role by removing the agent from the sentence and exclusively aims to describe the facts and phenomena. It appears also in the cases where not only the agent but also the activity is irrelevant and the only thing that matters is the affected subject. The first person pronoun 'I' is not used in scientific writing. Instead 'I' is often used 'we', 'the team' or 'the research group', to show that the whole group of people is mentioned which was involved in the reported experiments. This is better than using 'I'.

It is also possible to use Active Voice in the combination with general pronoun we as a subject *«we»* which refers more obviously to the author. It is mostly common in the texts of exact sciences: *«We deduce, we observe, we define, we obtain, we can express, we see, we note, we consider, we assume, we have experimentally verified, we have placed…» – Ми робимо висновок, ми спостерігаємо або робимо зауваження, ми визначаємо або надаємо визначення, ми можемо виразити або навести, ми бачимо, ми звертаємо увагу, ми вважаємо, ми припускаємо, ми дійшли висновків дослідним шляхом, ми визначили або з'ясували…*

To avoid personality tentative verb forms (*seems to, appears to, tends to*) and/or modal verbs are regularly used:

*This result of the research supports/proves our initial hypothesis*. – Over positive statement.

*This result of the research seems to support/ could prove our initial hypothesis.* – Hedged statement.

Modal verbs *can, may, might, would* are widely used:

*The result proves our method works.* – Direct statement.

*This result could prove our method works.* – Hedged statement.

To soften what you say or avoid claiming an absolute truth from your result the following adverbs are used: *a little, rather, somewhat, almost, nearly, quite, approximately, about:*

*This is a disappointing result to report.* – Direct statement.

*This is a somewhat disappointing result to report.* – Softened statement.

In addition to using Passive Voice, it is necessary to avoid ambiguous language; especially metaphors that might not be widely understood.

The texts of scientific and technical style are different from the texts of other literary styles not only in their vocabulary and grammar but also in their syntactic constructions. The following formula **IT IS + ADJ + TO + INF** is used in the beginning of the new paragraph in scientific and technical literature: *It is true that …but; It is obvious that….*

Impersonal sentences of this type bring minimum semantic information and serve only as an introduction sentence presenting the basic thought:

*It is evident that investigations should be made for other exposure times. – Зрозуміло, що дослідження треба повторити декілька разів.*

The presumptions and statements comprise one of the peculiarities of scientific and technical style because they are usually not represented directly. It is mostly caused by the fact that newly revealed knowledge is often needed to be proved in a great amount of time. That is why general pronoun *we* is recommended to use not only if the scientific phenomenon is confirmed and proved as a truth. The following example demonstrates the situation where there is no certainty yet: «*…the difference does not appear to greatly affect the calculated value» – «…різниця між отриманими даними ще не з'ясована».*

In the above-mentioned impersonal sentences from scientific and technical style the modal verbs *must, should, ought to, can, may, might* are often occurred with the weaker lexical meanings. In the following examples it is clear that modal verbs lose their lexical meaning mostly with the verbs *to note, to notice, to remark, to observe, to mention,* partially also with the verb *to say: «It may be noted»; «It should be noted»; «It might be remarked»; «It ought further to be remarked».*

It is necessary to realize that this modality is not subjective author's attitude to conveyed facts, but it is objectified which is in compliance with clarifying scientific style. Therefore the usage of modal verbs is convenient for giving indirect instructions. Direct form of instruction is expressed in imperative mood that is used also in hypotheses or mathematical formulae, e. g.: *Assume a Cartesian coordinate system; Let us examine a couple of cases; Let V be the vector analytic signal.*

Another peculiarity of scientific and technical style is the way of presenting material. The first and most noticeable feature of scientific and technical writing is the logical sequence of utterances with a clear indication of the interrelations and interdependencies. Logical sequence of utterances is definitely important to comply with the following general features.

The second characteristic feature of scientific and technical style is what we may call sentence-patterns. They are of three types: postulatory, argumentative and formulative ones [5].

There are some other peculiarities of scientific and technical texts such as the use of quotations and references, the frequent use of foot-notes, digressive in character, and the impersonality of scientific and technical writing. Another basic and no less important feature of scientific language is objectivity. The objectivity, clarity and formality of scientific and technical writing is connected also with the specific usage of language means named intellectualization or rationalization. It means the tension to a concrete and precise expressing which is helpful in suppressing emotionality or expressivity.

In his practical manual «The Structure of Technical English» A.J. Herbert considers the following formulae as the basic feature of scientific and technical style in contemporary texts [5, p. 178]. All peculiarities of scientific and technical style can be compared in the given table:

| Scientific and Technical Texts | Literary Texts |
|---|---|
| Logicality | Lack of argumentative progression |
| Precision | Vagueness |
| Reason | Emotion |
| Truth to particular reality | Truth to the ideal |
| Generalization | Concretion |
| Referential meaning | Emotive meaning |
| Denotation | Connotation |
| Lexical affixation | Grammatical affixation |
| Idiomatic expressions are rare | Idiomatic expressions are frequent |
| Use of abbreviations, acronyms, and registers | Very few abbreviations, acronyms, and registers |
| Standard expressions | Almost all varieties |
| Use of scientific terminology, specialized items, and formulae | No use of scientific terminology, or formulae |
| No use of elements of figurative language | Expensive use of figurative language |

There is a concept of scientific and technical translation in modern linguistics. Technical translation is a type of specialized translation involving rendering documents produced by technical writers (owner's manuals, user guides, etc.) or more specially, texts which relate to technological subject areas or texts which deal with practical application of scientific and technological information meanwhile scientific translation deals with the texts of science and science writing. Scientific texts are conceptually more difficult and more abstract than other types of texts. They have more standardized terms which are easier to look up and they are better written than the texts on the other levels. Terminology based texts are more concrete containing scientific information and scientific concepts which are easier understood. Unlike technical texts the texts of science rely on the world or background knowledge to a greater extent.

Thus the main task of scientific technical translation is to represent information to the reader in the clearest and the most precise way. This can be achieved by logical interpretation of actual material without expressing it emotionally. So the style of scientific and technical literature can be identified as formally logical.

As a field technical translation has been recognized, studied and developed since 1960's. Stemming from the field of translation studies, the field of technical translation traditionally emphasized much importance on the source language from which text is translated. However over the years there has been a movement away from this traditional approach focused on the purposes of the translation and on the intended audience. This is perhaps because only 5–10% of items in technical documents are terminology while the other 90–95% of the texts is the language belonging to the neutural style of the source language though technical and scientific translation is only subset of the different types of professional translation. Currently, more than 90% of all professionally translated work is done by technical translators, highlighting the importance and significance of the field.

There are some requirements for those who are going to take up scientific and technical translation. According to London institute of Linguistics, to be a scientific translator one should have:

1) broad knowledge of the subject matter of the text to be translated;

2) a well-developed imagination that enables the translator to visualize the equipment or process being described;

3) intelligence to be able to fill in the missing links in the original text,

4) a sense of the context to be able to choose the most suitable equivalent term from the literature of the field or from dictionaries;

5) the ability to use one's own language with clarity, conciseness and precision;

6) practical experience in translating related fields.

In short to be a technical translator one must be a scientist, a linguist and a writer. Some translators define three things that there are vital in order to deal with scientific and technical texts:

1. Knowledge of the text structure in different languages.
2. Knowledge of the subject area.
3. Knowledge of the language of special purposes of the area.

To sum up mentioned above it can be signified a specific vocabulary, the usage of terms and scientific notions, a wide layer of words with written-bookish stylistic colouring, the usage of gerund and participle constructions, abstract nouns formed from verbs and adjectives, strictly logical syntax and sentence ordering, explicitness, objectiveness, impersonality, clarity, the lack of emotional colouring, concentration and precision as the main language peculiarities of modern English scientific and technical literature style.

Scientific and technical translator plays the key role in the process of translating scientific and technical texts. The translator's primary task is presenting information in an appropriate way to make the communication successful and effective by means of the target language. This aim supersedes any intentions to transfer the text of the source language into the target one. Translator does not interpret words but interprets what people do with these words. In this sense scientific and technical translator becomes intercultural and cross-field writer.

**Bibliography**

1. Білозерська Л.П. Термінологія та переклад: навчальний посібник / Л.П. Білозерська. – К.: Либідь, 2010. – 232 с.

2. Карабан В.І. Переклад англійської наукової і технічної літератури. Граматичні труднощі, лексичні, термінологічні та жанрово-стилістичні проблеми / В.І. Карабан. – Вінниця: Нова книга, 2002. – 458 с.

3. Коваленко А.Я. Загальний курс науково-технічного перекладу / А.Я. Коваленко. – Київ: Фірма ІНКОС, 2002. – 320 с.

4. Terminology. Theory and method. Edited by Olga Akhamanova and Galina Agapova. – MGU, 1974. – 206 p.

5. Herbert, A.J. The structure of Technical English. – [Available from]: http://www.uefap.com.materials/history/herbert.pdf. Internet; accessed January 9, 2011.

Стаття є спробою дослідити мовні особливості стилю сучасної англійської наукової і технічної літератури, які суттєво впливають на специфіку її перекладу українською мовою. Автор аналізує лінгвістичні ознаки науково-технічної літератури, характерні мовні конструкції і способи їх перекладу.

*Ключові слова: науково-технічний стиль, жанр наукової літератури, терміни і професійні знання,наукова лексика, суто наукова фразеологія, безособові речення, науково-технічний переклад.*

В статье сделана попытка изучить языковые особенности стиля современной английской научно-технической литературы, которые существенно влияют на специфику ее перевода на украинский язык. Автор анализирует лингвистические черты научно-технической литературы, характерные языковые конструкции и способы их перевода.

*Ключевые слова: научно-технический стиль, жанр научной литературы, термины и профессиональные знания, научная лексика, полностью научная фразеология, безличные предложения, научно-технический перевод.*

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