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# ELIMINATION OF LACUNAS IN THE TRANSLATION OF MEDICAL SCIENTIFIC ARTICLES

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## *Abstract*

To ensure the appropriate level of medical services is one of the most important directions of the national economy development. The analysis of foreign studies provides information for the improvement of the business processes organization in the production of medical services, as well as their service characteristics, taking into account modern economic and social trends. For the sustainable development of medicine, it is required to translate scientific articles in which new concepts and terms are introduced. Such terms form a lacuna, which can be eliminated by means of compensation, comment-filling or remark-filling. We have developed an algorithm for preparation of the original scientific texts for their subsequent transferring to the translator. It is the author who should determine the depth of the lacunas, and accurately describe them to the translator, highlighting the key information that should be presented in the form of mind maps, dividing the key terms in blocks and presenting the logical relationships between them graphically. Clichés and so-called phrasebanks ("prompts") are commonly applied to academic writing. For example, in Medicine the Academic Phrasebank created by the University of Manchester, contains phrases grouped in the following way: Being Cautious, Being Critical, Classifying and Listing, Compare and Contrast, Defining Terms, Describing Trends, Describing Quantities, Explaining Causality, Giving Examples, Signalling Transition, Writing about the Past. All the above-mentioned phrase patterns can be successfully described by mind maps, and the use of emoticons and emoji makes it possible to describe the logical structure of the text, without resorting to language tools.

**Keywords:** Elimination, lacuna, mind map, phrasebank, pre-translation text analysis, translation of scientific articles.

## 1. Introduction

Sustainable development of medicine is impossible without high-quality scientific communication. In modern Russian medical scientific community translation of articles is mostly made by the authors themselves, or by translation agencies by the order of the authors. Such works are carried out sporadically, haphazardly, so the opportunity and necessity to formalize them arises only in large research centers that conduct a great amount of research. First Moscow State Medical University named after I. M. Sechenov (Sechenov University) is a leading academic medical institution in Russia with the Institute of Linguistics, actively exploring methods of preparation to Russian-English translation of medical scientific articles, functioning as its department.

New concepts and terms unfamiliar to both the translator and the reader are often introduced in scientific articles. At the same time, the translator faces the task of describing a new subject area for the reader and propose new terms. The task has to be solved in several stages: firstly, it is necessary to master the initial level of knowledge in the translated subject area (and to include it in the terminology glossary for translation), then to understand the new information described in the article, choose adequate means of its translation, and only then it is possible to proceed directly to the process of translating the text of the article.

Medical documents, including scientific ones, are directly related to the health and life of people, which imposes a number of restrictions on them. In particular, they must meet the increased requirements for the accuracy and reliability of the information presented, for the preservation of personal and commercial secrets. Therefore, the analysis is stage in order to fulfil the ethical requirements of the target audience of the translation (not always familiar to the audience in the original language and not always familiar to the author of the text) should be included in the translation process of medical texts and at least dual control of the translated information (of compatibility to the original text and observation of regulatory constraints of the translation language) should be provided.

In addition to that, when preparing an article, it is necessary to consider the peculiarities of the scientific style adopted in certain regions (for example, the differences between the American and British versions of the language) and even in various journals (described in the recommendations and guidelines for authors). These peculiarities, since they are not related to the source language, but to the translation language, should also be introduced into the text of the translated article by the translator. To do this, at the stage of pre-translation text analysis of the article, it is essential to select the region and even the journal for the article to be published. In the journal selected by the translator and/or the author, it is advisable to choose the publication type (which can vary in different journals even of one profile and not always correspond to the type of publication in the original language), find similar articles and specify the prototype article which is as close as possible to the desired result of the translation, this will form the basis for the translated article to be written by analogy with.

Examples of emoticons are given from the program coggle.it. Examples of general language functions and translations – from the website Academic Phrasebank, The University of Manchester (see Table 01).

**Table 01.** Examples of the use of emoticons and general language functions in translation retrieved from Academic Phrasebank of The University of Manchester (Academic Phrasebank, 2019)

| General language function | General language function (Phrasebank) | Example of a phrase in Russian | Emoticon | Example of translation |
|---|---|---|---|---|
| The expression of doubt | Being Cautious | Данные следует оценивать с осторожностью | ? :question: | These data must be interpreted with caution because |
| The expression of critical opinion | Being Critical | Однако авторы не обратили внимание на | ‼ :!!!: ⁉ :!?: | the author overlooks the fact that |
| Classification and enumeration | Classifying and Listing | Выделяют следующие варианты | ✅ :check: | X may be divided into several groups |
| Comparison and Contrast | Compare and Contrast | Отличаются по ряду признаков | усл усл обл | There are a number of important differences between |
| Defining Terms | Defining Terms | Определяют как | ✏ :pen: | can broadly be defined as |
| Describing Trends | Describing Trends | Достигает максимума | 💥 :explode: 🔥 :fire: | X rose to a high point and peaked in |
| Describing Quantities | Describing Quantities | Почти половина | 1/2 | Over half of those surveyed indicated that |
| Explaining Causality | Explaining Causality | Причинами снижения X могли быть | без записи сторонний сложности иста | One reason why Xs have declined is that |
| Giving Examples | Giving Examples | Примером может служить | 🚩 :red_flag: 🏴 :black_flag: ⭐ :star: 🏁 :checkered_flag: | This is evident in the case of |
| Moving to a new section or summing up a section | Signalling Transition | В заключение, по данным | 🔒 :lock: 🔓 :unlock: | To conclude this section, the literature identifies |
| Description of past events of different time ago | Writing about the Past | Впервые эффект описал | 👤 :silhouette: 👥 :silhouettes: | An experimental demonstration of this effect was first carried out by |
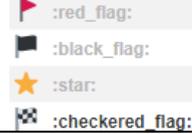
## 2. Problem Statement

In the near future, the requirements for the quality of scientific publications, including those offered for translation to be published in English-language journals are expected to be raised (Zayakin & Smagin, 2019). Thus, the translator of the scientific publication faces the task to accurately identify and translate the new information contained in it (eliminate the reader's lacuna). According to the Lacuna Theory, proposed by Markovina and Sorokin (2006), the lacuna can be compensated or filled. However, compensation does not provide the recipient with new knowledge, so its use in scientific translation is not always justified. Therefore, in scientific translation, the lacuna must be filled. Given the systemic nature of scientific information, in which partial loss of meaning may prevent the formation of a comprehensive idea of the research subject, it is expedient to choose such strategies as comment-filling or remark-filling, that require replacement of the lacuna in the original text of the article with additional information by the

author. We have developed an algorithm of lacuna elimination, presented in this article, for the authors of original scientific texts, which can be used while preparing the article for subsequent transferring to the translator.

## 3. Research Questions

According to the Lacuna Theory Markovina and Sorokin (2006), the description of the new subject area given by the translator, can be represented as a lacuna elimination phase by the filling technique – a quick method of obtaining of new knowledge about foreign culture. An alternative way of eliminating lacunas by compensation for the knowledge already available to the recipient – does not provide the recipient with new knowledge, so in the case of scientific publications appears to be ineffective communication. Among the filling methods, given the systematic nature of scientific information, in which the partial loss of the meaning may be critical for the formation of the comprehensive idea of the research subject, it is expedient to choose the most profound technique, that is, comment-filling or remark-filling. However, the translator is not an expert in the subject area, so he / she cannot assess the depth of the lacuna. The maximum of what he / she has the possibility to do is to evaluate the coherence and consistency of the article, and to convey it in a holistic form

## 4. Purpose of the Study

We have studied how useful it is for a translator to assess the novelty of the article's material by visual presentation of the article, its key information (terms and their logical connections) in the form of a table, structure or a mind map.

## 5. Research Methods

As a result of the summarizing, the translator should have a mind map of the text in question. In an attempt to visualize such complex intellectual constructions, in the 1960s, the psychologist Tony Buzan (2014) proposed the use of intelligence maps (entity-relationship diagram, mind map). In his book, he describes the principle of their creation as follows: "the creation of a mind map always begins with an image in the center – it can be something that roughly or accurately characterizes the idea, concept, thought, remark, topic or essence of any question on which you focus. In other words, the object of attention is clothed in the form of a central image. From the central image you need to hold the branches, which should be in the form of winding, not straight lines. They contain key concepts that need to be labeled with keywords or images" (p. 71). He calls this type of thinking "radial", and contrasts it with linear thinking, "killing creativity": "the beauty (both literally and figuratively) of mind maps is that their branches stretch in all directions, forming new levels according to your thoughts and ideas. The secret of the effectiveness of the mind map is the dynamism of its structure and shape. The more multi-colored winding lines, symbols, words and images stretch in all directions from the center, the more clearly its completely natural and organic structure is revealed. The mind map schematically reproduces myriad synapses of brain cells, allowing us to see how we are created" (Buzan, 2014, p. 86). Thus, using mind

maps, the basic elements of the concept and the relationships between them are outlined in a logical and clear form of a synopsis and conveyed to other people in a brief and structured way.

## 6. Findings

For our purposes, two properties of the mind map are important: 1) the necessity to identify key concepts in the process of its creation; 2) the possibility to quickly transfer them to the recipient. The first property is implemented using templates, which are entered both manually and automatically (especially if these data can be structured, for example, according to the International Classification of Diseases or the Classification of Medical Terminology MeSH). It is easy to structure abstracts of scientific articles as they are usually presented in IMRD format (introduction, methods, results, discussion). These files can then be converted to natural text formats. All these operations are implemented, in particular, in the freely distributed software package for the preparation of scientific publications – The Docear Research Publications Package (docear). With its use, Jöran Beel in 2009 conducted a comparative analysis of mind-map-based literature search compared to traditional academic publications. It is noted that mind maps provide less data availability (primarily due to a lower prevalence of this type of presentation of scientific information), less reliability (because they are more dependent on the subjective selection process of key terms), but make it possible to search the literature more quickly (as they are updated in online mode) and accurately (because the terms in them are associated with others having similar meanings, even if the author did not specify a search term) (Beel, Gipp, & Stiller, 2009). After the publication of this work in the early 2010s, the development of the Docear system stopped at the second version. This is probably due to the inability to reliably automate the selection of key terms and the need to carry out this work manually, which can be performed by conventional word processors. As for the second property of mind maps, it is shown that their use increases the perception productivity of the material of scientific articles by 25-50% (Guerrero & Ramos, 2015). There is an assumption that it is more expedient to use mind maps to speed up the work of bibliographic search engines and for educational tasks. The use of these maps has not justified itself in identification of key terms.

However, from the point of view of translation of logically structured scientific information, mind maps have another advantage - they are efficient for tracking logical chains of arguments. According to the Lacuna Theory of Markovina and Sorokin (2006), at the second stage of elimination of lacunas by the filling method, a socio-psychological mechanism of "attraction" begins to function. At the same time, the mechanism of "repulsion" actually stops intercultural dialogue: the found equivalent of "obscure" foreign specificity compensates for the gap, making irrelevant the acquisition of new knowledge about another culture". Therefore, at the stage of in-depth reading of the article, it is advisable for the translator to activate the mechanism of "attraction". There is a well-known example of how recipients of foreign-language caricatures with the unfamiliar comic text, that is, in a situation of experimentally created cultural lacunas, successfully managed to compensate them by creating associative projections using the mechanism of "attraction". Therefore, to activate this mechanism, graphic images expressing some emotions and relationships – emoticons can be useful (Dengin, 2018). They can represent the logical relationships between the key terms of the article (Table 01).

The authors of scientific texts frequently use fixed phrases and set expressions in their studies and sometimes retrieve them from the so-called phrasebanks containing fragments of phrases with the required meanings. In medicine, an example of such a "prompt" of scientific phrases is Academic Phrasebank of the University of Manchester (The University of Manchester). The phrases given there are grouped by general language functions: Being Cautious, Being Critical, Classifying and Listing, Compare and Contrast, Defining Terms, Describing Trends, Describing Quantities, Explaining Causality, Giving Examples, Signalling Transition, Writing about the Past. The relations of arguments are perfectly described by mind maps, providing the possibility to indicate them with emoticons and emojis, thereby allowing to describe the logical structure of the text, without resorting to language tools. This way the coherence and consistency of the presented material are increased. Here is an example of replacement of the Russian-language expressions with the emoticons from the set of mind maps (in this example, generated on a public website coggle.it, the synopsis of the section "Learning Interpretation" from the book of Komissarov (2011). Modern Translation Studies is given (Komissarov, 2011). This work is done by the author, then the translator, noting on a mind map the general language function type selects appropriate expressions in the translation language from the phrasebank.

## 7. Conclusion

Currently, preparing scientific articles using mind maps is not widespread, however, from the point of view of the translator of these papers, for whom the logic and consistency of presentation of the material is of primary importance, mind mapping should be strongly recommended to authors, and in case they used it, it is expedient to apply mind map in the translation simultaneously with the use of phrasebanks. As our research has shown, all this is successfully described by mind maps, and the use of emoticons and emojis makes it possible to present the logical structure of the text, without resorting to language tools.

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## References

Academic Phrasebank (2019). *The University of Manchester*. Retrieved July, 5, 2019, from http://www.phrasebank.manchester.ac.uk/writing-about-the-past-2/

Beel, J., Gipp, B., & Stiller, J. O. (2009). Could Mind Maps Be Used To Improve Academic Search Engines? In S. I. Ao (Ed.), *International Conference on Machine Learning and Data Analysis*

*(ICMLDA'09), Lecture Notes in Engineering and Computer Science*. Vol. 2, pp. 832-834, Berkeley: International Association of Engineers (IAENG), Newswood Limited.

Buzan, T. (2014). *Mind Maps for Business*. Minsk: Popuri. [in Russ.].

Dengin, V. V. (2018). Summary of the monograph section: Interpretation training. From the book: *Komissarov, V.N. Modern Translation Studies: textbook*. Moscow: R. Valent. [in Russ.] Retrieved July 15, 2019, from https://coggle.it/diagram/XEFbCD0qwjd5Upc8/t/обучение-устному-переводу-из-кн-переводоведение-link-title

Guerrero, J. M., & Ramos, P. (2015). *Introduction to the applications of mind mapping in medicine*. Create Space Independent Publishing Platform.

Komissarov, V. N. (2011). *Modern Translation Studies: textbook*. Moscow: R. Valent. [in Russ.]

Markovina, I. J., & Sorokin, Y. A. (2006). Elimination of lacunae as the effect of social and psychological mechanisms of "attraction" and "rejection". *Journal of Psycholinguistics [Voprosy Psycholingvistiki], 2006 (3),* 12-33. [in Russ.].

Zayakin, A., & Smagin, A. (2019). Write, Emelia. *New newspaper [Novaya Gazeta], 20.04.2019*. Moscow. [in Russ.].