



## Scientific Communication and Translation as a Space of Pragmatic, Cognitive and Communicative Overlap

Irina Bykova<sup>1</sup>, Elena Notina<sup>2</sup>, Nebojša Radić<sup>3</sup>

RUDN university, Russian Federation<sup>1,2</sup>  
Cambridge University, UK<sup>3</sup>

### Abstract

*In the context of mediated scientific communication the connection between information and knowledge and usage thereof in speech production is considered through the prism of cognitive-discursive approach in linguistics as a special cognitive process in which adequacy of linguistic representation of scientific thinking throughout scientific communication acquires special relevance for increasing efficacy of the latter, for it enables maximum cognitive effect to be ensured and achieved from processing of information encoded by linguistic means and transmitted by scientific text. Pragmatic, cognitive and communicative overlap within translation is a space where responses can be found to the challenges and issues regarding study and analysis of specificities intrinsic to the relation or connection between language and scientific cognition, scientific text comprehension, communicativeness of scientific text, knowledge augment as the aim of scientific communication, verbalization of new knowledge in scientific discourse and its reflection in worldviews of the source and target languages, etc. This article aims to analyze complex multilevel information forming part of deep sense structure of scientific text in the triad “communication act – text – word” where overlapping individual cognitive spaces of communicants shape communicative and pragmatic potential of scientific discourse within translation.*

*Methods and materials. The methods of semantic and comparative analyses, the questionnaire method, the method of interpretational experiment, along with the translation method were used in the research. The experiment involved RUDN university Ph.D. students in Medicine (with different mother-tongue backgrounds from different countries) that have certain level of English language proficiency and are learning academic writing, including those taking the programme “Translator in the field of professional activities” (n. 82).*

*Conclusion. In translation the potential of interpretation of thesaurus networks in the source and target languages, through the lens of dissimilarities between languages in what regards organization of their thesauri, is viewed as determined by efficacy of processing of cognitive information represented in scientific text in the source and target languages by a certain linguistic form, and can influence understanding and conclusions that are achieved depending on the degree of different communicants’ comprehension of the same texts, the number and quality of implications that they are able to derive, the amount of information, which is implicitly represented in a given communication act and which implies the need for dynamic interaction of conceptual systems and representations of the language users, i.e. the primary sender in the source language, translator as the secondary sender in the target language, and respective addresses in search of fruitful and efficient scientific communication.*

*The practical value of this study can be relevant for discourse researches, translation studies, and language teaching.*

**Keywords:** translation; presuppositions of scientific communication; thesaurus; intertextuality; scientific text.

### 1. Introduction and discussion

Cognitively based approach to the theory of translation considers cognitive processes within mediated scientific communication as a phenomenon within the space of pragmatic, cognitive and communicative overlap.

Scientific text encapsulates space of comprehension in which bases are generated for communicants’ cognitive activity related to searching for new knowledge or processing it, incorporating it into the system of stable representations and evaluating the scientific object which is being apprehended mentally through the lens of the position that is widely accepted in corresponding scientific community.



Interactivity of the communicative space of translation, in the light of comprehension within scientific cognition, is conditioned by communicants' (the sender's in the source language (SL), translator's and addressee's in the target language (TL)) linguistic and extralinguistic knowledge, including related to special areas of expertise, their interaction within cognitive models, fixed by stable linguistic signs, usage and recognition of which accords with the objectives of scientific communication and allows to detect scientific text's characteristic features as to the cognitive dimension in a given field of scientific research.

This article aims to analyze complex multilevel information forming part of deep sense structure of scientific text in the triad "communication act – text – word" where overlapping individual cognitive spaces of the communicants shape communicative and pragmatic potential of scientific discourse within translation.

For the purposes of this research, human cognitive activity in terms of organization of mental and linguistic space through categorization in the mental lexicon of the perceived scientific information and its verbalization within translation is of special relevance.

At this point, it is also relevant in terms of the potential of effectuating thesaurus nets interpretation in the SL and TL (in the light of organizing thesaurus in a given language) within translation, having processed cognitive information represented by a certain linguistic form in the scientific text in the SL and TL with the aim of approximation of contexts of interpretation on the basis of conceptual representations of the language user (*i.e.*, the primary sender, translator as the secondary sender and addressee in scientific communication in the SL and TL correspondingly).

Space of scientific comprehension (which represents *per se* a cognitive procedure) constitutes within translation process an act of cognition of an object or situation, *etc.*, of the reality, as a space of formal and semantic overlap, in which coordination of cognitive structures of the sender and addressee in the SL takes place and to which the addressee in the TL can connect.

In the context of potential asymmetry of terminology and notions matching the latter, space of comprehension in scientific translation may be conceived as an operative model that reflects experience of specific thinking, in terms of translation, and comprehension based upon the laws of language functioning and obtained, *inter alia*, on the basis of communicants' special background knowledge in respective areas of scientific research manifested by means of the SL and TL and verbalized in scientific text/discourse. Moreover, this model predetermines pragmatic and communicative effectiveness of scientific communication and ensures designed pragmatic effect thereof.

## 2. Methods and materials

The methods of semantic and comparative analyses, the questionnaire method, the method of interpretational experiment, along with the translation method were used in the research. The experiment involved RUDN university Ph.D. students in Medicine (with different mother-tongue backgrounds from different countries) that have certain level of English language proficiency and are learning academic writing, including those taking the programme "Translator in the field of professional activities" (n. 82).

When it comes to sources in foreign languages, Ph.D. students encounter significant difficulties and issues as to apprehension of scientific knowledge formed within the frames of settled or stable scientific representations in the SL (the English language, in this research) of special fields of knowledge, *e.g.*, medicine, and linguistic realization in the target text (TT) as to shaping adequate reflection of this new knowledge within scientific representation and linguistic embodiment in scientific discourse by means of the TL (the Russian language).

One of the key problems here, its gnoseological value regards sense conveyance in scientific translation and consists in overcoming pitfalls of formal correspondence in the SL text when achieving adequate linguistic embodiment of the SL text's content in the TT.

## 3. Results

Multilevel comprehension of the space of translation unveils the essence of the communicative space and, throughout objectivization and exteriorization of the interiorized conceptual structures, reflects the conceptual structure of the scientific text in its verbal form in accordance with certain requirements of formal nature and with the ones that apply to the content (translation norm, criteria of adequacy and equivalence, *etc.*).



Multilevel complex information of the deep structure of scientific text, which is activated in the course of its linguistic processing within approximation of the contexts of comprehension in the SL and TL, often shows that there is no well-defined dividing line between linguistic and nonlinguistic knowledge.

The Yu. N. Karaulov's hypothesis that the world picture is unmatched in different languages [1] may also be applied to scientific picture in the SL (language 1) and scientific picture in the TL (language 2). Turning to dimensions of mediated scientific communication which are of special interest for the purposes of this research, we should note that, in many cases, in translation certain specificity of the asymmetricalness of the scientific pictures just referred to may begin manifesting itself. In particular, as accoupled within translation, they are in dynamic equilibrium, which influences linguistic manifestation of scientific thinking within mediated communication, as well as creation of sense invariants and verbalization of the latter in translation from the SL into the TL.

It may, as a result, have an effect either on augment of scientific information or on the loss of the latter, predetermining the necessity for corresponding translation methods (Newmark [2]) to be applied.

Designed to facilitate the forming of an *ad hoc* analytical and search strategy of translation, multi-vector translation analysis of scientific text shows that the perceiving, interpreting and realizing, to which the variant of translation opted for in the TL is subjected, comes determined by the linear character of its perception in a given space of scientific discourse and depends largely on specificities of translator's linguistic and scientific (professional) competence (Ph.D. student's, in this research). In this respect, it is in accordance with the addressee's linguistic and scientific world pictures in the TL that the issues of appropriateness of remodeling and reflecting the cognitive space of scientific text discourse are to be viewed by the translator.

In most cases, it is even at the stage of perception that this type of approach eliminates multiple interpreting, mismatches concerning perception of the source text (ST) at its verbal level pursuant to the scientific tradition in the SL and TL, and contributes greatly to adequacy in intertextual references (especially in what regards other scientific texts, their segments, cliché, stereotype expressions). Example:

*"In a case series involving patients with severe Covid-19 who received remdesivir through a **compassionate-use program**, the majority of patients had a decrease in the need for oxygen support, but there was no comparison group".*

*(Mild or Moderate Covid-19//N Engl J Med 2020; DOI:10.1056/NEJMcp2009249)*

Translation into the Russian language: *"В ряде случаев с участием пациентов с тяжелой формой COVID-19, которые **получали** ремдесивир **по благотворительной программе**, у большинства из них снизилась потребность в кислородной терапии, но группа сравнения отсутствовала".*

(For the essence of this programme, see Mussa Rahbari & Nuh N Rahbari, "Compassionate use of medicinal products in Europe: current status and perspectives", Bulletin of the World Health Organization, 2011;89:163-163// available at: <https://www.who.int/bulletin/volumes/89/3/10-085712/en/> : "... allow seriously-ill patients to obtain the medicines through a "**compassionate-use programme**"; "patients ... who cannot be treated satisfactorily by an authorized medicinal product. The medicinal product concerned must either be the subject of an application for a marketing authorization in accordance with Article 6 of this Regulation or must be undergoing clinical trials").

Our questionnaire demonstrated that, Ph.D. students' translation of the ST word combination "compassionate-use program" into the Russian language, in most cases (85%), fails to produce similar parallel knowledge structure in the TL due to lack of involvement of extralinguistic knowledge in the sense perception and its verbalization in the TL within scientific picture of the Russian language. It also fails to ensure cognitive transparency and reproduce pragmatic markedness and of the English word-combination, and to facilitate appropriate sense interplay and adequate processing of conceptual information and communication efficacy oriented towards restoration of scientific communication presuppositions in the Russian language. Moreover, it fails to embody pragmatically intended cognitive context of the scientific medical discourse in the Russian language.

#### 4. Conclusion

In translation the potential of interpretation of thesaurus networks in the source and target languages, through the lens of dissimilarities between languages in what regards organization of their thesauri, is viewed as determined by efficacy of processing cognitive information represented in scientific text in the source and target languages by a certain linguistic form, and can influence



understanding and conclusions that are achieved depending on the degree of different communicants' comprehension of the same texts, the number and quality of implications that they are able to derive, the amount of information, which is implicitly represented in a given communication act and which implies the need for dynamic interaction of conceptual systems and representations of the language users, i.e. the primary sender in the source language, translator as the secondary sender in the target language, and respective addresses in search of fruitful and efficient scientific communication.

### **References**

- [1] Karaulov, Yu.N. *Obschaya i russkaya ideografiya*. -M.:Nauka, 1987, 263 s.
- [2] Newmark, P.A. *Textbook of Translation*, London, Prentice Hall International (UK) Ltd., 1988.