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«МНОГОКОМПОНЕНТНЫЕ ТЕРМИНЫ В ПЕРЕВОДЧЕСКОЙ ДЕЯТЕЛЬНОСТИ

Аннотация. В статье изложены общие и частные методологические вопросы, связанные с подготовкой и принятием переводческих решений, которые касаются межъязыковых трансформаций. Осуществлен поиск оптимальных путей представления в информационно-поисковых системах терминологической лексики. Исследование, проведенное автором, является развитием одной из наиболее актуальных проблем современности, связанной с разработкой основ создания методологии переводческих решений. Особую важность приобретает проблема передачи научно-технической информации, содержащейся в многокомпонентных терминах. Автором рассмотрены различные подходы к анализу многокомпонентных терминов и использованы различные приемы для моделирования терминологических лексико-семантических знаковых систем. Введен термин «изомеризм», определен алгоритм перевода многокомпонентных терминов. Основным в алгоритме перевода изомерных многокомпонентных терминов является этап переориентации компонентов как закономерной трансформации структуры английского многокомпонентного термина при переводе его на русский язык. Этапу переориентации компонентов должно предшествовать определение допустимости адъективации атрибутивных существительных, что указывает на возможность выбора лишь одного из изомерных многокомпонентных терминов. Многокомпонентные термины подразделяются на несколько групп в зависимости от роли опорного компонента относительно атрибутов, и это учитывается при построении алгоритмов перевода. Для практического применения автором предлагаются алгоритмы перевода, разработанные на основе когнитивного подхода к контрастивным исследованиям. В систематизированном виде представлен круг вопросов и проблем, возникающих при переводе многокомпонентных терминов. Статья представляет интерес для переводчиков, студентов, аспирантов, преподавателей вуза и других лиц, которых интересуют проблемы филологии и перевода.

Ключевые слова: многокомпонентные термины, перевод, тезаурус, деятельностный подход, трансформация.

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MULTICOMPONENT TERMS IN TRANSLATION ACTIVITIES

Abstract. The article presents general and particular methodological issues related to the preparation and adoption of translation decisions that relate to interlanguage transformations. The search for optimal ways of presenting terminological vocabulary in information search systems has been carried out. The research conducted by the author is the development of one of the most actual problems of our time, related to the development of the basics of creating a methodology for translation solutions. The problem of transmitting scientific and technical information contained in multicomponent terms is considered. The author considers various approaches to Multicomponent Terms analysis and uses various techniques for modeling terminological lexico-semantic sign systems. The term isomerism is introduced, the Multicomponent Terms translation algorithm is defined. The main stage in the isomeric Multicomponent Terms (MT) translation algorithm is the reorientation of components as a natural transformation of the structure of the English MT in the process of translation it into Russian. The stage of reorientation of components should be preceded by the determination of the admissibility of adjectivization of attributive nouns, which indicates the possibility of choosing only one of the isomeric Multicomponent Terms. Multicomponent Terms are divided into several groups depending on the role of the reference component relative to attributes, and this is taken into account when constructing translation algorithms. The author suggests a translation algorithm developed on the basis of a cognitive approach to contrastive research for practical application. The range of issues and problems arising in the translation of multicomponent terms is presented in a systematic form. The article is of interest to translators, students, postgraduates, university teachers and others who are interested in the problems of philology and translation.

Keywords: multicomponent terms, translation, thesaurus, activity approach, transformation.

Introduction

Modern scientific communication actualizes the global task of reflecting the scientific reality [6, p. 58]. In modern conditions of integration of society, special languages as a communication tool of professional activity are becoming particularly relevant [9, p. 36].

As a result of the rapid development of science and scientific knowledge, a «terminological explosion» occurred, which led to a sharp increase in the number of terms [3, p. 6]. New terms appear, as well as old ones become more complicated. As a result, the number of multicomponent terms (MT) that most fully describe modern realities is growing [10, p. 120].

Translation of scientific and technical terminology is especially relevant recently due to the rapid development of modern technologies. Modern information search has undergone many changes. Currently, access to all reference sources is implemented with the help of Internet and mobile phones [4, p. 39]. A distinctive feature of scientific and technical texts is the abundance of terms and various phrases, formulas, graphs, the translation of which can cause a number of difficulties. The main task of scientific and technical translation is a brief and accurate presentation of information. The purpose of translation is its equivalence, that is, the preservation of the purpose of translation [5, p. 34].

Due to the presence of many components in the units we are considering, it is almost impossible to single out a specific translation technique that would be used for a whole combination. The translation takes place at the level of the components themselves, first the semantic core of the term is determined, and then the other components are arranged in the desired sequence [2, p. 63].

The analysis of multicomponent terms with categorical and semantic properties that present certain difficulties in translation, in the creation and use of automatic dictionaries, is of increasing interest. Of particular importance is the fact of the presence or absence of isomorphism of structures of foreign-language MT and their Russian equivalents. Terms whose structure is transformed during translation must be entered into the automatic dictionary as separate configurations. Terms with isomorphic equivalent structures should not be included in the linguistic support of an automatic dictionary. The percentage ratio of terms with a different number of components convincingly shows the predominant majority of two-component terms, after which the numerical indicators of terms with a large number of components begin to decline quite sharply [8, p. 106].

1. Relational approach to MT analysis

The activity approach allows us to present a theory of spatial semantics in which language as such can be considered in a space with zero curvature (**c**), and speech can be represented in a semantic space with a modified curvature, i.e. at c>0 or at c<0.

The procedure for creating an algorithm for detecting and translating MT consists in determining the structural multi-level characteristics that change the curvature of the semantic space, in which, when curved, there are correlations between the units that come into operation. This fact is particularly evident in the analysis of MT, which is the units of colligation and collocation, i.e. units of language and speech, i.e. the existing relationships between MT components are due to the curved spatial structure of each MT component. The difference in the factors causing the curvature of the semantic space causes the difference in translation models, i.e. the translation algorithm must be created taking into account the structural factors that change the curvature of the semantic space of MT. These factors determine the choice of a translation model that equates the curvature coefficients of two languages in a bilingual situation.

The grammar of MT translation is based on the connection with stereosemantic, or spatial linguistic curvature, and consists in the following: all the structural characteristics of MT correlate with the features of the semantic structure presented for clarity in a three-dimensional form, the planned factors that influence on the choice of the equivalent of MT translation are determined, i.e. the signs of English MT and their components indicating the translation model are revealed. To do this, it is necessary to develop formal signs of MT boundaries, a set of models of interlanguage correspondences, factors determining these correspondences and structural characteristics.

In the process of translating MT, for example from English to Russian, it is required to restore the preposition implicated in their structure (programming manual, not a program manual). This stems from the analyticity of English and the flexity of the Russian language. A. F. Shiryaev identifies three interrelated stages in the translation process: the process of orientation in the source text, the process of searching, as well as making translation decisions and the process of implementing translation actions.

Due to the fact that the MT we are considering are units of collocation and colligation, these three stages proposed by A.F.Shiryaev can be transferred from the consideration of the text to the consideration of MT and use this model in the development of MT translation algorithms.

We have developed formal ways of representing MT to create an algorithm, for example, generalization of the set of varieties of interlanguage correspondences of the structure of English and Russian equivalents of MT made it possible, based on the obtained homogeneous groupings, to identify ways of translating MT.

In the form of configurations, the computer program is laid down with topics that, having the same meaning, contain various attribute features in English and Russian. These signs refer to the motivated signs of a compound name.

The array is examined from the point of view of the connections between the elements.

A systematic approach to the study of the terminological lexico-semantic system of MT requires a model approach. When modeling terminological lexico-semantic sign systems, the following techniques are used:

1) formal recognition of the meaning of the text, operating with the concepts of «semantic space», the area of «semantic space», subdomain, dot, alphabet and the sign of «semantic space»;

2) a thesaurus-network technique that makes it possible to present semantic space in the form of a drawing (a tree-like thesaurus graph) and consistently, consistently explicate such linguistic concepts as «hyponymy», subordination, inclusion of meaning, mutual subordination, etc.

3) semantic and lexicographic methods of material selection, the essence of which consists in the fact that only those that serve for a systematic description of the corresponding sublanguage are selected from an infinite set of MT;

4) distributive semantic techniques that are aimed at the study of original English and Russian texts representing a sublanguage and including the vocabulary of periodicals.

2. Thesaurus representation of terminology

Modeling of the terminological lexico-semantic system of MT is carried out in three stages:

1) modeling of the terminological field of the terminological lexico-semantic MT system using the tree structure of a thesaurus graph;

2) MT selection using semantic-lexicographic and distributive-static method;

3) construction of the MT terminosystem by memorizing the thesaurus graph and its correlation with the help of the text given by the specialists of the relevant field.

The development of rules for formal (algorithmic) MT analysis is one of the most difficult problems of automatic analysis, which is associated with a very significant heterogeneity and implication of these formations of the English language. The same complexity is represented by the creation of an MT conversion algorithm.

The dependency grammar apparatus is used to represent the MT structure. Dependency trees were built for all the MT considered.

We are interested in studying possible ways of subordination of components within MT in order to identify transformational capabilities of different types of MT when constructing an algorithm for the identified formal characteristics of these MT.

Since natural language texts are characterized by greater syntactic ambiguity, morphological and syntactic analysis has to use algorithms that would allow for multivariate analysis.

The algorithm of the type under consideration is compiled for complete MT in which there are the propositional relations, i.e. the relations between the preposition and the post-prepositional element are expressed explicitly. Both the preposition and the post-preposition component are presented. However, this type of algorithm cannot be used for compressive MT with implicit prepositional relations (or the preposition as a post-prepositional element is not repeated in one of the MT variants). The unsuitability of this algorithm is due to the fact that it cannot reveal the measure of semantic deficiency when decoding the value of the compression MT as a unit of nomination. The meaning of MT is the resulting meaning not only of a set of components, due to the semantic connectedness of a complex name, but also implicitly presented prepositions, various kinds of relationships.

The mention of an object or phenomenon in the text introduces implicitly into the situational and thesaurus context a certain subject area with its inherent real connections, which will simultaneously imply the existence of an inherent part of the signs and some other object or phenomenon of a higher ring, parts and signs of which they themselves are, i.e., nonlinear factors are superimposed on the inter-component relationships, for example, thesaurus context.

It is especially important to take into account non-linear; semantic factors in the positional mode of encoding syntactic communication, although taking into account these factors is also necessary in the morphological mode of encoding syntactic communication.

The heterogeneity of the medium and its influence on MT were taken into account when constructing algorithms. Changes in the semantic structure of MT under the influence of nonlinear factors are especially evident in the functioning of identically designed combined components of MT with the identity of the connection of prepositive components with the reference one.

When creating a practical system for machine translation, which is the object of linguistic research, the basic unit of translation should be defined as a constant value in accordance with the specific tasks solved by the corresponding system.

3. Translation units

When modeling the translation process, new units of formalization arise – translation units. The translation unit (minimum translation segment) in translation modeling is understood as a certain language element used in the translation of the original information.

The structural and statistical connections of the text are embedded in MT to a greater extent than in individual words, which is very important when working with related text and this is the advantage of optimizing the educational process.

In stable MT, lexical content is regulated by the communicative task and lexico-semantic compatibility at the level of subclasses of words. They do not lose their integrity out of context and are semantic-syntactic linguistic units located between syntactic levels.

Thus, two mutually exclusive points of view coexist: phrases are considered as belonging to the lexical level or to the syntactic level. In addition, it is recognized that phrases should be considered as being between these levels. In our opinion, the phrases belong to each of these levels. They can be considered as units of colligation and collocation, although each of the points of view can be quite justified, for example, dissertations have been written whose tasks include "proving that phrases belong to units of the syntactic level of the language".

In this paper, the attribution of MT to one or another level cannot be based only on purely theoretical speculations, because the purpose of this work is ultimately practical, namely: the construction of an MT translation algorithm for teaching students. Therefore, on the one hand, we must rely on the results of theoretical research based on the actual functioning of MT in the scientific and technical literature, and on the other hand, take into account the chosen strategy of MT translation, i.e. the «opinion» of the computer, because the machine treats MT in a completely different way than a person and the strategy of the student who uses it.

The comparison can be made at different language levels. The task of the work is to compare MT, which should be translated at the level of phrases, but MT, being units of collocation and colligation, combine the existence of several levels. As white light consists of red, green, etc., so MT combine several levels. Therefore, they should be analyzed for each of these levels in order to make an algorithm for their translation. V.A.Krupnov writes about this, considering the role of translation at the level of individual words and phrases for solving problems related to adequate translation and transmission of the general meaning of the text [5].

Research and development in the field of machine translation, where the object of processing or text of a narrow subject, have shown the presence of insurmountable difficulties in terms of syntactic analysis, as a result of which the need for a human translator remains.

When analyzing MT on syntactic grounds, difficulties arise, to overcome which we were forced to develop a number of semantic analysis tools.

The construction of algorithms in the analysis of MT of one specialty (narrow field) has the disadvantage that the linguistic description is constructed taking into account the features that relate to the attribution of semantic features to MT during construction. In the language of semantic-syntactic abstractions organized in the form of graphs for natural languages at the input (English) and at the output (Russian), the analysis is performed in a local way, i.e. limited only by the MT level.

The MT analysis procedure is completely separated from interlanguage comparisons, which makes it possible to consider this system multilingual, since the graph obtained as a result of such analysis can serve as a basis for interlanguage operations and synthesis procedures that provide translation of MT into various output languages.

The process of interlanguage operations involves and is carried out by viewing the tree of components built at the analysis stage in the top-down direction.

This process of bringing the MT of various languages into interaction with semantic-syntactic abstraction in the form of graphs is more efficient and more reliable than using alternative trees when creating teaching linguistic automata for students studying two or more languages.

4. MT translation algorithm

The experience of mass processing of texts has shown that the orientation of the automatic dictionary on the translation of all MT is too general, because the types allocated within the MT system with a special structure organization, for example, constrictions based on metonymy, are peculiar types of outdated stable combinations that require a clearer and more correct organization of the automatic dictionary with developed translation algorithms for each of the MT types.

A special organization is required for the translation of the MT used in the patent, which are character-

ized by a more complete expansion of the structure and the absence of abbreviated MT when they are repeated in the patent document.

Algorithmic translation of English terminological composites, whose components are interconnected only positionally without morphological design of syntactic dependencies into Russian, which does not contain similar structures, can be considered one of the neutral problems of machine translation.

When constructing a formal MT translation model, we proceed from the fact that the real language space is a curved space of variable curvature.

Based on the general theory of relativity, it can be concluded that the linguistic space should expand over time. Speech activity is characterized by a change in the metric of language space over time. The model of speech activity can be based on the hypothesis that speech activity is homogeneous, i.e. it is arranged in the same way in all its parts. Of course, we are also talking about speech activity in general. If we talk about relatively small scales, then, of course, even without special analysis, one can notice the heterogeneous nature of speech activity, which depends on the density of the set of characteristics that determine the curvature of the language space.

The idea of language, in contrast to speech activity, seems to be connected with the idea of a real language space with zero curvature. Considering a language as an abstract system of units in their paradigmatic connections and relations with zero curvature is one of the special cases of considering a language space of variable curvature.

The greater the curvature of the language space created by the density of the set of characteristics, the more difficult it is to formalize an algorithm for machine translation.

As a measure of curvature estimation, the definition of the coefficient taking into account the density of the set of characteristics leading to the curvature of the linguistic space is proposed.

MT as frequency methods of compressive expression of clumps of scientific and technical concepts, creating characteristics of the density of the text, themselves are subject to the action of curvature. The existing approaches to the algorithmization of MT translation do not give acceptable results, so the word-by-word translation of MT as a translation algorithm, in fact, represents each component of the term at zero curvature. The semantic approach to the translation of MT is the same in nature, consisting in the description of English-Russian correspondences at the level of semantic features. In the approach when the genitive construction is considered the main one as the most special case of MT translation, the real curvature of the language space is almost not always taken into account. The construction of the semantic-syntactic grammar of MT translation is somewhat closer to taking into account the curvature coefficient, although it does not allow taking into account, for example, MT isomerism in MT, i. e. the phenomenon of the existence of various formulas of the structure of inter-component relations.

The paper introduces the concept of isomerism for MT, which may have the same composition of components, but different relationships between these components. In this case, the component does not determine the nature of drilling, but the drilling machine itself, naturally, is not connected with the component. It is known that machines can be characterized by the nature of the operation and by structural qualities. As for drilling machines, they are characterized not by the type of drilling, but by structural qualities.

In order to distinguish isomeric MT, some additional parameters are taken into account in the task of constructing a formal translation model, such as, for example, the terminological coefficient and thesaurus affiliation. But, that the terms, not obeying the action of the probabilistic distribution scheme, create special characteristics of the text, the identification of which will help to determine the measure of deviation in the behavior of linguistic units of a terminological nature from the normal distribution. The more terms are used in the text, the higher its terminological coefficient, nevertheless, the distribution of terms in this text is subject to the action of a probabilistic scheme.

The coefficient of curvature of the linguistic space is associated with the coefficient of terminology, the definition of which can be based on statistical identification of the ratio of the number of terms in the text fragment under consideration to the total number of words. In the translation algorithm, the stage of reorientation of components as a natural transformation of the structure of English MT when translating it into Russian should be preceded by the definition of the thesaurus affiliation of MT, namely, in our case, taking into account the fact that in mechanical engineering machines are characterized not by the nature of operations, but by structural features, which implies the need for adjectivization of the noun «planing» when translating, a subsystem of interlanguage operations is introduced into the translation algorithm, including such a number of possible transformations on one part of speech into another, in order to take into account as many of these thesaurus characteristics.

Thus, summing up, it should be noted that the main stage in the isomeric MT translation algorithm is the reorientation of components as a natural transformation of the structure of the English MT when translat-

ing it into Russian. Thesaurus accessories of components imposes restrictions on the translation of isomeric MT. For example, it is necessary to take into account the fact that machines are characterized not by the nature of the operation, in our case, not by the type of planing, but by structural features. The stage of reorientation of components should be preceded by the determination of the admissibility of adjectivization of attributive nouns» which indicates the possibility of choosing only one of the isomeric MT.

5. The limits of the deployment of the structure of multicomponent propositional terms in modern English

We divide MT into several groups depending on the role of the reference component relative to attributes, and take this into account when constructing translation algorithms.

The supporting component of the MT can play a different role in relation to its subordinate attributes, for example, in our material, MT were found in which the supporting component turns out to be only subordinate (its role is not disclosed at the MT level). There are also such MT in which relations of a prepositional type are superimposed on the general attributive relationship, which are actualized by the attribute predicate, i.e. the role of the reference is disclosed, at the MT level. Depending on the MT belonging to a particular group, we make different translation algorithms, for example, we consider English structured attributive phrases (SAP). As is well known, the semiotic specificity of these collocations consists in the fact that they reveal an internal semantic unity according to the type of proposition.

Unlike other attributive phrases, in which the defined word is only a subordinate element, and its role in relation to attributes remains undisclosed at the level of the phrase, in CAC the defined word is involved in the structure of semantic relations. As a result, propositional type relations are superimposed on the general attributive relationship in the phrase, which are actualized by the attribute – predicate word: *a government-sponsored opinion poll = (the) government sponsors opinion poll* [1].

In other words, the predicate word SAP structures the entire chain of words, including the defined word, actualizing semantic relations between them not of an attributive, but of a prepositional nature. This is confirmed by the transformational correlation of SAP and sentences (with, however, the opposite direction of the deployment of semantic relations).

It can be seen from the transformations that the same semantic relations are traced between the elements of the SAP and between the members of the sentence: subjective, objective and circumstantial. In favor of this understanding of the internal organization of these phrases evidenced by the fact that the permutation or the omission of elements is unacceptable and leads to disruption of the relations between the messengers: one of the main problems is the problem of determination of MT, its position in the system of social relations, revealing for what and how to use MT, i.e. the disclosure of the process of development of the MT and regularities of its formation, the conditions and mechanisms of formation.

Guided by the established activity approach to the formation of the term as a member of the terminological system, we use the activity approach and analysis of MT.

The activity approach allows us to consider language as a cognitively interpreted system. The combination of formal and semantic rules of language and rules of pragmatic interpretation allows us to see the language in its entirety, i.e. as a pragmatically interpretable (or socially interactive) system.

Conclusion

In order to create linguistic support for an information search word-by-word translation of texts, a study of journal articles of strictly limited subjects was conducted.

When analyzing the selected MT in a monolingual situation, their regularity and irregularity were taken into account. The semantics of dependent and kernel words, as well as its influence on the structure of this phrase, were studied. The identification of the semantic structure of each of the components of nominal phrases and the establishment of the nature of the intercomponent semantic relations allows us to formulate rules for choosing the structure of translation.

In order to develop optimal algorithms for syntactic analysis and synthesis of named groups, the search is conducted for environments that allow or prohibit the translation of prepositive nouns by adjectives.

In a bilingual situation, the facts of isomorphism and non-isomorphism of MT structures in the input and output languages, including the phenomena of regular non-isomorphism, understood as a natural transformation of the structure of the English MT when translating it into Russian.

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