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DYNAMICS OF DEVELOPMENT OF SCIENTIFIC AND TECHNICAL TERMS IN ENGLISH LANGUAGE. THE APPEARANCE OF NEW TERMS

Abstract: Thus, a lot of research in the field of linguistics, semiotics and philosophy is devoted to the issues of terminology. Without touching upon General issues, we intend to pay attention to the formation of new scientific terms in the natural and technical Sciences. It is known that the requirements for the terms used in scientific practice are much tougher than in everyday life. In this article highlights of dynamics of development of scientific and technical terms in English language.

Key words: development, technical terms, English language, research, new terms, terminology, knowledge, education, linguistic.

Language: English

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Introduction

The understanding of various statements and statements largely determines the reliability of the perception of the information exchanged by various participants in the communication process. In the natural and technical Sciences of the terms often require more certainty than in the Humanities. The rigidity of terminology requirements is reflected in the rigor of the use of definitions. The practical use of a particular terminology leads to the exchange of terms between special and domestic use. Diffusion of terms from one area to another occurs constantly. This, in turn, leads to a blurring of clear terminological boundaries. Accordingly, the concept of rigid fixation of the term is somewhat different from its real use [1]. This process is essential when the use of a term has already become a practice. At the time of the emergence of a new term, the process of improving its use is determined by other circumstances.

Materials and Methods

A number of new areas of technology, such as information technology, are currently undergoing rapid development. For these areas and related sections of pedagogy the process of emergence and formation of new terms is of particular importance. We want to focus on these circumstances. The emergence of new terms goes in several ways. One, the most simple and obvious, is the transfer of the term from another language along with some technical innovation, the use of so-called barbarisms [2]. At the same time, the borrowed term often supersedes the already existing, but not very widespread designation. Thus, the real appearance of computers in Russia quickly caused the replacement of words: computer — computer, digital printing (digital printing device) — printer, etc. To a certain extent, this is determined by fashion and the desire to have a single international terminology. This process often meets serious resistance. It is well known, in particular, the desire of the French public to replace in practice the English-language computer on ordinateur (ordering). There

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are cases of joint use of barbarism and the original Russian term. Such a pair of terms, characteristic of pedagogical Informatics, are the terms digitization and digitalization.

The relationship of the term and the concept. For our purposes, it is interesting and useful to consider not only the process of the emergence of a new term, but also its further change until it becomes generally recognized and takes a strong place in the relevant dictionaries. The appearance of the term in dictionaries and comparison of dictionaries published in different years allows us to trace the dynamics of changes in the term and its meaning. At the same time, it can also undergo interesting and important changes before the term is firmly fixed in the dictionary. The emergence of new terms and in practical use, and in professional language is almost the same laws. In the scientific and technical sphere, they are more clearly expressed, although there is no sharp border between professional languages and languages of everyday communication. Recall the basic scheme of the formation of new words. People feel the world around them through the perception of external stimuli or, almost the same, external information. Sensory elements of the senses — receptors — convert external information signals. From them, the converted signal enters the brain. The degree of completeness of the incoming information, as well as its possible distortion in the transmission of nerve channels for the problem under discussion do not matter. On the basis of sensations, which are received by the brain, is shaped a certain way. The image arises as a result of the influence of repeated stimuli and their comparison with the existing in the brain "dictionary", or thesaurus. The role of repeatability is very important. No less important is the process of forming the initial thesaurus. In the case of the emergence of scientific and technical terms, we are talking about the brain of Mature people, and the process of forming the initial thesaurus can be excluded from consideration.

For the emergence of a new word, the most important stage should be considered the transition from the image to the concept. To do this, it is necessary that a certain group of sensations, creating an image, separated from other images. In other words, the emergence of the concept is associated with the most important information operation — allocation or restriction. This is the most important action associated with the operation of identification type "friend or foe". It is the selection of a group of images from all their diversity that arises in the brain under the influence of the flow of sensations that underlies the newly emerging concept. For the emergence of the concept is no less important and the operation of comparing images with those images and concepts that are already reflected in the brain. In General, the concept can be formed on the basis of a large group of images. Randomly occurring in the brain images in the formation of concepts do not

participate, the number of concepts is less than the number of images that occur in the brain. In order that the arisen concept was issued in the form of the word, certain time has to pass. Moreover, the number of words should obviously be less than the number of concepts. Otherwise, the language will lose its flexibility and expressiveness, and the number of words in it will increase immeasurably [3]. Suffice it to recall, for example, that already the fingers on the hand are described by two words. Their phalanges in everyday speech also do not have special words for their designation.

In different languages the concept of the ratio \wedge the word is different. Undoubtedly, the study of quantitative relations between the number of concepts and words in different languages is of great interest. Research, using modern mathematical apparatus, lead to the same conclusion — the number of words in language, correlated with the number of concepts, is determined by some compromise between the convenience of the speaker — one word refers to a set of objects (concepts) — and the listener, when each word strictly corresponds to one concept [4]. In other words, any approach to the problem leads to the conclusion that there are ambiguities in the language and that the number of words and the number of concepts in human practice should not coincide.

However, we are interested in the process of turning words into scientific, technical and pedagogical terms. Here, the conditions for the selection of words and their allocation from the total number of linguistic units through definitions (definitions) are even more stringent. It is no accident that the word term itself comes from the Latin terminus, which has the meaning of limit, boundary. Restrictions imposed on the word proposed as a term should, if possible, provide such properties of the term as unambiguity, weak dependence on the context, systematic, stylistic neutrality and, to the extent possible, some semantic (semantic) unification. In connection with the globalization processes and the development of interdisciplinary research requirements for the unification of terms are of paramount importance.

Estimating the number of concepts is a much more time-consuming and complex task than simply counting the number of words. At first glance, it seems that the set of concepts used by different peoples should be the same. In fact, the cultural level, historical experience, state of the art and technology are different in different Nations. This provides a difference in the use of a set of concepts. It would seem that people who have made a similar historical path and are in close natural conditions and in a similar technical environment should have a common set of concepts. This should be reflected in a similar vocabulary. However, it is not. Suffice it to recall that the concept reflected the Russian word of the day (Ukrainian dawba) in the English language, the

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special words do not matter. The British talk about day and night (day and night). Similarly, the German Geschwister is absent in Russian. It corresponds to the expression brothers and sisters. These are the simplest examples. In fact, the distinction and separation of concepts in different languages does not coincide. This is reflected in the vocabulary of different Nations.

Terminological system. The selection of new concepts, especially in the scientific and technical sphere, is a gradual process. First, it is necessary to identify a new concept. In order to designate a word, the consent and interest in the concept of a few individuals. The emergence of new words and then terms is not possible without the presence of an interested group, among whose members there are communication contacts. Time spent on the formation of the term may be different. In a rapidly developing field of knowledge, this process is fast. Examples of this we meet every day, for example, in the field of information technology. At the same time, the emergence of a new conceptual sphere can go very slowly. At the same time, the new term, while remaining very vague and having blurred boundaries, has long been in a latent state.

Returning to the examples from the field of information, we note that the initial interest in the corresponding phenomenon can be found in the unformed form already in the works of ancient scientists. As noted in a famous review, [5], the term information is used for the first time in the dialogue "Alciphron," published in 1732. It took about 200 years for the concept of information to be fully formed. Further features and properties of information were specified. At this stage, it is difficult to give a clear definition of the new concept. As a result, there are terms that are based on practical use and intuition. In accordance with [6], in this case there is a situation called natural-established terminology — have. Very often a new concept is simultaneously revealed in different fields of knowledge. In this case, its boundaries may be different, and the terms used to refer to it are different. The creation of a unified conceptual and terminological system in certain branches of knowledge can go in different ways. The consolidation of individual private systems into a single system is usually associated with great difficulties. It requires some time and some administrative resources.

The refinement and splitting of concepts. Clarification of new scientific and technical concepts is associated with two processes. On the one hand, it is a process of introducing new, stricter restrictions that clarify the definition of the term and more strictly delineate the limits of its application. This process goes both empirically and theoretically. Theoretical clarification of the concept requires clear wording of the relevant definitions (definitions). These definitions should rely on other definitions, etc.

Consistent application of this principle reduces everything to an endless process — regress ad infinitum. In reality, sooner or later we have to stop at the so-called indefinable concepts. They form a kind of axiomatics, rely intuitive. This means that the process of limiting and clarifying concepts pushes indeterminate concepts deeper. The question of whether it is possible to judge the rigor of the theory on the basis of distance from these concepts remains open.

On the other hand, clarification of the concept caused by research and analysis of the relevant problems opens up new features of the concept. This leads to the need for fragmentation of the concept. It is important to note the following. Each new feature (property) of the concept makes less and less contribution to its description. When studying the properties that are described by the concept, many new features are revealed. As a result, the concept begins to be divided into more specific concepts. New properties associated with the fragmentation of the concept affect the completeness of the description of the concept as a whole. It is known that each new property opened and entered in the description has less and less impact on the overall completeness of the description [7]. In this case, the contribution that is made by a particular property to the understanding of the characteristics of the concept depends on the sequence in which these properties are studied and introduced into the definitions. In other words, almost always the property, which is revealed first, gives the maximum contribution to the description of the concept. If this property is not considered first, its contribution to understanding the properties of the concept is reduced. When you select the concepts that define a new area of knowledge, especially the formation of representations often automatically allocate in the first place really the most important, common features. They make the greatest contribution to the completeness of the description. The progressive reduction of the contribution to the completeness of the description of subsequent properties leads to the fact that the total number of characteristics of the concept is not very large. Therefore, the number of new secondary concepts revealed in the process of crushing the primary concept is also not very large. According to assumed that at the first stage of crushing it will be about 7-8 properties, which seems to be due to the peculiarities of the functioning of the brain. For us, however, it is sufficient to assert that the number of concepts allocated to the second level is not very large. Naturally, and secondary terms can be subjected to crushing. However, such a deep crushing is not very common. Of course, this does not mean that from the semantic concept, which is covered by a certain term, cannot be allocated a new concept, described by the new term. Thus, the development of the concept of information over time has generated a concept that

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describes the processes of its transfer, storage and processing. To denote this concept, a special term Informatics is introduced.

Let us turn to the dynamics of the development of terms, which is associated with the refinement of different meanings. What is important here is that the clarification and fragmentation of the term into particular concepts should not necessarily be based on the creation of new word forms. On the contrary, rather widely semantic fragmentation of the term is associated with the introduction of complementary definitions in the form of adjectives to the term — so we talk about semantic, aesthetic and other types of information [9; 20]. Two-word terms, in our opinion, are convenient and informative. They eliminate the overload of texts with new word formations. Moreover, this approach is consistent with established traditions in the classification of flora and fauna. It should be said that such fragmentation always accompanies the development of the concept.

In real life, we are often faced with other phenomena. These include, in particular, the transfer of the initial broad term to a narrower, secondary part. An example of this kind can be traced in the case of the development of the already mentioned term Informatics. It was originally used to describe all the processes of working with computer science. In pre-computer times it was mainly the processes of working with library information and information on other traditional media [8]. Subsequently, this term was associated only with the study of computer technology. In this regard, to separate this value with the designation of Informatics in the traditional sense, it is necessary to introduce additional definitions. This leads to two-word terms: machine and machine-free Informatics [9]. The latent existence of the term is often replaced by a period of further rapid development, when there is a need to create new terminology in the developing area. Similar processes are sometimes described by the term terminology. New terms are transferred from other languages or invented in haste. The translation of terms from other languages often alters, truncates, or even distorts their original meaning. Let us give one instructive example. Any Internet user knows the word spam. For the first time this word appeared in English in the second half of the 30-ies of XX century. in the novel of the life of the Vikings one of the now forgotten writer. This word denoted the food that the Vikings took with them on long voyages.

It should be noted as a General phenomenon that many foreign terms introduced into the Uzbek

language often have a meaning different from that which corresponded to them in the mother language. Since a huge number of Uzbek users do not know English very well, this sometimes creates some difficulties. So, having met in the English text the word file, which can make sense a folder with documents or a personal file, an unprepared reader may experience problems with understanding the meaning of the phrase. It must be said that a similar situation is characteristic of the new terminology in other languages. This allows us to outline the main sequence of work to improve the activities in this area [10]. Such work has long been widely carried out in many fields of knowledge. It is sufficient to refer to the international work on the standardization of chemical terminology carried out by the competent international organizations.

When constructing a conceptual system of any branch of knowledge, it is natural to take into account the requirements of linguistic economy of terms. The natural sequence of works here is obvious:

- give clear formulations of basic concepts and definitions of all basic terms, which should be correlated to the maximum extent with the terms of related areas of knowledge;
- determine the allowable share of English-language terminology;
- to determine the hierarchy of pedagogical concepts of computer science and carry out basic crushing concepts that should strictly meet the main requirements of the theory of classification: the partitioning of one base, the completeness, i.e. the reflection of all possible elements of the lower degree of fragmentation, lack of redundant and repetitive terms and concepts;
- to separate the terms of pedagogical Informatics from the terms of related fields and, first of all, pedagogy;
- conduct a consistent discussion and development of concepts and definitions for each step of the proposed hierarchy.

Conclusion.

The processes of formation of new scientific and technical terminology and terminology of pedagogical Informatics require careful attention. They should first be discussed in detail in the relevant literature. It is useful to accompany the discussion process with special statistical studies using refined network search techniques.

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