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Physics Terms Created Using the Kalkalaw Method

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The terminology of the Karakalpak language has developed its own historical path. Over the years, various terms have been incorporated into our terminology from different sources. Many of them have been adapted from other languages, both through direct borrowing and through translation.

In the current system of Karakalpak terminology, the methods of term formation have been standardized. They include:

1. Lexical-semantic method;
2. Morphological method;
3. Syntactic method;
4. Borrowing terms from other languages [3:107].

In Karakalpak terminology, the role of borrowing terms from other languages, both through direct borrowing and translation, is significant. The borrowing method involves adapting terms from other languages to the morphological structure of the Karakalpak language (e.g., "potok" - "aǵıs" meaning "stream" - "flow," "davlenie" - "basım" meaning "pressure," etc.). This method requires not only a word-for-word translation but also the preservation of the morphemes and their meanings in the original language when transferring them into Karakalpak.

As G.C. Pyurbeev noted, "Creating terminology through borrowing is a challenging task. To ensure the accuracy of the transfer, it is necessary to have a good understanding of the semantics and morphological structure of the word (term) in the source language and how it can be applied in the target language" [6:101].

The "Kalkalaw method" of terminology development has its own distinctiveness, starting with the acceptance of a new word or phrase in the target language, which should be clear and related to the meaning of the word or phrase in the source language," as stated by Sh. Qurmanbay Uly [4:99].

In this method, linguists differentiate between two types: "term creation methods." In fact, a significant number of physics terms in the Karakalpak language have been developed through this method. Furthermore, terms have been created both through direct borrowing and through translation.

In linguistic literature, there are two types of terminological derivation mentioned: word-formation and semantic derivation [5:73]. Word-formation involves the adaptation of words from other languages, including their morphological components, while semantic derivation focuses on the meaning of the term. In our lexicon, terms have been adopted from other languages, such as Russian and Uzbek, and adapted to the Karakalpak language, like "gaz turaqlısı" (газовая стабильность) meaning "gas stability," "jaqtılıqtıń basımı" (легкое давление) meaning "light pressure," "aynalmalı kernew" (переменное напряжение) meaning "alternating current," and so on.

The word-formation method ensures that the structure of the adopted word is preserved, with its formation material conforming to the Karakalpak language. Even though the term retains its structure when adapted through this method, the material and affixes are modified to fit the Karakalpak language. Semantically, the term retains its original meaning and morphological structure in the source language, while its meanings are linked to different meanings or words in the target language, or even a different term in the target language, with the same meaning [7:105].

Examples mentioned above, such as the Russian words "свет" and "ярко," being translated to "jaqtılıq" and "ashıqlıq" (meaning brightness and intensity, respectively), show the semantic adaptation in the Karakalpak language. However, in the semantic derivation, the word "jaqtılıq" is used to preserve its meaning.

Not all physics terms in the Karakalpak language have been created through semantic derivation. Many terms have been formed through word formation. The diversity in terms has led to the creation of terms through word formation.

In the case of physics terminology in the Karakalpak language, there are two main forms of word formation:

1. Complete adoption: This method involves adopting physics terms from Russian and Uzbek into Karakalpak by using their original meanings as-is. For example, "напряженность" (napryazhennost') becomes "kernewlik," (tension) "давление" (davlenie) becomes "basım,"(pressure) "вес" (ves) becomes "awırlıq,"(weight) "время" (vremya) becomes "waqıt,"(time) "тело" (telo) becomes "dene," (body) and so on.

2. Partial adoption: This method involves adopting only a portion of the term from another language, while the second part is represented by a Karakalpak word. The choice of which language's structure to maintain depends on the structure of the term in the source language. For example, "промежуточный нейтрон" (promezhutochnyy neytron) becomes "aralıq neytron,"(intermediate neutron) "изотропное тело" (izotropnoe telo) becomes "izotrop dene,"(isotropic body) "высокий вакуум" (vysokiy vakuum) becomes "joqarı vakum," (high vacuum) and so on.

In the field of physics terminology, as mentioned above, two main types of derivation have been widely used to create a significant majority of terms. The role of suffixes in word formation plays a crucial role in adapting terms to the Karakalpak language. For instance:

- The Russian suffixes -ость/-есть are represented in Karakalpak as -lıq/-lik. For example, "твердость" (tverdost') becomes "qattılıq" (hardness), "хрупкость" (khrupkost') becomes "mortlıq" (fragility), "проводимость" (provodimost') becomes "ótkizgishlik" (conductivity), and so on.
- Russian suffixes like -тель, -ник, -чик are adapted into Karakalpak using the suffixes -qısh/-kish, -ǵısh/-gish. For instance, "рассеиватель" (rasseivatel') becomes "shashıratqısh" (disperser), "ускоритель" (uskoritel') becomes "tezletkish" (accelerator), "проводник" (provodnik) becomes "ótkizgish" (conductor), and so on.
- Russian suffixes like -ени(е), -ани(е), -к(а), ация, -изаци(я) are adapted into Karakalpak with corresponding movement-forming suffixes, as indicated by Kazakh linguist Sh. Qurmanbay Uly. For example, "вращение" (vrashchenie) becomes "aylanıw" (rotation), "настройка" (nastroika) becomes "sazlaw" (tuning), "блеск" (blesk) becomes "parlanıw" (brilliance), "кепение" (kepenie) becomes "qaynaw" (vaporization), "премление" (premlenie) becomes "sınıw" (melting), "отражение" (otrazhenie) becomes "shaǵılısıw" (reflection), and so on.

Furthermore, in the context of the Karakalpak language, the "Kalkalaw method" of terminology development is considered a significant approach. This is particularly relevant in the field of physics due to its precise and specific nature. Physics terminology, as one of the key branches of science, requires precise and accurate representation of concepts and content. Therefore, the

Kalkalaw method, which allows for the adaptation of terms from Russian and other languages into Karakalpak, is of great importance in ensuring the clarity and accuracy of physics terminology. It enables the creation of terms that are both meaningful and aligned with the content in the field of physics. Consequently, a significant portion of physics terminology in the Karakalpak language has been developed through this method, incorporating terms from Russian and other languages.

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