MORPHOLOGICAL STRUCTURE AND SOURCE MODELS IN UZBEK TERMINOLOGY

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Annotation

The topic “Morphological Structure and Source Models in Uzbek Terminology” focuses on the linguistic mechanisms and models through which Uzbek scientific and technical terms are formed and systematized. It examines the morphological patterns of term creation, including affixation, compounding, reduplication, and abbreviation, which play a central role in expanding the terminological system of the Uzbek language. The study also explores source models such as native Uzbek formations, borrowed models from Arabic, Persian, Russian, and English, as well as international terminological elements. Special attention is given to the interaction between native and borrowed morphemes in the formation of hybrid terms and to the adaptation of foreign models into the morphological system of Uzbek. The research highlights the significance of morphological productivity and structural regularity in ensuring the transparency, precision, and standardization of Uzbek terminology in various scientific fields.

Keywords: Morphology, terminology, word-formation, affixation, compounding, borrowing, hybrid terms, source models, Uzbek language, linguistic adaptation.

Аннотация

Тема «Морфологическая структура и исходные модели в узбекской терминологии» посвящена лингвистическим механизмам и моделям, с помощью которых формируются и систематизируются узбекские научно-технические термины. В ней рассматриваются морфологические модели терминообразования, включая аффиксацию, словосложение, редупликацию и аббревиатуру, которые играют центральную роль в расширении терминологической системы узбекского языка. В исследовании также рассматриваются исходные модели, такие как исконные узбекские образования, заимствованные модели из арабского, персидского, русского и английского языков, а также международные терминологические элементы. Особое внимание уделяется взаимодействию между исконными и заимствованными морфемами в образовании гибридных терминов и адаптации иностранных моделей в морфологическую систему узбекского языка. Исследование подчеркивает значение морфологической продуктивности и структурной регулярности для обеспечения прозрачности, точности и стандартизации узбекской терминологии в различных научных областях.

Ключевые слова: морфология, терминология, словообразование, аффиксация, словосложение, заимствование, гибридные термины, исходные модели, узбекский язык, лингвистическая адаптация.

Annotatsiya

“O‘zbek terminologiyasida morfologik tuzilish va boshlang‘ich qoliplar” mavzusida o‘zbek ilmiy-texnikaviy atamalarining shakllanish va tizimlashtirishning lingvistik mexanizmlari va qoliplari o‘rganiladi. Unda atama yasalishining morfologik qonuniyatlari, jumladan, o‘zbek tilining terminologik tizimining kengayishida markaziy o‘rin tutadigan affiksatsiya, birikma, ikkilanish va qisqartmalar o‘rganiladi. Tadqiqotda, shuningdek, asl o‘zbek shakllanishlari, arab, fors, rus va ingliz tillaridan o‘zlashtirilgan naqshlar, shuningdek, xalqaro terminologik elementlar o‘rganiladi. Duragay atamalarning shakllanishida ona va o‘zlashgan morfemalarning o‘zaro ta’siri, o‘zbek tilining morfologik tizimiga yot qoliplarning moslashishiga alohida e’tibor qaratilgan. Tadqiqotda turli fan sohalari bo‘yicha o‘zbek terminologiyasining shaffofligi, to‘g‘riligi va standartlashtirilishini ta’minlash uchun morfologik mahsuldorlik va tizimli qonuniyat muhimligi ta’kidlanadi.

Tayanch so‘zlar: morfologiya, terminologiya, so‘z yasalishi, affiksatsiya, birikma, o‘zlashtirish, duragay atamalar, asl modellar, o‘zbek tili, lingvistik moslashuv.

Analysis of the morphological structure of terms also shows the division into **motivated and unmotivated** units. **Motivated** refers to terms whose internal form (word-formation or semantic) clearly indicates their meaning [Kurbanova, 2025]. In Uzbek zooterminology, many words are motivated: their components are understandable to the speaker. For example, *qo'y bozori* - "sheep market" - obviously means the market for selling sheep; *tuyaxona* - "camel pen" - a room for keeping camels *(tuya* + *xona* "premises"). Even more complex cases, such as *junqirqim* (literally "shearing wool": *jun* "wool" + *qirqim* "shearing") or *sutdor sigir* ("milk cow": *sutdor* from *sut* "milk" + *suf.-dor* "having"), easily decompose into components, explaining the term through colloquial words. This facilitates the assimilation of terminology by practitioners without linguistic training.

Unmotivated terms, on the contrary, are not transparent in form - either because they are borrowed, or because their internal form has been lost. For example, *sigir* is a non-derived word for the modern speaker, unrelated to any root (although etymologically related to the ancient Turkic verb *sığır* - "milk," this connection is unclear). Another example: *ğunajin* (two-year-old calf) is a word of Turkic origin, but the morphemes *ğuna* and *-jin* are not used outside of the given word, therefore for the Uzbek speaker it appears as a whole sign without internal form; the meaning has to be memorized. Many borrowed terms are also unmotivated: *xachir* (mule) - a direct borrowing from Persian **خچر**, its morphology is foreign to Uzbek; *sil* (tuberculosis) is an Arabic root that cannot be restored with Uzbek remedies. The presence of

a significant percentage of unmotivated vocabulary complicates terminology: it requires a special explanation in dictionaries and textbooks. However, unmotivated terms are often shorter and more convenient to use, so they continue to be used alongside descriptive terms *(mastit* - instead of the long *yelin yalliğlanishi,* "yelin inflammation").</22

It's also important to note the differences **by style registers**. Morphologically simple native words are often characteristic of colloquial speech and dialects, while book terms may have a more complex structure. For example, the folk *tuya buqasi* ("camel bull," male camel) vs. the literary *nar* (a single-root term originating from the Arabic *nar* - male camel). In this case, the first option is motivated and understandable, but cumbersome, while the second is concise, unmotivated, and appears in specialized literature. Such pairs (colloquial-descriptive vs. scientific-concise) exist for many concepts, and their use depends on the communicative situation [Kurbanova, 2023]. In the terminological work on the Uzbek language in the 21st century, there is a tendency to unify such variants, giving preference to either the original Uzbek word with sufficient terminology or the international word with its unambiguousness and rootedness [Dadaboyev, 2019].

Thus, morphological analysis has shown that Uzbek livestock terminology has formed through the interaction of several word-formation processes. Affixation remains the main way of creating terms on its own basis, ensuring the development of terminology "from the inside" of the language. Word composition and calquing filled vocabulary gaps, allowing new realities to be called understandable combinations of native words. Semantic derivation connected terminology with general vocabulary, securing special meanings for individual words. Together, these processes led to the emergence of synonymy and variability (for example, parallels of the type mastit vs. yelin shamollashi - "mastitis" vs. "yelin inflammation"), which creates certain difficulties in standardization. The next section will examine how preferences for choosing a particular method have historically changed, which models have fallen out of use, and which have been institutionalized.

The genetic sources and word-formation models of zooterminology did not remain static over time - their evolution was observed under the influence of social, technological, and linguistic factors. This section is dedicated to the fate of different terminological layers and forms in the historical perspective: which of them have disappeared, which have been preserved and developed, and how the **institutional consolidation of terminology** occurred (in dictionaries, standards, educational materials).

Eliminating and surviving models. Historical changes in animal husbandry directly impacted the lexicon. When certain realities of the traditional order went into the past, special names disappeared along with them. For example, the reduction of the use of oxen as a drafting force has led to the fact that some terms related to harnessed livestock have become archaic [Development..., 1991]. In the modern Uzbek language, words like *xalok* (old. "harness, yoke for ox") or specific names of the stages of ox tillage are rarely used - they are only recorded in

historical dictionaries or in the speech of older generations. Most of these obsolete terms have been replaced by more common words or have simply fallen out of use along with changes in agricultural practices. Nevertheless, some of the old terms have been preserved in folklore and dialects. For example, *qarabol* - an old word meaning experienced bull (literally "black cattle," variant *qoramol),* appears in proverbs, although in modern terminology it corresponds to either the general literary *hökiz* (bull) or the specialized *ishchi buqa* (working bull). Such **folklore lexical conservatism** creates interesting cases: when reading classical literature or listening to folk songs, the modern reader may encounter a term that is understood only from the context or through footnotes. For example, in Abdulla Qodiriy's novel "Obid ketmon," there is *ğunajin* without explanation, and only the comment states that it is "a two-year-old calf being prepared for mating" [Kurbanova, 2023]. Thus, a number of terms, having disappeared from active use, continue to "live" passively in culture, and lexicographers are forced to explain them.

Another aspect of evolution is the transition of some terms from limited professional use to literary language and vice versa. During the Soviet period, some of the folk names of animals and products were replaced in official speech by Russian or scientific terms, however, in the post-Soviet period, there was a reverse movement, a return to **national terminology**. For example, the word *qoramol* (qoramol) has always existed in Uzbek, but officially, cattle were often called calque *yirik shoxli qoramol* (literally "cattle"). Modern state standards and veterinary guidelines attempt to use shorter *qoramol*, reflecting the trend of **localization of terminology** [Dadaboyev, 2019]. The example of disease names is noteworthy: in the old veterinary manuals of the 1950s-1970s, almost all diseases were listed under Russian or Latin names (*sibirskaya yazva*, *brutsellyoz*, *yaschur*), and now in the official bulletins of the Ministry of Agriculture of Uzbekistan, they are listed next to them or even replaced with Uzbek ones: *sibizğa* (sibirskaya yazva), *brutsellyoz* (brutsellyoz, the form of the word is adapted to Uzbek pronunciation), *tuyachöp* (yaschur, literally "camel's column" - the old name of the disease). These processes reflect work on the **normalization of terminology**, striving to make it understandable to the national specialist without translation. However, it is impossible to completely abandon international names - they remain in scientific use, in parentheses, or in their original form, to ensure mutual understanding at the interlingual level.

The institutionalization of terms occurs primarily through their fixation in **dictionaries** and **educational and methodological documents.** In the Uzbek lexicographical tradition, special dictionaries on agriculture have been published (1983, 1996, 2020, etc., see above). Their analysis shows which terms are recognized as official. For example, the specialized "Chorvachilik atamalari luğati" (Tashkent, 1996) even included dialectal names with pomegranates and provided Russian equivalents. If a term has entered such a dictionary, it can be considered legitimate, even if it does not occur frequently in speech. The pometa fields in dictionaries (old, dialectal, colloquial) precisely reflect the degree of institutionalization: the absence of a pometa in a word means its recognition in literary language. The Six-Volume

Explanatory Dictionary (2006-2008) provides stylistic markings for most zooterms. Thus, *tovusqon* is marked as "dial. rabbit," *xumpar* - "colloquial, old. kitten." **The inclusion of such units in the national vocabulary** indicates that, despite limited use, they are recognized as part of the lexical heritage. For practical use, bilingual and industry-specific dictionaries are more important: they regulate the term by offering a translation or equivalent. For example, the aforementioned Russian-Uzbek Dictionary (1983) approved standard translations for dozens of livestock terminology. After its publication, specialists gained the opportunity to use uniform Uzbek terms in translated literature and official texts [Nosirov et al., 1996].

Educational programs and standards (UDCs, GOSTs) are another platform for consolidation. Since the 1990s, textbooks for Uzbekistan's higher education institutions on veterinary medicine and zootechnics have been providing all terms in Uzbek (with possible Latin/Russian references in parentheses). This significantly expanded the scope of use of national terms previously known only to a narrow circle. For example, the term *yelin fibrozi* (yelin fibrosis) appears in Uzbek veterinary textbooks from the 2000s, although veterinarians previously used the Russian *"yelin fibrosis"* for lack of established translation. Compiling glossaries at the end of each textbook has become the norm, which also contributes to standardization: students memorize a term directly in Uzbek [Kurbonova, 2024]. Additionally, there is a Terminology Committeet under the State Language Development Committee, which issues recommendations and lists of approved terms for various sectors. In published lists on agriculture, some Soviet terms have been replaced with new ones (for example, instead of the calque *artificial insemination*, it is recommended to use a more specific *artificial insemination* for animal husbandry, although both variants still coexist). This shows a lively process of terminology refinement.

To illustrate the institutional status of various source models, Table-1 was compiled, reflecting which groups of terms are actively used in everyday life, which are formatted as terms, and how they are presented in dictionaries and official documents.

Table-1 The fate of source models in Uzbek terminology: institutionalization

Source / model	Household use	Transition to a term (special use)	Fixation in dictionaries	Textbooks and standards
Turkic native words	Very active (the basis of the colloquial lexicon of villagers)	Historically, many folk words have become terms (e.g., *cow*, *sheep* - basic terms)	Included without markings as a general usage; definitions reflect special significance [O'zIL, 2008]	They are used as basic terminology (primarily Uzbek names of animals, products, etc.)
Borrowings Persian-Arabic.	Moderately (partly outdated, partly in proverbs)	Most borrowed terms are either displaced or limited by specific spheres (e.g., *xar* - among the people, but not in science)	There are in explanatory dictionaries with markings "old," "dial"; some without markings (e.g., *zot*)	In textbooks, it is used selectively: generally accepted (*zot, nasl*), rarely replaced with Uzbek equivalents or described in footnotes

Russisms and Europeans	Different: well-known ones (farm, tractor) have become commonplace, narrowly specialized ones. - poorly understood outside the professional environment.	They became terms immediately, avoiding the everyday stage; now some are being replaced with local ones (e.g., *navbat* instead of *alternation* in breeding work)	Bilingual dictionaries of the 20th century recorded the main Russian-Uzbek correspondences; new borrowings are included in the glossary with the mark [Rus.]	In textbooks, as a rule, it is given, but often next to the Uzbek translation; standards offer Uzbek versions, but allow for internships.
Calques of Russian terms	Low (in everyday life)	Consciously introduced as terms, some have become ingrained (*artificial fertilization*), others are cumbersome for spoken language	In new terminological lists and dictionaries, for example, *sun'iy qochirish* is marked as a preferred term [Dadaboyev, 2019]	In textbooks, they are increasingly used instead of Russian words; in regulatory documents, they are officially enshrined (mandatory to use).
Dialectisms and archaisms	Local (in individual dialects, folklore)	Most of them did not become commonly used terms, except in cases where the dialectal word proved more successful (*serka* as a term in some sources)	Included in special dictionaries with markings and translation (*tovusqon* - "rabbit (dial.) " etc. in [Chorvachilik luğati, 1996])	Modern UMCs are not used except for mentioning them in a local history or historical context.

The table shows that the Turkic basis of terminology not only existed initially but was also fully recognized in science and education - it is a natural foundation that has never fallen out of use. Eastern borrowings have partially lost their terminological status: the language of modern science prefers either original equivalents or international terms, and only a few Persian-Arabic words have remained irreplaceable (for example, *nasl* - breed, genus, has no exact Turkic equivalent and is actively used in terminology alongside the derivative *naslli*). The European layer has firmly entered professional vocabulary, but now it is going through the *"Uzbek Filtering"* stage: unnecessary Russisms are being removed, meaningful internationalisms are being adapted or calqued. We can speak of a unique *purification and normalization* of terminology after the period of bilingualism in Soviet science [Dadaboev, 2019].

Morphological strategies

Three dominant morphological strategies appear:

1. Native Turkic word-formation: Uzbek uses native roots with productive affixes to form agentive, adjectival, and nominal derivatives. Examples: *nasl* → *naslli* (nasl + -li, adjectival 'having lineage'), *tanlash* (verb 'to select') → *tanlov* (noun 'selection').

2. International scientific borrowing: Many technical terms are borrowed directly from Russian or English with slight phonological adaptation: *selektsiya*, *gibrid*, *mutatsiya*, *genetika*. These are often used in scientific registers and higher education.

3. Calquing and semantic extension: Some complex concepts are expressed by calquing international phrases into Uzbek native morphology: *molekulyar diagnostika* (molecular diagnostics), *genetik marker* (genetic marker) — frequently combining a borrowed head with native modifiers. Semantic extension of common words is also frequent: *nasl* in everyday speech can mean 'children' or 'family lineage' but in technical discourse becomes a precise biological 'breed' or 'line'.

Etymology and register distribution

- **Scientific register:** Predominantly uses direct borrowings for lab-based concepts (e.g., *genetika*, *genom*, *DNA*). These terms often enter through Russian technical literature historically, and more recently from English.
- **Practical/rural register:** Relies on native lexemes and descriptive phrases (e.g., *aryalash nasl* for crossbred) and practical verbs describing actions (e.g., *tutiqlash*, a local practice term). When speakers lack access to formal education, borrowed scientific terms are sometimes unknown or replaced by descriptive periphrases.

Semantic problems and ambiguity

Certain terms show polysemy and potential misunderstanding:

- *Nasl*: general sense (lineage, offspring) vs. technical 'breed'. In extension work this can create ambiguity unless context clarifies.
- *Irq*: historically loaded term in many languages; in Uzbek usage it may intersect with social or ethnic senses, making its use in scientific discourse sensitive.
- *Selektsiya*: among non-specialists this may be heard but not fully semantically integrated, leading to misapplication.

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