

FORMATION OF VERBAL NOUNS (MASDARS) FROM NON-GEORGIAN STEMS IN TECHNICAL TERMINOLOGY

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Abstract. The article analyzes the means of forming verbal nouns (masdars) from foreign roots in Georgian technical terminology, as well as the ways of their adaptation into Georgian. The research material is based on dictionaries, specifically, technical terminological dictionaries published in 1972 and 1988 (edited by R. Dvali and R. Ghambashidze), compiled as a result of extensive work of a large team of scholars. The research identifies several common patterns among the analyzed terms: those marked by the base-markers **-eb** and **-av**, which are most often accompanied by the verbal prefix **da-** (da + root + eb, da + root + av). However, other prefixes such as **ga-**, **gan-**, **gamo-**, **she-**, and **tsa-**, as well as formations without prefixes, also occur to varying degrees. Special attention is given to the dominance of the prefix **da-** in adapting these foreign roots into Georgian, which is due to its specific semantic feature: the ability to express neutral direction. This peculiarity is observed not only in technical terminology but also in the literary language and spoken Georgian. In addition to the terms with borrowed roots, the article also discusses lexical units obtained through semantic adaptation (loan translation/calquing), e.g. *dajvareba* ("breeding"). Of particular interest are the possibilities of deriving verbal adjectives (participles) from these forms. All types of participle formation are attested, including negative forms, although, for understandable reasons, the dictionaries include only some of them, most frequently, those with the suffix **-ul**. Formations with the suffix **-ad** are also encountered functioning as participles, but they are almost never used with prefixed forms (e.g. *k'oksvadi* – "coking"; *absorbirebadi* – "absorbing; absorptive"; *degradirebadi* – "degrading/degenerative"). In technical literature, Georgianized verbal nouns (mostly masdars) are used primarily as nouns; verbal forms are rare. Instead, Georgian scientific texts commonly employ the following strategy: Collocations with the functional verb: *verbal noun + "is in progress," "is carried out," "is implemented," "continues,"* etc. The reason for this is the specificity of terminology: such words are almost never found in fully conjugated verbal forms (e.g. "aggregation is in progress" etc.).

Key words: technical terminology; conversion into verbal nouns (masdars); formation patterns; verbal prefixes.

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Introduction. The issue under discussion is highly relevant in the context of modern scientific and technological progress, as it examines the strategies of formation of new scientific terms and analyzes the current state of Georgian scientific terminology in this regard.

The aim of the article. Research objectives involve understanding the experience of derivational strategies applied to borrowed words in terminology and evaluating their future prospects.

Significance of the research. The research is important for the development of the Georgian literary language and scientific terminology, as it assesses the current situation and outlines specific tasks. The

discussed strategies can be used for the adaptation of scientific terms derived from foreign (primarily English) roots.

History of the Study of the Issue. In Georgian linguistics, attention has long been paid to the reasons for borrowing foreign vocabulary units and the formation of verbs from nouns (Shanidze, 1981). Related to this are issues of terminological derivation (Ghambashidze, 1986; Osadze, 2016, and others).

In the Georgian language, many words borrowed from foreign languages are used: some in unchanged form, others in adapted forms. In the 20th century, the use of words borrowed from Russian became especially frequent, but only a small portion of them have become part of standard literary Georgian.

It is important to determine whether this process is negative for terminology. The language itself always tends to adapt foreign words and roots in Georgian: through the use of appropriate prefixes and suffixes, and within texts – through the possibilities of nominal declension and verbal conjugation.

Relevance of the issue. The goal of the research is to describe the ways of adapting borrowed roots in the Georgian scientific language, specifically, in technical terminology. For this purpose, the patterns of verbal nouns (masdars) are identified/ The semantic features of the derived forms are explained with consideration of the functions of verbal prefixes.

Theoretical foundation. The theoretical basis of the research embraces the works by Georgian linguists (Shanidze, 1973; 1981; Kiknadze, 1946; Tuskia, 2014; Muzashvili, 2016; Loladze, 1998; Ghambashidze, 1986; Osadze, 2016, and others) dedicated to the nominal verbs and the formation of Georgian scientific terminology.

In recent years, linguists' interest in the adaptation of borrowed words (particularly, borrowed verbs) has increased, as this issue has become highly relevant due to globalization (e.g. Amiridze, 2018; Kobaidze, 2021; Zekalashvili, 2025, and others). However, comparatively less attention has been paid to the formation of verbal nouns (masdars).

Research material. The analysis is mainly based on Georgian technical terminological dictionaries, including both Georgian and Russian terminology presented in them; technical scientific texts are also used as supporting material.

Research Methods: The following methods have been used in the research process: descriptive, comparative-contrastive, semantic analysis method; statistical method.

Discussion:

1. Verbal nouns (masdars) containing borrowed roots in Georgian technical terminology As is well known, every language changes over time. This is especially true for vocabulary, which continually expands throughout historical development through the borrowing or adaptation of new units. This process is further accelerated in the modern era, as language contacts are increasing, consequently, borrowing of words is becoming more intensive. This applies both to standard literary Georgian and the spoken language (including slang), and, above all, to scientific terminology.

In the course of the historical development of a language, word-formation patterns are established, on the basis of which new words are created and borrowed vocabulary is adapted to the existing linguistic system. In scientific terminology, it is impossible to avoid the borrowing of foreign roots and words. This is determined by the specific nature of the field.

Naturally, extensive efforts have been made and continue to be carried out with the aim of adaptation of foreign terms in Georgian. However, it is impossible to find exclusively native Georgian equivalents for each term. In European languages as well, the majority of roots of such lexical units are Latin (and, in some

fields, Greek). These are referred to as “internationalisms”. Specialists emphasize that “a significant portion of terms today consists of borrowed words, mostly internationalisms, which enter the terminological systems of different languages as ready-made linguistic units with their meanings and semantic variations” (Osadze, 2016, p. 5).

It should be noted that significant work has been carried out in Georgian lexicography to refine technical terms and compile terminological dictionaries.

In the given research, we examine Georgian technical terminology, specifically, verbal nouns (masdars) containing foreign roots, and the strategies for their adaptation in Georgian.

While the increasing use of English words in the literary language and spoken Georgian is not generally considered a positive phenomenon, and efforts are made to avoid them, “borrowing in terminology is a highly active means and, in a way, a driving force of its development” (Osadze, 2016, p. 5).

In terminology, the most important place is occupied by nouns and verbal nouns (masdars), and the terminological system is enriched with lexical units precisely through their formation (see Ghambashidze, 1986, pp. 61–68).

2. Means of adaptation of borrowed stems in terminology

In Georgian, two types of adaptation of verbs derived from borrowed stems can be distinguished. The first is conditioned by the economy of linguistic means: synthetic, morphologically integrated verbs are formed from borrowed stems through the use of Georgian verbal affixes. This strategy has a long-standing tradition in the language for adapting **international** (mostly Latin) borrowings.

In the process of adapting verbs/masdars from international stems, the most commonly used verbal prefix is **da-**. The reason is its general, neutral meaning. It is well known that all verbal prefixes have different functions, but their primary role is to indicate direction. Although **da-** can express downward direction, its main function is the formation of new verbs and verbal nouns (see A. Shanidze, 1973).

New masdars are formed from borrowed stems using Georgian affixes; however, unlike standard literary Georgian and everyday speech, such forms are rarely conjugated in terminology.

3. Patterns of borrowed verbal nouns (masdars)

In the patterns of borrowed masdars, the Georgian verbal prefix **da-** is especially common (though other prefixes also occur), and the stem takes the thematic suffix ~~base marker~~ **-eb** (sometimes **-av**). The same means of adaptation were used for borrowings from Latin or Greek stems, but such words have long been considered internationalisms and form part of the core vocabulary of the Georgian language.

a. The first pattern of adaptation: verbs with the prefix da-

The verbal prefix **da-** is used together with the thematic suffix ~~base marker~~ **-eb**, with the addition of the masdar-forming suffix **-a**: **PRV-R-THS-Suf (da-R -eb-a)**

daelet'roeba, elekt'rizacia – электризовать, электризация – electrification; electrization.

daagregat'eba – агрегатирование – aggregation.

daazot'eba, nit'rireba – азотирование, нитрирование – nitration.

daank'ereba – анкерование, анкеровка – anchorage

daanodeba – анодирование – anodization; anodizing.

daaromat'eba, gasurnelovneba – ароматизировать – aromatize (Germ. Aromatisieren)

dabalast'eba – балластировка – ballasting.

dabet'oneba – бетонирование, бетонировка – concreting.

dabrik'et'eba – брикетирование – briquetting.

dadisk'oeba – дискование – dialing; diskling.

daek'raneba – экранирование, экранировка – ground effect; insulation; masking; screening.

In some cases, the root is added by the derivational suffix **-ian**:

-ian+eb+a: daozonianebe, gaozonianebe, ozonizacia – озонизация, озонирование – ozonization.

dakhaoianebe – ворсование, ворсовка – teasing.

dagazianebe, daairebe – газирование, загазирование, загазование – gassing, aerated.

b. The second pattern of adaptation

Monosyllabic stems are added the verbal prefix **ga-** and the thematic suffix ~~base marker~~ **-(a)v**, which is contracted when added the masdar suffix **-a**, leaving only **-v-a**:

PRV-R-THS-Suf (da- R-v-a):

dak'valva, monishvna – разбивка, бороздование – furrowing.

dalamva – заиление, заиловка – silting.

damorva – раскряжовка bucking; crosscutting, расторцовка – разделка древесины.

damucht'va – заряд; зарядка; заряджение – charging.

danaghmva – минирование – minining.

dap'lombva – пломбировка, пломбирование – sealing, seal integrity.

dargolva, shergolva – кольцевание – cross-feeding; cyclization.

dasalt'va, mosalt'va, sheburva – ошиновка – bus system; buses.

daghorghva, sheghorghva – бойка щебня – driving.

dachorva, dachoravebe – нагромождение, аккумуляция – pile.

Apart from the Georgian derivational patterns with thematic suffixes ~~base marker~~, dictionaries also mention foreign (rarely – Georgian) **synonyms**: daaluminebe, alit'irebe – Aluminizing; – calorizing; molerizing; aromatizing;

In rare cases, the verbal prefix **ga-** is also used: gagozva, shegozva – замазка – filling; mastic; puttying.

dagrapit'eba, grapit'izacia – graphitization;

gauminoeba, ganminva – расстекловывание – devitrification.

It should be noted that with regard to such verbal nouns, dictionaries also mention other verbal prefixes, underlining the primary function of the verbal prefix: expression of direction (they are often used with the stems translated into Georgian):

amo- (showing outward or upward direction): amochamchva, amochap'va amonichbva, gamonichbva, amoghebe – выгреб rake, raking;

amok'irva, shemok'irva – обмуровка – brickwork; setting;

amochamchva, amochap'va amonichbva, gamonichbva, amoghebe – выгреб rake, raking;

amochamchva, amochap'va – зачерпывание – ladling; scooping.

gan- (in terms, this prefix often denotes an opposite concept: ganmagnit'eba размагничивание demagnetization, demagnetizing, degaussing;

ganmagnit'eba – размагничивание demagnetization, demagnetizing, degaussing;

ganblok'irebe – разблокировка unlocking;

gantitebe, gansht'oeba – развилка bifurcation;

ganlamva – дешламация desludging;

ganchrachna, moshvebe, dashla – развинчивание, разбирание, развертка unscrewing;

ganmoklonva – расклепывание, расклепка; отклепывание – unriveting, cupping.

ga-:

gaalgoritmeba, algoritmizacia – алгоритмизация – algorithmization;

gaamineba – аминирование – amidating, amidation, amination.

gamo- (showing outward direction):

gamonichbva, amonichbva, amogheba – выгреб – rake, raking, casspool;

gamoplat'va gamorecchva, dziris gamotchra – подмыв, подмывание – washing.

gamomarileba – отсаливание – salting out.

gada- (showing repetition):

gadavalcva – перевальцевание – rolling to death;

gadamagnit'eba – перемагничивание – fluch reversal, magnetization reversal, reversal, switch, magnetization switching, switching, fluch transition.

mi-:

mit'umbva – подкачка – drink, roll-in, swap, swapping, upload.

mimo- (showing the movement to and fro):

mimoklonva – приклепка – riveting.

she-:

shek'iloeba shebneva, shek'vra – застегивание – closing;

shepicvra – опалубка; подшивка – boarding;

shebijgeba, bijgis shedgma – подпирать – bear, carry, promote, support, sustain;

shergolva, dargolva – кольцевание – girdling, ring-barking; ringing;

shet'borva – подтопление – waterlogging;

shezetva, gap'ochva – смазка – lubrication action; lubricant; oiling.

shemo- (direction inward and around):

shemok'irva, amok'irva – обмуровка – brickwork envelope, casing, serving, walling-up;

shemogozva, amoglesa – обмазка, обмазывание – daubing, doping;

shemocharchva, gacharchva, mocharat'eba – обточка, обтачивание – circular job.

cha- (downward and inward direction):

chaglinva, chat'k'eca – закатать – wrap roll;

chak'verva – зачеканка – blade footing, crown setting (of diamonds).

In these terms, other verbal prefixes are rare. Yet, they outnumber the prefixes found in other lexical units. In such cases, the semantics plays a decisive role, depending on the meaning of direction in a verbal noun.

4. The usage of verbal nouns together with verbal-nominal collocations in special texts

In scientific terminology, verbal nouns (masdars) are adapted based on the following **means**: analytical forms are used when the borrowed word is accompanied by an auxiliary verb, the so-called **verbalizer**. All these auxiliary verbs are devoid of their initial semantics. They form the so-called verbal-nominal collocation. The verbal noun turns into the so-called **formal subject or object**. It expresses the key verbal semantics, whereas the verbalizer expresses all the verbal categories: person, number, mood, voice...

Some of the above-mentioned auxiliary verbs express active action, others – passive, for instance: akhdens (ACT) – „is akhdens“ – (implements); ckdeba (PASS) происходит – „ikceva“ (happens); ts'armoebs (MED) производится – „midis, agrdzelebs“; akhorcielebs (ACT) realize – осуществлять; khorcieldeba (PASS) осуществляться – „realizebulia“.

There are also verbs that express duration: mimdinareobs (is going on), grdzeldeba (continues), or verbs of different semantics like gegmavs (plans), agrdzelebs (goes on), amtavrebs (finishes), ts'q'vet's (stops)...

Technical texts use all the means of adaptation: organic formation, descriptive combination of words (in some cases, translation loans). Most frequently, forms are based on the verbs ending in suffix **ir-** (-ir-eba):

invest'ireba (investing): daainvest'irebs (will invest), invest'irdeba (is invested), invest'irebas akhdebs/ats'armoebs (makes an investment), invest'ireba khdeba/ts'armoebs (investment is made)... (cf.: German: investieren).

regist'rireba (registering): daaregist'rirebs (will register), regist'rirdeba (is registered), regist'rirebas akhdens/ats'armoebs regist'rireba khdeba (registration) (carries out registration, is being registered);

piksireba (fixation): apiksirebs (fixes), piksirdeba (is fixed), dapiksirebas akhdens/ (makes/implements fixation), ats'armoebs/akhorcielebs, dapiksireba khdeba/ts'armoebs/khorcieldeba (is being fixed/fixation is implemented).

5. Possibilities of Derivation from the Same Root

It is well known that verbal nouns do not differ in voice. Naturally, they do not add person markers. It is possible to form participles, but all the derivational types cannot be presented in the dictionary.

Participles (for detailed information regarding the formation of participles, see Osadze, 2016, p. 103-117) can distinguish forms **with and without prefixes**:

m- (-av thematic suffix ~~base marker~~):

mk'vant'avi – квантователь – quantizer,

mp'lombavi – plombировщик – plumber,

mpilt'ravi (sapilt'ravi, sats'uri) – фильтрующий – cleaner, filtering, filtrate,

msht'amp'avi – штамповщик – puncher, pressman.

With a verbal prefix:

gamomt'ut'avi – выщелачивающий – leaching; leaching-out.

mapok'usirebeli – фокусируемый – driven.

Without a verbal prefix:

damatsement'ebeli – цементирующий – binding, cementitious;

mapok'usirebeli – фокусируемый – driven.

map'roekt'ebeli – проектируемый – [estimated](#); [projected](#); [projectible](#);

masinkronebeli – синхронизируемый, хронизируемый – synchronized.

Containing the suffix **-iz**:

map'olarizebeli – поляризующий – polarizing;

galvanizebuli – гальванизированный – galvanized;
p'ast'erizebuli – пастеризованный – (pasteurization) pasteurized.

Containing the suffix **-ir**:

maregulirebeli, momts'esrigebeli – регулировщик – regulator;
регулирующий – adjusting, control, governing, potentiometric, regulating.

With a verbal prefix: m(a)-el:

ganmamagnit'ebeli – размагничивающий – bucking; degaussing (cable);

-ul:

daagregat'ebuli – агрегатированный – packaged; unitized;
daionebuli – ионизированный; ионизованный – ionized;
dabak'elit'ebuli – бакелизированный – bakelized;
dabariumebuli – барированный – barium-coated; bariated;
dak'arbidebuli – карбидированный – carbilized; tungsten-carbide cathode;
daemulsiebuli – эмульгированный, эмульсированный – emulsified;
darezinianebuli – обрешиненный – coated, rubber, rubberised;
nit'rirebuli, daazot'ebuli – нитрированный – nitrated

sa-el:

sap'roekt''ebeli – проектируемый – estimated; projected; projectible;
saregulirebeli, regulirebadi, sats'esrigebeli – регулируемый – adjustable; controllable; controlled;
regurable.

Negative participles:

u-: daushunt'avi – [нешунтированный](#) – [unshunted](#).

u-el: dauk'alibrebeli – некалиброванный – calibrated, (ღილვი) gauged

Formation with the ending **-ad** is semantically close to participle (e.g.: amoburcvadi, ts'edadi – ковкий вольфрам – ductile, malleable, pliable, pliant, wrought; khsnadi – растворимый, растворяющийся – dissoluble, resolvable).

The above-mentioned forms are created from both **Georgian** and **foreign** stems:

mdgradi – устойчивый – fast, firm, inconvertible, persistent;
gamopit'vadi – выветривающийся; истощимый – echhaustible, depletable;
dabaldnobadi – низкоплавкий – low-melting, soft, depletable;
dabr'k'olebamdgradi – помехозащитный, помехоустойчивый – noiseproof; jamproof.

Forms with verbal prefixes are rare with **foreign** stems:

k'oksvadi – коксующийся – coking;
absorbirebadi – абсорбирование – absorbent; absorbing; absorptive;
degradirebadi – деградирующий – degenerative;

depormirebadi – деформируемый – deformable; deformed;
depibirebadi – дефибрирование – defibrating.

Conclusions. Georgian has a longstanding tradition of borrowing words from **Latin and Greek**. In terminology, many verbs and verbal nouns are formed using stems borrowed from foreign languages. These may be of international origin (Latin or Greek) or English words (earlier, borrowing from Russian was intensive, although most of the stems were international in Russian terminology as well).

In Russian, such international words are formed with the suffix **-ировать**. In Georgian, the element **-ir** is retained, to which the verbal ~~base marker thematic~~ thematic suffix **-eb** is added, and finally **-a** (a marker forming the verbal noun/masdar) is added. Sometimes two variants are used: the suffix **-ireb-a**, or the entire borrowed word ending in **-tsia**, for example: piksireba (fixing) and fiksatsia (fixation), regist'ireba (registering) and regist'ratsia (registration).

It should be underlined that the excessive use of borrowed vocabulary in the literary language is considered a negative process, whereas in scientific terminology it is acceptable and even necessary. Georgian terminologists spare no effort to adapt terms into Georgian by making use of traditionally established patterns.

Summary. The terminological system uses the same patterns to produce new lexical units from foreign stems as those that have historically developed in the Georgian literary language and spoken speech (including slang). This is justified and makes it possible to further enrich and expand the Georgian terminological base, keeping pace with scientific and technological progress and increasing the number of lexical units through the use of borrowed stems.

On the one hand, in the Georgian technical terminological system, foreign words may be transferred unchanged, that is, borrowed as they are; on the other hand, these words are used as the base for verbal nouns (masdars) by adding a Georgian prefix and a verbal thematic suffix ~~base marker~~. In scientific texts, they also occur as nominal components within verbal-nominal constructions. For example: piksireba (fixing) or fiksatsia (fixation); verbal forms: afiksirebs / fiksirdeba (he/she fixes/ fixing takes place); participles: damfiksirebeli (one who fixes), fiksirebuli (fixed), dasafiqsirebeli (to be fixed), daufiksirebeli (unfixed). Similarly: asimilireba (assimilating) – asimilatsia (assimilation); verbal forms: asimilirebs (assimilates), asimilirdeba (is assimilated); asimilatsias akhdens (performs assimilation) – asimilatsia khdeba (assimilation takes place); participle: asimilirebuli (assimilated) and so on.

The processes associated with Georgian verbal nouns formed from borrowed stems reflect the same trends in language development and should be considered a result of language contacts and scientific progress.

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