

# Polyfunctional Words: Semantic Analysis and Interpretation

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**Abstract:** This article is devoted to the study of poly-functional words in computer linguistics, linguistic factors of differentiation of poly-functional words and the issue of linguistic modeling of poly-functional word environment for the semantic analyzer of the Uzbek language. A semantic analyzer is a program that semantically processes the syntactic structure of a query using conceptual graphs. Conceptual graphics are semantic or, in other words, conceptual representations of situations and knowledge in natural language comprehension models.

## 1 INTRODUCTION

The study of poly-functional words in computer linguistics. In computer linguistics, a number of studies have emerged on the elimination of homonymy and poly-semantics in the process of tagging homonymous and polysemous words and automatic reading of text. We did not observe during the study that a study of poly-functionality in computer linguistics has been conducted on the automatic implementation of word differentiation. This, in our opinion, is explained by the lack of a unified scientific conclusion about the phenomenon in Uzbek theoretical linguistics. In some small studies, the phenomenon of polysemy being given in the corpus has been addressed in a way that is biased. In particular, I.M. Kobozeva's article "Polysemy of discursive words and the possibilities of their resolution in the context of the sentence (on the first syllable vot)" makes some comments on the fact that the word vot is a poly-functional word in both the loading and rhyming functions and its expression in the Russian national corps (Kobozeva, 2007).

In this paper, the ideology of J. Katts and J. Fodor's semantic theory has been applied to the problem of solving discursive word polysemy. It is no coincidence that the variability of the discursive word


is described not only in terms of "polysemy" but also in terms of "poly-functionality".


"Poly-functionality can be included in the concept of" syntactic derivation "in different syntactic functions, while maintaining a single semantic invariant", said E.A. Starodumova. Two things are worth noting in this definition:


1. What lies behind the concept of "syntactic function"? Clearly, the concept of "syntactic function" is not isomorphic to the concept of "word group". Words of the same word group can perform multiple "syntactic functions".

2. What does "same unity" mean? In the definition, poly-functionality is interpreted as an attribute of "same unit". In this case, the semantic criterion is put forward, that is, it is the preservation of a single semantic invariant. An analysis of the practice of expressing DS in general and special annotated dictionaries shows that three parameters are taken into account when deciding on the identification (feature) of a word: 1) form (sign); 2) lexical and grammatical class of a word (word group) is determined by tradition; 3) meaning.

A syntactic derivative is a form that has the same lexical meaning as the original form of a word that performs another syntactic function. We use the term "derivation" in the broadest sense not only because some words are formed from other words, but also

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because the same word can appear in different syntactic forms. While Kurilovich considers syntactic derivation to be related to important words, Starodumova argues that a similar phenomenon occurs in the field of auxiliary words (Starodumovada, 2002).

English sources also point out that poly-functionality is difficult to detect. Even linguistic dictionaries such as the famous Brown and Miller have no explanation for this term. N. Chancharu notes that most of the authors who have used “multi-functionality” do not dare to define it, and some definitions are not enough. He put forward the following definition: “poly-functionality is a linguistic phenomenon in which one form has more than one meaning. The meanings of poly-functional units belong to more than one syntactic category.

Along with poly-functionality, the term “multi-functionality” is found in the work of some linguists. In particular, Lefebvre states that “a lexical element that performs several grammatical functions is multifunctional”. The term poly-functional and multifunctional is used synonymously.

Based on research on poly-functionality in the traditional direction of Uzbek linguistics, we will try to solve the problem of poly-functional words for the semantic analyzer linguistically, highlighting the importance of localization in the filtering of such words, highlighting the linguistic factors in the semantic filtering of poly-functional words in the text.

## 2 RESULTS AND DISCUSSIONS

*Linguistic factors of poly-functional word differentiation.* In the process of analyzing the existing work on poly-functional words in Uzbek linguistics, it was concluded that the word belongs to different groups with the series that occur in the sentence and the function it performs: its series and syntactic function take place within the sentence.

The development of languages indicates the semantic-functional development of the word, which is the central unit of its meaning, the need to apply the popular trinity (semantic-morphological-syntactic) criterion to each word or group of words in the classification of polysemous, poly-functional and homonymous words. . It is not correct to evaluate this criterion as a perfect measure of word classification and to treat it as always a “magic wand”. The criterion is pragmatic. This pragmatism is manifested directly in the context of the context. Because the analysis and classification of language units using grammatical

rules is not always justified. As a language creator, the interaction of linguistic and pragmatic factors should not be overlooked for the realization of language tools. In the analysis of poly-functional words, which is the object of research, in addition to linguistic factors, the speech situation, the importance of the word environment should be taken into account. Therefore, as noted by A. Botirova, “the semantic-syntactic aspect of poly-functional words in the Uzbek language from the point of view of categorization is one of the most pressing problems in our linguistics” (Botirova, 2018).

We observed mutually exclusive phenomena when separating poly-functional words from ADUL (Annotated dictionary of the Uzbek language). That is, although a word has a poly-functional character, it is interpreted as a polysemous word (blind, deaf, sick, healthy, emerald, steel). This is due to the lack of a unified solution for the definition of poly-functional words and the versatility of the word. It seems that the change in the functional possibilities of word groups has been one of the central problems of formal and structural linguistics as a semantic-syntactic development of a linguistic sign. The fact that the expansion of word meanings can range from polysemy to homonymy through poly-functionality today raises the need not only to improve grammatical interpretations and reform the teaching of grammatical events in line with objective reality, but also to reconsider lexicographic interpretations.

In order to observe the nature of positional morphemes, Sh. Hamroeva cites the meanings of the words *zumrad*, *po'lat*, *qum* from the dictionary, noting that the first meaning of these words is material-mineral nouns, the second meaning is adjective. The researcher concludes that these words are positional morphemes, their meaning is realized in the context of words in the text, and notes that the differentiation of the meaning of such morphemes takes place at the stage of semantic analysis.

Researcher U. Kholiyorov in the process of forming the initial base of the morphological lexicon of the Uzbek language found the following: word groups in the Uzbek language have the following ratio:

There are 22599 nouns, 7172 adjectives, 3949 verbs, 1856 prepositions, 800 imitation words, 244 prepositional words, 182 rhymes, 132 modal words, 108 poly-functional words, 106 auxiliaries, 52 conjunctions, 45 prepositions, 30 numerals; the total number of lexemes is 37,282. The author identified 108 poly-functional words.

The "Dictionary of Uzbek borrowed accented words" prepared by the team of authors contains

11000 words of assimilation (Qurbonova, et. al., 2021). The dictionary divides the number of words into categories and identifies 66 poly-functional words.

The poly-functional units identified in the above two sources are selected in terms of whether the word belongs to a different category. However, the ability of a verb to come as an independent and auxiliary verb has also been assessed as poly functional.

The number of poly-functional words identified in this study is not limited to this.

In order for a semantic analyzer to identify poly-functional words, it is first necessary to develop its linguistic basis. To do this, it is important to identify the linguistic factors that distinguish poly-functional words.

The word *donishmand* (sage) is defined in ADUL as follows:

**DONISHMAND** - [scientist, knowledgeable, wise]. Possessing existing knowledge, able to predict certain events; bilimdon; olim; dono.

If the word *donishmand* comes in the sense of a *olim*, it belongs to the category of nouns, and if it comes in the sense of *dono*, it belongs to the category of adjectives. It turns out that poly-functionality is realized through a syntactic encirclement.



Figure 1: Donishmand.

At this point, the prefixes embodied the word *donishmand* in both the adjective and the noun function. The linguistic factor alone is not enough to determine which category it belongs to. Because in the sentences “U - donishmand”, “Otam - donishmand”, “Rahbar - donishmand” the word wise could come to mean both “olim” and “dono”. However, exactly in what sense it is applied depends on the pragmatic factor.

In a speech situation, the interlocutors understand exactly what this means. It is clear from the situation that “U- He”, “Otam - Father”, “Rahbar - Leader” means a wise person, whether he is a scientist or some other professional. The later conjunctions of this word – kelmoq/to come, gapirmoq/to speak, and ba’z aytmoq/to preach - are realized as a noun.

It should be noted that in the first of these contexts, noun *donishmand* is connected by a conjunction and comes as a adjective function. In the second, the possessive pronouns alternated (... *deb aytgan donishmandlar*). In this case, the word *donishmand* took the suffix -s and showed the equestrian feature.

In the third, there was another noun, and the number was tied to it and bound by a bond. In WP, when the number comes in the subordinate clause, the dominant word is mainly represented by the noun and the verb series. In the fourth context, too, the noun is subordinate to the verb through consonantal control. In this sentence, the word *donishmand* is followed by the word *g’azablanganda*, but this word is not conjunctive because there is no logical subordination. In this place the verb *sina* came after the conjunction. This means that consecutive words do not always form WP. The concept of conjunction implies semantic and grammatical connection.

Consider the examples given in the glossary:

<i>Donishmand odam.</i>	Adjective (donishmand)+noun	
<i>Tiriklikning belgilaridan biri – muhabbat, deb bekor aytmagan donishmandlar. Shukrullo, Saylanma.</i>	Verb + noun (donishmandlar)	-s/es (-lar)
<i>Bir donishmand: “Soli nek az bahor ma’lum ast”, ya’ni “yilning yaxshi kelishi bahordan ma’lum”, deb aytgan ekan. S.Ahmad. “Qadrdon dalalar”.</i>	Numeral+noun (donishmand)	
<i>Jasurni – jangda, donishmandni – g’azablanganda, do’stni muhtojlikda sina. Maqol.</i>	Noun + verb	-ni This suffix does not exist in English language but it can be meant by transitive and object pronouns.

Figure 2: Donishmand used as different function.

In ADUL, “*tashlamoq*” is given as a poly-semantic word. The 9 meanings of this word are separated by Arabic numerals:

**TASHLAMOQ** 1. To cut an object from the hand, shoulder, or other place, and to lower it (throw, shoot, etc.), to direct it. 2. To direct, take, put, put something on, on, under, or in place of something else. 3. Power, to strike with a blow, to shoot oneself. 4. A job, task, etc. to direct, direct; to mobilize. 5. Ignore, disconnect, and b. leave without. 6. To annihilate, to annihilate; pick up (about some habit, behavior, etc.). 7. To decrease, to drop. The cold dropped a bit. Prices dropped a lot. 8 w.s. To dance; to play. 9. *In the auxiliary verb function.* = (i) *b* is added to the adjective form to indicate that the motion occurs in a sharp, strong manner.

Although the meanings 1-8 of this word have a reciprocal poly-semantic character, the fact that the 9th meaning, i.e. the auxiliary verb, is an auxiliary part in the compound word, is its poly-functionality. In the above eight senses, *tashlamoq* occurs as an

independent verb. All of them can be evaluated as words that perform a single function, which means that they have multiple meanings. However, it is reasonable to evaluate the occurrence of an auxiliary verb as the transition of a word to another task.

It is known that there are no pure auxiliary verbs in Uzbek. Independent verbs can come as an auxiliary verb. Since any independent verb can be an auxiliary verb, it means that the number of such words in the Uzbek language is significant. It is important to distinguish such words at the semantic stage. Here are the conjunctions of the word *tashla* on the basis of ADUL:

<u>Yerga</u>		<u>tashlamog</u>
<u>Ro'mol</u>		
<u>Yelkasiga</u>		
<u>Maktabni</u>		
<u>Aroqni</u>		
<u>Naxlar</u>		
<u>Tanovorga</u>		<u>tashlamog</u>
<u>Chekishmi</u>		
<u>Buzib</u>		
<u>Jerlib</u>		
<u>G'ijimlamog</u>		
<u>Ag'darib</u>		
<u>Tilka-pora qilib</u>		

Figure 3: Dictionary Depiction of Annotation.

In the “Annotated Dictionary of Uzbek Homonyms” (ADUH) the verbs are given in the 2nd person in the imperative mood, and in ADUL in the indefinite form of the verb (-*moq*). Due to the requirement that all verbs in the base to be created must be in the same form, we have given them in the form given in ADUH. While this aspect is not important for poly-functional words, it is important for homonyms. Therefore, this issue was covered in detail in the analysis of homonyms.

Verbs such as *ber* - give, *boq* - look, *kel* - come, *ol* - take, *yubor* - send, *qol* – stay given as homonym in ADUH, should be considered as poly-functional words. The theoretical basis for this is analyzed in the first chapter of this chapter. Considering the factors that differentiate poly-functionality between independent and auxiliary verbs:

*Ber* - verb. To hand over, to provide.

*Ber* is an auxiliary verb. To the lexical meaning of an independent verb: 1. Adds the grammatical meaning of “done for someone”. 2. Adds the grammatical meaning of “continuity, repetition” - Rahmatullaev, Sh. (1984).

The verb *ber* is used as an independent word through prepositions. Being an independent verb, the governor acted as a word, directing the forms of agreement. In the examples of *ber kel*, *berib yubor*, it has become an independent verb and a subordinate component of the conjunction.

<i>Ber</i> is an independent verb (In the word phrase is the dominant part)		
kitobni, mehri, baxtni	<u>ber</u>	
menga, unga, bizga		
uyda, ko'chada, mahallada, ishda		
puldan, shirinlikdan, choydan		
<i>Ber</i> is an independent verb (Subordinate part in a word phrase)		
Berib	<u>kel</u>	
berishga		
bersa		
berganda (-guncha, -gach) bergandan keyin		
Berib	<u>yubor</u>	
bersa		
berganda (-guncha, -gach) bergandan keyin		
berib		
berishni (-ga, -da) bersa	<u>avt</u>	
berganda (-guncha, -gach) bergandan keyin		
<i>Ber</i> is an independent verb (The leading part of the auxiliary verb conjugation)		
berib (-a)		<u>ko'r</u>
	<u>yubor</u>	
	<u>sol</u>	

Figure 4: Dictionary Depiction of Annotation.

<i>Ber</i> an auxiliary verb	
jerlib	<u>ber</u>
aytib	
kuylab	
tekshirib	
Ayta	
ko'ra	
Topshira	

Figure 5: Dictionary Depiction of Annotation.

Here the auxiliary verb came as an auxiliary part of the word compound. The leading and auxiliary parts are connected by adjacent forms. Hence, when this verb becomes an independent verb, it occurs in both the dominant and subordinate positions. When it is an auxiliary verb, it is connected only with the leading verb and means an action performed for someone.

*Boq* - verb. 1. To look, to look at. 2. Taking care of food for a long time.

*Boq* is an auxiliary verb. Adds to the lexical meaning of the independent verb the grammatical meaning of “action performed for the purpose of testing, verification” - Rahmatullaev, Sh. (1984).

Apparently, the word *boq* is an independent verb, with a dominant and subordinate position in the phrase, as well as a leading part in the auxiliary verb conjugation. It occurs as an auxiliary verb in AVC (Auxiliary Verb Conjugation) as an auxiliary verb. The function of such poly-functional verbs is determined by left and right conjunctions.

Although syntactic factor leadership is observed, morphological factor is also important. Poly-functional words are associated with their

constituents through morphological forms. Words choose the conjunction that is semantically and grammatically appropriate by adopting morphological forms. Therefore, in this case, the cooperation of both factors is required.

<i>Boq is an independent verb (In the word phrase is the dominant part)</i>	
menga, unga, bizga	boq
bolani, qo'yni	
go'sht bilan	
<i>Boq is an independent verb (Subordinate part in a word phrase)</i>	
boqib	so'z
boqqandan	
boqquncha	
boqqach	ayt
boqib	
boqquncha	
boqqach	kut
boqib	
boqqandan keyin (so'ng)	
Boqquncha	kut
Boqqach	
<i>Boq is an independent verb (The leading part of the auxiliary verb conjugation)</i>	
boqib (-a)	goy'
	ber
	tashla
	yubor
	boshla
	yur

<i>Boq is an auxiliary verb</i>	
o'qib	boq
Yeb	
Sakrab	
Kulib	
Surishtirib	

Figure 6: Dictionary Depiction of Annotation.

*Linguistic modeling of poly-functional word environment.* The problem of poly-functional speech has not been fully resolved in world linguistics, and we have not encountered any research on its automatic detection, elimination in the corpus, linguistic filter and model. In this chapter, summarizing the existing theoretical views in the Uzbek language, using them, tried to carry out preliminary work on the modeling of poly-functional words for the semantic analyzer.

It should be noted that the phenomenon of polyfunctionalism is assessed as a purely Turkic, non-linguistic reality. It is possible to talk about conversion in cases like *ishlagan tishlaydi*, but there is no conversion in cases like *ishlaganining unumi, uzoq muddat ishlagandan so'ng..., qovunning pishgani*. In this case, the pure Turkic, non-European poly-functionalism, which exists in Turkish adjectives, is observed, and this should be studied in comparison with lexical polysemy. The use of the term transposition in cases such as *Agarni Magarga kuyov qilsalar, Tug'ilgay bir o'g'il oti Koshki* (Gafur Gulom), *To'yib bo'ldim «bajaraman»laringdan* (Nemat Amin), *Borida chilik-chilik, yo'g'ida quruqchilik*, which A. Gulomov called occasional migration, and transposition should be considered as a completely new application of the linguistic unit in

a certain speech situation, in a task and sense that does not correspond to its original features. Both transposition and conversion are speech phenomena and cannot be confused with lexicalization and its above-mentioned manifestations (Sayfullayeva, 2010). It seems that polyfunctional words have an individual nature, which is not sufficiently studied theoretically in world linguistics, the factors that differentiate such words in the corpus, the lack of filtering, the creation of linguistic models show the relevance of the work.

Filters work to model polyfunctional words. It is important to create linguistic models based on the filters created. To do this, you must first identify the issue in terms of categories.

Polyfunctional words can be observed among the following categories:

- 1) among noun - adjective;
- 2) between adjective -modal;
- 3) between adjective- adverb;
- 4) between modal - adverb;
- 5) between the adverb -conjunction;
- 6) between independent verbs-auxiliary verbs;
- 7) between noun - adverb;
- 8) between the auxiliary- conjunction;
- 9) between the conjunction -modal;
- 10) between adverb -auxiliary-modal;
- 11) among adjective -pronoun - auxiliary;
- 12) between pronouns - adverb;
- 13) between particle - adverb;
- 14) between adverb -auxiliaries;
- 15) between the conjunction - particle;
- 16) between noun- adjective -modal;
- 17) among adjective - auxiliary;
- 18) among noun - auxiliary;
- 19) between noun - exclamatory;
- 20) between exclamatory -modal;
- 21) between modal- particle.

It is necessary to develop a linguistic model of poly-functional word differentiation for each category. Poly-functional words can also be distinguished on the basis of conjunctions, such as homonyms. But this method alone is not enough to distinguish all the poly-functional words and create a model. Because some word groups are defined in context.

Poly-functional words between a number of nouns such as *oltin, kumush, cho'yan, kasal, temir, yog'och, cho'loq, quyi, bo'rtma* are modeled as follows:

$P_i^N+V$ . Here:  $P_i^N$ ={A polyfunctional word that comes from a noun,  $i=1..n$ };  $V$ ={verb}.

$P_i^N+V$ ={ oltin topmoq/kovlamoq/sotib olmoq/bermoq...}

$P_1^{ADJ+N}$ . Here:  $P_{ADJ}=\{ \text{A polyfunctional word that has become an adjective, } i=1..n \}$ ;  $N=\{\text{noun}\}$

$P_1^{ADJ+N}=\{ \text{oltin uzuk/bilakuzuk/soat/bosh/qo'l...} \}$

The phenomenon of polyfunctionalism between auxiliary, isolated words, or between them and independent words takes place in context. A word is both a connective and an auxiliary, and the exact function it performs in a sentence depends on their position, conjunction, and function.

For example, *aniq* comes as both an adjective and a modal word (the introductory word in a sentence acts as a word).

*Aniq ad.* - good at hearing, seeing, understanding, fully expressive. For example: Saodatxon orziqib javob kutar, Tojiboy aka bo'lsa, aniq javob bermay, gapni aylantirar edi. S.Zunnunova, Fire. Ko'pchilik tomonidan ma'qullangan amaliy, aniq takliflar kiritildi. From Newspaper.

*Aniq mod.* - expresses the truth of the idea; of course. Xolmirza aka ichidan «shu g'ayrating bo'lsa, ikki yilda Xirmontepadan aniq ayrilamiz», deb o'ylaydi. A.Qodiriy, Girvonlik Mallavoy. Endi kimga og'iz solsang, g'iring demay tegishi aniq. S.Ahmad, Yulduz.

The experiment conducted by A. Kaplan on the study of minimal elimination of context is also useful for the elimination of polyfunctional words. The issue of modeling homonyms was discussed in detail in this experiment. The formula "whole sentence together - S (sentence-speech)" helps to define polyfunctional words. For example:

1. Cholning bo'yin tomirlari bo'rtib chiqqani, iyaklari orqaga tortilgani traktor fonarida **aniq** ko'rinib turardi (S.Ahmad, Horizon. – p. 83).

2. Manavini to'ldirib, adreslarni **aniq** qilib yoz (S.Ahmad, Horizon. – p. 104).

3. *Pastga qulashi aniq edi* (S.Ahmad, Horizon. – p. 133).

4. *O'zi daryoga tushib ketishi aniq* (S.Ahmad, Horizon. – p. 150).

5. Tashqarida bo'layotgan shovqin-suron, ketmon va belkuraklarnng ovozi, toshga qadalayotgan lomlarning qarsillashi, ketmon peshlayotgan temirchilarning jarang-jurungi taxta devor tirqishidan o'tib Belyavskiyga **aniq** eshilib turardi (S.Ahmad, Horizon. – p. 156).

6. Sizdan loyihaga **aniq** amal qilishingizni so'raymiz (S.Ahmad, Horizon. – p. 170).

Apparently, in sentences 1-2-5-6 it belonged to the category of *aniq* adjectives, while in sentences 3-4 it was a modal word. In this case, it is not easy to identify them by connectors. Therefore, it is necessary to approach from the content of the whole

sentence. Through the general content of the sentence, what function the word performs is realized.

Hence, we model the polyfunctional word between the qualitative-modal categories as follows:

$P^{ADJ} \downarrow W_j = S$  – the basic invariant model occurs in the following submodels:

$P^{ADJ} \downarrow W_j^N = S$ ;  $P^{ADJ} \downarrow W_j^V = S$

$P^{ADJ} = \{ \text{adjective polyfunctional word} \}$

$W_j^N = \{ \text{adjectives are words that belong to the noun phrase that can come after a polyfunctional word} \}$

$W_j^V = \{ \text{adjectives are words that belong to the verb category that can come after a polyfunctional word} \}$

$S = \text{бутун жумла.}$

$P^{MW\{shubhasiz/shaksiz\}} \downarrow \{W\} = S$

$P^{MW\{shubhasiz/shaksiz\}} = \{ \text{when adjective becomes a polyfunctional word, it is replaced by modal words such as shubhasiz / shaksiz} \}$ .

$\{W\} = \text{any word can come.}$

It is therefore necessary to include in the linguistic base exactly which verbs and nouns the polyfunctional word is combined with.

In the "Explanatory Dictionary of Uzbek homonyms" words that can come in the form of both independent and auxiliary verbs are indicated as homonyms. Based on the research, it should be noted that we consider words with such categories as polyfunctional words rather than homonymous. For example:

*Boq* – verb.1. Nazar solmoq, qaramoq. 2. Uzoq vaqt oziq-ovqat berib parvarish qilmoq.

*Boq* is an auxiliary verb. Adds to the lexical meaning of the independent verb the grammatical meaning of "action performed for the purpose of testing, verification" - - Rahmatullaev, Sh. (1984).

Bolani	<u>Boq</u>
Menga, unga, bizga	
O'qib	<u>Boq</u>
Yeb	
Sakrab	
Kulib	

Figure 7: Dictionary Depiction of Annotation

Their modeling is as follows:

$WG+H_V$ . Here:  $WG=\{ \text{noun, adverb, adjective, numeral, prnoun} \}$ ;  $H_V=\{ \text{verb-homonym} \}$ .

$Y_r^f + H_V$ . Here:  $Y_r^f=\{ \text{leading verb: -b/-b, -a/-y} \}$ ;  $H_V = \{ \text{verb-homonym} \}$ .

Through this model, it is possible to distinguish polyfunctional words that can be independent and auxiliary verbs. Because when a word becomes an independent verb, it is preceded by a group of independent words, and when it is an auxiliary verb,

of course, it is preceded by a word in the position of the leading verb.

A polyfunctional word between adjectives such as *betartib*, *nochor*, *bitik*, *bashak*, *zoye* can be modeled as follows:

$P_j^{ADV}+V_j$ . Here:  $P_j^{ADV} = \{$  A polyfunctional word that has become ravish,  $j=1..n\}$ ;  $V_j = \{$  Verbs attached to a polyfunctional word that has become adverb  $\}$ .

$P_j^{ADJ}+N_j$ . Here:  $P_j^{ADJ} = \{$  A polyfunctional word that has become a adjective,  $j=1..n\}$ ;  $N_j = \{$  Nouns attached to a polyfunctional word that has become a form  $\}$ .

For example: **NOCHOR** [majburiy, noiloj; chorasiz; ojjz, notavon] 1 adv. O‘z mayliga, xohishiga qarshi; chorasiz, noiloj. 2 adj. Kambag‘al, bechora; xarob, abgor - Gataullin, R.R., & et. al. (2019).

$P_j^{ADV}+V_j = \{$  Nochor qaytmoq/ko‘nmoq/ruxsat bermoq/aytmoq  $\}$   
 $P_j^{ADJ}+N_j = \{$  Nochor xo‘jalik/odam/oila/mahalla/bola  $\}$

In theoretical linguistics, adjectives have been found to be related to the noun and the past participle, and to the verb and its function forms. This theoretical generalization is the basis for distinguishing the polyfunctionality between adjective and form.

The polyfunctionality between the conjunction and the auxiliary is modeled as follows (if *bilan* comes with a conjunction):

$DW - P^{conj} - DW$ .

$DW$  (dominant word) – the word in the position of dominant.

$P^{conj}$  – a multifunctional auxiliary that has become a conjunction.

This is an invariant model and is expressed through the following submodels:

$DW_j^N - P^{conj} - DW_j^N$ .  
 $DW_j^{Pron.} - P^{conj} - DW_j^{pron.}$ .  
 $DW_j^N - P^{conj} - DW_j^{pron.}$  or  $DW_j^{pron.} - P^{conj} - DW_j^N$ .  
 $DW_j^{Adj} - P^{conj} - DW_j^{Adj}$ .  
 $DW_j^{Num} - P^{conj} - DW_j^{Num}$ .  
 $DW_j^{Adv} - P^{conj} - DW_j^{Adv}$ .

Масалан:

$DW_j^N - P^{conj} - DW_j^N = \{$  ota bilan ona, gul bilan lola, aql bilan davlat...  $\}$

$DW_j^{Pron.} - P^{conj} - DW_j^{pron.} = \{$  men bilan sen, biz bilan siz...  $\}$

$DW_j^N - P^{conj} - DW_j^{pron.}$  or  $DW_j^{pron.} - P^{conj} - DW_j^N = \{$  onam bilan siz  $\}$  .....  $\{$  siz bilan onam  $\}$

$DW_j^{Adj} - P^{conj} - DW_j^{Adj} = \{$  yaxshi bilan yomon, aqlli bilan nodon  $\}$

$DW_j^{Num} - P^{conj} - DW_j^{Num} = \{$  bir bilan ikki, yuz bilan ming  $\}$

$DW_j^{Adv} - P^{conj} - DW_j^{Adv} = \{$  ko‘p bilan kam, bugun bilan erta  $\}$

It is known that the *bilan* function connective connects equally related units and serves to express the morphological meaning of the equation between them: *olma bilan anor*, *havas bilan hasad*. It is understood from the submodels that *bilan* noun-noun serves to equate the categories adjective-adjective, numeral- numeral, adverb-adverb, pronoun-pronoun, pronoun-noun/noun-pronoun. In the category group, there are other independent word groups in addition to the verb. Because it is not possible to connect verbs in the grammatical function of this connector.

When it comes to *bilan* auxiliary, it can be modeled as follows:

$SW - P^{aux.} - DW$ .

$SW$  (subordinate word) – word in subordinate position

$DW$  (dominant word) – the word in the position of dominant

$P^{aux.}$  – a multifunctional assistant who has become an auxiliary.

This is an invariant model and is expressed through the following submodels:

$SW_j^N - P^{aux.} - DW_j^V$  or  $SW_j^N - P^{aux.} - DW_j^{Vr}$  or  $SW_j^N - P^{aux.} - DW_j^{Vs}$  or  $SW_j^N - P^{aux.} - DW_j^{Vh}$   
 $SW_j^{Pron.} - P^{aux.} - DW_j^V$  or  $SW_j^{Pron.} - P^{aux.} - DW_j^{Vr}$  or  $SW_j^{Pron.} - P^{aux.} - DW_j^{Vs}$  or  $SW_j^{Pron.} - P^{aux.} - DW_j^{Vh}$   
 $SW_j^{Adj} - P^{aux.} - DW_j^V$  or  $SW_j^{Adj} - P^{aux.} - DW_j^{Vr}$  or  $SW_j^{Adj} - P^{aux.} - DW_j^{Vs}$  or  $SW_j^{Adj} - P^{aux.} - DW_j^{Vh}$   
 $SW_j^{Num} - P^{aux.} - DW_j^V$  or  $SW_j^{Num} - P^{aux.} - DW_j^{Vr}$  or  $SW_j^{Num} - P^{aux.} - DW_j^{Vs}$  or  $SW_j^{Num} - P^{aux.} - DW_j^{Vh}$   
 $SW_j^{Adv} - P^{aux.} - DW_j^V$  or  $SW_j^{Adv} - P^{aux.} - DW_j^{Vr}$  or  $SW_j^{Adv} - P^{aux.} - DW_j^{Vs}$  or  $SW_j^{Adv} - P^{aux.} - DW_j^{Vh}$   
 $SW_j^{Vs} - P^{aux.} - DW_j^V$  or  $SW_j^{Vs} - P^{aux.} - DW_j^{Vr}$  or  $SW_j^{Vs} - P^{aux.} - DW_j^{Vs}$  or  $SW_j^{Vs} - P^{aux.} - DW_j^{Vh}$   
 $SW_j^{Vh} - P^{aux.} - DW_j^V$  or  $SW_j^{Vh} - P^{aux.} - DW_j^{Vr}$  or  $SW_j^{Vh} - P^{aux.} - DW_j^{Vs}$  or  $SW_j^{Vh} - P^{aux.} - DW_j^{Vh}$

$SW_j^N - P^{aux.} - DW_j^V = \{$  qunt bilan o‘qi  $\}$   
 $SW_j^N - P^{aux.} - DW_j^{Vr} = \{$  aql bilan o‘ylab  $\}$   
 $SW_j^N - P^{aux.} - DW_j^{Vs} = \{$  zavq bilan tinglagan  $\}$   
 $SW_j^N - P^{aux.} - DW_j^{Vh} = \{$  diqqat bilan tinglash  $\}$ .

$SW_j^{Pron.} - P^{aux.} - DW_j^V = \{$  u bilan suhbat qur  $\}$   
 $SW_j^{Pron.} - P^{aux.} - DW_j^{Vr} = \{$  men bilan chiqib  $\}$   
 $SW_j^{Pron.} - P^{aux.} - DW_j^{Vs} = \{$  sen bilan kelgan  $\}$   
 $SW_j^{Pron.} - P^{aux.} - DW_j^{Vh} = \{$  biz bilan ko‘rish  $\}$ .

$SW_j^{Adj} - P^{aux.} - DW_j^V = \{$  yaxshi bilan yur  $\}$   
 $SW_j^{Adj} - P^{aux.} - DW_j^{Vr} = \{$  aqlli bilan gaplashib  $\}$   
 $SW_j^{Adj} - P^{aux.} - DW_j^{Vs} = \{$  dono bilan yashagan  $\}$   
 $SW_j^{Adj} - P^{aux.} - DW_j^{Vh} = \{$  nodon bilan yashash  $\}$

$DW_j^{Num} - P_{aux.} - DW_j^V = \{ \text{besh bilan qo'sh} \}$   
 $DW_j^{Num} - P_{aux.} - DW_j^{Vr} = \{ \text{ikki bilan qo'shib} \}$   
 $DW_j^{Num} - P_{aux.} - DW_j^{Vs} = \{ \text{yuz bilan qo'shgan} \}$   
 $DW_j^{Num} - P_{aux.} - DW_j^{Vh} = \{ \text{o'n bilan qo'shish} \}$

$SW_j^{Adv} - P_{aux.} - DW_j^V = \{ \text{kechasi bilan kut} \}$   
 $SW_j^{Adv} - P_{aux.} - DW_j^{Vr} = \{ \text{tuni bilan uxlamay} \}$   
 $SW_j^{Adv} - P_{aux.} - DW_j^{Vs} = \{ \text{oz bilan qanoatlangan} \}$   
 $SW_j^{Adv} - P_{aux.} - DW_j^{Vh} = \{ \text{kam bilan qoniqish} \}$

$SW_j^{Vs} - P_{aux.} - DW_j^V = \{ \text{sevgan bilan yasha} \}$   
 $SW_j^{Vs} - P_{aux.} - DW_j^{Vr} = \{ \text{tushungan bilan yashab} \}$

$SW_j^{Vs} - P_{aux.} - DW_j^{Vs} = \{ \text{kelgan bilan ko'rishgan} \}$   
 $SW_j^{Vs} - P_{aux.} - DW_j^{Vh} = \{ \text{borgan bilan xayrlashish} \}$

$SW_j^{Vh} - P_{aux.} - DW_j^V = \{ \text{kutish bilan yasha} \}$   
 $SW_j^{Vh} - P_{aux.} - DW_j^{Vr} = \{ \text{aldash bilan yashab} \}$   
 $SW_j^{Vh} - P_{aux.} - DW_j^{Vs} = \{ \text{kutish bilan yashagan} \}$   
 $SW_j^{Vh} - P_{aux.} - DW_j^{Vh} = \{ \text{kutish bilan yashash} \}$

It is understood from the submodels and their derivatives that the auxiliary came after the noun, rhyme, number, adjective, form, action noun, and adjectives, and served to bind them to the dominant unit.

### 3 CONCLUSION

The elimination of poly-functional words is important in many applications of computer linguistics, especially in search engines. This is because it can increase the processing accuracy of certain query classes or reduce the amount of information stored.

During the study, 12 models and 37 sub-models were developed to identify some poly-functional words.

The analysis shows that there are a number of problems in modeling poly-functional words for a semantic analyzer. Because the word is a multifaceted phenomenon, working with meaning is a complex process. There is confusion in the meaning of some words in the Uzbek dictionary, which complicates the issue. To create the perfect linguistic base for a semantic analyzer, individual work on the meaning of each word is required. To do this, the meanings, descriptions, categories, and the nature of the words must be entered into the database in perfect condition.

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