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Contents

A Study of Polysemy in Four Negative Non-Verbal Prefixes in Persian Based on Principled Polysemy: A Corpus-Based Approach

Alireza Khormaee[1], Amirsaeid Moloodi[2], Elham Kaviyani Fardzadeh[3]

Abstract

This article explores the polysemy of four negative non-verbal prefixes in Persian language (zedd 'against, opposite of', bi 'without', nā 'not' and qejr 'not, non-') based on Principled Polysemy framework (Tyler and Evans 2001, 2003). First, the primary sense of each prefix is determined and then it is explained how non-primary senses are derived from the primary one, hence demonstrating the semantic network of each prefix as a radial category. In this research, using AntConc software (Anthony, 2014), first all the occurrences of the four prefixes were extracted from the Hamshahri Corpus Version 2 (AleAhmad, Amiri, Darrudi, Rahgozar & Oroumchian, 2009) and then in order to analyze research data, some of them were randomly selected. The findings of the study indicate that only in three of the four prefixes under study, polysemy is observed, and that the frequency of use, ease of derivation and predominance in the semantic network are the best criteria for determining the primary sense. The conceptual phenomenon involved in the polysemy of these prefixes is metonymy. Data analysis shows that metonymical shift occurs at two levels: at the level of morpheme/prefix sense and at the level of word-formation, and that the former leads to more straightforward relations within the semantic network. This is due to the fact that the latter requires a more complex line of imagination which automatically translates into a corresponding complexity of relations in the semantic network and significant reduction in the type frequency of non-primary senses as a whole.

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1. Introduction

There are a variety of semantic relationships at word level like homonymy, synonymy, antonymy, polysemy, and meronymy. Polysemy is one of the types of semantic relationships seen in many languages and is a condition in which a single word form has two or several different but interrelated meanings, and this meaning relatedness causes all these meanings to be under one single lexical entry. According to Löbner (2002), in polysemy, a lexeme has a number of meaning variants; one of them is primary meaning and the others are secondary meanings. In particular, those general cognitive mechanisms that play a major role in linking meaning variants are metaphor and metonymy.

With the emergence of the cognitive semantics during the 1980s, the study of polysemy was among the main subjects under consideration. Brugman (1981) used a cognitive semantic view to identify almost a hundred distinct uses of the English preposition *over*, which drew attention to this area of study and set the scene for further research. In the domain of polysemy, cognitive semantics is faced with many questions including how to determine whether different occurrences of a word are so linked to be considered instantiations of a single sense, or how to identify the primary sense among the other senses (Grise & Divjak, 2009). Many scholars have adopted different solutions to these problems. Such solutions are the Full-Specification Approach (Lakoff, 1987), Partial-Specification Approach (Kreitzer, 1997), experimental studies of Sandra and Rice (1995) and the Principled Polysemy introduced by Tyler and Evans (2001, 2003).

This study aims at investigating the polysemy of four negative non-verbal prefixes in Persian language (*zedd* 'against, opposite of', *bi* 'without', *nā* 'not' and *qejr* 'not, non-') based on Principled Polysemy framework.

2. Literature Review

There are numerous studies on polysemy in Iranian languages, mostly Persian. Among them, some researchers have conducted studies, using Principled Polysemy framework. These fall under three categories: those that examine the polysemy of prepositions which are the majority, the ones that explore the polysemy of affixes, and the studies that depict the polysemy of verbs. In what follows, we briefly review some of them to give a taste of what is currently under focus.

Zahedi and Mohammadi Ziyarati (2011) conducted a study on the semantic network of the preposition *æz* 'from' in Persian. They determined the primary sense and the non-primary ones, and thereby, drawing the semantic network for *æz*. The senses and examples were extracted from *Sokhan Grand Persian Dictionary (2002)*.

Rasekh-Mahand and Ranjbar Zarabi (2013) examined the semantic network of the prepositions *dær* 'in' and *sær* 'head'. *Sokhan Grand Persian Dictionary (2002)* was used as the source of data collection. Based on analyzing the semantic network of prepositions *dær* and *sær*, they concluded that different senses of each preposition are related to each other as well as relating directly or indirectly to the primary sense. The findings of their study also revealed that abstract senses of prepositions are extended out of their concrete senses.

In a similar vein, using Principled Polysemy approach, Bamashadi and

Ansariyan (2014) investigated the polysemy of the preposition *tā* 'until' in Persian. The findings of this research indicated that the various senses of *tā* are related to each other and the primary sense of this preposition is 'termination of time, place or an affair'.

Adopting Principled Polysemy approach, Razaviyan and Khanzade (2015) examined the various senses of the preposition *be* 'to'. They concluded that *be* has different senses; all these senses are derived from a single sense, i.e. 'attachment and communication' and form an interconnected network; all concepts are systematically derived from a primary concept and metonymic uses of this preposition motivate the accumulation of metaphorical senses on its only explicit sense, and hence lead to polysemy.

In order to investigate the semantic diversity and flexibility of a proposition, Daneshvar Kashkooli, Amouzadeh, & Rezaee (2016) studied the semantic dimensions of the preposition *zir* 'under'. They also applied Principled Polysemy in identifying the primary sense and distinct senses. They tried to address the strengths and weaknesses of this cognitive model. After analyzing the data, they found that Principled Polysemy approach has some advantages over other approaches including the possibility to determine the primary sense according to compiled linguistic criteria and the limitation of senses. They also emphasized that this approach has met challenges, such as cognitive ambiguities of distinct senses, and the dependent nature of distinct senses on the context.

Also, recently there has been an increasing interest in exploring the polysemy of Kurdi prepositions. Bamashadi (2014) studied the semantics of Gorani Kurdi prepositions using Principled Polysemy approach. Five prepositions *læ*

'from'*, wæ* 'with'*, wæl* 'with', *tā* 'until' and *ærā* 'for (the sake of)' were investigated. The primary sense of each preposition was extracted and their semantic network was drawn. He asserted that among Gorani Kurdi prepositions, preposition *læ* has the most semantic variety and the most complex semantic network. Dehghan (2018) also studied four of the most frequent prepositions (*wæpi* 'to'*, wægærd* 'with'*, wæ* and *læ*) in Kalhori Kurdi using Principled Polysemy approach. After examining the prepositions, the primary sense and distinct senses of each preposition were identified and their semantic networks were presented.

Few studies have been published on the polysemy of affixes in Persian language; Shaghaghi (2002) studied seven negative prefixes (*bi, pād* 'against, opposite of'*, zed, qejr, lā* 'not, non-'*, næ* 'non-'*,* and *nā*) in Persian language. She investigated the different senses of each prefix as well as the functional differences between them. The main weakness of this study is that it uses no framework to base the data analysis on.

Afrashi and Kushki (2018) analyzed the semantics of the prefix *pish* 'pre-' in Persian. In this research, different senses of this prefix were extracted from *Sokhan Grand Persian Dictionary (2002)*. Drawing the radial network of this prefix, they designated two central semantic clusters. They also demonstrated that other senses are derived from these two central semantic nodes.

Amouzadeh, Karimi-Doostan and Sharif (2016) addressed the polysemous nature of the Persian verb *gereftan* 'to take'. The analyzed data were gathered from *Sokhan Grand Persian Dictionary (2002)*. In this study, one primary sense and seven distinct senses of the Persian verb *gereftan* were determined and its semantic network was

drawn. The results of this study showed that the conceptual mechanisms of metaphor and metonymy play a major role in the derivation of distinct senses from the primary sense.

It should be noted that in some of the above-mentioned studies, no sufficient reasons are given for determining the primary sense or distinct senses. In almost all the studies on polysemy in Persian, dictionaries, especially *Sokhan Grand Persian Dictionary* (2002) or native speaker's intuition, has been used to derive different senses, but in the present study, using Hamshahri corpus (Version 2), distinct senses of the prefixes under study were extracted from the sentences produced by a variety of writers of Persian language in everyday use. Using a corpus-based method in extracting different senses can be considered as one of the strengths of this research.

3. Theoretical Framework of the Study

The Principled Polysemy is a model that has been developed within the domain of lexical semantics. It was proposed by Tyler and Evans (2001) and then developed further in subsequent studies, including Tyler and Evans (2003), Evans and Tyler (2004a, 2004b), and Evans (2003, 2004 and 2005). The main idea of Principled Polysemy is that a lexeme such as a preposition or a noun is associated with a number of different but interrelated meanings. Tyler and Evans (2001) believed that the meaning extension of a lexeme is a principled process, so they tried to provide methodologically constrained principles for analyzing semantic networks. These principles present a set of criteria for determining the primary sense and distinct senses as follows.

3.1. How to determine distinct senses

Tyler and Evans (2001, 2003) propose two criteria based on which distinct senses are identified. First each distinct sense must contain non-spatial meaning and/or represent a distinct configuration between trajector and landmark. Second distinct senses must not be inferable from other senses and the context in which they are situated. Since none of the four prefixes under study contain a spatial meaning, the first criterion is irrelevant here.

3.2. How to determine the primary sense

Four criteria are introduced to find out the most eligible candidate for the primary sense: the earliest attested meaning, predominance in the semantic network, relations to other prepositions, grammatical predictions. The assumption is that none of these in isolation could definitively single out the primary sense; the more the number of the criteria resorted to, the more it is plausible to nominate one of the senses as the primary one.

In the present study, the earliest attested meaning was only applicable to the prefix *qejr* because it functioned as preposition and noun as well, and thus its earliest meaning could be traced. There were no sources or researches available to do the same for the other prefixes. Since the items under study were all prefixes, the criterion of grammatical prediction was not applicable either. The four prefixes under study did not form a contrast set in Persian; therefore, we could not reach out for the relation of any one of them to the others in order to discover the primary sense. Consequently, out of those four criteria proposed by Tyler and Evans (2001, 2003), we could inevitably rely mainly on the predominance in the semantic network. But this was contrary to

the spirit of what Tyler and Evans tried to do, namely to fortify, as much as possible, the foundation on which the primary sense is to be pinpointed.

Fortunately, since the study is corpus-based, it can take advantage of frequency as a strong yardstick to determine the primary sense. It is notable that frequency is not only a criterion for determining primary sense but also a benchmark indicating the predominance in the semantic network. That is, high frequency serves as a predominance-marker, too. In addition, Tyler and Evans (2001, 2003) following Langacker (1987), believe that the primary sense is the sense sanctioning the other sense or senses. In another word, each primary sense provides a schema based on which other subschemas are derivable. As a result, if the primary sense is the one that gives rise to the non-primary ones due to its sanctioning power, then it is justifiably the sense out of which other senses are most easily and readily extended compared to other senses. Therefore, ease of derivation can be taken as another effective criterion to base the selection of the primary sense on. Taking all these points into consideration, three measures are mainly used in this research to choose one out of a set of meanings as primary: frequency, predominance in the semantic network, ease of derivation.

As will be shown in section 5, metonymy is at the heart of polysemy in the prefixes under study. The model we follow here for metonymy is that of Radden and Kövecses

(1999). Their model of metonymy is based on Idealized Cognitive Models, ICMs, (Lakoff, 1987). They point out that since metonymy revolves around the concept of contiguity, the best framework for delineating metonymic processes is ICMs because an ICM "includes peoples' encyclopedic knowledge of a particular domain as well as the cultural models they are part of" (p. 20). They define metonymy thus: "Metonymy is a cognitive process in which one conceptual entity, the vehicle, provides mental access to another conceptual entity, the target, within the same idealized cognitive model." (p.21)

Radden and Kövecses (1999) introduce three ICMs, namely Sign ICM, Reference ICM, and Concept ICM which respectively give rise to sign metonymy, reference metonymy, and concept metonymy. The first two ICMs interconnect entities belonging to distinct ontological realms within the same semiotic unit, but Concept ICM "interrelates entities of different semiotic units within the same ontological realm or realms" (p. 23).

Additionally, Radden and Kövecses (1999) discuss the conceptual relationships within an ICM which may produce metonymy. Figure 1 shows an overview of Radden and Kövecses' taxonomy of metonymy-producing relationships along with an example of a metonymy type corresponding to each ICM. Our account of the polysemy of the prefixes under study is based on these relationships.
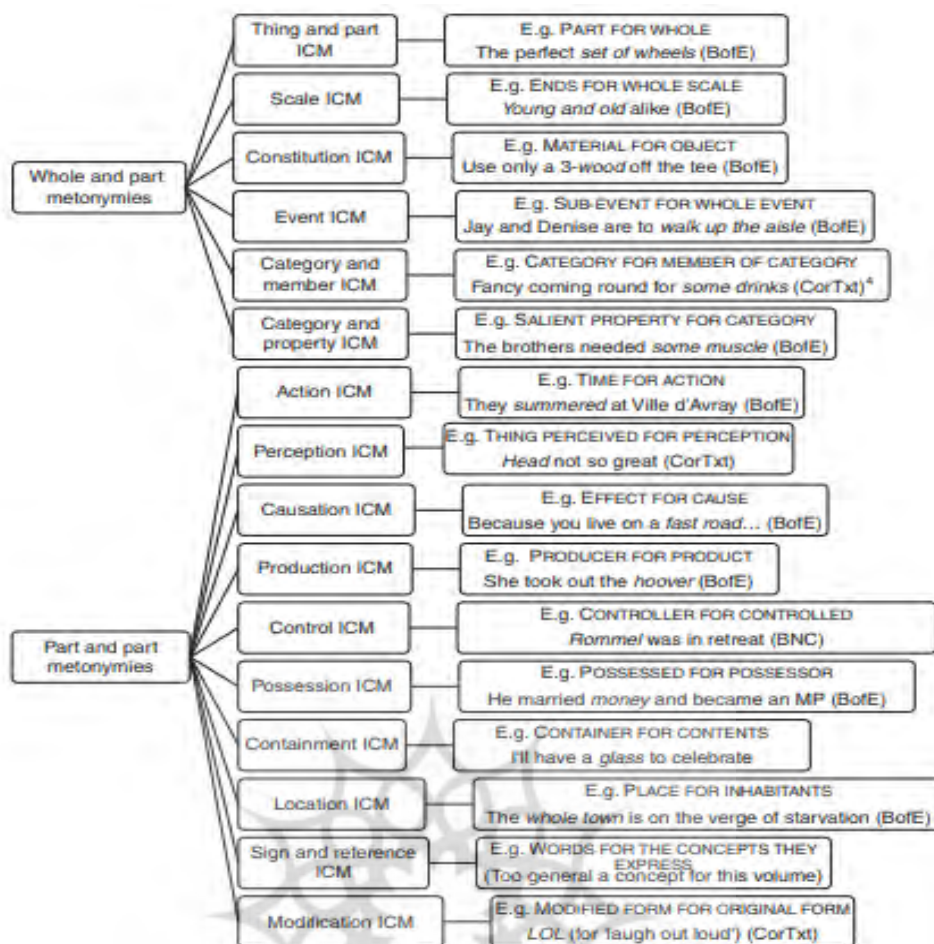
Fig 1. Key Metonymy Types in Radden and Kövecses' Taxonomy (Adapted from Littlemore, 2015)

4. Research Method

In the present research, the required linguistic data were gathered from "Hamshahri corpus (Version 2)" and the concordancer program, AntConc (2014), was used to extract the data from the corpus. The process of data selection went through several stages. Initially, all the words containing the strings *qejr, zedd, bi,* and *nā* at the beginning of them were extracted from the corpus. Then, the data were moved to Excel program to delete the irrelevant cases. They were of two types:

1) Simple words (not complex ones) in which the mentioned strings were not prefix, like **bi**māri (disease) or **bi**jābān (dessert).

2) Cases in which the strings were used as other lexical categories like preposition as in *bær* **zedd**-*e mærdom* (**against** people) or noun as in *solte-je* **qejr** (domination of **others**).

The total number of words extracted from the corpus before deleting the irrelevant cases was 2,001,360, and after removing the irrelevant ones, the number was reduced to 521,817. Out of these, 19,504 tokens belonged to *zedd*, 126,768 to *qejr*, 213,687 to *nā*, and 161,858 to *bi*.

Considering the large amount of the data, we had to study a random selection of them. The data sample size was estimated based on the Krejcie and Morgan's table (1970).

Accordingly, the sample size for each negative prefix was as follows:

1) *zedd*, 377 tokens and 172 types;
2) *bi*, 384 tokens and 133 types;
3)*, nā* 384 tokens and 109 types; and
4) *qejr*, 384 tokens and 139 types

For example, *biʔæsær*/ineffective was a type which had four tokens in our data. It should be noted that, for each prefix, the frequency of different senses was calculated based on the types rather than the tokens because each distinct sense remained stable across the different tokens of each type. Take *nābærābær*/unequal for example. Here the prefix *nā meant* 'not to be' and, of course, it remained unchanged across all the tokens. After selecting the data randomly, they were analyzed based on the theoretical framework of Principled Polysemy.

5. Results and Discussions

In this section, each prefix is investigated separately. At first, some examples are listed for the various senses of each prefix, and then, the primary sense is specified. The derivation of non-primary senses from the primary one is also shown based on the conceptual mechanism of metonymy. Finally, the semantic network of each prefix is presented in the form of a radial category. It is worth mentioning that, during data analysis, we realized two types of metonymy: the metonymies which occurred in the morpheme/prefix sense and the ones which occurred in the word-formation process.

5.1. The various senses of *zedd*

The prefix *zedd* is attached to nominal and adjectival bases. According to the data, this prefix has the following meanings:

1) To oppose/ to be against

This meaning is observed in most of the analyzed data. The addition of *zedd* onto the beginning of bases in such examples adds the meaning of 'to oppose or to be against something or someone represented by the base'. Consider the following examples: *zedd-e* *ʔenqelāb* (counter/anti-revolutionary), *zedd-e bæʃærijæt* (against humanity), *zedd-e zæn* (anti-woman).

2) To destroy/ annihilate

In some cases, *zedd* adds the meaning of 'to destroy or to annihilate' to the base: *zedd-e tānk* (anti-tank), *zedd-e muʃæk* (anti-missile), *zedd-e ʔofunæt* (antibiotic: that destroys infection).

3) To prevent/block

In some other cases, *zedd* adds the meaning of 'preventing/blocking' to the base: *zedd-e ʔāftāb* (blocking the sun's ultraviolet radiation), *zedd-e xoropof* (anti-snoring), *zedd-e tæʔærroq* (antiperspirant).

4) To contrast/counter

The prefix *zedd* also adds the meaning of 'to contrast/counter' to the base: *zedd-e ʔærzeʃ* (anti-value: in contrast to socially accepted values), *zedd-e hæmle* (counter-attack), *zedd-e qæhræmān* (anti-hero: someone in contrast to the characteristics of a hero).

5) To control

'Controlling' is another meaning the prefix *zedd* adds to the base: *zedd-e ʔæsid* (anti-acid controlling the acidity in the stomach), *zedd-e hormon* (anti-hormone: controlling the volume of hormones) *zedd-e kolestrol* (anti-cholesterol).

6) To resist

In some items in the data, *zedd* means 'to resist something': *zedd-e ʔāb* (waterproof), *zedd-e zelzele* (anti-earthquake), *zedd-e zærbe* (anti-impact).

7) To cure

In some other items, the prefix *zedd* adds the meaning 'to cure something': *zedd-e tʃāqi* (anti-obesity), *zedd-e jobusæt* (anti-constipation), *zedd-e tæʃænnoʤ* (anti-convulsant).

As already observed, for the prefix *zedd*, seven senses have been identified. They are distinct because none of them are inferable from the other senses and the contexts in which they are used. Each sense is the result of the interaction among the prefix, the base and the world knowledge. For example, when, in a lexical item, *zedd* precedes *zelzele* (earthquake) and an adjective is formed, the world knowledge tells us that we are dealing with something resistant to earthquake and not with a thing or process preventing it. That is, this specific meaning is context-independent, remaining unchanged irrespective of the context of use; therefore, other meanings are cancelled out. The same line of argumentation applies to the other senses of *zedd* and also to the other prefixes.

Table 1. The Type Frequency of Different Senses of the Prefix *zed*

	Sense	Number of Usage	Percent of Usage
1	To oppose/ to be against	81	%47.09
2	To destroy/ annihilate	29	%16.86
3	To prevent/ block	17	%9.88
4	To contrast	15	%8.72
5	To control	6	%3.49
6	To resist	6	%3.49
7	To cure	18	%10.47
		172	%100

5.1.1. The primary sense of *zedd*

There are several reasons why sense 1 (to oppose/to be against) is the primary one. First, it is the earliest attested among all the identified senses. According to *Sokhan Grand Persian Dictionary* (2002), it dates back to several centuries ago; for instance, it is attested in Rumi's poems (thirteenth century AD). Second, when *zedd* functions as a preposition, it conveys the meaning of opposition and againstness (Reza *zedd-e mænāfeʔ-e Ali ʔæmæl mikonæd*/Reza acts *against* Ali's interests). Third, as table 1 shows, meaning 1 is the most frequent one (%47.09 of the cases). Fourth, if this meaning is located at the center of the semantic network, other meanings will be most readily and easily derived through metonymic extension. One could not possibly think of a way to derive 'to oppose' sense from 'to control' sense, or to extend the meaning of 'to resist' out of 'to destroy' or vice versa. Finally, with sense 1 at the center of the semantic network as shown in figure 2, we can obviously see the predominance of 'to oppose/ to be against' sense since four of the non-primary senses are directly derived from sense 1 through one single process of extension which is *cause for effect* metonymy. These five reasons combine to demonstrate the centrality of sense 1.

5.1.2. The semantic network for *zedd*

Having demonstrated that 'to oppose/to be against' sense is the primary one, four of the non-primary senses can be derived by means of metonymic extension at the level of morpheme sense based on *causation ICM*. In this case, *cause for effect* metonymy is involved. To put it differently, if we oppose something or someone (cause), we will try to resist, destroy, control, stand in

contrast to, or counter it (effect). In another word, the former serves as the cause and the

1) Not to have

This is the sense when *bi* is used to indicate
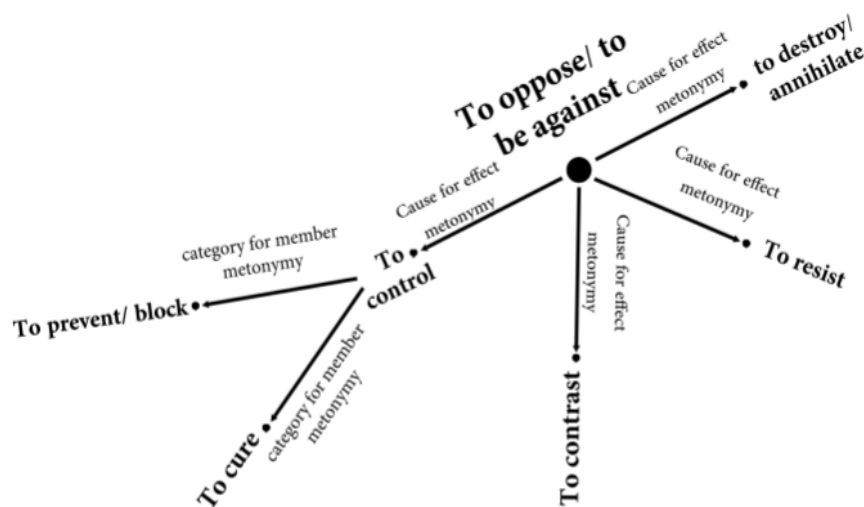
Fig 2. The Semantic Network for the Prefix *zedd*

latter are the effects; the cause is asserted but the effect is meant. Two of the remaining non-primary senses (to prevent/block, to cure) can be regarded as two instances or subtypes of controlling, hence being extended metonymically out of 'to control' meaning within the *category and member ICM*. That is, the category (control) is spelled out but the member (preventing or curing) is accessed. The meaning of 'to oppose/ to be against' functioning as the primary sense of *zedd* and the subsequent direct or indirect derivation of the non-primary senses based, respectively, on the *cause for effect* and *category for member* metonymy results in a semantic network in the form of a radial category which is represented in Figure 2, no need to mention that all the metonymies occur at the level of morpheme/prefix sense.

5.2. The Various Senses of bi

The prefix *bi* is augmented to nominal bases. The following is a list of the different senses of *bi* based on the collected data:

the absence of a thing literally denoted by the base itself: *bibærg* (leafless: not to have *bærg*/leaf), *biʔæsær* (ineffective: not to have *ʔæsær*/effect), *biʔæsās* (baseless: not to have *ʔæsās*/base), *bikār* (jobless/unemployed: not to have *kār*/job), *biʔehtijāt* (incautious: not to have *ʔehtijāt*/caution), *biʃomār* (innumerable: not to have *ʃomār*/number).

2) Not to do

In some words, *bi* carries the general meaning of 'not to do' which is, semantically and formally, realized by different verbs in the process of word formation. As we will discuss later, this sense is derived metonymically within *action ICM* while forming a word through *bi* prefixation: *bixāb* (sleepless: not to go to *xāb*/sleep), *bigonāh* (sinless/innocent: not to sin), *bitæræf* (impartial: not to take sides/*tæræf*).

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3) Not to do properly

In just one type, *bi* adds the meaning 'not to do something properly': *bimæsʔulijæt* (irresponsible: not to do one's *mæsʔulijæt*/responsibility properly).

4) Not to do/occur in a suitable time

We found just one single type in which *bi* means 'not to do/occur in a suitable time': *bivæqt* (ill-timed/untimely: not to do/occur in a suitable *væqt*/time).

Following the line of argumentation presented in 5.1, these four senses are also distinct because they are each based on the interaction among the prefix, the base and the world knowledge irrespective of the context of use.

Table 2. The Type Frequency of the Different Senses for the Prefix *bi*

	Sense	Number of Usage	Percent of Usage
1	Not to have	127	%95.49
2	Not to do	4	%3.01
3	Not to do properly	1	%0.75
4	Not to do/ occurin a suitable time	1	%0.75
		133	%100

5.2.1. The primary sense of *bi*

As noted above, four distinct senses were extracted from the data for *bi*. In this case, frequency, predominance in the semantic network and ease of derivation prove that sense 1 (not to have) serves as the primary one. It is the most frequent sense according to table 2 (%95.49 of the cases) which is also indicative of being predominant in the semantic network. Furthermore, as we will see below, other senses could be easily derived from 'not to have'. One wonders if a

way could possibly be discovered to put one of the other senses at the center of the semantic network and, at the same time, be able to extend the other senses easily and readily. How is it possible, for instance, to derive the meaning 'not to have' from 'not to do'. In this regard, we can mention Heine (1997, 47-50) who discusses how different languages use Action Schema as a concrete source domain to express predicative possession (to have) as an abstract target domain, but no mention is made of a reverse process. This is, of course, unsurprisingly predictable, since language users as conceptualizers normally resort to concrete domains for the expression of abstract ones. Heine himself (1997, 45) refers to this in the spirit of Lakoff and Johnson (1980). Accordingly, since the meaning 'not to do' comes, no doubt, under Action Schema, we can expect to extend 'not to have' out of it. However, Heine (1997, 47), quoting Givón (1984, 1993), states that the involved verbs are active possessive verbs such as "grab", "take", "seize" and "obtain" which are semantically bleached, and what is left behind is a mere sense of possession. Therefore, the general meaning 'not to do' does not carry the semantic potential required to give rise to possession meaning, namely we cannot expect a metaphorical shift. In addition, as seen above, 'not to have' enjoys an absolute high frequency and this leaves us no choice but to consider it as the primary sense.

5.2.2. The semantic network for *bi*

With 'not to have' being the primary sense, the meaning 'not to do' is also the product of a metonymic extension but, this time, occurring at the level of word formation and not at the level of morpheme sense. In other words, the sense 'not to have' cannotbe

metonymically shifted to produce 'not to do', in that these two meanings are not in the same ICM, neither *possession* nor *action ICM* or any other ICM; consequently, the latter will not be accessible via the former. Now, the question is if no morpheme-level metonymy is at work, how *bi* as a prefix can primarily mean 'not to have' but could also carry the meaning 'not to do'. It seems that, in such cases, we are dealing with a type of metonymy in the process of forming a word with *bi*. For example, the word *bixāb* (literally one who does not have *xāb*/sleep) is

true for the other cases in which *bi* means 'not to do'. If it were not for this imagination taking place in the process of word formation, we would not be witnessing a case of metonymy leading to the creation of a new meaning for *bi*.

We come across words such as *biʔehtijāt*/incautious which apparently follow the same pattern: if someone does not *doʔehtijāt*/take caution, it is as if he does not have any *ʔehtijāt*/caution; therefore, *biʔehtijāt* literally denotes 'one who does not
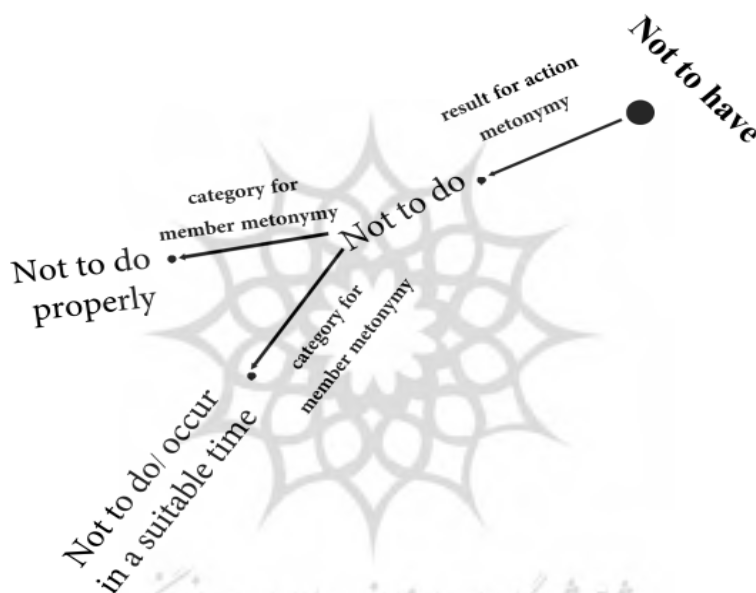
Fig 3. The Semantic Network for the Prefix *bi*

taken to mean one who does not go to *xāb*/sleep (sleepless). This requires a somewhat complex imagination when coining a word to refer to such a person along the following line: if someone does not go to *xāb*/sleep, it is as if he does not have any *xāb*/sleep; therefore, the coined word (*bixāb*) literally signifies the result (not to have *xāb*/sleep) but the non-occurrence of the action (not to go to *xāb*/sleep) is meant, hence a *result for action* metonymy within *action ICM* being operative. The same is

have *ʔehtijāt*/caution' as the result but the non-occurrence of the action (one who does not *doʔehtijāt*/take caution) is implied. However, this is not the case. Words like *ʔehtijāt* which have been borrowed from Arabic, although a noun, do contain verbal meaning and many of them such as *ʔeʔtemād*/trust possess argument structure (*ʔeʔtemād-e* Ali be Maryam, Ali's trust/putting trust in Maryam), hence a general meaning of 'to do' accompanying them. Karimi-Doostan (2008) terms them as

"predicate nouns". As a result, *bi* in such words carries the primary sense 'not to have'. If that is true, as we believe, *biʔehtijāt* and *biʔeʔtemād* respectively mean 'one who does not have *doingʔehtijāt*/ taking caution' and 'one who does not have *doingʔeʔtemād*/putting trust in'.

That being said, two of the other non-primary senses (not to do properly, not to do/occur in a suitable time) are now easily derivable through *category for member* metonymy. That is, the category (not to do) is stated but the member (not to do properly or not to do/occur in a suitable time) is implied. Here we are observing a shift from metonymy in word formation to metonymy in morpheme sense. To put it differently, a metonymy in the word formation process provides a sense that can now be shifted by means of a metonymy in the morpheme sense. The overall set of metonymies described leads to a semantic network for *bi* represented in figure 3.

5.3. The various senses of *nā*

The search through the randomly selected cases of *nā* revealed the following five senses:

1) Not to be

The most frequent sense of *nā* is 'not to be', as is observed in the following examples: *nābærābær* (unequal: not to be bærābær/equal), *nāʔāʃnā* (unfamiliar: not to be ʔāʃnā/familiar),*nātæni* (half-blood: not to be tæni/of full blood).

2) Not to have

Another sense for the prefix *nā* is 'not to have': *nāʔomid* (hopeless: not to have ʔomid/hope),*nātævān* (incapable: not to have tævān/capability), *nārezājæti*

(dissatisfaction: the condition of not having *rezājæt*/satisfaction).

3) Not to happen/occur

There was only one item in the data in which *nā* conveys the general meaning of 'not to happen/occur': *nākām* (unfulfilled: not to reach one's *kām*/wish).Of course, there exists in Persian the word *nāmorād* which is synonymous with *nākām*and represents another instance of *nā* prefixation with the same sense. Therefore, it seems that this meaning, despite being absolutely low in frequency, is another case of polysemy for *nā* and provides a potential for forming further words in which *nā* carries the same meaning.

4) Not to do

In two items in the data, *nā* has the general meaning 'not to do' which is realized by different verbs depending on the base to which *nā* is attached: *nāpejrævi* (non-conformity: not to conform), *nāpejmān* (not to respect a *pejmān/*promise).

Table 3. The Type Frequency of Different Denses of the Prefix nā

	Sense	Number of Usage	Percent of Usage
1	Not to be	96	%88.07
2	Not to have	9	%8.26
3	Not to happen/occur	1	%0.92
4	Not to do	2	%1.83
5	Not to do properly	1	%0.92
		109	%100

5) Not to do properly

In one single item, *nā* means 'not to do properly': *nādāværi*(not to judge properly/impartially in sports games).

Since these are again the product of the interaction among the prefix, the base and the world knowledge and are consequently context-independent, they function as five distinct senses.

5.3.1. The primary sense of *nā*

Five distinct senses were listed for *nā* in 5.3.1. Sense 1 (not to be) enjoys the highest frequency (%88.02 of the cases), depicting an undoubted predominance in the semantic network. As shown below, other senses are easily extended out of sense 1. These three reasons suggest that 'not to be' is the most qualified candidate deserving to be designated as the primary sense.

5.3.2. The semantic network for *nā*

If 'not to be' is the primary sense, now we must be able to figure out ways to directly or indirectly derive the other non-primary senses out of it. We begin by the meaning 'not to do' observed in the words *nāpejrævi* (non-conformity) and *nāpejmān* (not to respect a promise). First and foremost, a metaphoric shift is not thinkable in this case because one cannot work out a way to portray the mapping of 'not to be' (conceptual domain of existence) onto 'not to do' (conceptual domain of action). Besides, these two domains enjoy the same degree of concreteness. It seems that, here, a metonymy in the process of word formation is operating. Since 'not to be' and 'not to do' cannot be considered as members of one single ICM due to their belonging to distinct ICMs, respectively *existence ICM* and *action ICM*, a metonymy in the morpheme sense itself would not be possible, namely 'not to be' cannot be metonymically shifted to produce 'not to do'. As in the case of the prefix *bi*, a feat of imagination is required while forming a word with *nā* in this way. It

reads like this: if you do not do *pejrævi*/conforming, then it is not *pejrævi*/conforming but is *nāpejrævi*/non-conforming. That is, the meaning 'not to be' as the result is stated but 'not to do' as the non-occurrence of the action is meant; the latter is accessed via the former. This is a clear instance of *result for action* metonymy within *action ICM*. We owe the emergence of this meaning to the metonymy taking place in the process of word formation, which, in turn, is totally dependent on a significant amount of imagination. The same is true for *nāpejmān* (one who does not respect a *pejmān*/promise): if a *pejmān*/promise is not respected, then it is not something worth being called a *pejmān*/promise but it is a *nāpejmān*/non-promise; again the result serves as a vehicle to conceptually access the non-occurrence of the action. Of course, the output is an adjective referring to a person who does not respect a promise.

The metonymy in word formation provided us with the meaning 'no to do'. Now the sense 'not to do properly' is available as a consequence of the *category for member* metonymy in the morpheme sense within *category and member ICM*. The member (not to do properly) is accessed via the category (not to do).

Let's turn now to the sense 'not to have' which brings us to the concept of possession. Heine (1997) demonstrates that a close relationship exists between action, location, accompaniment and existence, on the one hand, and possession, on the other; the formers act as concrete source domains for the latter as the abstract target domain through the diachronic process of grammaticalization, based on what he terms "emergent metaphor". By "emergent metaphor" he means a gradual metaphorical

shift from one of the source domains towards the target domain (possession) by virtue of what he calls "context extension". That is, the contexts in which a source domain occurs, invites the language users to infer possession, and when context-induced inferences become conventionalized, the meaning of possession is established. As indicated above, one of the source domains is existence schema which, in turn, subsumes five subschemas: genitive, goal, topic, source, equation. Under all these five, Heine (1997) provides us with examples from various languages containing both verbs of existence and mere copulas. In addition, he states that verbs functioning as the nucleus of possessive predicates do not reflect the same degree of grammaticalization, pointing to a hierarchy of grammaticalization with general copula at the final stage indicating the extreme case. In fact, the primary sense 'not to be' for the prefix *nā* semantically instantiates this general copula and not a verb of existence. The map portrayed by Heine displays a path, based on which we should move from 'not to be' (semantically a general copula) to 'not to have' (possession) resorting to a non-conventional type of metaphor which lacks the typical mapping of the source onto the target. It is very hard to imagine how the elements of "be" are mapped onto "have". In fact, "context extension" seems to be a mechanism merely compensating for the absence of a clear-cut process of mapping. We believe that the mere context extension does not necessarily guarantee metaphorical shift from existence to possession because it can equally give rise to metonymy. It is the nature of the relationship between "be" and "have" that determines whether we are dealing with metaphor or metonymy and not the context which provides a platform

for extension. Context just acts as a pillar giving support to either metaphor or metonymy. Therefore, it seems that, in this case, there are some pieces of evidence leading us to believe a metonymy at the level of morpheme/prefix sense is at work.

Langacker (1995), trying to model a schema abstract and general enough to cover all the wide-ranging instances of possession, introduces reference-point model in which a *conceptualizer* (C) makes mental contact with a *target* (T) through a *reference point* (R) within a *dominion* anchored by *reference point*. R is the possessor and T the possessee. Upon hearing or reading a phrase such as "John's elbow", the *conceptualizer* makes mental contact with elbow (T) by means of John (R) within D which, in this case, is R itself. In prototypical cases, R has control over and access to T whereas in extremely peripheral instances (the tree's shade), the possessor acts just as a mere R enabling C to mentally make contact with T. Langacker (2003, 9-10) sets forth a locative schema in which a *conceptualizer* (C) finds a *target of search* (T) in a *domain of search* (D) defined in relation to a *reference object* (R). For instance, based on the locative phrase "the book on the table", the *conceptualizer* finds the book (T) in the domain of search provided by the table (R). Langacker considers locative schema as a "special case" of reference-point model. Viewed from this perspective, unlike what Heine (1997) argues, we believe that using locative constructions to express possession is contiguity-based rather than being an instance of metaphorical shift, mapping location onto the possession. As a result, since location and existence are highly interrelated as shown by Langacker (2003, 9), we should expect the same when dealing

with *nā* and trying to extend 'not to have' out of 'not to be'. Indeed, Langacker draws two schemas for location and existence which are the same except for the fact that the former additionally contains a delimited region lacking in latter.

Locker (1954, cited in Heine, 1997) believes that "be" conceptually includes "have". In this regard, we can mention Koch (2012) who, based on an example from Wolof language, depicts the move from a possessive construction to an existential one along the following line. If in a possessive construction in which the possessor is realized as subject and the possessee as object, the subject fades away, the remaining object will be an "existing entity" and no longer serves as the possessee because there is no possessor to stand in a possessive relation to. The resulting construction would be an existential one which formally shows a subpart inheritance link to the original possessive construction in the sense of Goldberg (1995), and semantically is contiguous with it, meaning that there is no ground for considering a metaphorical shift. Koch's argumentation leads us to the belief that existence is prior to possession to the effect that possessive constructions, in case of losing the possessor, come to function as an existential construction. To put it differently, for the possessive constructions to form, it is first and foremost essential to have an "existing entity" which then stands in a possessive relation to a possessor, namely every "existing entity" has potentially possession within itself provided that it comes into a possessive relation with a possessor. As a result, copular "be", being a more grammaticalized form of existential "be", potentially includes possession waiting to be actualized if the context supports the move from the actual to the potential.

The same applies to the shift from the prefix *nā* with the primary sense 'not to be' to the non-primary sense 'not to have' in that the former potentially contains the latter provided that the context paves the way for a metonymical movement from actual (not to be) to the potential (not to have), in which case we are witnessing an *actual for potential* metonymy under *event ICM*. In another word, the potential is mentally accessed via the actual. As far as contextual support is concerned, in all the items in the data in which *nā* means 'not to have', the base is a noun denoting a thing in the sense of Langacker (1987) instead of an adjective signifying a property: we are observing prototypical cases of possession with regard to the type of possessee. For instance, in *nāʔomid* (hopeless), *ʔomid* is an abstract thing that more readily establishes a relation to *nā* in the sense of 'not to have' than 'not to be'. Therefore, *nāʔomid* is someone who does not have *ʔomid*/hope rather than something or someone that is not *ʔomid*/hope. To put it differently, *nā* in the context of *ʔomid* moves away from the primary sense 'not to be' towards the non-primary sense 'not to have' by means of an *actual for potential* metonymy. Thus, as said before, it is the nature of the relationship between the existence and the possession that specifies the type of the extension and not the "context extension".

In addition, there is another piece of evidence that proves the sense 'not to be' potentially contains 'not to have'. In some words, where *nā* means 'not to be', traces of 'not to have' are observable as well. For example, *nāʔæmn* is defined thus: a place that is not *ʔæmn*/safe. This definition could be reformulated as 'a place that does not have *ʔæmnijjæt*/safety', namely 'not to be

safe' entails 'not to have safety'. Or *nāhæmāhæng* which is defined as 'that which is not *hæmāhæng*/harmonious' could also be reinterpreted as 'that which does not have *hæmāhængi*/harmony'. In these cases, 'not to be' also evokes 'not to have'. This moves us to the stance that the former potentially contains the latter.

gave rise to a sense based on which other senses were extended through metonymy in the morpheme sense, for instance when the meaning 'not to do' for the prefix *bi*, which was derived from 'not to have' by means of a metonymy at the level of word formation, resulted in 'not do properly' and 'not to do/occur in a suitable time' following a *category for member* metonymy in the
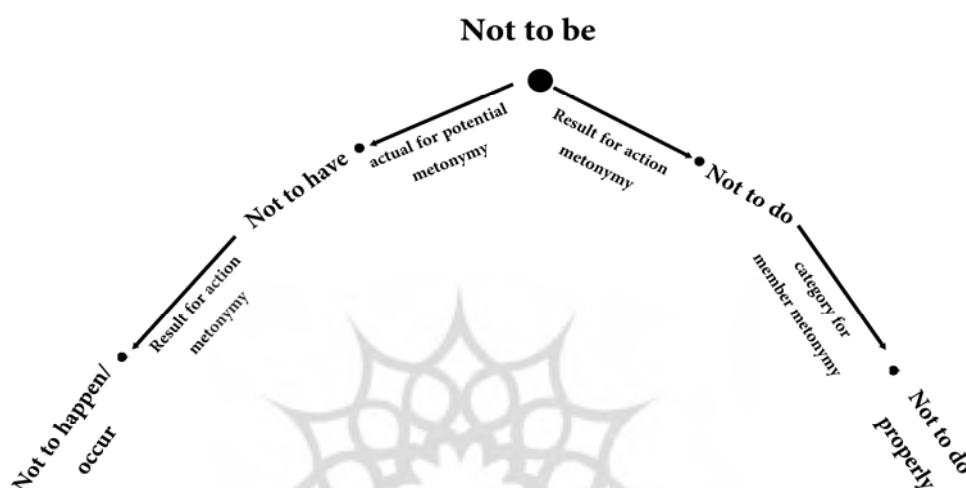

Fig 4. The Semantic Network for the Prefix *nā*

As observed above, an *actual for potential* metonymy in the morpheme sense produced a 'not to have' meaning for the prefix *nā* out of 'not to be'. Based on this meaning, the meaning 'not to happen/occur' found in the item *nākām* (not to reach one's *kām*/wish) is now derivable by virtue of a metonymy at the level of word formation, which, of course, requires a feat of imagination. If we do not reach our *kām*/wish, it is as though we do not have it. That is, not having one's *kām* results from not reaching it. Consequently, the result is stated but non-occurrence is implied, hence the former serving as a vehicle to conceptually access the latter. All this brings us to the *result for action* metonymy under *action ICM*. We saw above cases where a metonymy in the process of word formation

morpheme sense. However, we are here witnessing the reverse. All these direct and indirect derivations end in a semantic network as presented in Figure 4.

5.4. The prefix *qejr*

This prefix displays a different semantic behavior, being monosemous compared to the other prefixes under study. There is no evidence in our data that could be considered as proof of polysemy. *qejr* merely means 'not to be plus binary opposition'. Indeed, what differentiates *qejr* from *nā* which means primarily 'not to be' is the fact that *qejr* contains the additional semantic feature 'binary opposition'. In other words, when it is added to the base, which is usually an adjective, the output always stands in binary opposition to the base: *qejr-e*

ʔestāndārd (non-standard: all that is not ʔestāndārd/standard), *qejr-e ʔæxlāqi* (non-moral: all that is not ʔæxlāqi/moral), *qejr-e tedʒāri* (non-commercial: all that is not tedʒāri/commercial). This binary opposition is observable in all the items in the data. However, when semantic context or linguistic knowledge is taken into consideration, we come across a significant number of instances in which the binary opposition as the semantic force of *qejr* disappears or, at least, decreases to a great extent. The relevant cases are as follows (The first four deals with semantic context and the last one with linguistic knowledge):

1) When the word containing *qejr* is used as a predicative adjective. Since it appears in a *locus of predication*, we observe more of assigning a property to a noun than expressing opposition.

2) When it appears before an infinitive "be" forming one single unit (*qejr-e behdāʃti budæn/* to be non-sanitary). This is again another instance of putting the relevant adjectives at the *locus of predication*.

3) When it is attributed to a definite noun rather than a noun with generic reference (*ʔin sāzmān-e qejr-e dowlati/*this non-governmental organization vs. *sāzmānhāy-e qejr-e dowlati/*non-governmental organizations). Nouns of generic reference are more susceptible to opposition.

4) When it occurs alongside one or more attributive adjectives. The binary opposition loosens under the impact of the other adjective or adjectives attributing a property or properties to a noun. The more the

number of accompanying adjectives the more the force of opposition loosens.

5) When the adjective formed with *qejr* modifies a noun but the corresponding noun phrase involving an adjective without *qejr* does not exist. We see in Persian *keʃværhāy-e qejr-e* moteʔæhhed/non-allied countries. However, *keʃværhāy-e moteʔæhhed*/allied countries is not used in the same political meaning. As a result, *qejr-e* moteʔæhhed does not contrast with moteʔæhhed when the political sense of these two adjectives is evoked by the context.

All the above-mentioned instances in which the binary opposition fades away or, at least, loses force to a great extent, are dependent either on semantic context or an *ad hoc* process of decision-making as to whether or not the relevant adjectives containing *qejr* stand in contrast to corresponding adjectives without *qejr*. Thus these are all cases of online processing and cannot be regarded as proof of polysemy, indicating that we are not witnessing a non-primary sense under the prefix *qejr* in the semantic memory.

6. Conclusion

The aim of this study was to explore the polysemy of four negative non-verbal prefixes in Persian according to Evans and Tyler's (2001, 2003) framework of Principled Polysemy. It was observed that three of the four prefixes (*zedd*, *bi*, *nā*) displayed polysemy by virtue of metonymy. Three criteria were mainly used to identify the primary sense: frequency, predominance in the semantic network, and ease of derivation. Accordingly, the primary senses

of *zedd*, *bi*, and *nā* were respectively determined as 'to oppose/to be against', 'not to have', and 'not to be'.

Two types of metonymies were operative in the extension of the non-primary senses out of the primary sense, one in the morpheme/prefix sense and the other at the level of word formation. The polysemy of *zedd* was wholly due to the former. As a result, looking at the semantic network of *zedd* revealed a straightforward relation between the primary meaning and the non-primary ones due to the fact that the relevant derivations were just dependent on the imagination inherent in the metonymies involved. A consequence of this straightforward relationship was the considerable type frequency of the non-primary senses as a whole (%52.91 of the types). To the contrary, the polysemy in the case of *bi* and *nā* resulted mainly from the

metonymy in the process of word formation. This entailed extra imagination, namely one that was inherent in the metonymy as in *zedd* and another at the level of word formation. This extra imagination, which seems to be a burden on mind/brain, manifests itself in the significant reduction in the type frequency of the non-primary senses when looked at as a whole. The type frequency for the non-primary senses of *bi* was totally %4.51 and for *nā* %11.93.

As for *qejr*, no evidence was found to make a case for polysemy. What we observed was merely the disappearance of or, at least, the substantial decrease in 'binary opposition' as part of the semantic content of *qejr*, which was a result of online processing based either on semantic context or an *ad hoc* process of decision-making.

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بررسی چندمعنایی چهار پیشوند نفی غیرفعلی در زبان فارسی
بر اساس چارچوب چندمعنایی اصول‌مند: رویکردی پیکره‌بنیاد

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چکیده

مقالهٔ حاضر، بر اساس چارچوب چندمعنایی اصول‌مند (تایلر و ایوانز، ۲۰۰۱ و ۲۰۰۳)، به بررسی چندمعنایی چهار پیشوند نفی غیرفعلی (ضد-، بی-، نا-، غیر-) در زبان فارسی می‌پردازد. ابتدا معنای اصلی هر پیشوند مشخص می‌گردد و سپس شیوهٔ اشتقاق معانی فرعی از دل معنای اصلی عرضه می‌شود و بر این اساس، شبکهٔ معنایی هر پیشوند در قالب یک مقولهٔ شعاعی به تصویر کشیده می‌شود. در این راستا، ابتدا با استفاده از نرم‌افزار انت‌کانک (آنتونی، ۲۰۱۴) تمامی موارد وقوع چهار پیشوند موردنظر از پیکرهٔ همشهری نسخهٔ دو (آل‌احمد، امیری، دررودی، رهگذر و ارومچیان، ۲۰۰۹) استخراج شد. پس از آن، برخی از موارد وقوع جهت تحلیل به صورت تصادفی انتخاب گردید. یافته‌های مقالهٔ پیش رو نشان می‌دهد که فقط در سه پیشوند از این چهار پیشوند شاهد چندمعنایی هستیم، و اینکه بسامد کاربرد، سهولت اشتقاق و فراگیر بودن در شبکهٔ معنایی بهترین معیارها برای تعیین معنای اصلی هستند. سازوکارِ مفهومیِ چندمعنایی در این پیشوندها، مجاز است. تحلیل داده‌ها بیان‌گر آن است که چرخش مجازی در دو سطح روی می‌دهد، یکی در سطح معنای تکواژ/پیشوند و دیگری در سطح واژه‌سازی. به علاوه، تحلیل داده‌ها گویای آن است که چرخش مجازی نوع اول به روابط سرراست‌تری در درون شبکهٔ معنایی می‌انجامد. این امر ناشی از این واقعیت است که چرخش مجازی نوع دوم مستلزم تخیل بیشتری است که این، خودبه‌خود به پیچیدگیِ روابط در درون شبکهٔ معنایی و در کل، کاهشِ چشمگیر در بسامدِ نوعیِ معانیِ فرعی منجر می‌شود.

واژه‌های کلیدی: چندمعنایی اصول‌مند، شبکهٔ معنایی، مجاز، زبان فارسی، پیشوندهای نفی غیرفعلی.

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