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A Semantic Analysis of the Verb dowr zædæn (to turn around) in Persian: A FrameNet-Based Account [In English]

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ABSTRACT

The investigation of semantic frames evoked by various syntactic categories has always been the focus of study in the field of cognitive linguistics. Here, the syntactic category is a verb and the hypothesis is that as the verb *dowr z d n* (*to turn around*) is a polysemous motion verb in Persian, it is expected that just as there is an association among its meanings, there will also be a relation among the semantic frames evoked by it. In order to test the hypothesis, the findings of this research, which are composed of different situations where the verb was used, were extracted from the Persian Corpus of Bijankhan at the first stage. Then, the duplicate cases were eliminated so that only one type of each situation would remain. Having been translated into English and searched through the FrameNet database, the Persian cases alongside their frames were compared and analysed; as a result of which, it was identified that the hypothesis was confirmed, as there is a semantic association among the semantic frames the polysemous motion verb in question evokes-revolving around an object or deviating from the main path.

Keywords: FrameNet, Semantic Frames, The Persian language, Polysemy, Motion Verb, Sociology of Language**.**

1. Introduction

The FrameNet database (http://framenet.icsi.berkeley.edu) is a project launched in 1997 by the International Institute of Computer Science in collaboration with the Department of Linguistics at Berkeley University. The aim of this project is to describe the semantic frames of English words (Baker et al., 1998). In fact, the network is composed of Linguistic Units, henceforward LU, that relate each word to its semantic frame (s) (Fillmore, 2006). FrameNet,

which is a research project in computer lexicography based on the principles of frame semantics (Fillmore, 1977; 1982; 1985), is a lexical source for contemporary English language, syntactically annotated sentences as well as information which is related to the words or LUs capabilities in collocations.

The frame, which is motivated by language issues, provides a type of background for each word. In the following, first, a brief introduction of the structure of the FrameNet with examples from English is mentioned, and then, by taking the motion event and examining an example of a Persian motion verb and its semantic frames into account, the research hypothesis will be stated.

The FrameNet analyses the LUs and annotates the examples adjacent to the frame elements, the product of which is a description of the syntactic and semantic capacity of each LU. For example, the Motion Frame refers to a situation in which the motion process starts from the *Source*, follows the *Path* and reaches the *Goal* (Petruck, 1997). A simple example of a LU in the Motion Frame is shown in (1):

(1) [The ball]$_{\text{Source}}$ [**fell** from the child's hands]$_{\text{Ground}}$ [into the pit]$_{\text{Goal}}$ [after crossing the garden]$_{\text{Path}}$.

In Example (1), the bolded word is the fall of a LU in the Motion Frame, and the subscripts such as *Source*, *Ground* and *Path* are considered to be the frame elements that are bracketed.

Motion event was primarily paid attention to by Talmy (1985; 2000a; 2000b). The event, as the name suggests, refers to any phenomenon taken place as a movement. As Talmy (2000a&b) states, every motion event consists of 4 major and 2 minor components which are Figure, Path, Ground and Motion as the major components, and Cause and Manner as the minor ones. He also believes that the component Path is regarded as an indispensable part of any motion event (Ibid.). In fact, according to Talmy, if there is no Path, no motion will occur. Based on such a view, he has classified the languages in the world into verb-framed and satellite-framed languages, the basis of such a classification of which is the way Path and Manner are encoded. Accordingly, if Path is encoded on the verbs and Manner on any element other than the verb of a language, then the language will be considered verb-framed.

By contrast, if the same component is encoded on any element other than the verb but Manner is encoded on the verb, the language will be regarded as a satellite-framed language. Needless to say, by satellite, it means the non-verbal elements in a language such as verb particles, for instance (Talmy, 2000b).

Talmy (2000b) considers motion to include the following components: An element which moves is called a *Figure*, whose motion or location is examined in relation to another element called a *Ground*. The semantic construction of motion also includes two other internal components called *Path* and *Motion*. By the component *Path*, it means the way that is traversed or the place occupied by the Figure against the Ground, and *Motion* means the presence of a moving event. It is worth noting that as any motion event is also composed of 2 other components, that is to say Manner and Cause, they need to be defined. By Manner, Talmy means the way of movement and by Cause, he means the cause of motion (Talmy, 2000b).

Talmy (2000b) gives two examples to represent Figure and Ground:

(2) The pen lay on the table.

(3) The pen fell off the table.

In both (2) and (3), the phrase *The pen* acts as the Figure and the phrase *the table* as the Ground.

In the FrameNet database, there are similar components for motion verbs, which are referred to as the Core and Non-Core Frame Elements, hereafter CFE and NCFE, respectively. Indeed, the structure of the FrameNet is such that after providing a definition and various examples relevant to the LUs, each of which implies Motion in some way, such as *move*, *drift*, *roll*, *fly*, *float* and *go*, first the CFE are displayed and then, the NCFE are shown along with the definition of each frame with some examples. For instance, sentence (4) which has been taken from the FrameNet database is considerable:

4) Emily rose to her feet and MOVED restlessly around the room.

The structure of the FrameNet for English words is in such a way that by inserting words from any category in the *Search Box*, it provides the frame(s) related to that word. By clicking on each frame, the definition of it and the CFE and NCFEs of that frame are displayed together with a few examples.

As an example, the definition of a Motion Frame, which has been obtained as a result of searching the motion verb *go* can be referred to as follows:

"*Some entity (Theme) starts out in one place (Source) and ends up in some other place (Goal), having covered some space between the two (Path).*"

In what follows, that part of this frame including the CFE and NCFEs are displayed in Table 1:

Table 1. Core and Non-Core frame elements of *Go*

Lexical Unit	CFEs	NCFEs
Go	Area Direction Distance Goal Path Source Theme	Carrier Containing_event Degree Depictive Duration Frequency Iterations Manner Path_shape Place Purpose Result Speed Time

As mentioned earlier, in FrameNet, the frame elements fall into two core and non-core categories. Table (1) contains the elements for the Motion Frame. The definition provided by the FrameNet for the Motion Frame is almost identical to that given by Talmy (1972) about motion. In his definition, Talmy considers the moving element to be

called Figure, while in the FrameNet, it is called Theme, but other components involved in the movement such as Path, Source, Goal and Direction are the same in both Talmy's definition and that of the FrameNet.

Considering that the main issue and purpose of the present study is to investigate the semantic frames of the Persian motion verb *dowr z d n* (*to turn around*), we are going to see if its semantic frames will change in different contexts. In other words, our hypothesis can be expressed as follows:

Research hypothesis: As the verb in question, that is dowr z d n, is a polysemous verb of motion on the one hand and there is a semantic association among the meanings in a polysemy relation on the other, there should also be a relationship among the semantic frames evoked by the verb.

To achieve this goal, the findings containing the Persian motion verbs that were extracted from the Persian Corpus of Bijankhan, electronic sources and everyday speech of Persian speakers were gathered. In Section 3, the method through which they have been collected and analysed has been described in detail. The following section is allocated to the most prominent works carried out in Persian and other languages with respect to the exploration of semantic frames of motion verbs.

2. Literature Review

An enormous amount of research on the investigation of motion verbs in Persian and other languages on the one hand as well as on that of syntactic categories with respect to the theory of frame semantics on the other hand has been conducted. However, what is of utmost importance in this section refers to the works which have been allocated to the study of motion verbs within the theoretical framework of frame semantics in both Persian and other languages. In Persian, there are only 3 works which have focused on the study of motion verbs within the theory of frame semantics (Imani & Motavallian, 2020a, b, c). the 3 works are somehow interrelated to each other despite being different in that they all have examined the semantic frames of Persian motion verbs. In their study, Imani and Motavallian (2020a, b, c) have found that there are some limitations in FrameNet. Moreover, it is possible for the Persian language to have a

FrameNet database like the database established for contemporary English, that is to say, the FrameNet.

In addition to what they have arrived at, there are no other pieces of research on the inspection of such a topic. However, there are great bodies of research which have either looked into the study of syntactic categories with respect to the frame semantics approach or went into the study of motion verbs themselves to specify the position of Persian with regard to the binary classification proposed by Talmy (2000a&b).

As the discussion of these studies is beyond the scope of this article, we refrain from mentioning them. As for the languages other than Persian, it ought to be stated that there are a few works whose concentration is the exploration of the semantic frames of their motion verbs. To name a few, the following research papers will be observable.

In his paper, Cristobal (2001) compares the events of "arrival" in both English and Spanish and examines the related events with a confrontational approach within the framework of frame semantics theory.

Baker and Ruppenhofer (2002) compared Levin (1993) 's classifications of various verbs in an article with respect to frame semantics. In this comparison, the thematic construction of the verbs of each class, which also includes motion verbs was compared with the meaning of them.

Dekova and Nestorova (2008) have examined Bulgarian motion verbs in FrameNet and presented the classification of these verbs in the Bulgarian FrameNet database.

Subirats (2009) argues that semantic analysis of a given LU involves identifying a pattern that incorporates this LU into only one of its meanings. He also goes on to say that the frame semantics that underlies the Spanish FrameNet is different from other semantic approaches.

In their paper, Johnson and Lenci (2011) present a frame semantic analysis of a small group of Italian verbs that express visual perception constituting the first stage of the creation of the Italian FrameNet project.

3. Method

The findings of this study were collected in such a way that first, all the sentences and phrases containing this verb were extracted from the Persian Corpus of Bijankhan[1] and then, duplicate cases were removed. In fact, the tokens were taken out but the types remained. Afterwards, using Persian to English lexical dictionaries (Aryanpur & Aryanpur, 2008; Aryanpur, 2007; Ghaffari, 2007) and Persian to English idiomatic expression dictionaries (Ardeshir Jey, 1959; Nazari Teimoori, 2005), the English equivalents of the types were found so that the FrameNet can be asked for their semantic frames. Thereafter, the semantic frames defined by the FrameNet were displayed and extracted for making comparison and further analysis.

4. Findings and Discussion

According to Table (2), the number of collocations of the verb *dowr z d n*, a compound verb in Persian, is restricted to only 6 different situations; as a result of which, it is expected to evoke 6 distinct semantic frames.

Table 2. The collocations of the verb *dowr z d n*

Lexical Unit	Persian Collocations	English Equivalents
Dowr z d n (Turn around)	ماشین به سرعت **دور زد**.	The car **turned around** quickly.
	علی تختخواب را **دور زد** و کنار مادرش نشست.	Ali **circled** the bed and sat beside his mother.
	اولین زنی که کره زمین را از راه دریا **دور زد**.	The first woman who **rotated** the earth through the sea.
	یک فکر مزاحم در سرم **دور زد**.	Intrusive thoughts **popped into** my head.
	می‌توان این محدودیت‌ها را **دور زد**.	One can **circumvent** these restrictions.
	هواپیما بلند شد و شهر را **دور زد**.	The plane **took off** and turned around the city.

[1]. It is one of the most well-known, reliable and frequently used corpora in Persian having both electronic and online versions. The data in this study have been collected from the online version: http://corpora.phil.hhu.de/bonito/run.cgi

As Table (2) depicts, the verb is in the simple past form, the reason of which refers to the fact that with this form, the frequently used form of Persian verbs in texts, the largest number of types and tokens exist. That is why the tense of the sentences all is in the simple past form.

By *dowr z d n*, according to Amid (2001: 978), it means to turn around something, to change direction by car and to rotate. Hence, sentences 1, 2, 3 and 7 indicate the prototypical meaning of the verb. In fact, what these situations have in common is to turn around a stable axis or revolving around a fixed place, in which the Figures are *car*, *Ali*, *woman* and *airplane* respectively.

The manner of motion in them all is identical, i.e. it is circular. However, they are different in their Ground and Path or in the animacy or inanimacy of the Figure. For example, in *ma in be sor' t dowr z d* (*The car turned around quickly*), Ground is the surface on which Figure (car) is located, and Path is the way that Figure paves, that is to say the surface of the road or street.

In *h vapejma bol nd od v hr ra dowr z d* (*The plane took off and turned around the city*), Ground and Path change from a primary status to a secondary one. In the primary status, the airplane moves in the airport, whereas in the secondary status, it moves into the air in a circular way. Thus, the Ground is the airport in the primary status while it is the air in the secondary status. It also holds true for Path as well. Path, in the primary status, is from the earth to the sky, whereas it is the circular way in the secondary status.

When it is said that *Ali t xt-e xab ra dowr z d v kenar-e mad r ne st* (*Ali circled the bed and sat beside his mother*), it is obvious that the Figure's (Ali's) turning around is done via his walking and the Path he has traversed is the space around the bed. Indeed, the Source is Ali's primary location and the Goal is his mother's neighbourhood (his secondary location).

In the sentence *v lin z ni ke kore z min ra z rah-e d rja dowr z d* (*The first woman who rotated the earth through the sea*), we expose to a situation in which the Figure (woman) goes through a Path (sea) and the Ground is the earth. In the 4 aforementioned sentences, the prototypical meaning of the verb *dowr z d n* is interpreted. In other words, the literal meaning of the verb, that is *to turn around*, *to rotate*, have been referred to.

As for the two other situations—*jek fekr-e mozahem d r s r m dowr z d* (*Intrusive thoughts popped into my head*) and *mi t van in m hdudij t-ha ra dowr z d* (*One can circumvent these restrictions*)—it should be said that the idiomatic meanings are considered.

When it is said that *jek fekr-e mozahem d r s r m dowr z d*, by *dowr z d n*, it is meant the sudden intrusion of irritating thoughts into the mind. To put it another way, by using this verb in such a sentence, the speaker is going to make his addresses realize that an annoying issue has suddenly crossed his mind.

The last sentence to consider is another idiomatic construction *mi t van in m hdudij t-ha ra dowr z d*, by *dowr z d n*, it means to disobey rules or to defraud lawmakers.

Now, take the 2 idiomatic constructions into account, the motion event components will be considerable. In the former, Figure is *jek fekr-e mozahem* (*An intrusive thought*), Ground is *s r* (head) and Path is the space inside the head. The components Motion and Manner have been simultaneously encoded on the verb. It ought to be said that this motion event is of a subjective type, as it is invisible.

In the latter case, the Figure refers to the person or people who are going to disobey the rules or deceive the lawmakers. Like the former case, Manner and Path have been encoded on the verb at the same time. The path of motion in this sentence is the method via which the Figure (people) try to find for the violation of rules. It seems that the idiomatic construction of *dowr z d n* denotes the disobedience or violation of rules due to the fact that the people who violate the rules are similar to those figures that deviate from the right path and choose the wrong one. As a result, there is a kind of similarity between these two types of people. Hence, the application of the verb in the idiomatic construction.

Now, given the abovementioned explanations, the semantic frames of *dowr z d n* will be observable in Table (3):

Table 3. Semantic frames of *dowr z d n*

Lexical Unit	Semantic Frame	Frame Elements (Core)	Frame Elements (Non-Core)
Turn	Moving_in_place	Theme	Angle Depictive Direction Explanation Fixed_location Manner Periodicity Place Purpose Result Time
Circle	Motion	Area Direction Distance Goal Path Source Theme	Carrier Containing_event Degree Depictive Duration Frequency Iterations Manner Path_shape Place Purpose Result Speed Time
Rotate	Moving_in_place	Theme	Angle Depictive Direction Explanation Fixed_location Manner Path_shape Periodicity Place Purpose Result Time

Pop	Ingest_substance	Delivery_device Ingestor	Duration Entry_path Frequency Manner Means Place Purpose Time
Circumvent	Compliance	Act Norm Protagonost State_of_affairs	Degree Depictive Explanations Judge Manner Means Result Time

We should see whether there is any association among the semantic frames of the verb or not. As can be seen, for Turn, there are 7 semantic frames on the FrameNet, from among which the frame whose definition and elements are closest to it is Change_direction. In addition, the Moving_in_place Frame is the closest frame to the meaning of Turn in such cases, as it refers to the concept of revolving around an object or a person.

For Circle, there are 2 semantic frames defined by the FrameNet from which only Motion Frame is relevant. Interestingly, the Cause_to_move_in_place and Moving_in_place Frames are the two frames that Rotate and Turn have in common. This shows that these two LUs are closely related to each other.

There are 3 other LUs which are different in terms of both semantic frame and conceptual meaning. The LU Pop which is followed by *into* and collocated with *thoughts* evokes Ingest_substance Frame, and Circumvent evokes Compliance Frame. Examining the elements of this frame indicates that the 3 aforementioned LUs are far away from the prototypical meaning and have a tendency toward the idiomatic one. Thus, it appears that the prominence of the Motion component in these frames is less than that of the 3 former frames.

In sum, it is notable that as in the verb *dowr z d n*, the 2 components such as Manner and Path are encoded on the verb, the Persian language is considered to be neither verb-framed nor satellite-framed, as Hamedi Shirvan and Sharifi (1393) has also believed. Furthermore, based on the data analyses, it was revealed that although the verb is differently interpreted in various contexts, its interpretations as well as the semantic frames evoked are related to each other. It most often takes place when the verb or LU is polysemous.

5. Conclusion

What was important in this study was to examine the semantic frames of a polysemous motion verb in Persian to determine whether there is a relation between the semantic frames of this verb, as is among its meaning. In order to achieve this goal, relying on the FrameNet database that Fillmore established in the early 1990s, the semantic frames of *dowr z da n* (*to turn around*) were extracted and compared to each other. It should be noted that the study and comparison of the semantic frames of *dowr z d n* was done in continuation of the comparison of different contexts where the verb is used. Following the extraction of its frames, it was specified that the verb evokes 6 semantic frames which themselves denote 6 distinct contexts.

Of the 6 different semantic situations or frames, 3 had lexical interpretation and the 3 others had an idiomatic concept. However, there was an association among the frames that was related to the path and manner of the Figure's motion along the Path and against the Ground. In other words, the rotational motion was an event that all the semantic frames of the verb share. In conclusion, it can be claimed that the research hypothesis stating that there is a relationship between the semantic frames of the polysemous motion verb *dowr z d n* is confirmed.

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