ASPECTS OF ASPECT: PHASIC AND EPISODIC DIMENSIONS OF VERBS

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Abstract

The present study sets out to analyze aspectuality and coercion in Persian from a new perspective. With regard to the transcendental aspectual distinction between *perfectivity,* characterized by boundedness and heterogeneity, and *imperfectivity,* specified by uniformity and homogeneity (Langacker, 2008), it is argued that the heterogeneity of verbs may be assessed according to their phasic and episodic variables. In other words, in contrast to homogeneous verbs, which lack any kind of boundedness, heterogeneous verbs may occur either in a bounded phasic domain or in a bounded episodic domain. Concerning phasic-episodic features, this study presents a new model of lexical aspect that can differentiate five aspectual categories. The paper also scrutinizes the combinations of different verbs with different sentential operators in order to explain various kinds of type-shifting triggered by different operators. Thereby, two procedures of phasic coercion and episodic coercion are introduced which are responsible for modifying the phasic and episodic features of verbs in order to resolve the semantic conflicts between verbs and sentential operators. These procedures modify the phasic/episodic attributes of verbs according to the viewing frames evoked by interpretative operators.

Keywords: aspect; phasic and episodic coercions; adverb; tense; progressive operator

Povzetek

Študija analizira vidskost in prisilo v perzijščini iz nove perspektive. Glede na transcendentalnim vidskim razlikovanjem med dovršnostjo, za katero sta značilna leksikalna omejenost in raznoterost, in nedovršnostjo, ki jo določata enotnost in enovitost (Langacker, 2008), se domneva, da je raznovrstnost glagolov moč oceniti glede na njihove fazne in epizodične parametre. Z drugimi besedami, v nasprotju z glagoli enovitih dejanj, ki nimajo nikakršnih omejitev, se raznovrstni glagoli pojavljajo samo v omejeni domeni, ki je lahko fazna ali epizodična. V zvezi s fazno-epizodičnimi značilnostmi je v tej študiji predstavljen nov model

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leksičnega vidika, ki loči pet vidskih kategorij. V prispevku so podrobneje preučene kombinacije različnih glagolov in operaterjev (udeležencev), ki razjasnijo načine spreminjanja različnih glagolskih tipov. Pri tem študija uvede dva postopka fazne prisile in epizodno prisilo, ki so odgovorni za spreminjanje faznih in epizodnih značilnosti glagolov, in na ta način razreši pomenska nasprotja med glagoli in stavčnimi operaterji. Ti postopki spreminjajo fazne / epizodne značilnosti glagolov glede na okvirje, ki jih pogojujejo interpretativni operaterji.

Ključne besede: glagolski vid; fazne in epizodične prisile; prislov; glagolski čas; progresivni operater

1 Introduction

Aspectuality lies at the intersection of ontology and linguistics owing to the fact that ontological events are represented by different verbal classes. Ontological events are classified according to attributes such as (±durative, ±telic, and ±dynamic) in the literature (e.g. Vendler, 1967; Comrie, 1976; Smith, 1997; Frawley, 1999; Moens & Steedman, 1998). These attributes demonstrate the distinctive features of events. The first attribute refers to the continuity or instantaneity of an event, the second one indicates if a process includes an endpoint or not, and the third shows whether or not the action requires a source of energy. Accordingly, five fundamental schemata are proposed which represent different ontological processes, as shown below:

1. Activity (+durative, +dynamic, -telic): walk, run, dance
2. Accomplishment (+durative, +dynamic, +telic): build a bridge, learn English, destroy a wall
3. Achievement (-durative, +dynamic, +telic): win, lose, reach to a point
4. Semelfactive (-durative, +dynamic, -telic): cough, burb, blink
5. State (+durative, -dynamic, -telic): know, love, hate

These event schemata are represented by either verbs or verbal constellations (verb phrases) in language. Although verbs partly represent these ontological categories, their aspectual natures are greatly under the influence of semantic and syntactic combinations. For example, the specificity (+/-) of the internal argument of a verb has a significant impact on the telicity feature of the verb. These two examples from Persian show this very clearly:

(1) man yek Nāme rā[1] mi-nevisam.
I one Letter S/A imp-write-prs-1sg
'I (am) write (ing) a letter.'

[1] *rā* in Persian indicates the specificity and the accusative case of the internal argument of a verb simultaneously. Its functions are abbreviated as S/A in this paper.

(2) Man name mi-nevisam.
I letter imp-write-prs-1sg
'I (am) write (ing) letter(s).'

In the first sentence above, since the verb is linked with a specific internal argument, the verb is considered as telic (accomplishment). However, this verb in the second sentence is regarded as atelic (activity) because it has a non-specific internal argument. In other words, in the first sentence the specificity of the internal argument implies an endpoint; nevertheless, in the second sentence the action of letter writing refers to a repetitive process without implying a certain endpoint. With regard to this, some recent studies (Verkuyl, 1972, 1993, 2005; De Swart & Verkuyl, 1999), instead of focusing on event schemata and ontological categories, focus on the syntactic combinations in order to explain the aspectual nature of verbs and sentences. It must be noted that although these studies consider aspectuality as a linguistic phenomenon (not ontological), they are based on some implicit ontological categories like process, event, and state.

Nevertheless, aspectuality in cognitive grammar is based on the conceptualizer's interpretation of events rather than ontological categories and/or syntactic combinations, as is the case with the theories mentioned above. Accordingly, linguistic and ontological categories do not play a significant role in explaining the nature of aspectuality in cognitive grammar. To clarify this point, we need to further illustrate the concept of *construal*. The term construal refers to our "manifest ability to conceive and portray the same situation" in different manners (Langacker, 2008, p. 43, p. 54). Therefore, one may interpret the same scene or content in different ways and from various perspectives. Therefore, processes are not inherently characterized by aspect as being perfective or imperfective. Instead, they may be construed in different ways and with different aspects. This specific procedure of construal, which underlies aspectuality, is based on a cognitive ability that enables the construe of processual scenes in terms of heterogeneity and change (Langacker, 1987, p. 258; 2008, p. 147).

Consequently, processes may be interpreted as perfective or imperfective. An event is perfective when it is construed as a heterogeneous process revealing a change (such as a result, natural endpoint or stopping point) at the final instant of its temporal manifestation. Therefore, the process is considered as being bounded in time (e.g., build, kill, and win) simply because it is characterized by a temporal limitation. On the other hand, a process is considered as imperfective when it is construed as a homogeneous state without indicating any heterogeneity and variation (a result or a stopping point) during its temporal manifestation. Consequently, it is conceptualized as temporally unbounded, (e.g., know, hate, and like). In fact, perfective and imperfective aspects are the symptomatic manifestations of a fundamental cognitive ability specified for construing the events in terms of heterogeneity and change.

Although most events tend to be permanently categorized under one of the two perfective or imperfective aspects, it does not mean that it is impossible to interpret the same process in alternative ways; rather, the conceptualizer may sometimes interpret the same event in different ways. This is possible due to some operators called interpretative operators in this paper. These operators impose specific viewing frames on the processes denoted by verbs. As a result, they modify the aspectual nature of verbs. For instance, "-ing", as an interpretative operator in English, can re-interpret perfective verbs as imperfective. This is because this operator imposes a zooming-in strategy (internal viewing frame) on the process; accordingly, it puts emphasis on the medial phases of the event and "excludes the endpoint" and the temporal boundary of that event (Langacker, 2008, p. 155). Hence, it turns a bounded perfective verb into an unbounded imperfective one:

(3) You built the house.
(4) You were building the house.

Therefore, Langacker (2008, p. 155) believes that this operator imposes an internal perspective on perfective verbs to change them into imperfective states by removing their heterogeneity and bounded-ness. Accordingly, coercion and aspect shifting in cognitive grammar are nothing more than re-interpreting the aspect of a verbal constellation in the light of a viewing frame which has been evoked by a specific interpretative operator.

The present study aims to shed light on the relationship between the idea of heterogeneity proposed by Langacker (1982; 2008) and the five aspectual categories widely used in Vendlerian approach. In other words, we try to clarify in what ways the five aspectual categories can be inferred from the transcendental idea of heterogeneity. Next, we try to explain the role of interpretative operators in modifying the aspectual meanings of verbs in sentences. To accomplish its objectives, the paper analyzes a large amount of data in Persian language. About the data in the present study, it should be noted that the sentences have mainly been extracted from daily conversations, and in some cases, they have been constructed by the authors based on their own linguistic intuitions. Naturalness of the data and their potential interpretations have been discussed with native speakers. In addition, it is worth noting that although this theoretical study is based on data from Persian language, it seeks to propose a universal model to explain the idea of aspectuality; however, it does not claim to be universal since the validity of the findings should be assessed using data from various languages.

The article is organized as follows: In the second section, based on Langacker's model, a new model is proposed which can differentiate the five aspectual categories according to two binary variables (phasic and episodic heterogeneities). Next, in the third section of the study we try to investigate the semantic interaction between

perfective and imperfective verbs and different interpretative operators. In this regard, the concepts of phasic coercion and episodic coercion are proposed to explain this semantic interaction. These concepts refer to re-interpreting the phasic and episodic attributes of verbs in the light of viewing frames evoked by different operators. In the fourth part of the study, the semantic relationship between tense and aspect will be investigated. Finally, the fifth section of the study presents the findings of the research.

2 A cognitive appraisal of aspectual categories

As mentioned earlier, aspect is the product of a cognitive ability that conceptualizes events either as heterogeneous (perfective) or as homogeneous (imperfective) (Langacker, 1987, p. 258; Langacker, 2008, p. 147). Verbs may evoke one of these two alternative interpretations. In this regard, perfective verbs designate a heterogeneous process, which shows a kind of change and variation during its unfolding. On the other hand, imperfective verbs refer to a homogeneous and stable process not constrained by any temporal limitation. In fact, most of the verbs that are categorized under the title of imperfective aspect in cognitive grammar correspond with the ontological category of state in Vendlerian approach (example (5)). However, the perfective category covers various verbs which have been given different names (e.g., activity (example (6)), accomplishment (example (7)), achievement (example (8)), and semelfactive (example (9)) in the classical approach. In fact, cognitive grammar places these four categories of events under the perfective aspect.

(5) He knows mathematics.
(6) He walked in the park.
(7) He built a house.
(8) He won the game.
(9) He blinked.

In cognitive grammar, all divergent verbs classified under the perfective aspect have only one common attribute: heterogeneity. This feature is enough to distinguish them from the imperfective group of verbs. It should be noted, however, that most of the perfective verbs have different syntactic behaviors. In other words, they have different combinatory potential; as a result, each of them tends to combine with some particular adverbs, tenses, and interpretative operators. That is why, in Vendlerian approach, these verbs are categorized under different event schemata. For instance, accomplishment verbs preferably collocate with completive adverbs (example (10)). However, activity and semelfactive verbs are accompanied by durative adverbs (examples (11) and (12)):

(10) I cooked the meal in 2 hours.

(11) They walked in the park for 2 hours.

(12) He blinked repeatedly for 2 hours.

In spite of the subtle differences between different perfective verbs, they all have in common the attribute of heterogeneity; all of them profile events as heterogeneous processes. However, the concept of heterogeneity is too broad to explain the subtle differences of these verbs. The main question is how it is possible to extract the four aspectual categories (activity, accomplishment, achievement, and semelfactive) from this fundamental concept. In order to answer this question, we need to explain the concept of heterogeneity in such a way that it can explain the common attribute to all the four different perfective verbs, and explicate their characteristic features. In the following lines, we try to discuss this precise and comprehensive conception of heterogeneity in detail.

Considering Langacker's model (2008, pp. 147-149), one may argue that perfective verbs are characterized by phasic and/or episodic heterogeneities. As far as phasic heterogeneity is concerned, it refers to the emergence of a result (a change) at the final instant of atemporal period in which an event is unfolding. The result, opposed to the the previous co-equal phases of the process, gives rise to a kind of heterogeneity. This specific sort of heterogeneity is called *phasic heterogeneity* since "some change" (Langacker, 2008, p. 147) in the phasic structure[2] of the process "is observed". In other words, the preliminary particles of a process give birth to an ultimate result (as the final change) in an evolutionary manner.

In fact, this attribute can distinguish between perfective verbs (achievement and accomplishment) characterized by the presence of phasic heterogeneity (result) and those specified by the absence of phasic heterogeneity (without result) (activity and semelfactive). Thus we can say that perfective verbs can be divided into two groups of resultative (+R) and result-less (-R) based on the phasic heterogeneity variable (phasic variable). Smith (1977) describes the result emerging from the phasic structure of a process as *natural* ending. The word "natural" is used to differentiate accomplishment and achievement verbs from activity and semelfactive ones which lack an output. The following sentences in Persian illustrate some verbs including phasic heterogeneity that end in a result.

(13) Man xāne Rā sāxtam.
I house S/A build-pst-1sg
'I built the house.'

[2] Phasic structure refers to the structure of an event which includes preliminary, medial, and final phases.

(14) ʔu bāzi Rā bord.
s/he game S/A win-pst-3sg
'She won the game.'

In the examples above, there is exactly a single output for each resultative process. In other words, each process as a whole gives birth to one result. The singularity of the result is the fundamental requirement for the phasic heterogeneity since it is only by highlighting a single result (as the most prominent element) against the other co-equal components of the process (other phases of the process) that the conceptualizer may perceive a phasic heterogeneity. Therefore, we say that events entail phasic heterogeneity only if they have a single result against the preliminary phases. This is called the singularity requirement of the result. However, if the result is repeated, the (+R) feature will disappear. That is to say, when there are multiple outputs for a single process, that process is considered as result-less. This is because there is not a singular resultant stage to be in sharp contrast with other phases.

(15) ʔu bāzi Rā bord.
s/he game S/A win-pst-3sg
'S/he won the game.'

(16) ʔu bāzi Rā čandin bār bord.
s/he game S/A several times win-pst-3sg
'S/he won the game several times.'

In the first example above (15), the event of winning ends in a result that is the same for all stages and elements of the process. This distinguished result is a prominent heterogeneous element that is in contrast to the previous phases (stages) of the event. On the other hand, the process in the second example (16) is a repetitive process (repetitive activity). As a result, there are several results for numerous realizations of winning, and consequently, several results can be expected for the whole process. The verb in this example is thus considered to be (-R), and is not different from a perfective semelfactive verb.

(17) ʔu čandin bār čeʃmak zad.
s/he several time Blink lv.pst-3sg
'S/h blinked several times.'

In fact, an event is (+R) and has phasic heterogeneity only if there is one and only one result which is in contrast to the previous phases of the event. The singularity requirement and its relation to the phasic heterogeneity can be stated as follows:

> One state can be the result of a process if and only if this state is the only result for all the stages (phases) and for all the components of the process, and if it is *different* from the other elements.

In fact, an element or a state can be considered as the *result,* creating phasic heterogeneity, if it is the only output for all the phases of the event.

Nevertheless, Langacker (2008, p. 148) believes that there is a different kind of heterogeneity that does not relate to the resultant stage. He states that although some processes do not include a result and, consequently, do not have any phasic heterogeneity, yet they are categorized under perfective aspect. He argues that these processes can be regarded as heterogeneous with regard to their *episodic* dimensions. In fact, the episodic aspects of a process may give rise to a specific kind of heterogeneity which is called episodic heterogeneity. To explain this, firstly, we need to clarify the episodic dimensions of the perfective verbs, and then investigate how these dimensions bring about episodic heterogeneity. As far as episodic dimensions are concerned, they refer to the internal and external boundaries of a perfective event. To explain this, let us compare countable-uncountable dichotomy with perfective-imperfective duality. In the literature, this comparison has always been enlightening and very helpful to grasp the concept of aspect (see Leech, 1970, 2004; Mourelatos, 1978; Hoepelman & Rohrer, 1980; Carlson, 1981) and may clarify the notion of boundary and its relationship to episodic heterogeneity. With regard to the nominal distinction, countable nouns (e.g., table) refer to entities that are bounded and have a discrete boundary with their surroundings. In other words, an *external boundary* separates the entity from the spatial environment. This is while uncountable nouns (e.g., water) indicate elements that do not have a clear boundary with their surroundings since they are amorphous and shapeless. On the other hand, a countable noun refers to an entity with an internal configuration. Constituents of such entities are related to each other in a specific arrangement, and further, constituting particles can be differentiated from each other. Therefore, *internal boundaries* (lines of demarcation and separation) between the entity's particles (that are gathered in a structured arrangement) may be assumed. However, an uncountable noun denotes a shapeless element that does not have a discrete configuration, and its internal particles do not form a stable structure. That is why its constituents cannot be distinguished from each other. In other words, there are no clear and stable internal boundaries and lines of separation between internal elements of this entity. In short, countable nouns refer to elements that have a clear boundary line with their surroundings (external boundary), and there exists a clear and stable line of distance between their internal particles (internal boundary) that are gathered together in a structured configuration. However, neither the external limitation nor the internal boundary are relevant to an uncountable noun due to their external and internal shapelessness.

In comparison with the nominal distinction, perfective and imperfective verbs can be distinguished from each other according to the ideas of internal and external boundaries. Similar to uncountable nouns, the imperfective verbs profile processes that are devoid of any kind of external boundary with their temporal surroundings[3]. Accordingly, they "exclude" endpoint and temporal limitation "from what" they "put onstage for focused viewing" (Langacker, 2008, p. 147). In other words, these processes do not convey an ending or limitation; therefore, they are not bounded in time. Similar to uncountable nouns, imperfective processes do not contain recognizable internal phases or medial particles. In other words, a static process is devoid of medial phases and middle particles (the absence of internal boundary) since it is free of any kind of structured internal configuration. As a result, a state remains the same for all the instants during its temporal manifestation (Vendler, 1967, pp. 106-107; Smith, 1997, p. 32; Langacker, 1982, p. 266; Binnick, 1991, p. 183). Thus imperfective processes, similar to uncountable elements, have neither external (endpoint) nor internal boundaries (lines of demarcation between the internal phases of the event). However, most perfective events, similar to countable entities, have both external boundary (bounded-ness) and internal limitation (internal configuration). The external boundary separates the event from the temporal surrounding. This outer limitation is described either as a natural endpoint or as a stopping point. Due to this temporal limitation, perfective events are described as temporally bounded (Langacker, 2008, p. 147). In addition, the perfective processes involve discernible internal phases and different medial particles. Therefore, there are lines of demarcation between the components and stages of a perfective process.

To further elaborate on this issue, first, let us discuss the external boundaries of perfective events. Contrary to static processes, which have removed from *focused viewing* all boundaries with their temporal surroundings, all perfective events directly or implicitly express an endpoint (the completion or a stopping point). These events are thus described as temporally bounded. Temporal boundedness is evident in a perfective event with phasic heterogeneity because the moment in which a result emerges is the ending point of that action and the indicative of the boundary between the action and the temporal surrounding. In other words, the ultimate result of a perfective process may separate the event from the temporal surrounding and turn it into a bounded process. The outer limitation made by the result is called external phasic boundary. As already mentioned, it is this external phasic limitation that evokes phasic heterogeneity and boundedness. This suggests that the result as the final stage in a perfective process illustrate an external boundary.

Apart from the external boundary made by the emergence of a result, Langacker (2008, p. 148) suggests the idea of episodic bounded-ness (events "*occurring in*

[3] By temporal surrounding, we mean the infinite temporal axis in which a bounded event emerges. In fact, the bounded event only occupies a limited part of this infinite line.

bounded episode") to explain the external limitation of a result-less perfective process (e.g., walk, swim, blink and burp). In this regard, Langacker makes a comparison between some specific countable nouns (lake, lawn, brick, beep, and hole) and result-less perfective verbs. Despite the fact that these entities (like a lake) are inherently homogeneous, their external boundaries with the surroundings (a line between the lake and the land) can be recognized. In other words, they are episodically bounded. In the same way, although some events do not involve the resultant stage as the external limitation, they have an episodic external boundary separating the event from the temporal surrounding. Smith (1997, p. 23) believes that although a result-less process does not complete and finish at the resultant stage, it stops at a specific point described as *stopping point*. This point illustrates a specific kind of external limitation separating the bounded event without result from its temporal surrounding. While the result emerging necessarily from the phasic structure of a resultative process, the stopping point is derived from the terminable nature of perfective events with no results.

In contrast to the protractible nature of imperfective processes that removes any kind of external limitation, the terminable nature of result-less events imposes a limitation on these processes. The terminability attribute implies a specific temporal point in which a terminable perfective process may *come to* stop. Consequently, the result-less events are bounded due to this point. Therefore, if we regard the completion point of a resultative process as external phasic boundary, it can be argued that the stopping point of a result-less event may be considered as external episodic limitation. With regard to the terminable attribute of result-less processes and their external episodic limitations, the result-less events tend to always be bounded. That is why verbs *like walk, swim, blink and burp,* contrary to imperfective verbs, easily combine with the progressive operator (-ing) and *resist the present tense* (Langacker, 2008, pp. 147-148). In other words, since they associate the property of terminability, they always tend to be bounded. Similarly, result-less perfective verbs can always be combined with the progressive operator in Persian (example (18)); however, the imperfective ones cannot collocate normally with this operator (example (19)):

(18) Sohrāb dāʃt qadam mi-azd.
Sohrab pro-pst-3sg walk imp-lv-pst-3sg
'Sohrab was walking.'

(19) *kāmbiz dāʃt fāteme rā dust dāʃt.
Kambiz pro-pst-3sg fateme S/A love lv.pst-3g
('Kambiz was loving Fateme.')

We call this boundary, which demonstrates the event's bounded-ness and its detachment from its temporal surrounding, external episodic boundary. This episodic

boundary brings about episodic bounded-ness and heterogeneity. The heterogeneity or change made by a stopping point or an episodic limitation is described as episodic heterogeneity. This episodic heterogeneity is made by an external limitation and is thus called external episodic heterogeneity. Nevertheless, the heterogeneity made by the result which functions as the external phasic boundary is called external phasic heterogeneity. All kinds of perfective verbs are always bounded because there is a demarcation line (episodic or phasic external boundary) that separates these events from temporal surroundings. In other words, all the bounded perfective processes include an external limitation. This outer boundary as the common attribute in all perfective verbs may emerge in different forms such as a result or a stopping point.

A conceptualizer may demonstrate its cognitive access to the external boundary of an event in different ways. For instance, using the perfect operator (past participle (verb + e) + ʔastan (to be)), the conceptualizer may highlight the external phasic limitation (result) or the external episodic boundary (stopping point) of perfective verbs. The function of this interpretative operator is to focalize the external limitations of perfective verbs. A combination of this operator with various perfective verbs looks quite normal since all of them have external boundaries either in a phasic form or in an episodic form.

(20) Man zyād david-e ʔam.
I very much run-pp. be-prs-1sgs
'I have run very much.'

(21) ʔu xāne rā sāxt-e ʔast.
s/he house S/A build-pp. be-prs-3sg
'S/he has built the house.'

(22) ʃomā bāzi rā bord-e ʔi.
you-pl game S/A win-pp. be-prs-2pl
'You have won the game.'

(23) Man ʔatse kard-e ʔam.
I sneeze lv-pp. be-prs-1sg
'I have sneezed.'

In the examples above, external boundaries have been highlighted by the perfect operator. In fact, the operator has emphasized the external phasic limitation of the resultative perfective verbs (examples (21) and (22)), and the external episodic boundary of the result-less verbs (examples (20) and (23)). However, when this operator combines with a static and homogeneous process, usually the resulting

construction is a marked combination (example (24)) because the states do not have external boundary to be highlighted by the operator. That is because, as mentioned earlier, imperfective verbs delete the external episodic boundary from viewing; therefore, they are not used with perfect construction.

(24) *to ryāzi balad bud-e ʔi.
you mathematics know be-pp. be-prs-2sg
('You have known mathematics.')

Nevertheless, it should be noted that some static verbs combine with this operator just in virtue of episodic coercion. This means that they obtain new episodic features under the influence of a perfect operator, or , an external episodic limitation is imposed on the static process by the perfect operator (example (25)).

(25) ʔu tā ʔalān mariz bud-e ʔast.
s/he until now sick be-pp. be-prs-3sg
'S/he has been sick until now.'

Phasic and episodic coercion phenomena will be discussed in detail in the next section.

There are some specific verbs (described as super-lexical morphemes by Smith (1997, p. 48)) profiling either the external phasic boundary or the outer episodic limitation. For instance, using some verbs in Persian, *motavaqef kardan* 'stop' and *tamām kardan* 'finish', a conceptualizer may profile the external limitation of a perfective process as the focus of attention. The first operator is used to highlight the external episodic boundary (stopping point) and the second one is applied to focalize the external phasic one (completion point):

(26) To qadam zadan rā motavaqef kardi.
you walking lv S/A stop lv-pst-2sg
'You stopped walking.'

(27) Man xāne sāxtan rā tamām kardam.
I house building S/A finish lv-pst-1sg
'I finished house building.'

Nevertheless, static verbs that are devoid of any phasic and episodic external boundaries do not combine with these super-lexical morphemes. In other words, they do not have external boundaries to be highlighted and emphasized by these verbs:

(28) *Hasan moʔalem budan rā motavaqef/tamām kard.
Hasan teacher being S/A stop/finish lv-pst-3sg
(‘Hasan stopped/finished being teacher.’)

(29) *Maryam mariz budan ra motavaqef/tamām kard.
Maryam sick being S/A stop/finish lv-pst-3sg
(‘Maryam stopped/finished being sick.’)

However, this combination may convey an interpretation only if the verb undergoes phasic coercion. In this case, the verb describes a change or transformation from one state to another. This specific construction in which the state verbs undergo phasic coercion will be addressed in the next section.

It can be claimed that all perfective events have either external episodic boundary or external phasic boundary, and such limitations can be highlighted by different operators. These external boundaries bring about a specific kind of external heterogeneity that refers to a change (a result or a stopping point) obtained at the final temporal point of the temporal extension. The heterogeneity made by a result is called phasic heterogeneity, and that which is made by episodic limitation (stopping point) is called episodic heterogeneity. However, these different external boundaries (phasic and episodic) have the same function as far as they impose an outer limitation on the processes and bring about bounded-ness and perfectivity.

Now, let us discuss the internal boundaries of perfective events. Accomplishment and activity verbs, similar to countable nouns, refer to processual entities having discernible and distinguishable internal stages and particles. That is, the medial boundaries between the constituting elements of the process are distinguishable. Therefore, by using the progressive operator (*dāʃtan*), the conceptualizer can highlight some of the internal particles of a process against the external boundary (the endpoint or the stopping point of the action).

(30) Karim dāʃt xāne mi-sāxt.
Karim pro-pst-3sg house imp-build-pst-3g
‘Karim was building a house.’

(31) ʔebi dāʃt qadam mizad.
Ebi pro-pst-3sg walk imp-lv-pst-1sg
‘Ebi was walking.’

In fact, the role of the progressive interpretative operator is to highlight the medial phases and elements of a process (Langacker, 2008, p. 155) and exclude the endpoints.

Since these two processes (accomplishment and activity) have accessible and discernable internal particles, their combination with the progressive operator looks completely normal. Consequently, in the examples above, the medial stages and particles of building and walking processes have been focalized, and the endpoints (the result or the stopping point) have been de-emphasized and excluded by the operator. That is because the progressive operator has highlighted some of the medial particles against the external boundary of the actions. Nevertheless, because static verbs designate processes without discernible and accessible medial stages and internal elements, they cannot combine with the progressive operator of *dāʃtan*:

(32) *to dāʃti ryāzi balad budi.
You pro-pst-2sg mathematics know be-pst-2sg
('You were knowing mathematics.')

(33) *man dāʃtam ʔu rā dust dāʃtam.
I pro-pst-1sg s/he S/A love lv-pst-sg
('I was loving her/him.')

In fact, separability and recognizability of the internal elements of an event indicate the internal boundary (or existence of demarcation lines) between the event's internal phases and particles. These demarcation lines cause a kind of episodic heterogeneity between the constituents of the event. The fact that the medial particles (elements) of an event are cognitively accessible to the conceptualizer is called *internal boundary accessibility*. It means that the episodic boundaries between the medial elements of the event are accessible. Also, the resulting episodic heterogeneity made by this is called *internal episodic heterogeneity*. In other words, the episodic lines of demarcation between different elements of a process may give rise to an episodic heterogeneity. In fact, this specific episodic heterogeneity only exists in events which have accessible and recognizable medial elements.

In the following lines we discuss the internal configuration and boundaries of achievement and semelfactive verbs. As discussed earlier, these two events contain external phasic boundary and outer episodic limitation respectively, and this leads to the emergence of a kind of external heterogeneity in them. However, it should be noted that the internal particles and medial phases of these events do not look accessible to the interpretative operators. Thus, when the verbs that represent these events are combined with the progressive operator, the operator cannot highlight the internal stages and particles of these events, but it highlights the other parts of the events.

(34) ʔu dāʃt bāzi rā mi-bord.
s/he pro-pst-3sg game S/A imp-win-pst-3sg
'S/he was winning the game.'

(35) Man dāʃtam ʔatse mi-kardam.
I pro-pst-1sg sneeze imp-lv-pst-1sg
'I was sneezing.'

For instance, in the first example above, the interpretative operator has highlighted the internal elements of the preparatory phase, which has been imposed as a new episodic feature[4] on the process by the progressive operator (*dāʃtan*) (example (34)). The same operator, combined with a semelfactive event, has highlighted the external boundaries between several realizations of sneezing (example (35)). In other words, since the internal stages and particles of this event are inaccessible, the operator focalizes the external limitations between consecutive events [5] with inaccessible internal components. In conclusion, the medial particles have been conceptualized in neither case. In previous approaches (Vendler, 1967; Binnick, 1991; Smith, 1997; Frawley, 1999) these two categories (achievement and semelfactive) have been illustrated as punctual or instantaneous to show that they do not contain internal particles. The present study does not concern whether or not these events, from an ontological or physics' viewpoint, contain internal boundaries or particles. We only, from a cognitive perspective, claim that even if these events possess internal particles, they are not accessible to the conceptualizer, and thereby they do not have internal boundary accessibility. It means that their internal particles and the boundaries between them do not undergo cognitive processing. Therefore, it can be argued that although these two processes have external heterogeneity because of the existence of episodic/phasic external boundaries, they are devoid of internal episodic heterogeneity since their medial elements are inaccessible.

The examples below clearly show the difference between events with accessible internal boundaries and events with inaccessible internal boundaries.

[4] The verb undergoes episodic coercion in this example (see example (61)).

[5] Due to the semantic conflict between the episodic feature of the semelfactive event and the viewing frame evoked by the progressive operator, the semelfactive verb exceptionally expresses a repetitive process including several realizations of sneezing (episodic coercion). In this regard, the operator puts emphasis on the external limitations between the successive events (numerous realizations of sneezing) characterized by inaccessible internal particles (see example (62)).

(36) Do sāʔat maŝghul-e neveŝtane ʔān name budam vali hanuz
For 2 hour engaged-Ez writing that letter be-pst-1sg but yet
tamām naŝode.
finish not-become-prs-3sg
'I was engaged in writing that letter for two hours, but it has not been finished yet.'

(37) Man be-moddate do sāʔat ʔatse kardam.
I for two hour sneeze lv-pst-1sg
'I sneezed for two hours.'

In the first sentence above (example (36)), which contains an accomplishment verb with accessible medial particles, the middle elements of the process correspond with the moments of the temporal extension described by the durative adverb. However, because a semelfactive event does not have any accessible internal particles, there is not such a correspondence. The second example on the other hand shows the correspondence of temporal moments indicated by the adverbial operator with the external episodic boundaries between numerous realizations of sneezing. This sentence clearly points to a repetitive activity including several instantiations and realizations of sneezing, and each external boundary between two sub-instantiations corresponds with a moment of the temporal extension described by the adverbial operator. The reason is that semelfactive events do not have accessible internal elements, and their external episodic boundaries are only accessible to the operator. As a result, external boundaries between semelfactive events are mapped onto the temporal moments of the adverbial temporal extension.

Accordingly, we say that semelfactive and achievement events only possess accessible external boundaries and are devoid of internal boundary accessibility. Since static events are devoid of internal boundaries and accessible elements, there happens no correspondence between different moments of the temporal extension (expressed by the adverb) and the internal elements of the static process. The state stays the same for all the instants because its internal structure is inaccessible and unanalyzable for temporal moments:

(38) ʃahlā tā se ruz mariz bud.
Shahla for 3 day sick be-pst-3sg
'Shahla was sick for three days.'

Although the adverbial operator has imposed an external episodic limitation on the verb by episodic coercion (see examples (83)-(86)), the state as a whole stays the same for all the moments of the temporal extension. Therefore, the differential moments do

not correspond with the medial phases (that are inaccessible) of the static process. Based on this introduction, the following rule for cognitive access to internal and external episodic boundaries can be presented.

> An event is episodically accessible if the conceptualizer is able to make a contrast between a part of the event as the primary focus and the remaining stages. The highlighted element can be a medial element (accessible internal boundaries) or the external boundary (accessible external boundary: a result or a stopping point).

Briefly said, episodic heterogeneity in perfective events is the product of their external and internal boundaries. If the external boundary (a result or a stopping point) of an event is accessible, the event will have external heterogeneity and external boundary accessibility. Moreover, if the internal boundaries of an event are accessible, the event will have internal heterogeneity and internal boundary accessibility.

Based on the phasic (-R, +R) and episodic features [internal boundary accessibility (α), external boundary accessibility (β)], we can clearly categorize perfective events. The binary phasic variable examines events' phasic heterogeneity, and the binary episodic variable examines events' episodic heterogeneity. The phasic variable takes two complementary features (-R and +R), but the episodic variable is a variable with two non-complementary features (α and β). The episodic features are non-complementary because the co-existence of these values in a same process is not impossible. The same process cannot be simultaneously resultative (+R) and resultless (-R), but it may contain both of internal (α) and external (β) boundary accessibilities. Before classifying different perfective verbs according to the features mentioned above, it should be noted that since all perfective verbs are constrained by an external limitation (a result or a stopping point), the feature β cannot differentiate the perfective verbs from each other. In other words, they all have the feature + β in common because it is afundamental feature which makes a distinction between perfective verbs and static ones. The external limitation of the perfective processes appears in the forms of a result or a stopping point. As a result, for classifying the perfective verbs, only the feature of result (R) and the attribute of internal boundary accessibility (α) are used as distinctive features.

As far as the phasic variable is concerned, the processes can be divided into +result and –result. This variable can differentiate the accomplishment and achievement verbs from activity and semelfactive ones. In addition, with regard to internal episodic feature (α), the processes are classified into +α (events with accessible internal boundaries) and –α (events with inaccessible medial particles). This parameter makes a distinction between accomplishment and activity verbs and semelfactive and achievement ones. In other words, only activity and accomplishment verbs contain internal boundary accessibility (+α), but semelfactive and achievement verbs are characterized by inaccessibility of internal boundaries (-α).

To sum up, different perfective verbs have a common feature (+ β), but they are different with regard to the phasic attribute (+/-R) and internal episodic feature (+/-α). It should be noted though that all of these different features (phasic and episodic ones) are nothing more than different manifestations of the fundamental idea of heterogeneity. The table below describes the aspectual features of perfective events according to the fundamental attributes of phasic and episodic features. It shows how the four fundamental categories of lexical aspect can be extracted from the cognitive idea of heterogeneity. These features not only analyze perfective events in a unified manner but also differentiate them from each other.

Table 1: Aspectual categories according to phasic and episodic variables

Aspectual categories	Phasic heterogeneity variable	Episodic heterogeneity variable
Accomplishment	+R (resultative)	+ α (internal boundary accessibility) + β (external boundary accessibility)
Activity	-R (resultless)	+ α (internal boundary accessibility) + β (external boundary accessibility)
Achievement	+R (resultative)	- α (lack of internal boundary accessibility) + β (external boundary accessibility)
Semelfactive	-R (resultless)	-α (lack of internal boundary accessibility) + β (external boundary accessibility)

According to the table above, we can evaluate the degree of phasic and episodic heterogeneities of different perfective verbs. It can be inferred that accomplishment events have the greatest degree of heterogeneity. However, semelfactive events have the least amount of heterogeneity because they only contain external episodic heterogeneity. It should be noted that the feature + β is the minimum requirement for a verb to be considered as perfective. The other two events contain moderate degrees of heterogeneity:

Continuum of heterogeneity:
Accomplishment > Activity, Achievement > Semelfactive

The above mentioned features suggest that a static process is a process with no phasic or episodic bounded-ness, and that it has neither internal episodic boundary nor external phasic/episodic limitations:

State: -α, -β, -R

In fact, this process removes the external phasic and episodic limitations from the focused viewing. In addition, its medial phases (internal episodic limitations) are inaccessible. The only difference between a state and a semelfactive verb is due to the presence of external episodic limitation in the latter. Based on this introduction, in the

next part we discuss the semantic interaction between the discussed aspectual categories and different interpretative operators at the sentential level.

3 Aspectual categories and interpretative operators in Persian

As already mentioned, interpretative operators impose specific viewing frames on the event schemata denoted by verbs. For instance, perfect and progressive operators put emphasis on the external phasic-episodic boundary and the internal episodic limitations of events respectively, or shortly, they re-construe the processes indicated by verbs in the light of specific viewing frames. Temporal adverbs may also play the role of interpretative operators in the sentence; because the aspectual features of verbs are re-construed according to the temporal scales evoked by adverbs (Langacker, 2008). Consequently, verbs are highly sensitive to the temporal features of adverbs, which is because aspectual features of verbs are re-conceptualized in terms of the qualitative (evolutionary or non-evolutionary temporal extension) and quantitative (durative or non-durative) features of adverbial temporal scales. Combining a verb and a certain adverb, the conceptualizer makes a relationship between the temporal scale of the adverb and the phasic-episodic attributes of the verb.

Durative and completive adverbs are among those adverbs that exert considerable influence on the aspectual meanings of verbs. Before delving into this semantic relationship, we should illustrate the interpretative functions of these adverbs in detail. As far as a durative adverb is concerned, it re-interprets the phasic-episodic features of a verb in the light of a homogeneous temporal extension without culmination and result. However, the completive adverb re-construes the phasic and episodic features of a verb in terms of a heterogeneous temporal extension, which is directed towards a result. With regard to a durative adverb, the temporal moments hold the same degree of importance in the homogeneous temporal extension, and the process is supposed hide any kind of quality change over this consistent and uniform temporal extension. However, the completive adverb demonstrates a heterogeneous temporal extension with qualitatively different moments appearing in an evolutionary frame. The temporal extension gives rise to a result (ultimate change) in an evolutionary manner.

Since adverbs convey some qualitative and quantitative attributes, they are highly selective when it comes to compatible verbs. They prefer to be combined with those verbs that have some well-matched features. In case of incompatibility between the temporal nature of an adverbial scale and the event schema indicated by a verb, coercion will come forth to remove the incongruity. Coercion, in the literature, is a procedure responsible for resolving semantic incompatibility between different linguistic elements in a sentence (see Pustejovsky, 1995; Moens & Steedman, 1998, p. 17; Smith, 1997, p. 48; De Swart, 1998, p. 349; 2002; De Swart & Verkuyl, 1999; Jackendoff, 1997; Michaelis, 2004, 2011; Cortés-Rodriguez, 2014). As mentioned

before, coercion in cognitive grammar refers to re-construing the aspectual features of verbs in the light of the viewing frames invoked by operators. As a result, some phasic or episodic features of a verb may change due to the semantic requirements of an operator in the sentence. As far as the semantic interaction of verbs and adverbs is concerned, the episodic features (α/β) and the phasic attributes (+R/-R) of the verbs may undergo modification under the influence of the adverbial operators.

On the other hand, different aspectual features (phasic and episodic dimensions) may be modified in the process of coercion. In this regard, coercion may modify the phasic attributes of verbs; and alternatively it may change the episodic dimensions of verbs. As a result, the procedure of coercion triggered by different operators can be divided into two categories: phasic and episodic coercions. For instance, the phasic coercion, which is triggered by an adverb, modifies the phasic attribute of a verb according to the temporal features of the adverbial scale, and the episodic coercion, motivated by an adverb, may change the episodic properties of a verb according to the temporal requirements of the adverbial operator.

We next try to investigate the semantic relationship between the aspectual categories and different adverbs (completive and durative) in different sentences. The following sentences are mainly in the past tense because the past tense is neutral towards any kind of aspect, and triggers no coercion in Persian. By choosing the past tense, we can remove the disturbing variable of tense in order to examine the semantic interaction of verbs with adverbs.

We first study the relationship between perfective verbs and different operators, and then investigate the relationship between imperfective verbs and different operators. The following examples illustrate various constructions made by various perfective verbs and different adverbs:

(39) ʔali yek borj rā sāxt.
Ali one tower S/A build-pst-3sg
'Ali built a tower.'

(40) ʔali dar do sāʔat yek borj rā sāxt.
Ali in 2 hour one tower S/A build-pst-3sg
'Ali built a tower in 2 hours.'

(41) *ʔali be moddate do sāʔat ʔan borj rā sāxt.
Ali for 2 hours that tower S/A build-pst-3sg
('Ali built that tower for 2 hours.')

(42) ʔali be moddate do sāʔat borj sāxt.
Ali for 2 hours tower build-pst-3sg
'Ali built tower for 2 hours.'

(43) ʔānha qadam zadand.
They walk lv-pst-3pl
'They walked.'

(44) ʔānhā be moddate do sāʔat qadam zadand.
They for two hour walk lv-pst-3pl
'They walked for 2 hours.'

(45) *ʔali dar do sāʔat qadam zad.
Ali in 2 hour walk lv-pst-3sg
('Ali walked in 2 hours.')

In example (39) the accomplishment verb (*sāxtan*), with a specific internal argument, indicates an event which is characterized by + R and + (α/β). The process shows a certain result, and its internal and external boundaries are accessible. The combination of this verb with a completive adverb in example (40) sounds natural. It is because the phasic attribute of the accomplishment verb (+R) is completely compatible with the heterogeneous and evolutionary temporal extension indicated by the completive adverb. On the other hand, the episodic property of the verb (+ α: accessible internal boundaries) is in harmony with the durative temporal scale of the adverb. The accessible internal boundaries make it possible to make a connection between internal components of the event and different instants of the temporal extension of the adverb. The internal elements can thus correspond to different instants of the temporal extension, and after the combination of this verb and the adverb, the phasic and episodic properties of the verb remain intact. However, the combination of this verb and the durative adverb in example (41) is semantically marked. Although the episodic property of the verb (+α) is compatible with the durative temporal extension of the adverb, its phasic attribute (+R) is incompatible with the homogeneous and non-evolutionary temporal extension of the adverb. As such, the sentence is marked. Nevertheless, this verb has a non-specific internal argument in example (42) and therefore the process expressed by the verb is not directed towards a certain result or a singular output but rather to a repetitive activity of tower building. It is considered as an activity verb (the activity of building tower as such) and is characterized by aspectual features of –R and + (α/β). Since the verb refers to a result-less process, it can normally be combined with a durative adverb which indicates a homogeneous and non-

evolutionary temporal scale. The verb with the phasic attribute of (-R) is therefore in harmony with the homogeneous temporal extension of its adverb.

In example (43), the activity verb expresses a process specified by properties -R and + (α/β). A combination of this verb and the durative adverb is natural in example (44) because the phasic feature of the activity verb (-R) is congruent with the homogeneous temporal extension of the adverb. On the other hand, the episodic attribute of the verb (+ α) is harmonious with the durative temporal extension of the adverb. As a result of the accessibility of internal boundaries, internal components of the process indicated by the verb correspond with the moments of temporal extension profiled by the adverb. This means that the verb has kept all of its aspectual properties without any modification. However, the combination of this verb is incompatible with the completive adverb in example (45) because the phasic attribute of the activity verb (-R) is in conflict with the evolutionary and heterogeneous temporal extension of the adverb; therefore, this sentence is marked and unnatural. However, this verb in combination with the completive adverb can make sense if it describes a situation in which a person has a plan for walking in a specific day for three hours but, one day and because of some reasons, he has to finish this plan in less than two hours. In this special context and under the influence of the completive adverb, the process is re-construed as a heterogeneous process with a natural endpoint (end of the plan) which is obtained at the final temporal point of the evolutionary temporal extension denoted by the adverb. Accordingly, the activity verb seems to be re-interpreted as an accomplishment verb in order to be compatible with the evolutionary temporal scale expressed by the adverb. In other words, the –R feature of the verb is turned into + R by the adverb. It can be argued that the activity verb in this example undergoes phasic coercion because its phasic attribute changes into + R. This kind of coercion is considered as a kind of phasic coercion since the phasic attribute of the verb (-R) has been modified (+R) according to the temporal requirements of the adverbial operator (evolutionary time).

When these adverbs are combined with achievement and semelfactive verbs, many complicated constructions are obtained. As mentioned earlier, semelfactive verbs are characterized by aspectual properties of -R and -α/+β, and achievement verbs are characterized by +R and -α/+β. The following examples illustrate the combinations of these verbs and different adverbs:

(46) Sara bāzi rā bord.
Sara game S/A win-pst-3sg
'Sara won the game.'

(47) Sara dar do sāʔat bazi rā bord.
Sara in 2 hour game S/A win-pst-3sg
'Sara won the game in 2 hours.'

(48) Sara be moddate do sāʔat bāzi rā bord.
Sara for 2 hour game S/A win-pst-3sg
'Sara won the game for 2 hours.'

(49) To cheŝmak zadi.
You blink lv.pst.2sg
'You blinked.'

(50) To be moddate do sāʔat cheŝmak zadi.
You for 2 hour blink lv-pst-2sg
'You blinked for 2 hours.'

(51) *ʔu dar do sāʔat cheŝmak zad.
s/he in 2 hours blink lv-pst-3sg
('S/he blinked in 2 hours.')

Example (46) includes an achievement verb with the features of +R and -α/+β. However, this verb is combined with a completive adverb in example (47). This combination which describes a situation in which Sara has won the game after 2 hours of struggle. In this example, the heterogeneous and result-oriented temporal extension indicated by the adverb is in harmony with the phasic attribute of the achievement verb (+R). However, durative dimension of the completive adverb is in contrast with the inaccessibility of the internal episodic boundary of the verb (-α), which means that the internal components of the verb can not be accessed by the durative temporal scale of the adverb, and as a consequence the internal elements may not correspond with the moments of the temporal extension. To remove this semantic conflict, a durative preparatory phase with accessible internal particles (a new episodic feature: + α) is added to the process, which makes different instants of the adverbial temporal extension correspond with the accessible internal components of the preparatory phase of the process of winning. The preparatory phase is extended to two hours because it is the only relevant part of the process that is accessible to the completive adverb. As such, the process characterized by inaccessibility of internal particles changes into a durative process (two hours of duration in the preparatory phase) with accessible internal elements, and the ultimate result will be obtained after this temporal period. It can be argued that the achievement verb has taken a new episodic attribute (+ α), and although the internal elements of the process were inaccessible at first, they become accessible under the influence of the adverbial operator. As a result, the verb seems to have undergone episodic coercion because its episodic aspect (-α) changes into +α, however the phasic attribute stays the same during the process of coercion.

In example (48) the achievement verb combines with a durative adverb. In this case, the homogenous and durative temporal extension of the adverb is completely incompatible with the phasic (+R) and episodic aspects (-α) of the verb. This sentence is meaningful only in a specific context in which the person has repeatedly won a certain game for two hours. The verb, in this sense, describes a repetitive activity; simply because the process lacks a singular result for all of its components (it has several results). It can be argued that the achievement verb changes into a repetitive activity to be compatible with the semantic requirements of the durative adverb. This verbal metamorphosis can resolve the phasic and episodic conflicts between the verb and the adverb as the repetitive dimension of the resulting verb simultaneously removes the phasic (+R of the verb) and episodic (-α of the verb) incompatibilities. If we consider the repetitive activity as an eventual complex, the sub-events (several realizations of winning) will be its internal components. In addition, the internal components of the eventual complex are accessible to be connected with the instants of the durative temporal extension expressed by the durative adverb. At this place we can argue that the achievement verb, with inaccessible internal elements (-α), is turned into a repetitive activity with accessible internal components (+α). This aspectual modification illustrates an episodic coercion which is triggered by the durative adverb. Because the repetitive activity lacks a singular result for all of its elements and phases, it cannot be considered as a resultative verb. Consequently, the verb with + R turns into a –R verb in the light of the adverb with a non-evolutionary temporal extension. This aspectual modification demonstrates a phasic coercion motivated by the adverb, and procedures take place to modify the eventual schema denoted by the verb according to the temporal properties of the adverb.

Example (49) includes a semelfactive verb with aspectual features of –R and -α/+β. This verb is combined with a durative adverb in example (50). Although the homogenous temporal extension of the adverb is compatible with the phasic attribute of the verb (- R), the durative aspect of the temporal extension profiled by the adverb is inharmonious with the inaccessibility of the internal components of the process (-α, +β). As a result of this semantic conflict, the semelfactive verb turns into a repetitive activity. The resulting repetitive activity includes multiple co-equal instantiations (numerous realizations of blinking). If we consider the repetitive activity as a process, the sub-events (different realizations of blinking) can be regarded as its accessible internal components, and the realizations of the repetitive activity would correspond with the instants of the durative temporal extension of the adverb. With regard to this point, it can be said that the semelfactive verb takes a new episodic feature (+α: accessible internal particles) by the episodic coercion just to be harmonious with the temporal scale of the adverb; however, the phasic attribute remains unchanged in this process. The episodic coercion re-construes the episodic features of the verb in the light of temporal attributes of the adverb operator.

Example (51) includes a semelfactive verb which is combined with a completive adverb. In this case, the durative and heterogeneous dimensions of the adverb are in contrast to the phasic (- result) and episodic (-α, +β) attributes of the verb. The internal components of the process expressed by the verb are inaccessible to the temporal extension of the adverb, and the result-less verb can not be combined with an adverb indicating an evolutionary temporal frame. However, this sentence is acceptable in a situation in which the speaker had been trying to blink for two hours, and finally he succeeded in blinking just once after two hours. In this case, the verb takes new episodic and phasic attributes to be compatible with the temporal requirements of the completive adverb. For instance, the verb takes a new preparatory phase that is supposed to result in an output. In this regard, the imposed preparatory phase has two functions: first, for adding a durative phase with accessible internal components to the event that is to be processed against the durative temporal period indicated by the adverb, and second, to add a result to the result-less process which is to be re-construed against the evolutionary temporal extension of the completive adverb. A specific durative phase has been added to the process for resolving the episodic conflict between the verb and adverb. In other words, the verb has acquired a new episodic attribute (+α: preparatory phase with accessible elements) to be compatible with the durative temporal extension of the adverb. In addition, it takes a new phasic property (+R) to be compatible with the heterogeneous temporal scale of the adverb, and the verb simultaneously undergoes phasic and episodic coercions to modify its aspectual features according to the temporal requirements of the adverb.

The conclusion that arises is that all kinds of type shifting are imposed because of a conflict between the phasic-episodic attributes of the verbs and the temporal configurations of the adverbs. In case of a phasic or episodic conflict, two coercion procedures are applied to resolve this conflict. The phasic coercion is applied to re-construe the phasic attribute of the verb according to the temporal features of the adverb. Similarly, the episodic coercion is imposed to modify the episodic aspects of the verb according to the temporal properties of the adverb.

This evokes our further investigation on the relationship between two operators (namely perfect and progressive operators) and different verbs in different sentences. In the following examples, the interaction between the perfect operator and different verbs are illustrated:

(52) Man ʔān tasivir rā keŝid-e ʔam / budam.
I that picture S/A draw-pp. be-prs-1sg / draw-pp. be-pst-1sg
'I have drawn that image.' / 'I had drawn that image.'

(53) Man qadam zad-e ʔam / budam.
I walk lv-pp. be-prs-1sg / be-pst-1sg
'I have walked.' / 'I had walked.'

(54) ʔu be xāne resid-e ʔast / bud.
s/he to home reach-pp. be-prs-3sg / be-pst-3sg
'S/he has reached the home.' / 'He had reached the home.'

(55) Man cheŝmak zad-e ʔam / budam.
I blink lv-pp. be-prs-1sg. / be-pst-1sg.
'I have blinked.' / 'I had blinked.'

(56) Man farad qabl ʔaz ʔāmadane to dars rā tamām kard-e ʔam.
I tomorrow before coming-Ez you lesson S/A end lv-pp.
'I will have finished the homework before you come.'

The important point in the above examples is that the combination of different aspectual categories with the perfect operator sounds normal. In examples (52)-(56), the perfective verb highlights the external episodic or phasic boundary of the processes. Since all perfective verbs have external boundaries, they can be combined with the perfect operator. In resultative processes (accomplishment and achievement), the perfect operator profiles the result (the external phasic boundary) as the focus of attention. However, in result-less processes (semelfactive and activity) the perfect operator profiles the external episodic boundary (β) as the focus of attention. The perfect operator functions as a cognitive adjusting operator providing the conceptualizer with access to some specific parts (the ultimate result or the external episodic boundary) of the events. Because all perfective processes have either a final result (+R) or an episodic boundary (β), they are in harmony with the viewing frame evoked by this operator. No coercion occurs in these examples.

In the following lines, the interaction of the imperfective operators (progressive and habitual operators) and different aspectual classes will be investigated. It can be argued that the imperfective operator is the opposite of the perfect one. In fact, while the perfect operator highlights the external limitation of the processes, the imperfectivizers defocus the external episodic and phasic boundaries of the events. More specifically, the imperfective operators change the perfective processes into unbounded states. Frawley (1999, p. 328) describes the imperfective as an open aspectual category due to the lack of phasic and episodic limitations in imperfectivized processes. In Persian there are two different kinds of imperfectivizers (*dāŝtan and mi-*

): the first one (*dāŝtan*) homogenizes [6] the processes by representing them as progressive actions, but the second one (*mi-*[7]) homogenizes the processes by turning them into habits. It can be argued that these interpretative operators impose different viewing frames on the event schemata denoted by verbs. As far as *dāŝtan* as a progressive operator is concerned, it imposes an internal viewing frame (zooming-in strategy) on the processes; it highlights the medial components of events and defocuses their external phasic-episodic limitations. Nevertheless, *mi-* as a habitual operator imposes an infinite viewing frame (zooming-out strategy) on processes, and erases their internal and external phasic-episodic limitations:

(57) Man dāŝtam qadam mi-zadam.
I pro-pst-1sg walk imp-lv-1sg
'I was walking.'

(58) ʔu hamiŝe qadam mi-zanad.
s/he always walk imp-lv-3sg
'S/he always walks.'

Similar to -ing in English, *dāŝtan* as a progressive operator imposes an internal perspective on processes by selecting an "internal portion" of the process "for focused viewing" in order to "exclude the endpoints" (Langacker, 2008, p. 155). This operator shows the image of being in the middle of a process by highlighting the internal elements and removing the external boundaries of the processes. Although the external limitation of a perfective operator is defocused under the influence of this operator, its internal episodic limitations remain unchanged. It is because the medial elements and their episodic limitations are highlighted by the progressive operator. For instance, some medial elements and middle phases of the walking process in example (57) are focalized by the operator; however, the external episodic limitation of this action is defocused.

Mi- operator nevertheless imposes an infinite viewing frame on the processes, and consequently removes the external phasic and episodic boundaries of events and turns them into unbounded states. The habit of walking in example (58), for example, does not convey a stopping point but describes a state without any external limitation. This external unboundedness is not the side effect of focalizing the medial components as is the case with the progressive operator; on the contrary, it is the result of re-construing the perfective verb in the light of zooming-out strategy evoked by the

[6] Homogenization is a process in which the heterogeneity of a verb is deleted by an operator.

[7] mi- is a polysemic prefix. It can be used as progressive and habitual operators. Being a progressive operator, it behaves completely like dāŝtan. Accordingly, we ignore this semantic aspect of *mi* in this paper.

habitual operator. The habitual operator does not focalize medial elements of the process but removes their internal limitations, which consequently makes the resulting static process stay the same for all the instants (Smith, 1997, p. 32). In other words, since the perfective events are turned into static processes by the habitual operator, they do not have internal configuration (internal boundaries) to be connected with the instants of the temporal extensions. Considering example (58), walking doesn't describe an action with accessible particles, ongoing in some specific temporal moments, on the contrary it describes a state without internal configuration which remains the same for all the instants. Finally, it should be noted that *dāŝtan* operator only defocuses the external phasic and episodic boundaries while *mi-* deletes both internal and external boundaries. *Mi-* can in that way be regarded as an absolute homogenizer while *dāŝtan* is considered as a restricted homogenizer. It can be argued that *mi-* as a habitual operator changes the whole aspectual features of processes by changing events into states that lack any kind of limitation; nevertheless, *dāŝtan* as a progressive operator modifies only the external limitations of events by defocusing them. The following examples illustrate the combination of dāŝtan operator with different verbs:

(59) To dāŝtai xāne ra mi-saxti.
You pro-pst-2sg house S/A imp-build-pst-2sg
'You were building the house.'

(60) ʔānhā dāŝtand qadam mi-zadand.
They pro-pst-3pl walk imp-lv-pst-3pl
'They were walking.'

(61) ʔu dāŝt bāzi rā mi-bord.
He pro-pst-3sg game S/A imp-win-pst-3sg
'He was winning the game.'

(62) Man dāŝtam ʔatse mi-kardam.
I pro-pst-1sg sneeze imp-lv-pst-1sg
'I was sneezing.'

In examples (59) and (60), sentences include accomplishment and activity verbs characterized by aspectual features + R and + (α/β) and –R and + (α/β) respectively. They are combined with *dāŝtan* imperfectivizer in a normal way. The middle components of these processes are cognitively accessible to be highlighted against the external phasic and episodic boundaries. External phasic-episodic boundaries are defocused in favor of a highly focused partial process. In other words, the operator

highlights some specific medial components of the processes, and deemphasizes their external episodic and phasic limitations. Characterized by defocused external boundaries, the processes are homogenized to a considerable degree. Besides, the above mentioned verbs do not say anything about their possible endings (the stopping point or the result) because their external limitations have been removed by the operator. Actually, activity and accomplishment verbs undergo episodic and phasic coercions because their external episodic and phasic limitations are deemphasized by the operator. As far as the accomplishment verb in example (59) is concerned, it undergoes episodic and phasic coercions because its external episodic and phasic boundaries are removed by the operator; however, the activity verb in example (60) undergoes episodic coercion since its external episodic limitation is defocused under the influence of the operator. These verbs undergo these coercions to be compatible with the viewing frame invoked by the operator. It is worth mentioning that the internal episodic limitations of the above mentioned processes remain intact during the coercion procedures triggered by the progressive operator. Therefore, the medial particles are focalized by the operator to profile the imagery of *being-between-a-process*.

As already mentioned, the primary function of the progressive operator is to focalize medial elements. It can be said that this operator can not highlight middle components of the processes with inaccessible internal particles (-α). In example (61), there is an achievement verb characterized by + R and -α/+β. Medial parts of this process are not cognitively accessible. Consequently, there is an episodic conflict between the verb and operator. For resolving this conflict, a durative preparatory phase (with accessible particles) is added to the achievement process. As a result, the operator highlights some specific middle parts of the preparatory phase and defocuses the external phasic-episodic boundary of the process in order to represent the process as a progressive one. It can further be said that the verb has acquired a new episodic feature (+α: preparatory phase with accessible components) to be compatible with the internal viewing frame evoked by the operator. In addition, external phasic boundary of the process is removed by the operator and thus the verb does not indicate anything about the possible ending of the process. It can be argued that the verb undergoes episodic coercion (preparatory phase addition) and phasic coercion (defocused external phasic limitation) to be congruent with the viewing frame evoked by the operator. These coercions are applied as the result of re-construing the achievement verb in the light of the internal perspective evoked by the operator.

In example (62), there is a semelfactive verb including features –R and -α/+β. As in the previous case, the middle components of the process are not accessible for the operator. There is a semantic inharmony between the episodic feature of the verb and the cognitive function of the operator which is used for profiling the internal components, which makes the semelfactive verb turn into a repetitive activity to be harmonious with the progressive operator. If we regard the repetitive activity as an

eventual complex, the sub-events (several realizations of sneezing) will be its internal components. In such case the progressive operator can highlight some internal particles (some medial realizations) of this repetitive activity. The semelfactive verb characterized by – α is episodically coerced into a repetitive activity specified by + α in order to be harmonious with the perspective evoked by the progressive operator. In addition, the external episodic limitation (the last realization of the action) of the repetitive activity is defocused by the progressive operator. It is because the operator puts focus only on the medial particles of the repetitive activity. Therefore, it can be said that this verb undergoes two episodic coercions to be compatible with the internal perspective evoked by the operator.

Dāŝtan as a progressive operator modifies the phasic and episodic features of processes to bring about a homogenized process. To accomplish its objective, this operator defocuses the external phasic and episodic limitations of the processes, and focalizes some medial episodic limitations. This operator erases the external phasic and episodic heterogeneity by deleting the outer phasic and episodic limitations. Nevertheless, the internal episodic heterogeneity remains intact since the internal boundaries are highlighted by the operator.

However, the second imperfectivizer (prefix of *mi-*) evokes a zooming-out strategy; it is applied to re-construe a process as a habitual state. The operator excludes the internal and external phasic-episodic boundaries of a process to represent it as an open ended state. The following examples illustrate the interaction of this operator with various verbs.

(63) Man in ʔāwāz rā hamiŝe sobhā mi-xānam.
I this song S/A always morning-PL imp-sing-prs-1sg
'I sing this song every morning.'

(64) ʔu hamiŝe pyāderavi mi-konad.
He always walk imp-lv-prs-3sg
'He always walks.'

(65) Time mā hamiŝe bāzi rā mi-bāzad.
Team our always game S/A imp-lose-3sg
'Our team always loses the game(s).'

(66) ʔu hamiŝe ʔatse mi-konad.
s/he always sneeze imp-lv-prs-3sg
'S/he always sneezes.'

In the above examples, there are different predicates denoting various processes with different phasic and episodic boundaries. However, *mi-* operator has homogenized all of these perfective verbs. For example, the verb in example (63) has the features +R and + (α/β). Nevertheless, when it is combined with a *mi-* operator, its phasic and episodic boundaries are not accessible any longer. The verb in this sentence refers to the persistent continuum of a habit without external phasic-episodic limitation. It seems that the habitual operator removes the external phasic limitation of the process to represent it as an infinite state (phasic coercion), and that the imperfectivized process as a state does not include internal configuration to be connected with different moments of a temporal extension. Accordingly, the state remains the same for all the instants. Here it can be argued that the internal components of the process are not accessible any longer (episodic coercion). Then, the accomplishment verb loses its phasic and episodic features to be compatible with the infinite viewing frame evoked by the habitual operator. This absolute homogeneity is provided by phasic and episodic coercions triggered by the habitual operator. Similarly, the verb in example (64) involves the features -R and + (α/β). But, it is turned into a habit by the *mi-* operator. Like in the previous case, its middle components and its external episodic limitation are not accessible anymore. In other words, the verb undergoes episodic coercions to be compatible with the infinite viewing frame evoked by the operator, which makes the internal and external episodic limitations of the process get removed in order to be compatible with the zooming-out strategy of the operator. In the same way, the verbs in examples (65) and (66) (achievement +R and -α/+β; semelfactive -R and -α/+β) do not refer to specific processes with certain episodic and phasic boundaries. Instead, they describe persistent states without being bound to a phasic or an episodic limitation. In such cases the external episodic boundary of the semelfactive event is removed by the operator (episodic coercion) to illustrate the event as an infinite state. Similarly, the outer phasic limitation of the achievement process is deleted by the operator (phasic coercion) to represent the process as a persistent habit. Consequently, this operator turns all different aspectual categories into homogeneous states by applying phasic and episodic coercions. In other words, it deletes the internal/external phasic and episodic boundaries of the perfective verbs.

As mentioned earlier, interpretative operators mainly modify the phasic and episodic features of perfective verbs. But, how do they combine with imperfective verbs that have no phasic-episodic heterogeneity? For instance, the perfect operator highlights the external phasic and episodic limitations of the perfective verbs. Static verbs, characterized by having no external limitation, on the other hand do not seem to be compatible arguments for the perfect operator. As a result, many of the stative verbs in the perfect construction are semantically marked, especially when they describe an inherent attribute and a persistent state:

(67) *ʔu ryāzi balad bude ʔast.
s/he mathematics know be-pp. be-prs-3sg
('She has known mathematics.')

(68) *ʔu ʔāŝeqe setāreh bude ʔast.
s/he love Setareh be-pp. be-prs-3sg
('S/he has loved Setareh.')

However, episodic coercion may resolve this combinatory incongruency, particularly, when the static verbs describe a transient or non-inherent state (see Croft, 2012, p. 56). When the perfect operator combines with these stative verbs, the resulting construction illustrates a transient state which is constrained by an external episodic boundary. Accordingly, rather than being considered as infinite states, they are regarded as transient states preceded or followed by an episodic limitation. As a result, example (68) may be considered as a meaningful sentence only if it describes a transient psychological state which is not necessarily true at the present moment. The following examples demonstrate this construction.

(69) ʔu mariz bude ʔast.
s/he sick be prs-per-3sg.
'S/he has been sick.'

(70) ʔu dar ʔāmricā bude ʔast.
s/he in America be prs-per-3sg.
'S/he has been in America.'

(71) ʔānhā ʔasabāni bude ʔand.
They angry be prs-per-3pl
'They have been angry.'

To remove the semantic conflict between the perfect operator and stative verbs, the perfect operator turns the states into processes characterized by an external episodic boundary. This means that stative verbs are conditioned by an outer episodic limitation, from which it can be argued that stative verbs may acquire an external episodic limitation in virtue of the episodic coercion triggered by the perfect operator. Although these verbs have a kind of external episodic boundary, they can not be combined with progressive operators:

(72) *ʔānhā ʔasabāni mi-bude-ʔand.
They angry imp-be-pp.-be-prs-3pl
('They had been being angry.')

(73) *ʔānhā dārand ʔasabāni bude-ʔand.
They imp-3pl angry be-pp.-prs-3pl
('They have been being angry.')

Although the states are conditioned by external episodic boundary in perfect construction, they do not include accessible internal components to be highlighted by the progressive operator. This construction describes a transient state which remains the same for all the instants of a limited temporal extension. In other words, it illustrates a transient state without internal phases and particles which holds for a restricted temporal period.

Similarly, imperfective verbs do not combine with the progressive operator in a normal way. The following examples illustrate this problematic combination in the past and present tenses:

(74) *man dāram/dāŝtam ryāzi balad hast-am/bud-am.
I pro-prs/pst-1sg mathematics know lv-prs/pst-1sg
('I am/was knowing mathematics.')

(75) *ʔānhā dārand/dāŝtand be tārix ʔalāqemand hastand-budand.
They pro-prs/pst-3pl to history like lv-prs/pst-3pl
('They are/were liking history.')

(76) *to dāri/dāŝti mariz hasti-budi.
You pro-prs/pst-2sg sick lv-prs/pst-2sg
('You are/were being sick.')

As the above examples show, the stative verbs can not be combined with *dāŝtan* imperfectivizer simply because they do not have internal components to be highlighted against the external limitation. However, some stative verbs can be connected with *dāŝtan* operator only by virtue of coercion. That is to say, the imperfective verb takes a perfective interpretation to remove the semantic incompatibility between the stative verb and the restricted imperfectivizer.

(77) ʔu ʔaz sib badeŝ mi-ʔumad.
S/he from apple bad-3sg imp-lv-pst-3sg
'S/he disliked apple.'

(78) ʔu dāŝt ʔaz sib badeŝ mi-ʔumad.
S/he pro-pst-3sg from apple bad-3sg imp-lv-pst-3sg
'S/he was disliking (gradually) apple.'

Although the verb in example (77) is a stative verb describing a psychological inherent state, it refers to the process of taste changing in example (78). In other words, it describes a psychological process in which one kind of personal taste is in the process of changing. Accordingly, the stative verb is turned into a progressive one containing internal particles (durative preparatory phase) some of which are highlighted by the progressive operator. Therefore, it can be argued that the verb takes a new episodic feature ((+α): accessible internal boundaries) to be harmonious with the zooming-in strategy evoked by the operator. Accordingly, we argue that this verb acquires internal heterogeneity (accessible internal episodic limitations) by undergoing episodic coercion triggered by the operator. Although the verb in example (78) describes a process with accessible internal components, it does not say anything about its possible outputs. Because progressive operator excludes any kind of external phasic-episodic limitation from conceptualization, it does not add a new phasic limitation to the verb. Therefore, an active phasic limitation is not present in the structure of the resulting process.

By the same token, stative verbs do not combine with completive adverbs, because the homogeneous imperfective states are incompatible with the heterogeneous temporal extension of completive adverb:

(79) *ʔu dar do sāʔat ryāzi balad ʔast/bud.
S/he in 2 hours mathematics know be-prs/pst-3sg
('S/he knows/knew mathematics in two hours.')

(80) *ʔu dar 2 ruz mariz ʔast/bud[8].
S/he in 2 days sick be-prs/pst-3sg.
('S/he is/was sick in two days.')

[8] dar is not considered as a locating adverb in this sentence.

However, the completive adverb may change a stative verb into a resultative process.

(81) ʔunā 2 sāʔate ʔin ro dunestan.
They in 2 hours this fact S/A know-pst-3pl.
'They knew this fact in two hours.'

In example (81), the completive adverb transforms the stative verb into a resultative verb specified by two hours of preparatory phase (episodic coercion) and an acquired result (phasic coercion). In other words, the state process undergoes phasic and episodic coercions to be compatible with the evolutionary temporal extension described by the adverb. Similarly, some adverbs (like: *kam kam* 'gradually', *dir* 'late' and *yedafʔe* 'suddenly') may change some stative verbs into resultative ones by phasic coercion:

(82) Man yekdafʔe/kam kam dunestam ke ʔun xāʔene.
I suddenly/gradually know-pst-1sg that s/he traitor-be-3sg
'I suddenly/gradually knew that s/he is a traitor.'

Finally, let us consider the combination of stative verbs and the durative adverb. Although stative verbs, indicating an inherent attribute, do not tend to combine with durative adverbs (example (83)), the transient ones can easily go with them (examples (84) and (85)).

(83) *ʔu do sāl (e) ryāzi balad bud/ʔast.
s/he 2 year (be) mathematics know be-pst/prs-3sg
('S/he knew/knows mathematics for two years.')

(84) ʔu do sal mariz bud/ʔast.
s/he 2 year sick be-pst/prs-3sg
'S/he was/is sick for two years.'

(85) To do sāʔat (e) ʔasabani budi/hasti.
You 2 year (be) angry be-pst/prs-2sg
'You were/are angry for two hours.'

As far as the durative adverb is concerned, it indicates a homogeneous temporal extension which begins at one point and ends at another. Whenever it combines with a state, it imposes external episodic limitations on the infinite state. As a result, the static process acquires a beginning point (left external episodic limitation) coinciding

with the first moment of the adverbial temporal extension; additionally, it takes a stopping point (right outer episodic boundary) coinciding with the final instant of the adverbial temporal period. The resulting construction describes a state which holds for a limited temporal period. Therefore, the verb undergoes episodic coercions to be harmonious with the temporal requirements of the adverbial operator. Although this static verb is characterized by external episodic limitations, its internal components are not accessible. Consequently, the resulting construction does not go with *dāŝtan* as a progressive operator:

(86) *ʔu dāŝt do sal mariz bud.
s/he pro-pst-3sg (for) 2 year sick be-pst-3sg
('S/he were being sick for two years.')

Then, it can be argued that the static process in this construction remains the same for all the instants of the temporal extension. In other words, it does not have internal components to be connected with the moments of the temporal period.

Accordingly, it can be said that although the states exclude any kind of internal and external episodic-phasic limitations from conceptualization, they may acquire phasic and episodic boundaries to be compatible with the viewing frames evoked by different interpretative operators. In this regard, phasic and episodic coercions are applied to modify the aspectual features of verbs according to the semantic features of the operators. The phasic coercion may add phasic heterogeneity to the states, while the episodic coercion can add episodic heterogeneity to the static processes.

Finally, it is worth mentioning that light verbs play a significant role in indicating aspectual meanings in Persian. The light verb of *budan* 'be' (*ʔast* in the present and *bud* in the past) indicates an imperfective meaning (example (87)). Also, *ŝodan* 'become' as a light verb is used to refer to phasically heterogeneous perfective processes (example (88)). Additionally, the light verb of *kardan* 'make' is mainly used for episodically heterogeneous perfective verbs (example (89)).

(87) To ʔŝeq budi.
You lover lv-pst-2sg
'You were in love.'

(88) To ʔāŝeq ŝodi.
You lover lv-pst-2sg
'You fell in love.'

(89) ʔu ʔāŝeqi kard.
S/he love-ness lv-pst-2sg
'S/he /He did loving.'

Accordingly, when there is semantic incompatibility between verbs and interpretative operators, the procedure of light verb changing can also be used to resolve the semantic incongruency. In the next section, the relationship between tense and aspectual features will be scrutinized in detail.

4 Tense and Aspect

In contrast to aspect which illustrates the internal temporal constituency of a situation, tense as a deictic phenomenon makes a relationship between the temporal location of a situation and the deictic moment of speaking (Comrie, 1985). The deictic moment of speech is applied to determine and locate the temporal positions of the events. From a cognitive perspective, this deictic center functions as the reference point for the situation as the target (for reference point model see, Langacker 1995; 2009). In fact, it provides the conceptualizer with mental access to the temporal position of the event.

Point of reference (point of speech) >>> target (point of situation)

Time as represented by tense system is divided into two spheres (past and present) according to the deictic moment of speech (t0). The present sphere contains three temporal zones (pre-present, present and post-present) that are anchored around t0; however, the past sphere which includes only one temporal zone (past zone) is completely disjoined from t0. The past tense precedes the moment of speaking (t0), and, in contrast to the other tenses, it is completely disconnected from that moment (Declerck, 2006, 2015). The distance and separation of the past tense from the punctual moment of speech (t0) put the immediate temporal scope completely before t0 in the past tense. Consequently, the past temporal zone has a sufficient temporal scope to "encompass a bounded event" (Langacker, 2009, p. 191). Therefore, the past tense can represent processes in perfective and imperfective ways (Langacker, 2009, p. 190). Just in the same way, verbs in Persian can be expressed as perfective and imperfective in past tense:

(90) Mādar qadam zad. / madar dāŝt qadam mi-zad.
Mother walk lv-pst-3sg / mother pro-pst-3sg walk imp-lv-pst-3sg
'Mother walked.' / 'Mother was walking.'

(91) ʔu ʔāwāz rā xānd. / ʔu dâšt ʔāwāz rā mi-xānd.
s/he song S/A sing-pst-3sg / s/he pro-pst-3sg song S/A imp-sing-pst-3sg
'S/he sang the song.' / 'S/he was singing the song.'

(92) ʔānhā bāzi rā bordand. / ʔānhā dâštand bāzi rā mi-bordand.
They game S/A win-pst-3pl / they pro-pst-3pl play S/A imp-win-past-3pl
'They won the game.' / 'They were winning the game.'

(93) ʔu cheŝmak zad. / ʔu dâšt cheŝmak m-izad.
s/he blink lv-pst-3sg. / s/he pro-pst-3sg blink imp-lv-pst-3sg
'S/he blinked.' / 'S/he was blinking.'

(94) ʔu ʔali rā dust dâšt.
s/he Ali S/A love have-pst-3sg
'S/he loved Ali.'

As far as present tense is concerned, it locates "the situation as coinciding" with the punctual moment of speech (Declerck, 2006, p. 173). Bounded events should correspond to t0 to convey the meaning of being in the present zone, however, concerning default viewing arrangement and impossibility of temporal coincidence between a bounded process and t0 in present tense (Langacker, 2009, p. 192, 2011; Declerck, 2006), verbs tend *not* to convey perfective meaning in present tense. In other words, because heterogeneous bounded events can not be coincided with the punctual moment of speaking in the present tense (Declerck, 2006, p. 173), most verbs in present tense are often expressed as imperfective[9]. However, perfective verbs can be used in present tense construction if they are homogenized by the imperfectivizer operator (Declerck, 2006, p. 174). Therefore, perfective verbs are homogenized into progressive or habitual verbs in the present tense construction.

Similarly, verbs should always be imperfective in present tense in Persian language. As a result, verbs are always attached to *mi-* as an imperfective marker in the present construction. In fact, the prefix *mi* can never be separated from perfective verbs in the present tense; otherwise the structure is ungrammatical:

(95) *ʔu hamin hālā davad.
S/he just now run-prs-3sg
('S/he is running right now.')

[9] There are some specific and marked constructions in which perfective verbs can be expressed in present tense. However, because they are not the primary concern of this paper we do not discuss them here.

The obligatory presence of *mi-* in the present construction illustrates symptomatically the fact that verbs should always be imperfective (progressive or habit) in the present temporal zone. Hence, *mi-* is an indispensable part of the present tense construction in Persian. This prefix as an imperfective operator homogenizes perfective verbs in the present tense. As a polysemous prefix, *mi-* can express progressive and habitual meanings.

Persian perfective verbs are homogenized by a polysemic prefix to meet the requirements imposed by the default viewing frame. According to this frame, which is evoked by the present tense, the coincidence between the speech and the bounded event is impossible (problem of duration). In addition, the conceptualizer doesn't have an epistemic dominance over a process which is in progress at the present moment. As a result, it can not view the external phasic-episodic limitations of the process (epistemic problem) (Langacker, 2009, pp. 191-192; 2011). To resolve the epistemological and episodic conflict between the *viewing frame* evoked by present tense and the *perfective verbs*, Persian language applies the prefix *mi-* to remove the external boundaries of bounded processes denoted by perfective verbs.

As far as the progressive meaning of *mi-* in the present tense construction is concerned, it deletes the external phasic and episodic boundaries of the processes, and highlights some medial phases. Therefore, internal perspective is imposed on the processes to remove the semantic incompatibility between the present tense and the perfective verbs:

(96) ʔu hamin hālā mi-davad.
s/he just now imp-run-prs-3sg
'S/he is running right now.'

(97) ʔu hamin hālā xāne rā mi-sāzad.
s/he right now house S/A imp-build-prs-3sg
'S/he is building the house right now.'

(98) ʔu hamin hālā bāzi rā mi-barad.
s/he right now game S/A imp-win-prs-3sg
'S/he is winning the game right now.'

(99) ʔu hamin hālā cheŝmak mi-zanad.
s/he right now blink imp-lv-pr-3sg
'S/he is blinking right now.'

Verbs in the present tense can be homogenized by a restricted homogenizer (*mi-* as progressive marker) to remove the inharmony between perfective verbs and the present tense. In this case, *mi-* behaves completely like dâštan as a progressive operator, in such a way that it emphasizes the medial particles, and defocuses the external limitations. Therefore, it can be argued that the present tense construction may impose an internal viewing frame on processes. The verbs undergo phasic and episodic coercions to be harmonious with the temporal and epistemological perspective invoked by the present tense construction.

However, *mi-* as a habitual operator can change perfective verbs into habitual states in the present tense. In this construction, *mi-* excludes both external and internal phasic-episodic boundaries of the processes. Consequently, verbs don't describe bounded actions in the *present* moment; on the contrary, they describe some habitual states that are not constrained by t0 and any other episodic-phasic limitation. In this case, *mi-* as an absolute homogenizer erases any kind of internal/external phasic and episodic limitations of the processes. In other words, perfective verbs undergo phasic and episodic coercions triggered by *mi-* as an absolute homogenizer in order to be compatible with the present tense:

(100) ʔu hamiše sigār mi-keše.
s/he always cigarette imp-lv-prs-3sg.
'S/he smokes.'

(101) ʔu hamiše pyāderavi mi-konad.
s/he always walk im-lv-prs-3sg
'S/he always walks.'

Accordingly, the bounded verbs in the present tense are homogenized in two ways: firstly, the conceptualizer may exclude the external episodic-phasic boundaries of events by using a restricted homogenizer. Second, s/he can delete both internal and external limitations of processes by applying an absolute homogenizer. Therefore, the present tense turns verbs into imperfective verbs which lack external limitations.

5 Conclusion

In this paper, we tried to study lexical categories and the phenomenon of coercion from a new perspective. Following Langacker (2008), we divided verbs into two groups, namely perfective and imperfective. The perfective category describes a heterogeneous process which is bounded in time, but the imperfective one illustrates homogeneous and unbounded processes which are not constrained by any external

limitation. However, the heterogeneity of the perfective verbs may be assessed according to phasic and episodic variables. In other words, processes can be regarded as perfective, when they occur in a bounded phasic domain (with a single result highlighted against the preparatory and middle phases) or in a bounded episodic domain (having internal or external episodic boundaries). Afterwards, we classified perfective verbs into four types according to the phasic and episodic variables. In addition, the imperfective verb as the fifth aspectual type lacks any kind of heterogeneity.

Table 2: Aspectual categories according to phasic and episodic variables

Aspectual categories	Phasic heterogeneity variable	Episodic heterogeneity variable
Accomplishment	+R (resultative)	+ α (internal boundary accessibility) + β (external boundary accessibility)
Activity	-R (resultless)	+ α (internal boundary accessibility) + β (external boundary accessibility)
Achievement	+R (resultative)	- α (lack of internal boundary accessibility) + β (external boundary accessibility)
Semelfactive	-R (resultless)	-α (lack of internal boundary accessibility) + β (external boundary accessibility)
State	-R (resultless)	-α (lack of internal boundary accessibility) -β (lack of external boundary accessibility)

When there is a semantic conflict between the aspectual features of verbs and the viewing frames evoked by interpretative operators, phasic and episodic coercions are applied to remove the semantics incompatibility. These procedures modify the phasic and episodic attributes of verbs according to the semantic requirements of interpretative operators. These coercions refer to re-construing the event schemata denoted by verbs in the light of the viewing frames evoked by operators.

In addition, we introduced two different kinds of imperfectivizers of *mi* and *dāŝtan* in Persian. We showed that *dāŝtan* as a progressive operator highlights the internal boundaries of a perfective process and excludes the external phasic/episodic boundaries. But *mi* as a habitual operator defocuses both internal and external phasic/episodic boundaries in favor of representing the process as an infinite state. Accordingly, the first one was called a restricted homogenizer and the second one was called an absolute homogenizer. In contrast to the homogenizers, which defocus the external boundaries of events, it was argued that the perfect operator highlights the

external phasic/episodic boundaries of processes. Finally, we showed that verbs can be expressed as perfective and imperfective in the past tense because the past temporal zone is completely separated from t0. However, perfective verbs should be imperfectivized in the present tense because the bounded event cannot be coincided with the punctual moment of speaking. This homogenization can be accomplished in two ways: first, the conceptualizer may exclude the external phasic/episodic boundary of the bounded event and highlight the internal components. Second, it may defocus both internal and external phasic-episodic boundaries of the bounded process.

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Abbreviations

The abbreviations used in the present paper are as follows:

Pl:	plural
Sg:	singular
Imp:	imperfective
pst:	past
prs:	present
pp.:	past participle
per:	perfect
Ez:	Ezafe
def:	definiteness
indef:	indefiniteness
lv:	light verb
Pro:	progressive
S/A:	specificity and accusative case (as indicated by rā)