Event Structure and Complex Predicates in Persian

Karine Megerdoomian
University of Southern California

1. Introduction

In addition to simple verbs, Persian employs a large number of complex predicates consisting of a preverbal element and a light verb. The preverbal element can be a noun, an adjective, an adverb or a preposition phrase, which combines with a verb to form a single syntactic predicate. Determining the syntactic and semantic contributions of these two components lies at the center of the investigation of compound verbs (also known as complex verbs or light verb constructions). In the literature on these constructions in Persian, it has been suggested that light verbs are semantically empty and it is the preverbal nominal element that lends its arguments to the complex verb (Mohammad and Karimi 1992). Others have argued that light verbs contribute aspectual information but not argument structure (Karimi-Doostan 1997). Barjasteh (1983) and Ghomeshi and Massam (1994) treat the preverbal element as an argument of the verbal component. Karimi (1997), however, has argued that both components of the complex verb contribute a thematic structure, which undergo a semantic fusion after incorporating at LF. Another issue that has been the cause of much debate in the literature is the dual behavior of Persian complex predicates as lexical and syntactic elements. These verbal constructions undergo nominalization, adjectival formation and have a single word stress, which has led some researchers to suggest that they are lexical units. On the other hand, complex predicates are visible to syntactic and morphological processes: The components of these verbs can often be separated by negation and inflectional affixes, auxiliaries, modals and emphatic elements. Furthermore, certain preverbal elements can act as full-fledged noun phrases or DPs, since they may be modified, gapped or relativized.

In this paper, I investigate the causative/inchoative alternation and unergative verbs in Persian and propose an analysis for their event structures, in which the arguments are not projected from the lexicon but formed compositionally by combining the basic components of the complex predicate in syntax. I suggest an analysis based on a syntactic decomposition of the verbal construction, following ideas developed in Marantz (1997), Chomsky (1995), Vergnaud (2000) and Hale and Keyser (1993), whereby the argument structure is formed by the conjunction of the root element and functional components. I argue that the substantive aspects of the predicate are contributed by the preverbal element, while the event information is carried by the light verb. Aspectual properties and the interpretations of the arguments can be derived from the resulting syntactic configuration (Borer 1994, Ritter and Rosen 1998). The syntactic approach to argument structure can better capture the compositionality of the predicate, taking into account the contribution of the various elements in the verb phrase. In

addition, this approach obviates the need for a complex lexicon with multiple entries, derived by lexical or linking rules, as in a lexicalist approach.

The analysis proposed can also capture the dual nature of complex predicates in Persian. According to this view, word formation takes place in syntax and phrase markers are constructed out of lexical roots and functional features (Marantz 1997, Harley and Noyer 1998). The fact that the internal structure of a complex verb is visible to syntactic and morphological processes follows naturally from this analysis. Nominalizations and adjectival formations, which have been used to argue for the lexical behavior of complex predicates, are a process of word formation and are derived in syntax (see van Hout and Roeper 1998, among others). If word-formation is not confined to the lexicon, complex predicates may undergo nominalization in syntax, without having to be treated as lexical or X^o units.

The paper is organized as follows: Section 2 investigates the syntactic and semantic properties of complex predicates in Persian and isolates the contributions of each component. In Section 3, the causative/inchoative alternation verbs are studied in detail and it is argued that a finer decomposition is needed to account for their event structures. A predicate-based, compositional analysis is proposed in Section 4, which is then extended to unergative constructions in Section 5. Section 6 provides evidence for the syntactic approach to verb-formation in Persian. The last section concludes the paper.

2. Syntactic and semantic properties of complex predicates

One of the main issues in the study of complex predicates consists of determining the amount of information contributed by each component. Most approaches in Persian literature have treated light verbs as bleached elements that do not contribute to the argument structure of the resulting predicate. In these analyses, the number of arguments in the complex predicate and their alignment to grammatical functions is determined solely by the preverbal element.

I propose, however, that the arguments of these complex verbs are introduced by the functional elements representing the light verbs. Furthermore, the lexical root components of the preverbal elements contribute the core meaning of the predicate while light verbs provide information on the eventuality expressed.

2.1 Event Structure[1]

It is a well-known fact that the light verbs used in complex predicate constructions do not have the same argument structure as their heavy counterparts as exemplified in the contrast between (1), representing the full thematic verb <u>dadæn</u> (give) and (2), representing the light verb <u>dadæn</u>. In (1), the ditransitive verb appears with a direct and an indirect object, similar to its English counterpart. In the examples in (2), however, the argument structure is modified based on the preverbal element used. In (2a), the resulting structure is intransitive, but in (2b) the complex predicate takes a direct object, and (2c) requires both a direct object and a locative PP.

---

[1] Throughout this paper, I use the terms 'event structure' and 'arguement structure' interchangeably.

(1)   Nader   ketab- ro   be hušang   dad.
          Nader   book-OM   to Hushang   give.PAST.3SG
          'Nader gave the book to Hushang.'

(2)   a. Nader estefa'=dad.
            Nader resign=give.PAST.3SG
          'Nader resigned.'
        b. Nader in pesar-ro   nějat=dad.
           Nader this boy-OM   rescue=give.PAST.3SG
          'Nader rescued this boy.'
        c. Nader ketab-ro   ru-ye   miz   qærar=dad.
           Nader book-OM on-EZ table   setting=give.PAST.3SG
          'Nader put the book on the table.'

      Following an analysis by Grimshaw and Mester (1988) for Japanese <u>suru</u>, Mohammad and Karimi (1992) argue that Persian light verbs are semantically empty. According to this analysis, known as the Argument Transfer Hypothesis, the entire semantic content of the compound verb comes from the nominal element. This claim is supported by examples such as (3) and (4), where changing the light verb does not influence the meaning of the complex verb.

(3)   a. mæǰbur=kærdæn   (obliged=do/make)   'to force'
        b. mæǰbur=nemudæn   (obliged=show)   'to force'

(4)   a. æfzayeš=dadæn   (increase=give)   'to increase'
        b. æfzayeš=bæxšidæn   (increase=offer)   'to increase'

      The difference between (3a) and (3b) is only of a stylistic nature since the latter has a more formal reading. A similar distinction is present in the pair in (4) where (4b) is usually used in literary or journalistic prose. Mohammad and Karimi (1992) propose that the preverbal nominal element in these examples lends its arguments to the empty light verb, which is then turned into a theta-marker.

      This analysis faces a problem when the preverbal element is an adjectival or adverbial as pointed out in Karimi (1997), since these elements are not usually associated with thematic roles. In addition, pairs such as the ones shown in (3) and (4) are very rare and the formal uses are limited mainly to literary contexts.

      Karimi-Doostan (1997) and Vahedi-Langrudi (1996) also claim that light verbs are semantically bleached elements that are not associated with particular thematic roles and do not affect the argument structure of the verbal predicate. The transitivity of the verbal complex, Vahedi-Langrudi argues, is determined by the preverbal element. Hence, if the preverbal element is intransitive as in (5), the resulting predicate is also intransitive. If the preverbal element is transitive, however, as in the example in (6), the complex predicate is also transitive.

(5)   a. gerye=kærdæn
          cry = do
       'to cry'
       b. gerye-ye   bače
          cry-EZ   child
          'child's cry'

(6)   a. pærdaxt=kærdæn
          payment   do
       'to pay'
       b. pærdaxt-e   pul   be hæmsaye   (tævæsot-e æli)
          payment- EZ   money to neighbor   (by-Ez   Ali)
          'payment of money to the neighbor (by Ali)'

There exist numerous examples, on the other hand, in which a change in the light verb does result in a change in the interpretation and syntax of the complex predicate, suggesting that light verbs are not semantically empty and that they contribute to argument structure. The (a) sentences in the following examples are transitive clauses formed with the light verbs dadæn (give) and zædæn (hit). When these light verbs are replaced by their unaccusative counterparts, such as didæn (see), xordæn (eat, collide) or yaftæn (find) in the (b) sentences, the resulting clause is intransitive. Hence, in all of these sentence pairs, the choice of the light verb can determine whether a sentence is a transitive or an intransitive.

(7)   a. Særbaz-ha   golesorxi-ro   dærzendan   šekænǰe=dadænd.
          soldier-PL   Golesorkhi-OM   in prison   torture=give.PAST-3PL
          'The soldiers tortured Goleshorkhi in prison.'
       b. Golesorxi   dærzendan   šekænǰe=did.
          Golesorkhi   in prison   torture=see.PAST.3SG
          'Goleshorkhi was tortured in prison.'

(8)   a. Hušæng   nader-ro   gul=zæd.
          Hushang   Nader-OM   deceit=hit.PAST.3SG
          'Hushang deceived Nader.'
       b. Nader gul=xord.
          Nader deceit=eat.PAST.3SG
          'Nader was deceived.'

(9)   a. Pezešk   mæriz-ro   šæfa=dad.
          doctor   patient-OM   cure=give.PAST.3SG
          'The doctor cured the patient.'
       b. Mæriz   šæfa=yaft.
          patient   cure=find.PAST.3SG
          'The patient was cured.'

In these constructions, the preverbal element remains the same, while the light verb is modified triggering a change in the argument structure of the predicate. More specifically, the choice of the light verb determines whether an external argument is projected. Hence, in the alternation pair in (7), the light verb dadæn (give) in (7a) projects an external argument, særbaz-ha, which is not present in the sentence formed with the light verb didæn (see) in (7b). The internal arguments, however, remain unchanged in both sentences. In addition, the main meaning of the complex verb remains untouched, suggesting that the preverbal element provides the main core of the meaning. For instance, in both examples in (7), the main verb is 'to torture' regardless of the light verb used.

Another alternating pair in Persian consists of the causative light verb kærdæn (make) and the inchoative šodæn (become), illustrated below, which will be discussed at length in Section 3.[2]

(10) a. Mani   dær-ro   baz=kærd.
          Mani   door-OM   open=make.PAST.3SG
         'Mani opened the door.'
      b. Dær   baz=šod
          door   open=become.PAST.3SG
         'The door opened.'

Once again, the core meaning of the predicate (i.e., opening of a door) remains constant but the choice of the light verb affects the transitivity of the verbal complex. Thus, while the preverbal element provides the substantive content of the complex predicate in Persian, the light verb indicates the logical content of the predicate, such as causation, and may project an external argument.

As was argued in detail in Karimi-Doostan (1997), Persian light verbs directly affect the aspectual interpretation of the complex verb. One of the widely accepted methods for distinguishing bounded and unbounded predicates is to combine the sentence with the temporal adverbials in an hour and for an hour. If a predicate is bounded, it will be felicitous when combined with the frame adverbial in an hour. But since this adverbial requires that the event be terminated or bounded, it cannot occur with an unbounded predicate. On the other hand, the durative adverbial for an hour is compatible with an unbounded aspect but not with a bounded one. This test then suggests that the sentence in (11) is bounded whereas the one in (12) is unbounded. The distinct aspectual readings in these two sentences are associated with the choice of the light verb, since the preverbal element remains the same in both instances. Thus, the combination of dærd (pain) with the light verb gereftæn (catch) gives rise to a

---

[2] I follow the tradition in Persian literature which distinguishes between the two usages of the light verb kærdæn by glossing the causative meaning as make and the non-causative usage as do. It should be noted, however, that kærdæn as a simple and fully thematic verb can only mean 'do'. Hence, the different gloss reflects the semantic reading of each complex predicate, following a native speaker's intuitions. I will show in Section 4 that the distinct usages correspond to different syntactic configurations.

bounded predicate. When the light verb is changed to <u>kešidæn</u> (pull), the aspectual reading is also modified, resulting in an unbounded reading. In fact, light verbs generally contribute aspectual properties such as inception, repetition and completion to the verbal predicate.

(11) Dæst-e   daryuš   dær yek saniye / ?*sa'æt-ha   dærd=gereft.   (bounded)
     hand-EZ Dariush   in one second / hour-PL   pain=catch.PAST.3SG
     'Dariush's hand (started to) hurt in one second / ?*for hours.'

(12) Daryuš   ?*dær yek saniye / sa'æt-ha   dærd=kešid.   (unbounded)
     Dariush   in one second / hour-PL   pain=pull.PAST.3SG
     'Dariush hurt ?*in one second / for hours.'

The preverbal element also plays a role in determining the aspect of the complex verb. Consider the contrast in the following examples:

(13) Hale *dær   nim   sa'æt /   sa'æt-ha   gerye=kærd.   (unbounded)
     Haleh in   half   hour   /   hour-PL   cry=do/make.PAST.3SG
     'Haleh cried *in half an hour / for hours.'

(14) Hale dær nim sa'æt / #sa'æt-ha qofl-e   dær-ro   baz=kærd. (bounded)
     Haleh in half hour / hour-PL   lock-EZ   door-OM   open=do/make.PAST.3SG
     'Haleh opened the door lock in half an hour / #for hours.'

In (13), <u>gerye=kærdæn</u> (cry) represents an unbounded event as demonstrated by the acceptability of the durative adverbial <u>sa'æt-ha</u> ((for) hours). Changing the preverbal element to the adjective <u>baz</u> (open), however, results in a bounded reading as shown in (14). The durative adverbial in this case can only be felicitous in a repetitive reading (indicated by #), in which Haleh keeps unlocking the door over and over again.

Table 1: Contribution of complex predicate components

Preverbal element:
- substantive information
- internal arguments
- aspect

Light verb:
- external arguments
- aspect and event information
(causation, change of state, duration, inception)

Table 1 summarizes the generalizations obtained in this section. It was shown, in line with most current analyses of complex predicate formation in Persian, that both parts of the light verb construction contribute to the argument structure and aspectual interpretation of the VP.

Moreover, the preverbal element provides the core lexical meaning of the predicate, whereas the light verb contributes to the event reading of the complex verb. However, based on an examination of causative/inchoative alternations in the following section, I will argue that the preverbal and verbal elements in Persian are to be further decomposed into lexical and functional parts. Hence, I will show that both internal and external arguments are contributed by the verbal functional elements and not by the preverb. The causative predicates in these alternation pairs consist of two functional verbs and it is the lower light verb that provides a position for the internal argument of the complex verb.

3. Transitivity alternations: <u>kærdæn</u> vs. <u>šodæn</u>

As already shown in section 2, the choice of the light verb can affect the transitivity of the clause. In this section, I will investigate one such alternation observed between the light verb pair <u>kærdæn</u> (do/make) and its unaccusative counterpart <u>šodæn</u> (become) as illustrated in the following examples. The (a) sentences in these examples, formed with the light verb <u>šodæn</u>, are intransitive and denote a change of state. When the light verb is replaced by <u>kærdæn</u>, however, the sentence becomes transitive as seen in the (b) sentences. Thus, (15b), (16b) and (17b) refer to the causation of the change of state depicted in their (a) counterparts.

(15) a. Adæm=bærfi   ab=šod.
          man=snowy   water=become.PAST.3SG
          'The snowman melted.'
      b. Aftab   adæm=bærfi-ro   ab=kærd.
          sun   man=snowy-OM   water=make.PAST.3SG
          'The sun melted the snowman.'

(16) a. Dær   baz=šod.
          door   open=become.PAST.3SG
          'The door opened.'
      b. Hušæng   dær-ro   baz=kærd.
          Hushang   door-OM   open=make.PAST.3SG
          'Hushang opened the door.'

(17) a. Pesær-e   kučæk dær   dærya   qærq=šod .
          boy-EZ   little in   sea   drown=become.PAST.3SG
          'The little boy drowned in the sea.'
      b. Mi-guy-ænd   ke   in   mærd   pesær-e   kučæk-o   qærq=kærd.
          DUR-say-3PL   that this man   boy-EZ   little-OM   drown=make.PAST.3SG
          'They say that this man drowned the little boy.'

The complex verbs in Persian that undergo this transitivity alternation correspond in large part to the English verbs known as causative alternation verbs (Jackendoff 1990, Levin 1993) such as <u>open</u>, <u>dry</u>, <u>sink</u>, <u>redden</u>. In English, the same form of the verb can be used to denote an intransitive or a transitive as shown below. In the intransitive use, the subject

undergoes a change of state, hence in (18a) the door becomes open. The transitive counterpart in (18b) depicts the causation of this change of state that the object undergoes. In this sentence, the subject <u>John</u> has caused the door to open.

(18)   a. The door opened.
         b. John opened the door.

(19)   a. The boat sunk.
         b. The enemy sunk the boat.

     The objects of the transitive clauses (<u>door</u> in (18b) and <u>boat</u> in (19b)) are equivalent to the subjects of the corresponding unaccusative constructions. Thus, the transitive and unaccusative variants depicted in these examples are clearly related semantically as well as syntactically, and the analysis provided should be able to capture this relatedness.

     Following recent analyses of event structure, I suggest that the alternating verbs are formed by the combination of functional elements representing the EVENT and an adjectival predicate representing the resulting STATE. I propose that the relation between the two variants of an alternating verb is due to the fact that the internal structure of the inchoative version is a subset of the structure of the causative alternant. Hence, the inchoative verb 'open' consists of a BECOME event combined with a resulting state represented by the lexical root 'open'. The causative variant of the verb 'open' is formed by the addition of the CAUSE event to the inchoative structure. In the rest of this section, I provide evidence for the suggested analysis.

3.1 Evidence for STATE

     Alsina (1999) argues for the presence of a state in both variants of the causative alternation verbs, based on the scopal ambiguity of durative adverbials. In this section, I will present Alsina's evidence, which shows that both transitive and intransitive variants allow durative adverbials, if it can be interpreted as having scope over the State part of the predicate. Consider example (14), repeated below as (20), and its intransitive counterpart in (21). Both examples are felicitous with the frame adverbial 'in x time' but give rise to an iterative reading with the durative adverb 'for x time', indicating the properties of a bounded event.

(20)   Hale   dær nim sa'æt / #sa'æt-ha   qofl-e   dær-ro   baz=kærd.   (bounded)
        Haleh in half hour / hour-PL   lock-EZ   door-OM   open=do/make.PAST.3SG
        'Haleh opened the door lock in half an hour / #for hours.'

(21)   Dær   dær yek saniye /   #sa'æt-ha   baz=šod.   (bounded)
        door in one second /   hour-pl   open=become.PAST.3SG
        'The door opened in one second / #for hours.'

     The following English sentences are also unfelicitous if the action of waking up in (22) or of closing the door in (23) is interpreted as lasting for the whole two hour period.

(22)   ??Phil woke up for two hours.

(23) ??Phil closed the door for two hours.

Sentence (22) is felicitous, however, if the durative adverbial is referring to the resulting state, whereby Phil woke up and remained awake during two hours before going back to sleep. Similarly, (23) is acceptable only with the reading that Phil closed the door and the door remained closed during the two hours. These readings can easily be obtained in the following examples (=Alsina's (7b) and (8a), respectively):

(24) Phil woke up for two hours before falling asleep again.

(25) Phil closed the door for two hours, while he was out.

Alsina argues that the ambiguity in the interpretation of the sentences in (24) and (25) arises from the fact that the durative adverbial can take scope over the whole event, giving rise to the iterative and unfelicitous reading, or it can take scope over the resulting state with the acceptable interpretation. A similar contrast is obtained with the Persian examples as illustrated below:

(26) a. * Hale do sa'æt   bidar=šod.
          Haleh   two hour   awake=become.PAST.3SG
        'Haleh woke up for two hours.'
      b. ?? Hale   do sa'æt   bidar=šod   bæ'd dobare   xabid.
            Haleh   two hour   awake= become.PAST.3SG then again   sleep.PAST.3SG
          'Haleh woke up for two hours, then she went back to sleep.'

(27) a. * Mani   do sa'æt   pænǰære-ro   baz=kærd.
            Mani   two hour   window-OM   open=make.PAST.3SG
          'Mani opened the window for two hours.'
      b. Mani do sa'æt pænǰære-ro baz=kærd   ta   bu-ye   mahi be-re.
       Mani two hour window-OM open=make.PAST.3SG until smell-EZ fish SBJ-go.3SG
          'Mani opened the window for two hours so that the fish smell would go away.'

The inchoative predicate in (26a) and the causative construction in (27a) are unfelicitous with the interpretation that the event of waking up or of opening the window lasted for two hours. This is due to the fact that both predicates express an event that necessarily includes an end point; when this endpoint is reached, the event is terminated. Such terminative events do not allow for a reading in which the action takes place continuously for a period of time. The only possible interpretation in these cases is an iterative reading, whereby the event occurs repetitively over a certain period of time. There exists, however, another interpretation in which the durative adverbial takes scope over the result state of the event, and not over the whole event[3]. This second reading is illustrated in (26b) and (27b). The contrast shown can be

---

[3] This second interpretation is not available if the result state is considered to be permanent as in e.g., *drown*:

accounted for if we posit the presence of a STATE in the event structure of the alternation verbs, which represents the result state of the event.

3.2 Events CAUSE and BECOME

Levin and Rappaport Hovav (1995) provide the representation in (28) as the underlying representation of a causative alternation verb such as break; (28) is argued to be the representation for both the transitive and the intransitive variants of this verb.

(28)   break: [[x DO-SOMETHING] CAUSE [y BECOME Broken]]

In this analysis, the transitive alternant of the verb break consists of an action (x does something) that causes y to undergo a change of state (become broken). The intransitive alternant is then derived by the application of lexical rules. Levin and Rappaport Hovav propose that the unaccusative variant of the verb is obtained when the verb is detransitivized, which prevents the cause argument to project into the argument structure of the verb; the cause argument is thereby not realized in syntax. This analysis, as well as the analysis proposed by Dowty (1991), suggests that the transitive use of an alternating verb consists of two events of CAUSE and BECOME.

Harley (1995, 1996) has argued against this analysis based on evidence from Japanese, a language with overt morphological realization of the CAUSE and BECOME events, but which shows no stacking of event morphology. Instead, the morphemes corresponding to cause and change of state events are in complementary distribution, suggesting that CAUSE and BECOME are not both present in the event structure of the transitive verb. Harley provides the following underlying representations for the intransitive and transitive open, respectively, where the causative event (which projects an external argument) occupies the same position as the BECOME event.

(29)   a.   open – intrans.   [BECOME [y open]]
       b.   open – trans.   [x CAUSE   [y open]]

At first consideration, the surface realization of Persian complex predicates seems to support this analysis, as illustrated in (30), where the change of state event is represented by the light verb šodæn (become) and the causative event is denoted by the light verb kærdæn (make). These two light verbs can never occur within the same predicate in Persian and are in complementary distribution.[4]

(30)   a. Dær   baz=šod.
          door   open=become.PAST.3SG

(i)   *John drowned the boy for two hours and then he let him go.
Alsina suggests that this is due to extra-linguistic factors.

[4] The verb šodæn can also be used in forming passives in Persian. In this usage, it may appear with kærdæn forming the passive kærde šod (was done). In passives, šodæn behaves as an auxiliary and not a light verb (see Karimi-Doostan 1997 for discussion).

'The door opened.'
b. pro dær-ro   baz=kærd.
      door-OM open=make.PAST.3SG
'He/she opened the door.'

Drawing on the parallelism with other transitivity alternation pairs in Persian, however, I claim that the correct underlying structure of the causative verb in (30b) includes both CAUSE and BECOME. The reason we do not see two overt light verbs in Persian complex predicates is due to the fact that the lower event incorporates into CAUSE and the merged events are realized as the light verb kærdæn.

Consider the Persian transitivity alternation verbs shown in (31). The intransitive predicate in (31a) consists of a prepositional phrase be=ǰuš (to boil) and the light verb amædæn (come). The transitive variant of this sentence is formed by changing the light verb element to aværdæn (bring) as illustrated in (31b). The resulting sentence has a causative interpretation in which Nima has caused the water to boil. It has often been noted in crosslinguistic studies that 'bring' is the causative variant of the simple verb 'come'. Thus, to form the transitive of the complex verb be=ǰuš=amædæn (boil – Intrans.), it seems that Persian chooses to replace the light verb by its causative form.

(31)   a. Ab   be=ǰuš=amæd
         water   to=boil=come.PAST.3SG
          'The water boiled.'
       b. Nima ab-ro   be=ǰuš=aværd.
          Nima water-OM   to=boil=bring.PAST.3SG
          'Nima boiled the water.'

Similar behavior is attested in the following transitivity alternation pair where the light verb oftadæn (fall) in the intransitive construction in (32a) is replaced by its causative equivalent, the light verb ændaxtæn (throw), resulting in the causative-transitive predicate in (32b).

(32)   a. Homa   be= gerye=oftad.
          Homa   to=crying=fall.PAST.3SG
         'Homa started to cry.'
       b. Nima homa-ro   be=gerye=ændaxt.
          Nima Homa-OM to=crying=throw.PAST.3SG
          'Nima made Homa (start to) cry.'

Based on these alternations, I suggest that the causative/inchoative alternations discussed in (15-17) are also formed by replacing the light verb šodæn (become) by its causative variant. In other words, I propose that kærdæn (make) is in fact the causative of

šodæn (become) and should be represented as 'cause-become'.[5] The internal structure proposed for the alternating pair is given below, where the BECOME event merges with the high CAUSE to form the transitive verb.

(33) Intransitive: [y BECOME   State]
        Transitive: [x   CAUSE- BECOME   [y   State]]

Unlike the event structures put forth by Levin and Rappaport Hovav (1995) and Pustejovsky (1995), where the transitive verb is considered to be the underlying form in the lexicon from which the intransitive variant is derived, I propose two independent structures for the intransitive and transitive alternants. In this analysis, both verb forms are built in the syntactic structure by combining the various components. The close relation between the alternating forms is obtained from the fact that the internal structure of the intransitive verb is a subset of the transitive verbal structure.

The structure in (33) also differs from the representation proposed by Levin and Rappaport Hovav (1995), Dowty (1991) and Alsina (1999), in that I do not assume an Activity event for causative alternation verbs. In these verbal constructions, the activity that brings about the change of state is not specified and therefore need not be represented in the event structure. In addition, as pointed out by Fong (1999), there are causative constructions in which the causer does not perform any action on the causee as illustrated in (34).

(34)   The sun dried the linen.

In the sentence in (34), there is no real activity performed by the sun. It is, however, the causer of the change of state and should be represented in the event structure as the external argument of a CAUSE event.[6]

In this section, I investigated the properties of the kærdæn vs. šodæn alternation pair and argued that the transitive predicate is formed when a CAUSE event is added on top of the underlying intransitive structure. In Section 4, I present a predicate-based analysis for the proposed structures.
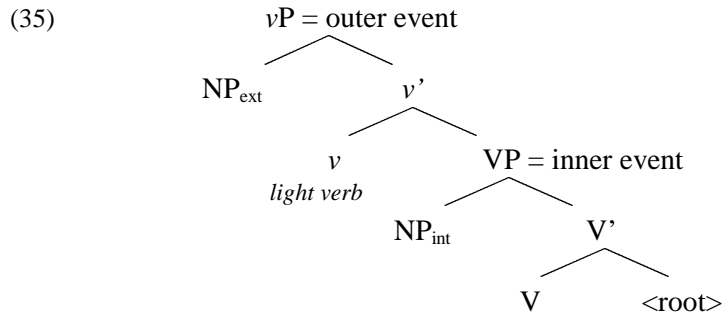
4. Causative alternations and VP-structure

The decomposition of Persian verbal constructions into two distinct parts is reminiscent of recent analyses that decompose the event structure of verbs into an outer or process event and an inner or result event (Pustejovsky 1995, Travis 1991, among others). Moreover, following the seminal work by Larson (1988) and Hale and Keyser's series of papers on argument structure, current syntactic approaches adopt the layered VP structure, which parallels a

---

[5] The question arises that if both CAUSE and BECOME events were present in the transitive verb, we would expect scopal interpretations of certain adverbials to isolate only the change of state event (i.e., y become STATE), but no such evidence has been reported in the literature. In the structure proposed here, however, the two events are incorporated and therefore it follows that the adverbials will not be able to take scope over either event independently of the other.

[6] Also see Fong (1999) for arguments against the *work scope* reading proposed by Alsina as evidence for the presence of the Activity event.

decompositional view of the verbal predicate. Thus, a split-VP analysis for verbal formation as illustrated in the configuration in (35), where a *v*P projection is added on top of the base VP, straightforwardly captures the event structure of Persian complex predicates presented in this paper.

(35)

```
            vP = outer event
           /        \
      NPₑₓₜ          v'
                    /    \
                   v      VP = inner event
              light verb /    \
                     NPᵢₙₜ      V'
                              /    \
                             V    <root>
```

Chomsky (1995) suggests that *v*P represents the projection of a "light verb", which bears the functional information in the verbal construction and projects the external argument. The lower VP projection, on the other hand, is responsible for projecting the internal arguments. The head of the base VP is a <u>root</u> in the sense of Marantz (1997) or an <u>encyclopedic item</u> in the sense of Borer (2000), which combines with a functional element *v* to form a verb.
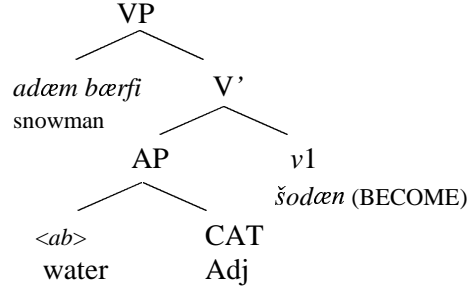
4.1 Inner *v*

In line with these theories of verb formation and in light of the analysis provided in the previous section for the causative alternation verbs <u>kærdæn</u> (make) and <u>šodæn</u> (become), I propose that a functional element *v* is projected within each component of the layered *v*P structure. The upper head of *v*P, little *v*, denotes the event CAUSE and is responsible for projecting the external argument in the complex predicate. But in addition, a lower functional head is available in the lower VP projection, which contributes the internal argument of the verbal construction and represenets the change of state or BECOME event. Consider the causative alternation pair for the verb 'melt', repeated below:

(36)   a. Adæm=bærfi   ab=šod.
           man=snowy   water=become.PAST.3SG
           'The snowman melted.'
       b. Aftab   adæm=bærfi-ro   ab=kærd.
           sun   man=snowy-OM   water=make.PAST.3SG
           'The sun melted the snowman.'

The structure that I propose for the inchoative/intransitive variant in (36a) is very similar to the one in Hale and Keyser (1997) and is illustrated in (37).

(37)

```
                    VP
                   /  \
          adæm bærfi   V'
          snowman     /  \
                    AP    v1
                   /  \   šodæn (BECOME)
               <ab>   CAT
               water  Adj
```
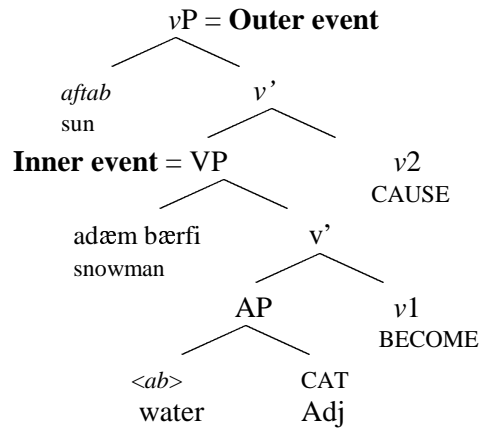
VP, the inner event, is a predicate representing the change of state undergone by the internal subject adæm=bærfi (snowman). The resulting state (i.e., the end result of the change of state) is denoted by the root element <ab> which combines with a functional category forming an adjectival predicate (cf. Marantz 1997).[7] The phrasal category AP may in turn combine with the functional head *v*1, denoting a BECOME event, thus forming a verbal predicate which represents a change of state. As shown in (37), I claim that each light verb head *v* is projected with a specifier position. In this example, the NP adæm=bærfi (snowman) occupies the [Spec, VP] position and is interpreted as the element undergoing the change of state. As pointed out in Marantz (2001), within the VP projection, the meaning of the argument NP is closely connected to the aspectual class or selectional restrictions of the root. Hence, the NP adæm=bærfi (snowman) has to be able to undergo a process which will result in it being in a watery or liquidy state; in other words, the argument in the [Spec, VP] position should be meltable. No such relation is present between the root element and the arguments outside of the VP projection (i.e., external arguments) in the corresponding causative constructions.
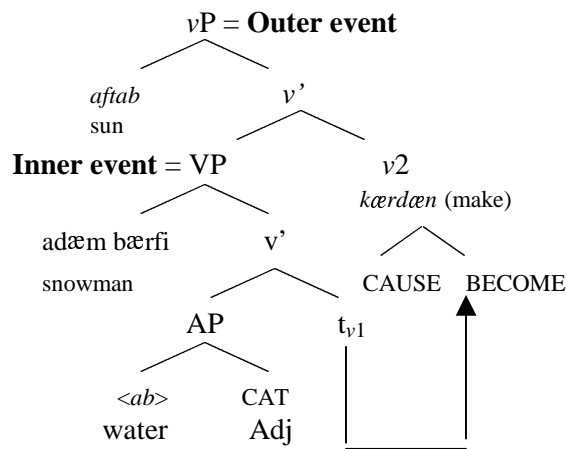
The causative variant of the alternating pair is obtained by adding the "outer event" on top of the VP projection as illustrated in (38a). This outer event consists of a verbal functional head *v*2, which also projects a specifier position. The resulting structure represents a causal relation: the change of state introduced by VP is now interpreted as caused, the event denoted by *v*2 has the meaning of CAUSE and the argument NP occupying the [Spec, *v*P] position acts as the causer of the change of state. As illustrated in (38b), I claim that the verbal head *v*1 then incorporates into the higher verbal element *v*2, giving rise to the newly formed light verb *v* which consists of the events CAUSE + BECOME (39b). In the case of Persian, I suggest that the combination of the two events is overtly realized as the light verb kærdæn with the meaning of 'make'.

---

[7] In this analysis, I assume following Marantz 1997, that the lexicon contains category-neutral elements (i.e., roots) that can combine with a functional category in syntax in order to form a phrase such as AP or NP. Nothing in principle hinges on this assumption, however, and the syntactic roots may already be present with a designated category within the lexicon, as in Hale and Keyser (1993).

(38) a.

vP = **Outer event**

aftab
sun

Inner event = VP

v'

v2
CAUSE

adæm bærfi
snowman

v'

AP

v1
BECOME

<ab>
water

CAT
Adj

b.

vP = **Outer event**

aftab
sun

v'

Inner event = VP

v2
kærdæn (make)

adæm bærfi
snowman

v'

CAUSE   BECOME

AP

t_{v1}

<ab>
water

CAT
Adj

In the analysis proposed in this section, the unaccusative in (36a) corresponds to a VP projection, whereas the transitive variant is obtained when the higher verbal projection combines with VP to form a *v*P structure. The analysis thus suggests that transitives consist of at least two event components and each component contains a verbal head *v*, which projects an argument position.[8] Whether the projected NP arguments are to be interpreted as 'internal' (i.e., undergoing the action) or 'external' (i.e., causer) is not predetermined in the description of the lexical item, but it is rather derived from the resulting structural position in which the NP appears.

---

[8] I am not suggesting that all transitive verbs contain a CAUSE event in their higher projections, but I do believe that all transitives consist of two functional elements representing the verbal component: v_1 and v_2. In addition, I am abstracting away from functional projections representing Aspect or Voice as in Borer (1994) or Kratzer (1994), or any higher functional projections such as Tense.

Furthermore, the configurations proposed correspond to the aspectual distinctions proposed by Vendler (1967) for predicates. In particular, the structure in (37), composed of the adjectival predicate and v_{BECOME} , corresponds to an Achievement. On the other hand, the combination of v_{CAUSE} and the lower VP projection in (38) represents an Accomplishment verb. However, the aspectual classifications of these predicates are not predetermined in the lexicon but are derived following a compositional process in syntax.

4.2 Decomposed predicates and the lexicon

Recall from Section 2 that complex predicates in Persian have traditionally been analyzed as consisting of two distinct components, one headed by the preverbal element and the other headed by the light verb. This was, in effect, the internal structure proposed for complex predicates in Persian in Table 1. It was argued that the light verb provides the aspectual and event information in complex predicates and projects the external arguments. The preverbal component, on the other hand, contributes the core meaning of the verb and is related to the internal arguments. The discussions in the previous sections now lead to a further decomposition of the verbal components in Persian as illustrated in Table 2, in which I propose to redistribute the properties of the complex predicate among the primitive syntactic components.

Table 2: Contribution of complex predicate components (revised)

Root element:
  - substantive information

Category:
  - determines root category (Adj, Noun)

Inner light verb (v_1):
  - internal arguments

Outer light verb (v_2):
  - external arguments

Table 2 distinguishes between the inner and outer light verb components. In the analysis proposed, the preverbal element (which includes the root) is still responsible for the substantive information of the predicate, but it does not contribute any arguments to the complex verb. I have argued that the internal arguments are in fact provided by the inner light verb component.

This analysis goes against most of the past literature on complex predicates in Persian. Based on examples such as the contrasting pair in (39), Vahedi-Langrudi (1996), Karimi-Doostan (1997) and others have argued that the verbal component that projects the internal arguments is the preverbal element. The component that remains constant between (39a) and (39b) is the preverbal element <u>baz</u> (open), while the light verb is modified. And as the examples show, the internal argument <u>dær</u> (door) is present in both instances, suggesting that it is related to the preverb.

(39)   a. Dær   baz=šod.
          door   open=become.PAST.3SG
          'The door opened.'

       b. Hušæng   dær-ro   baz=kærd.
          Hushang   door-OM   open=make.PAST.3SG
          'Hushang opened the door.'

I propose, however, that the component responsible for the projection of the internal argument dær (door) is the light verb of the intransitive clause, šodæn (become). The latter, I argue, is present in both (39a) and (39b), but the reason it is not overtly visible in the latter is due to the fact that it is incorporated into the CAUSE light verb in the transitive clause, which is then realized as the verb kærdæn (make) (cf. 38b).

In the analysis proposed, verbs are compositionally formed in syntax by combining the information from the two separate phrasal projections *v*P and VP. In this view, the lexicon does not contain a list of possible verbal constructions that are provided as input to the syntactic computation. Instead, the basic units in the lexicon consist of roots, such as <open> and <laugh> (Pesetsky 1995), and bundles of functional features, such as T, *v* or category C (Halle and Marantz 1993, Marantz 1997, Vergnaud 2000). Verbs are formed when roots and functional features are combined in syntax.

5. Unergatives

In this section, I will examine the properties of complex unergative verbs in Persian and I will show how the proposal discussed in the previous section can be extended to capture unergative predicate formation in this language.[9]

5.1 Complex predicates with kærdæn

In addition to the causative constructions discussed in Section 3, the light verb kærdæn (do, make) is often combined with nominals to form intransitives as exemplified in (40)[10].

(40)   gerye kærdæn   (crying do)   'cry'
       šena kærdæn   (swim do)   'swim'
       kar kærdæn   (work do)   'work'
       nale kærdæn   (moan do)   'moan'
       fekr kærdæn   (thought do)   'think'

---

[9] Persian also has simple unergative verbs formed by the incorporation of a root with null verbal elements (e.g., xændidæn 'laugh'). These verbs differ from the complex unergative constructions with respect to aspectual interpretation, and they may be morphologically causativized.

[10] *Kærdæn* is the light verb used most frequently in complex predicate formation in Persian. It is also used in forming transitive predicates, which I will not discuss in this paper.

pærvaz kærdæn	(flight do)	'fly'
bazi kærdæn	(play do)	'play'
sorfe kærdæn	(cough do)	'cough'
xande kærdæn	(laughter do)	'laugh'
tæzahorat kærdæn	(demonstrations do)	'demonstrate'

Apart from a few unaccusative predicates (e.g., <u>fout kærdæn</u> = die), most intransitives formed using the light verb <u>kærdæn</u> belong to the unergative category. Following the Vendlerian aspectual types, unergative constructions are usually categorized as Activity verbs, which are unbounded predicates with an agentive subject argument. The sentences in (41) show that the intransitive predicates formed with <u>kærdæn</u> are, in fact, aspectually unbounded, since these examples are all felicitous when combined with a durative adverbial but are unacceptable with a frame adverbial.

(41) a. Gonǰešk *dær yek saʼæt / saʼæt-ha pærvaz=kærd.
      sparrow in one hour / hour-PL flight=do.PAST.3SG
      'The sparrow flew *in an hour / for hours.'

    b. Mani *dær yek saʼæt / saʼæt-ha kar=kærd.
      Mani in one hour / hour-PL work=do.PAST.3SG
      'Mani worked *in an hour / for hours.'

    c. Bæče-ha *dær yek saʼæt / saʼæt-ha gerye=kærd-ænd.
      child-PL in one hour / hour-PL crying=do.PAST-3PL
      'The children cried *in an hour / for hours.'

The subjects in these verbal constructions display agentive properties and are directly involved in performing the action. So, for instance, the subject in (41a) is volitionally involved in the act of flying, and the subject in (41b) is a volitional agent of the action of working.

It has been argued that the application of certain diagnostics, such as –<u>er</u> nominalization or participial formation (cf. Levin and Rappaport Hovav 1995), can distinguish the verbal categories based on the type of argument they contain. Since –<u>er</u> nominalization targets predicates with an external argument, it can apply to unergative predicates; on the other hand, adjectival participle formation selects predicates with an internal argument. In addition, manner adverbial formation has been argued to target unergative predicates.

Karimi-Doostan (1997) has convincingly shown, based on these diagnostics, that there exists an unergative/unaccusative distinction in Persian[11]. Verbs typically treated as unergatives can form subject nominals (42a) but not past participle adjectives (42b), while unaccusative verbs cannot form subject nominals (43b) but form participle adjectivals (43a)[12].

---

[11] I use the terms unergative and unaccusative in the traditional sense for the sake of reference but I am not suggesting that the distinction between the two verb types is predetermined. I claim that the distinct properties observed are derived from the syntactic configuration (cf. Borer 1994).

[12] In Persian, verbal elements can be formed on either a 'present stem' or a 'past stem'. Subject nominals and manner adverbials are derived from the present stem while adjectival participles are formed on the past stem.

The transitive verb shown in (44) can yield both as expected. Karimi-Doostan thus argues that subject nominals are derived from verbs that contain an external argument (i.e., verbs categorized as unergatives and transitives) while past participle adjectives are derived from verbs with an internal argument (i.e., verbs categorized as unaccusatives and transitives).

(42) a. dævidæn   'run'   ⇨   dævænde   'runner'
      b. dævidæn   'run'   ⇨   *dævide   'ran'

(43) a. mordæn   'die'   ⇨   *mirænde   'dier'
      b. mordæn   'die'   ⇨   morde   'dead'

(44) a. afæridæn   'create' ⇨   afærinænde 'creator'
      b. afæridæn   'create' ⇨   afæride   'created'

Manner adverb formation can also distinguish unaccusative and unergative verbs as shown in (45). Since these adverbials are derived from verbs containing an external argument, they can be obtained from unergative verbs but not from unaccusatives.

(45) a. dævan 'running', xændan 'laughing'
      b. *oftan 'falling', *miran 'dying'

Karimi-Doostan also shows that the same diagnostics can be applied to complex predicates in Persian as illustrated below. Hence, Karimi-Doostan argues that intransitive complex verbs with an "Initiatory" light verb (i.e., a light verb that allows for an external argument) may form subject nominals but not participle adjectivals as shown in (46). On the other hand, complex predicates formed with a "Transition" light verb (i.e., a light verb that is only compatible with an internal argument) form participle adjectivals but not subject nominals as shown in (47).

(46) a. ǰar=zæn-ænde   (shout=hit + 'er')   'shouter, announcer'
      b. *ǰar=zæd-e   (shout=hit + 'ed')   'shouted'

(47) a. *fout=šæv-ænde (death=become + 'er') 'dier'
      b. fout=šod -e   (death=become + 'ed') 'dead'

The application of these diagnostics to the complex predicates presented in (40) clearly shows that this class of verbs patterns with unergatives as illustrated in the examples (48) through (50).

(48) –er nominalization: (formed on present stem kon)
      a. bazi=kon   'player'   from bazi=kærdæn (play)
      b. tæzahorat =konænde   'demonstrator'   from tæzahorat=kærdæn (demonstrate)

(49) adjectival participle formation: (formed on past stem kard)
     a. *mærd-e bazi=kærde   'played man'   from bazi=kærdæn (play)
     b. *pesær-e gerye=kærde 'cried boy'   from gerye=kærdæn (cry)

(50) manner adverb formation: (formed on present stem kon)
     a. šena=konan   'by swimming'   from šena=kærdæn (swim)
     b. pærvaz=konan   'by flying'   from pærvaz=kærdæn (fly)

It should also be noted that the verb kærdæn (do) cannot undergo these morphological processes independent of the preverbal element:

(51) a. nominalization: *kon, *konænde
     b. adjectival participle: *kærde
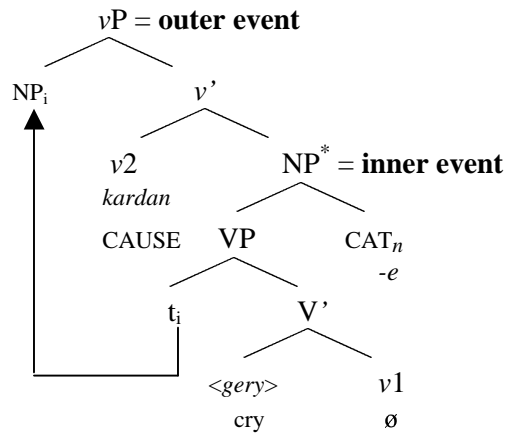   c. manner adverb: *konan

     The examples in this section show that the intransitive predicates listed in (40) display the properties usually associated with unergative constructions. Another important characteristic of these predicates is that, unlike their unaccusative counterparts discussed in Section 3, they do not undergo transitivity alternations.

5.2 A syntactic analysis

     The root element of the causative/inchoative alternation verbs of Section 3 was argued to be a State represented as an adjectival predicate. Unergative verbs such as laugh, dance or cough, however, are considered to have been formed from a nominal root. Hale and Keyser (1997) maintain that the root in these verbs is the bare nominal and they propose a monadic structure for these denominal verbs, where the nominal element laugh does not select a specifier in the lexical structure. Harley (1999) claims that the nominal part of these denominal verbs are event nouns and denote the eventiveness of the complex predicate. In Persian, the preverbal element of the unergative complex predicate is a noun (and not a nominal root) denoting an action or event. These nominals have been argued to be deverbal nouns (Sadeghi and Arzhang 1980). Hence, the nominals xænde and ændiše are derived by combining the present verb stem xænd of xændidæn (laugh) and ændiš of ændišidæn (think), respectively, with the nominalizing suffix –e, forming xænde (laughter) and ændiše (thought).

     Based on this analysis, I suggest that all the unergative verbs listed in (40) are composed of a deverbal nominal and a light verb v. The configuration in (52) represents the structure I propose for the unergative verb gerye=kærdæn in Persian. I claim that the 'inner event' includes a functional element v_1, which is part of the internal structure of the deverbal nominal gerye.

(52)

```
                        vP = outer event
                   ╱              ╲
              NPᵢ                  v'
               ▲              ╱         ╲
               │           v2            NP* = inner event
               │          kardan       ╱          ╲
               │         CAUSE    VP            CATₙ
               │               ╱      ╲          -e
               │             tᵢ        V'
               │                   ╱        ╲
               └──────────── <gery>          v1
                               cry            ø
```

NP* represents the deverbal nominal corresponding to the preverbal element in unergative complex predicates in Persian. Based on recent approaches to nominalization which argue that word formation is syntactic, rather than lexical (Marantz 1997, Harley and Noyer 1998, Van Hout and Roeper 1998, among others), I suggest that in forming the preverbal element gerye (crying), the root <gery> combines with the verbal functional element $v1$, which verbalizes the root in its context. In addition, the verbal head $v1$ is the structural source of the agent. The VP structure then combines with a category n (Marantz's D[13]), which nominalizes the verbal structure. Hence, the preverbal nouns in unergative constructions in Persian contain both a verbalizing ($v1$) and a nominalizing (n) environment and are in fact nouns formed from verbs. Note that this differs from the analyses provided for English in which unergative verbs are derived from the combination of a nominal root with an empty verb v in the outer event (cf. Hale and Keyser). I suggest that $v1$ denotes the existence of an event. Hence, the combination of the root <gery> with the verbal element $v1$ represents the existence of the event of crying.

To form the unergative predicate gerye=kærdæn, the verbal functional element $v2$ is added on the deverbal NP structure. I suggest that this verbal element is the same as the transitivizer $v2$ used in forming the causative verbs discussed in Section 3. Hence, I will represent $v2$ as CAUSE and I posit that the underlying representation of the unergative verb 'to cry' can be interpreted as causing the event of crying. In other words, when 'John cries', he brings about a crying event and when 'the airplane flies', it causes a flight to occur.

The proposed analysis suggests that there is no distinction between the structural position of causers and agents. This is in line with the conclusions in Arad (1998), which argues that agents and causers occupy the same syntactic position (i.e., [Spec, vP]). The difference between agents and causers is due to the way in which they are related to the lower VP. Hence, the semantic properties of an agent (described as volition or intention) as opposed to the semantic properties of a causer which merely brings about the event expressed by the lower predicate, are derivable from the nature of the association between the two event projections. For Arad, this distinction is captured by lexical selection: if the verbal head $v2$ is

---

[13] I refer to the nominalizing category as n rather than D because the preverbal elements in Persian are clearly non-specific nouns and the D head has often been argued to denote specificity within the noun phrase structure.

selected by the lexical V then the argument in [Spec, *v*P] is interpreted as agent, otherwise it's a causer.

I agree with Arad that the distinction between agents and causers is captured by the nature of the relation between the outer and inner events. However, I suggest that the closer relation between the outer and inner events in agentive unergative predicates is represented within the syntactic structure, whereby the two events seem to be members of the same domain. At this point, I can only offer some speculation as to the nature of the relation between the two events, but the distinction may be syntactically represented based on the category of the lower event predicate, that is whether the lower predicate is expressed as a VP or a deverbal NP, the latter being in a closer relation to the higher event.[14]

We are now in a position to derive the various properties of unaccusative verbs such as baz=šodan (open –intr.) and unergative predicates such as gerye=kærdæn (cry). I have proposed that *v*1 projects the agent argument of the deverbal noun, which explains the generalization that the preverbal elements in the unergative set in (40) seem to have an argument structure. As shown in the following examples, the preverbal elements gerye (crying) and pærvæz (flight) contain an agent that can be realized as the possessor of a noun phrase:[15]

(53) a. Gerye-ye   in   bæče   ma-ro   divane=kærde   (ast).
         crying-EZ this   child   we-OM   crazy=make.PPART (is)
      'This child's crying has driven us crazy.'

      b. Pærvaz-e   hævapeyma
         flight-EZ   airplane
      'The flight of the plane'

It was also shown, in this section, that unergative complex predicates in Persian contain an external rather than an internal argument. As the structure in (52) illustrates, I claim that the argument of *v*1 is moved to the [Spec, v2] position, thus becoming an external argument of the predicate[16]. In the unaccusative constructions, on the other hand, the subject is in the specifier of the inner *v* projection and is interpreted as undergoing the event.

The absence of transitivity alternations with unergative complex predicates is also accounted for. In unaccusatives, the verbal functional element occupies the inner *v* position (=*v*1); for unergatives, on the other hand, the verbal element is in the outer *v* position (=*v*2). Thus, unaccusative verbal constructions can become transitivized when a functional verb v2 is added on top of the lower VP projection. The unergative complex predicates, however, cannot be transitivized since the functional element *v*2 has already been projected.

To sum up, the unaccusative/unergative distinction arises from the fact that in a complex predicate such as baz=šodan (open –Intr.) there is only one event-denoting functional element

---

[14] The question remains as to why kærdæn is interpreted as 'make' in causative predicates but as 'do' in the unergative constructions. I suggest that just as kærdæn (make) was obtained from the merger of CAUSE and BECOME, similarly, kærdæn (do) results from the combination of CAUSE and another element, perhaps a manner component. I will leave this question open at this point.

[15] PPART denotes past participle.

[16] This movement may be due to EPP.

which is occupying the head of the inner event, but in an unergative complex predicate as in gerye=kærdæn (cry), there are two little-*v* projections.

5.3 Discussion

In the analysis proposed in this paper, the properties of the causative/inchoative alternation verbs and of the unergative complex predicates can be derived from the syntactic configuration built by the combination of a few basic syntactic atoms. I have argued that the lexicon need not contain fully annotated lexical entries, rather it should consist of roots and functional elements. In particular, I have shown that for the complex predicates discussed in this paper, the lexicon consists of root elements, categorial features, and several verbal functional elements that take a complement and project a specifier position.

The analysis presented in this paper shares the notion of compositionality of complex predicate formation with most previous works on Persian syntax, in particular with Karimi-Doostan (1997) and Vahedi-Langrudi (1996), but these approaches do not decompose the preverbal element and the light verb into smaller components in order to determine the basic elements of the verbal structure. In addition, as already discussed, the lexicon does not consist of fully annotated verbal entries as in Karimi (1997), in which the full thematic structures of preverbal and verbal elements are predetermined and unify at LF to form the argument structure of the complex predicate. This approach, as well as the lexicalist analysis in Barjasteh (1983), cannot quite capture the compositionality of Persian complex predicates. In the following section, I will discuss the dual behavior of complex predicates as lexical and syntactic elements.

6. Level of formation

Previous studies of complex predicates in Persian have argued that these verbal constructions behave as lexical units with respect to certain phenomena, but they are also able to undergo syntactic and morphological operations. This duality in their behavior has caused disagreement among researchers as to the actual domain in which complex predicates are formed. Certain approaches provide a lexicalist analysis, but postulate that the predicates formed in the lexicon are still visible to the syntactic and morphological operations; this is, in essence, the approach followed by Karimi-Doostan (1997). Others provide a syntactic analysis, in which complex predicates are formed compositionally in syntax. But in order to account for the lexical behavior observed, the complex verbs have to be generated under a X^0 node (see, for instance, Ghomeshi and Massam 1994). In this section, I will review the arguments put forth for a lexicalist approach to verb-formation and I will show that the predicate-based analysis presented here can account for these properties.[17]

Complex predicates in Persian can often undergo nominalization and can be used to form adjectives and adverbs, which suggest that these predicates are to be treated as lexical or X^0 element. These operations are illustrated in the following examples:[18]

---

[17] Also see Mohammad and Karimi (1992) for arguments against a lexical approach.

[18] In the gloss, AFF means Affix and is used whenever an overt morpheme is used to derive the various word formations; the affix used in each process is not distinguished at this level.

(54) a. Agentive noun:
    (i) tæzahorat=kon-ænde-gan   (demonstrations=do-AFF-PL)   '(the) demonstrators'
    (ii) bazi=kon-an   (play=do-ø–PL)   '(the) players'
  b. Participial adjective:
      lebas-ha-ye   xošk=šode
      dress-PL-EZ   dry=become.PPART
      '(the) dried clothes'
  c. Adjectival:
      In   kelid   peyda=šodan-i   n-ist.
      this   key   found=become-AFF   NEG-is
      'This key is not to be found.'   (Lit.: 'This key is not findable.')
  d. Adverb:
      Hæmid   šena=kon-an   be xoški   resid
      Hamid   swim=do-AFF to land   arrive.PAST.3SG
      'Hamid swam to land.' (Lit.: Hamid reached land swimming.')

These processes can only target fully thematic verbs; light verbs alone (with the light verb meaning and not as heavy verbs) cannot undergo these morphological formations as examplified below:

(55) a. kærdæn 'do/make':
    *konænde 'doer/maker'   vs.   telefon=konænde   (phone=doer) 'caller'
  b. šodæn 'become':
    *šode 'become.PPART'   vs.   xošk=šode (dry=become.PPART) 'dried'

      If word-formation is a syntactic operation as proposed in this paper, and there is no strict division between the lexical and the syntactic components, then the fact that complex verbs can be nominalized does not cause a problem for the analysis. The problem of the dual properties of complex predicates arises from theory-internal reasons. Any system that treats the lexicon as an autonomous unit, distinct from syntax, will not be able to account for a syntactic object with lexical properties. Goldberg (1996) argues that the fact that the Persian complex predicate is represented as a unit in the lexicon, but does not always behave as a syntactically atomic lexical item, is natural in theories like Construction Grammar since no strict division is drawn between lexical items and phrasal constructions. The proposal in this paper shares with Goldberg the idea that there is no strict division between words and phrasal elements, but instead of adding phrases in the lexicon, I propose (following Marantz 1997) that word formation, including nominalization and adjective formation, takes place in syntax. The duality of complex predicates in Persian naturally falls out in such an approach.

    Ghomeshi and Massam (1994) argue that complex predicates display syntactic properties but they also suggest that the preverbal element forms a unit with the light verb and they represent the complex predicate as a V^o. In their structure, preverbal elements (as well as non-specific objects) appear in a N^o position as sister to the light verb V under V^o in a juxtaposition relation which allows to capture the dual nature of the complex predicate in Persian. The evidence presented by Ghomeshi and Massam for the behavior of the preverbal and verbal elements as a unit comes from the facts surrounding stress placement. Ghomeshi and Massam

point out that in the simple past, stress falls on the last syllable of the verb stem (56a), but when a preverbal element appears before the light verb, the latter does not receive any stress (56b).

(56) a. ændáxt   (throw.PAST.3SG)   'threw'
      b. be geryé ændaxt   (to crying throw.PAST.3SG)   'made cry'

I argue that stress placement in Persian complex predicates does not suggest that the two components are to be treated as a lexical unit. Consider the contrast below:

(57) a. Ali   dǽr-ro   báz=kærd.
         Ali   door-OM   open=make.PAST.3SG
         'Ali opened the door.'
      b. dǽr=baz=kón
         'can-opener'

In the example in (57a), the main stress occurs on the preverbal element in the complex predicate (baz). In the nominal compound in (57b), however, which is formed from the same complex predicate, baz=kærdæn (open), the main stress falls on the final syllable, the verb stem. Hence nominal compounds and compound verbs do not show the same behavior with respect to stress. In addition, the stress can also appear on manner adverbs (58a) or on negation (58b).

(58) a. Mani   [^{vP} xúb   šena=mi-kone].
         Mani   good   swim=DUR-do.PAST.3SG
         'Mani swims well.'
      b. Mani   [^{vP} šena=né-mi-kone].
         Mani   swim=NEG-DUR-do.PAST.3SG
         'Mani doesn't swim well.'

It is not plausible to argue that the whole *v*P in (58a), including the manner adverb forms a single unit in syntax. Based on the evidence presented, I argue that stress placement in Persian cannot be used as an argument for the lexical behavior of complex predicates. Instead, I suggest that stress placement in Persian verb phrases is closely related to the syntactic structure and I propose, following Cinque (1993), that heavy stress occurs on the lowest element in the clausal structure.

7. Conclusion

In this paper, I have investigated the event structures of inchoative/causative alternations and unergative verbs in Persian and have presented a decomposition of the verbal construction into basic syntactic elements. Based on recent developments in syntactic theory, I have proposed a compositional analysis whereby the various components of complex predicates are combined in syntax and the meaning of the verb is derived from the resulting structure.

In the proposal I have been pursuing in this paper, the impetus is to place the least amount of information needed in the lexicon, and derive as much as possible from the syntactic configuration, in line with the theoires developed in Borer (1994), Marantz (1997) and Vergnaud (2000). The study of Persian complex predicates has shown that with only a few primitive syntactic elements, consisting of roots and functional heads, it is possible to obtain the properties of the unaccusative, unergative and transitive verbs discussed here. The notion of verb then consists of distinct components, projected as separate heads in the syntactic structure. The syntactic decomposition approach does not duplicate the work done in the syntactic component and does not give rise to a proliferation of lexical entries.

The analysis presented here has focused on a small representation of verbal predicates, but I hope to have shown that this approach seems promising in deriving the semantic and syntactic properties of verb formation in a computationally simple system. A thorough investigation of the various complex predicates in Persian, and its comparison with well-studied English constructions, could shed light on the internal structure and eventual properties of the syntactic objects known as verbs.

References

Alsina, Alex. 1999. On the representation of event structure. In *Grammatical semantics: Evidence for structure and meaning,* ed. Tara Mohanan and Lionel Wee, 77-122. Stanford, Calif: CSLI Publications.

Arad, Maya. 1998. VP-structure and the syntax-lexicon interface. Doctoral dissertation, University College London.

Barjasteh, Darab. 1983. Morphology, syntax, and semantics of Persian compound verbs: A lexical approach. Doctoral dissertation, University of Illinois.

Borer, Hagit. 1994. The projection of arguments. In *Occasional Papers in Linguistics* 17, ed. E. Benedicto and J. Runner, 19-48. GLSA, University of Massachussetts, Amherst.

Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, Mass: MIT Press.

Chomsky, Noam. 1998. Minimalist inquiries: the framework. In *MIT Occasional Papers in Linguistics*, Number 15. Cambridge, Mass.: MIT.

Cinque, Guglielmo. 1993. Null theory of phrase and compound stress. *Linguistic Inquiry* 24:239-297.

Dowty, David. 1991. Thematic proto-roles and argument selection. *Language* 67(3):547-619.

Fong, Vivian. 1999. Comments on Alsina. In *Grammatical semantics: Evidence for structure and meaning,* ed. Tara Mohanan and Lionel Wee, 123-134. Stanford, Calif: CSLI Publications.

Ghomeshi, Jila and Diane Massam. 1994. Lexical/syntactic relations without projection. *Linguistic Analysis* 24(3-4): 175-217.

Goldberg, Adele. 1996. Words by default: Optimizing constraints and the Persian complex predicate. In *Proceedings of BLS 22*.

Grimshaw, Jane and Armin Mester. 1988. Light verbs and θ-theory. *Linguistic Inquiry* 19:205-232.

Hale, Kenneth and Samuel Jay Keyser. 1993. On argument structure and the lexical expression of syntactic relations. In *The view from building 20*, ed. Kenneth Hale and Samuel Jay Keyser, 53-110. Cambridge, Mass: MIT Press.

Hale, Ken and Jay Keyser. 1997. On the complex nature of simple predicators". In *Complex predicates,* ed. Alex Alsina, Joan Bresnan, and Peter Sells, 29-66. CSLI Lecture Notes, Number 64. Stanford, Calif: CSLI Publications.

Hale, Ken and Jay Keyser. 1998. The basic elements of argument structure. In *Papers from the UPenn/MIT roundtable on argument structure and aspect,* ed. Heidi Harley, 73-118. MIT Working Papers in Linguistics, Volume 32. Cambridge, Mass.

Halle, Morris and Alec Marantz. 1993. Distributed Morphology and the pieces of inflection. In *The view from building 20*, ed. Kenneth Hale and Samuel Jay Keyser, 53-110. Cambridge, Mass: MIT Press.

Harley, Heidi. 1995. Subjects, events and licensing. Doctoral dissertation, MIT.

Harley, Heidi. 1999. Denominal verbs and Aktionsart. In *Papers from the UPenn/MIT roundtable on the lexicon,* ed. Liina Pylkkanen, Angeliek van Hout, and Heidi Harley, 73-86. MIT Working Papers in Linguistics, Volume 35. Cambridge, Mass.

Harley, Heidi and Rolf Noyer. 1998. Licensing in the non-lexicalist lexicon: Nominalizations, vocabulary items and the Encyclopedia. In *Papers from the UPenn/MIT roundtable on argument structure and aspect,* ed. Heidi Harley, 119-138. MIT Working Papers in Linguistics, Volume 32. Cambridge, Mass.

Hout, Angeliek van and Thomas Roeper. 1998. Events and aspectual structure in derivational morphology. In *Papers from the UPenn/MIT roundtable on argument structure and aspect,* ed. Heidi Harley, 175-200. MIT Working Papers in Linguistics, Volume 32. Cambridge, Mass.

Jackendoff, Ray. 1990. *Semantic structures*. Cambridge, Mass.: MIT Press.

Karimi, Simin. 1997. Persian complex verbs: Idiomatic or compositional. *Lexicology* 3(2):273-318.

Karimi-Doostan, Mohamad-Reza. 1997. Light verb constructions in Persian. Doctoral dissertation, University of Essex.

Larson, Robert. 1988. On the double object construction. *Linguistic Inquiry* 19:335-391.

Levin, Beth. 1993. English verb classes and alternations: A preliminary investigation. Chicago, Illinois: Chicago University Press.

Levin, Beth and Malka Rappaport Hovav. 1995. *Unaccusativity: At the syntax-lexical semantics interface*. Cambridge, Mass.: MIT Press.

Marantz, Alec. 1997. No escape from syntax: Don't try morphological analysis in the privacy of your own lexicon". In *Penn working papers in linguistics*, volume 4, ed. Dimitriadis, 201-225. Philadelphia, Pennsylvania.

Marantz, Alec. 2001. Words. Paper read at WCCFL 20, University of Southern California, Los Angeles.

Mohammad, Jan and Simin Karimi. 1992. Light verbs are taken over: Complex verbs in Persian". In *Proceedings of WECOL,*vol. 5:195-212.

Pesetsky, David. 1995. *Zero syntax: Experiences and cascades.* Cambridge, Mass.: MIT Press.

Pustejovsky, James. 1995. *The generative lexicon*. Cambridge, Mass.: MIT Press.

Ritter, Elizabeth and Sara Thomas Rosen. 1998. Delimiting events in syntax. In *The projection of arguments*, ed. Miriam Butt and Wilhelm Geuder, 135-164. Stanford, Calif: CSLI Publications.

Sadeghi, A. A. and Gh. Arzhang. 1980. *Dastur(Grammar)*. Vol. I, II, III. Ministry of Education and Training, Iran.

Travis, Lisa. 1991. Derived objects, inner aspect and the structure of VP. Paper presented at *NELS 22*, University of Delaware. (Not in proceedings.)

Vahedi-Langrudi, Mohammad-Mehdi. 1996. The syntax, semantics and argument structure of complex predicates in modern Farsi. Doctoral dissertation, University of Ottawa.

Vendler, Zeno. 1967. Verbs and times. In *Linguistics and Philosophy*, ed. Zeno Vendler. Ithaca: Cornell University Press.

Vergnaud, Jean-Roger. 2000. Primitive aspects of the syntactic code. Paper read in Université Paris VII, Paris.