

# Verbs in Turkish Sign Language: A cognitive linguistic approach

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**ABSTRACT:** Recent studies show that semantic components of event structure are decomposable. In this study, the semantic components of events and event structure constructions will be examined within the framework of Talmy (2000) and Tang & Yang (2007)'s model on sign languages. Our analysis shows that lexical verbs have the same mechanisms with classifier predicates in terms of event structure constructions. Besides, we have determined that semantic components of event structure have an effect on lexicalization which seems to be one of the most important reasons of lexical variations in Turkish Sign Language (TİD).

**Keywords:** event structure, lexical verbs, sign language, lexicalization

## Türk İşaret Dilinde Eylemler: Bilişsel dibilimsel bir yaklaşım

**ÖZ:** Son yıllardaki araştırmalar, olay yapısının anlamsal bileşenlerinin parçalanabilir özellikte bulunduğunu göstermektedir. Bu çalışmada Talmy (2000)'in devinim olay yapısına ilişkin kavramsal çerçevesi ve Tang ve Yang (2007)'nin işaret dillerine özgü sunduğu model takip edilerek TİD'de olayın anlamsal bileşenlerinin sözcüksel eylemlerdeki görünümü ve olay yapısının sözcüksel düzeyde kurulumu incelenmektedir. Sözcüksel eylemler, sınıflandırıcı yüklemcil yapıların aksine sözlüksel düzeyde bulunmasına karşın olay kurulumunun benzer kavramsal şemaya sahip olduğu görülmüştür. Ayrıca olay yapısının anlamsal bileşenlerinin sözlükselleşme sürecinde etkisi bulunduğu ve TİD'in sözvarlığındaki sözlüksel çeşitliğin en önemli nedenlerinden biri olduğu gözlemlenmiştir.

**Anahtar sözcükler:** olay yapısı, sözcüksel eylemler, işaret dili, sözlükselleşme

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## 1 Introduction

Recent studies argue that inner mechanisms of events can be understood within the framework of cognitive perception and the structure of sub-events are semantically decomposable (Taylor, 2002; Jackendoff, 1983; 1990). According to the Prosodic Model (Brentari, 1998, 2002), which represents the

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phonological structure of sign languages (SLs), movement is a phonological parameter which makes a word pronounceable/signable like vowels in spoken languages (SPLs). Accordingly, the fact that all words have movement parameters in SLs bring out questions on how movement occurs and what the stages of conceptualization processes are in SLs which use a different modality than SPLs.

This study investigates lexical verbs and basic properties of their semantic components in TİD within the framework of event structure proposed by Talmy (2000).

The following questions are going to be answered in line with this aim:

- (i) How meaning components of events are mapped onto the lexicalization of verbs on TİD?
- (ii) What kinds of features do semantic components of lexical verbs carry in terms of Figure-Ground segregation? How are causal relationships represented in lexical verbs?

Tang & Yang (2007:1217) assert that the aim of verb semantic studies is to describe the components of meaning perceived as conceptual primitives and determine how these primitives are encoded in the grammatical system of natural languages. They also add that some followers of this view analyze lexicalization patterns cross-linguistically and assume that different grammatical categories such as nouns and verbs are constituted by a universally defined set known as “semantic primitives” (Wierzbicka, 1988; Wunderlich, 1997; Talmy, 2000). Following their claim, this study examines how event structure constructions are similar to classifier predicates and how co-events are mapped onto lexical verbs in TİD. Aside from these, the study describes Figure-Ground segregation and shows how Cause is represented in TİD.

## **2 Theoretical Background**

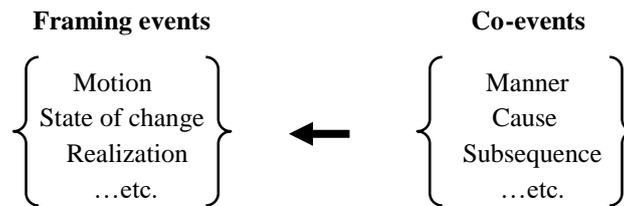
### *2.1 Talmy’s Event Structure Framework*

Studies assuming that event structure is a subject of linguistic analysis consider that natural languages have some features related to events in their predicates. According to this, the inner structure of events is a part of our cognitive perception and can also be decomposable into parts such as change and causation. In his substantial studies Talmy (1985, 2000) discusses how meaning components like Figure, Path, Ground, Manner, and Cause are lexicalized in events of motion and causation cross-linguistically. Besides Jackendoff (1990) analyzes how meaning components such as Motion, Location and Cause in natural languages are realized at the morphological and syntactic levels through positing a lexical conceptual structure (Tang & Yang, 2007: 1217). Following

this, semantic components in SLs give clues on how languages differ in conceptualization of manner, causation etc. (see for TİD Özyürek & Perniss, 2009; Arık, 2009, 2015).

In Talmy's (2000) conceptual framework, as summarized by Tang & Yang (2007: 1218), the conceptual organization underlying human language encodes events in many different ways and events can be defined as objects having different degrees of complexity in their inner structure. Accordingly, a macro-event has a complex structure which consists of a core or framing event and some sub-event components. According to Talmy's conceptual structure, a motion event is defined as the continuation of a figural entity or a situation that contains movement. In this way, motion as an event entity can be perceived as having the central role in dynamism. Talmy's conceptual structure of a macro-event is presented in Figure 1.

Figure 1. Talmy's conceptual structure of a macro-event



Talmy's (1985) event structure analysis symbolizes the basic characteristics of dynamism or its opposite concept, stationariness (Tang & Yang, 2007: 1218). From this point of view, the basic structure constituting a lexeme in SLs is motion and it is also the basic component in pronounceability/signability of the handshape. The role of motion in structuring the words in SLs may show the importance of dynamism in human perception. The modality of SLs allows multi-dimensional production-perception opportunities different from SPLs. This multi-dimensionality allows many words in vocabulary that are kinds of imitations of real world activities such as **RUN**, **CLIMB**, **ITCH** etc. For instance, the lexical sign **CLIMB** in TİD, is produced by opening and closing the hand and the alternate movement of the hand is upwards which is similar to the arms of the movement of a climbing person. It can be clearly seen that such signs are similarity-based and they have an iconic relationship with their referents (see Sonesson, 1989; Ahlner & Zlatev, 2010). Apart from this, Figure and Ground are conceptual components which are core meaning components in motion events.

## 2.2 *Event Structure in Sign Languages*<sup>1</sup>

As Tang and Yang (2007:1219) claims, studies on SLs employing Talmy's conceptual framework generally aims to analyze the structures known as classifier predicates<sup>2</sup>. Besides, his conceptual model helps researchers to observe semantic and syntactic characteristics of classifier predicates and examine decomposable components of such constructions (Supalla, 1986; Schick, 1990; Engberg-Pedersen, 1993; Wallin, 2000; Morford, 2002; Tang & Yang, 2007; Arik, 2015 and others). In SLs "handshape which is defined as a classifier is a bound morpheme, having a classificatory function similar to the 'classifiers' in SPLs (Frishberg, 1975 in Tang and Yang, 2007: 1219)". In addition to this, Tang and Yang (2007) proposes that although various classifications were proposed in the literature of SLs, at least, four main classifier types are accepted: whole-entity classifier, size and shape classifier, instrumental/handling classifier and body-part classifier (see Supalla, 1982; Liddell & Johnson, 1987; Engberg-Pedersen, 1993).

When considered in terms of event structure constructions, handshape or the movement or both handshape and movement are claimed to form the verb root of the predicate (Supalla, 1982; Schick, 1990; Engberg-Pedersen, 1993 in Tang & Yang, 2007). Tang (2003) also proposed 'movement-as-root' hypothesis

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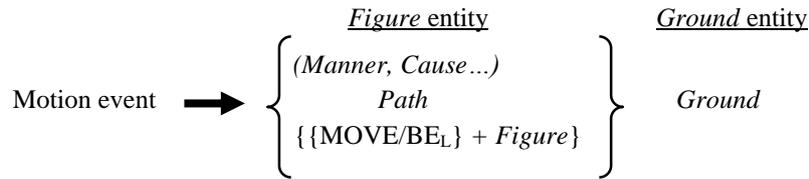
<sup>1</sup> Notations for event structure

MOVE	Abstract morpheme for 'motion' in the underlying conceptual structure. In event of causation, MOVE = ACT-ON
BE <sub>L</sub>	Abstract morpheme for 'locatedness'
BE <sub>R</sub>	Abstract morpheme for the 'resultant' state
Path <sub>P</sub>	Path traversed by an entity
Path <sub>S</sub>	Site occupied by an entity
Path <sub>C</sub>	Transfer of act in event of causation
1st tier	Glosses in capital letter (handshapes or nonmanuals)
2nd tier	Meaning components and their representation as a conceptual structure
LH	Left hand
RH	Right hand
NM	Nonmanual markers
CL	Classifier handshapes
WORD-WORD	Hyphens are used when more than one word is required to gloss a single sign

<sup>2</sup> The linguistics mechanism of classifier predicates has been subject to much debate. They are generally known as classifier signs, whereas elsewhere they are variously referred to as polysynthetic signs (Wallin, 2000), productive signs (Brennan, 1992), polycomponential signs (Slobin et al., 2003; Schembri, 2003), and polymorphemic verbs (Engberg-Pedersen, 1993).

following Talmy's conceptual model according to which movement provides information to domains such as motion, event, state and location. Accordingly, movement is the basic component of motion and location events. Figure 2 shows the conceptual structure of a motion event in SLs.

Figure 2. Conceptual structure of a motion event in SLs (Tang, 2003)



According to this model proposed by Tang & Yang (2007:1223) a motion event requires a Figure entity which may or may not require a Ground entity. They assert that in SLs the meaning components Figure and Ground are mapped onto the phonological handshape parameter whereas the meaning component Motion is encoded phonetically by abstract morphemes MOVE or BE<sub>L</sub>. Firstly, MOVE conflates with Figure and then combines with Path which is an obligatory component of a motion event reflecting its semantic core. This component optionally can combine with co-events such as Manner or Cause. Path may be either the path followed by Figure (i.e. Path<sub>P</sub>) or the path occupied (i.e. Path<sub>S</sub>) by the Figure. Path<sub>P</sub> conflated with the component {MOVE + Figure} represents translational motion, where Path<sub>S</sub> conflated with the component {BE<sub>L</sub> + Figure} represents the location or existence of an entity in space. In this study lexical verbs displaying motion events are interpreted following this conceptual framework.

### 3 Event Structure in TİD: Lexical Verbs

#### 3.1 Figure and Ground

In a language, conceptualization of space is possible by encoding the spatial scenes by linguistic features. We can talk about two basic components in linguistic representation of spatial scenes: Figure and Ground. The representation of space depends on the relationship between Figure and Ground (Talmy, 2000). In representation of spatial scenes, the entity having prominence is referred to as Figure, whereas the second entity with less prominence is referred to as Ground or Reference Object.

According to Talmy's conceptual framework, Figure can be defined as the entity which is a meaning component located in space and attracting our attention initially. Moreover, in event structure Figure is specified as the entity moving its place where Ground is defined as the entity to which the moving

object (Figure) converges in a motion event. In event structure constructions Figure locates or moves by reference to Ground. From this point of view a motion event always takes place in Ground. However, in languages Ground may not be specified clearly and can be recovered by implication. Basic properties and segregation of Figure and Ground can be summarized in Table 1 below (Evans & Green, 2006:70).

*Table 1. Basic Properties of Figure and Ground (Evans & Green, 2006)*

Figure	Ground
Has unknown spatial properties	Acts as reference entity, characterizes Figure's unknown properties
More moveable	More permanently locates
Smaller	Bigger
Geometrically simpler	Geometrically more complex
More recently on the scene/in awareness	Earlier on the scene/in awareness
Less immediately perceivable	More immediately perceivable
More salient, once perceived	More backgrounded, once figure is Perceived
More dependent	More independent

In the example in Figure 3 **LAND-ON** the dominant handshape (right) represents the claws of a bird whereas the nondominant handshape (left) represents the branch of a tree and similar to the motion in real life Figure moves towards the Ground. This example which supports Talmy's conceptual framework shows the roles of Figure and Ground in event construction. When we consider the second example **SIGN** in Figure 3 the dominant hand (right) represents 'pen' because of its shape whereas the nondominant hand (left) represents a piece of 'paper'. In the construction of event structure, handshape of the Figure, which represents the motion, moves towards the Ground and presents the location of motion.

Figure 3. Figure and Ground: *LAND-ON* and *SIGN*

Figure and Ground which are components of meaning in SLs is presented with handshape and in recent studies apart from the semantic properties of the verbs, the relationship between their argument structure and morpho-phonological structure is examined as well. One of the properties characterizing the structure of events conceptually is ‘activating process’. Figure, initializing this process stays stationary with Ground or makes transitional movement. Accordingly, when we consider the verb *SLEEP* in TİD, the nondominant hand is Ground and the body part “head” is Figure and moves towards the Ground as shown in Figure 4 below. This shows us that not only handshape, but also movement of the body parts such as head can also function as a Figure.

Figure 4. Body-parts as a Figure



According to Tang & Yang (2007: 1225) decomposable property of event structure and differing semantic properties of its parts support the claim about the mapping relation between conceptual primitives and verb meaning representation (Jackendoff, 1990; Grimshaw, 1990; Pustejovsky, 1988, 1995; Levin & Pinker, 1992; Hale & Keyser, 1993; Levin & Rappaport, 1995, among

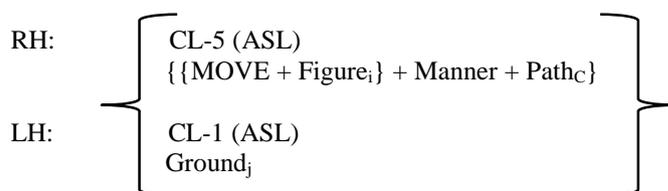
many others). According to the basic properties of event structure and its semantic components many verbs in TİD show lexical variations. Although these signs share similar semantic properties, they are different lexical units in terms of event structure.

In the example [ATTACK1](#) in Figure 5, the dominant hand is the Figure which represents the collective human community, and the nondominant hand is the Ground which represents only one person and it operates as a whole entity classifier. When we analyze the event structure, we can clearly see that many people are making a movement and this follows a Path towards one person. Moreover, the semantic primitives which are encoded by Figure and Ground handshapes present information about the manner of the motion.

Figure 5. Figure and Ground properties of lexical verbs: [ATTACK1](#)



[ATTACK1](#)



In the next example [ATTACK2](#) in Figure 6, the handshape for Ground represents only one person, whereas Figure represents a fist or a hard object and it is a bodypart or an instrumental classifier. Different from the previous example ([ATTACK1](#)), here the Figure, the agent of the event, denotes one person or an object. The semantic primitives of classifier handshapes are reflected on many lexicalized verbs in TİD and this brings up the effect of event structure in lexicalization process. Thus in the TİD lexicon underlying difference between words having different conceptual contents can be explained by referring to the

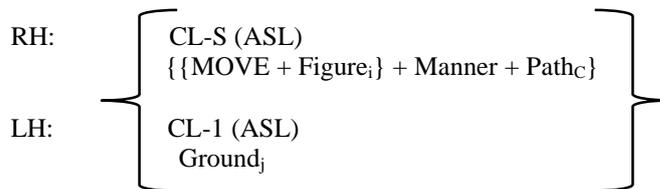
event structure. Differing semantic components in event structure causes the emergence of verbs with different phonological parameters.

When lexicalization is thought as a continuous linguistic process, change of one semantic component such as Figure, Ground and Manner can produce many near-synonymous words (lexemes) in the lexicon.

Figure 6. Figure and Ground properties of lexical verbs: [ATTACK2](#)



[ATTACK2](#)



As stated before, according to Talmy's conceptual framework Figure and Ground are conceptual primitives that are core semantic components. Figure is the component that initializes the motion event where Ground is the stationary component. In the verb [SHOW](#) in Figure 7, the dominant handshape is used for pointing function, and the motion is shown with Ground that is the nondominant handshape. In this example the nondominant handshape starts the movement as the dominant handshape touches the nondominant handshape. Here what is interesting is that although Ground is stationary in Talmy's conceptual framework, in this example the Ground moves with Figure contiguously. This example demonstrates how Ground, defined as the stationary semantic component in Talmy's model, moves together with Figure. Thus, we can conclude from this example that as the Ground designates location it can move with Figure.

Figure 7. The movement of Ground in Event Structure: *SHOW*



In this section we discussed how lexicalized verbs in TİD involve decomposable semantic components such as Figure and Ground just like event structure constructions in predicates. When it is considered through lexicalization process, we observe that what lies under the meaning differences in near-synonymous verbs having the same conceptual content are the variations in event structure constructions and their semantic properties. Moreover, the examples in TİD displays that the Ground which is defined as the stationary component in Talmy's conceptual framework, can move with Figure simultaneously as soon as it represents location for Figure. Further studies are needed in order to determine whether this is a parametrical specialty emerging because of the modality of SLs or an extended definition is required to define the Ground component. The next part will discuss Causation being external components of the event structure.

### 3.2 Causation

An event of causation is generally described as a composite event which consists of two independent but interrelated sub-events (Jackendoff, 1990; Grimshaw, 1990; Levin and Rappaport, 1995; Pustejovsky, 1995; Wunderlich, 1997; Talmy, 2000, among many others). The first event is a causing event which may or may not be agentive. It includes either an activity or a process that gives rise to a transition or a change of state. The second sub-event is the resultant state itself. According to Talmy (2000) a lexicalization account for the meaning component of Cause is considered cross-linguistically valid. From a conceptual perspective, an event of causation in Talmy's model is a macro event consisting of two components: (a) causing event with the meaning component Cause as a co-event, and (b) a framing event indicating the result of causation, which is an event of 'Change of State'.

Following Talmy's (2000) theoretical framework on events of causation Tang and Yang (2007:1237) investigate the construction of causation events in Hong Kong Sign Language and maintain that an event of causation is temporal in nature, in such a way that the causing event conceptually precedes the framing event of 'change of state'. The causing event has an underlying morpheme {MOVE + Figure} that conflates with the co-event Cause. The association function of linking the causing event and the 'state change' is set up by the Figure entity 'acting on' the Ground entity, which can be abstractly conceived as Path<sub>C</sub>. Thus in a prototypical event on causation, an agent/causer is a Figure entity and the affected/theme is a Ground entity and between them there is a co-event Cause supported by Path<sub>C</sub>. This schema happens when causative force comes from an external source. If causative force does not come from an external source the event schema will require the Ground entity to be identified with the Figure entity as the causative force comes from the Figure entity itself in framing the event of state of change. On the other hand, the schema of the event for 'state change' presents a schema includes a combination of type of transition along with resultant state which is represented by an underlying abstract morpheme BE<sub>R</sub>. This BE<sub>R</sub> morpheme obligatorily conflates with Figure, Path and Cause, or optionally with any other co-events. The general conceptual framework of the two sub-events of causation as proposed by Tang and Yang (2007:1238) is shown in Figures 8 and 9:

Figure 8. Conceptual structure of a causing event in SLs (Tang and Yang, 2007)

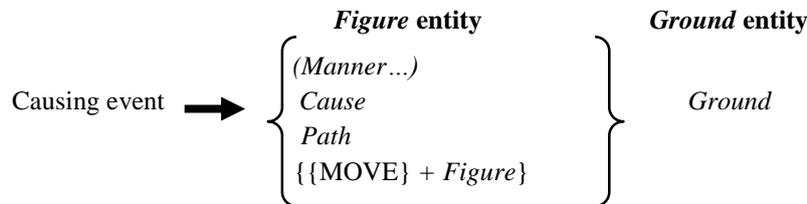
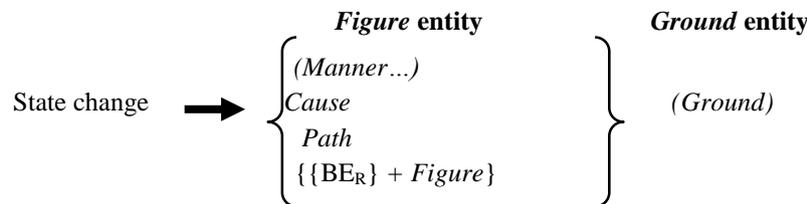
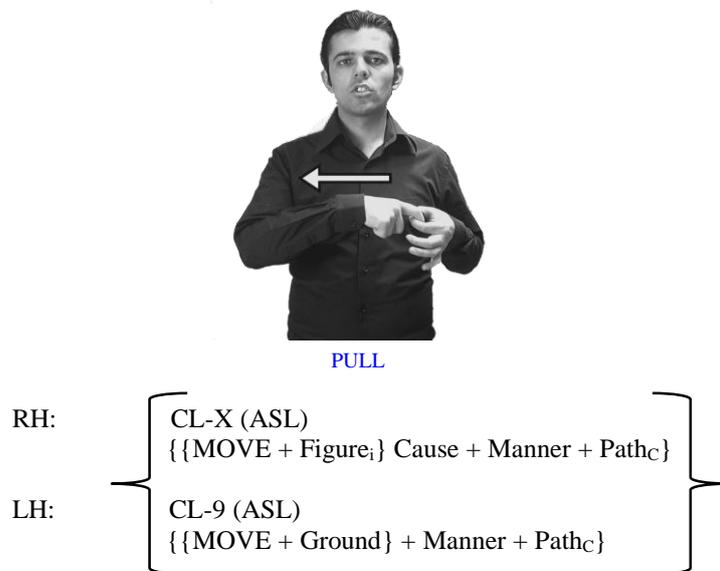


Figure 9. Conceptual structure of an event of 'State Change' in SLs (Tang and Yang, 2007)



Typical causative predicates in many SLs are often associated with classifier predicates involving a handling classifier. Recent studies has showed that the handling classifier is linked with a causative predicate which indicates a causing event (Supalla, 1982; Schick, 1990; Kegl, 1990; Lau & Tang, 2001; Lau, 2002; Benedicto & Brentari, 2004). A typical causative predicate in TİD is seen in the verb **PULL** (see Figure 10) which is articulated by a handling classifier in which the dominant hand refers to tow-bar and the non-dominant hand represents the towing-ring. The dominant hand denotes mounting tow-bar and pulling an object (non-dominant hand). While in predicates an agentive entity is the grammatical subject of the sentence, in lexical verbs the handling classifier which acts as an agent of an event conveys information only about the content of the proposition and the realization of the event. Moreover, in predicates Figure and Ground are the subject and object of the grammatical sentence and contain various thematic roles.

Figure 10. Lexical causatives with handling classifiers in TİD



A macro-event which consists of decomposable two sub-components is considered as an event complex. A framing event provides an overall conceptual frame for certain activities which are conceived as being taken place. Also this framing event is considered in the construction of a particular event schema and it contributes to the sematic characteristics of the arguments within it. A co-event, on the other hand contributes to the realization of the framing event and supports it. Within this framework we can explain the event structure of verb

**PUFF-UP** in Figure 11 as such. In a motion event ‘air’ moves from point *a* (i.e. from lungs) to point *b* (i.e. to inside of an object/entity) and the movement of air from one location to another is perceived as the main schema. The event of sending the air to another location occurs with the support of Cause co-event. The co-event causes a State Change in the volume of object, i.e. by puffing up the volume of the object enlarges and turns into a bigger object.

Figure 11. Macro-event structure: Nonmanual



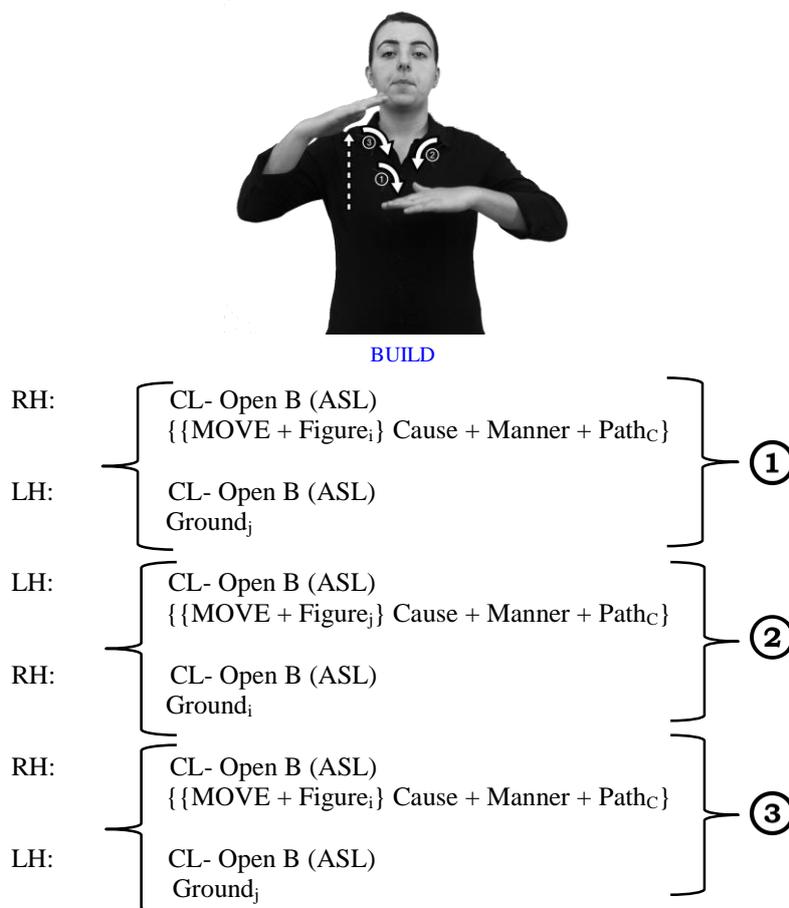
**PUFF-UP**

NM:	Puffing { {MOVE + Figure <sub>i</sub> } Cause + Manner + Path <sub>C</sub> }
RH+LH:	CL- 5 (ASL) { {BE <sub>R</sub> + Figure <sub>j</sub> } + Manner + Path <sub>C</sub> }

Consider the verb **BUILD** in Figure 12. The classifier handshape represents the floor of the building, i.e. it is initially a Figure. While articulating the construction of a new floor the same hand, this time becomes the Ground. With this example we attempt to show that in the construction of motion event the conceptual primitives Figure and Ground form the core of the meaning component but at the same time the role of Figure and Ground can change independently. The example in (12) shows the spatial configuration of the RH and LH in space. In this example, the LH is introduced as the Ground argument of the event structure. The downward movement of the RH (indexed with ‘i’) ends at a locus in space (indexed with ‘j’) and serves as the Figure argument. This classifier handshape for RH, originally encoding Figure in the event structure, becomes the Ground, when the next cycle is set up. Adopting Talmy’s framework of analysis, Ground and Figure are perceived as displaying dynamic role relations in the event structure. The RH is initially Figure, but becomes

Ground. Then the cyclic alternating pattern goes on in the ensuing event structure.

Figure 12. Causation in Figure-Ground change



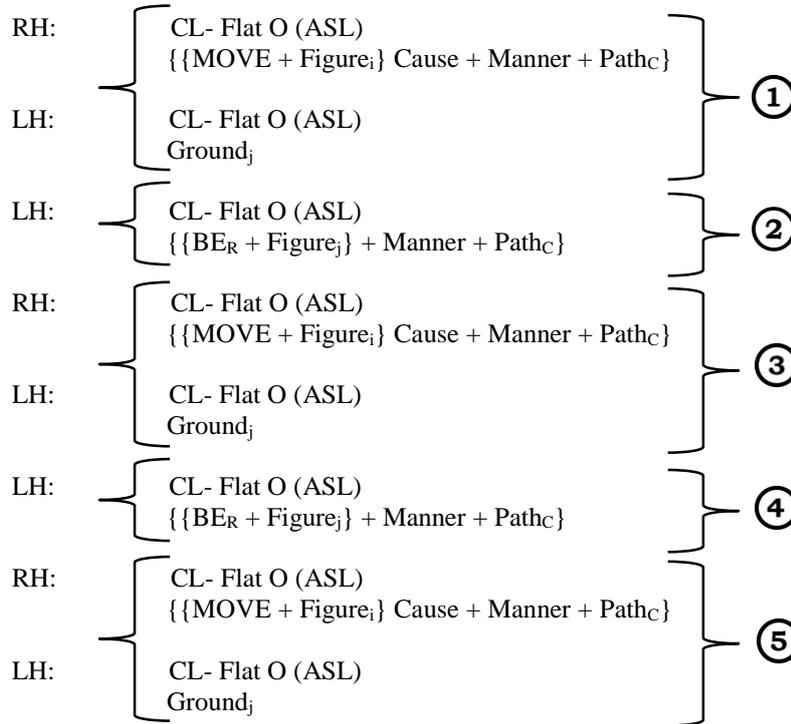
In the same vein, take the verb **INCREASE** in Figure 13. Here the augmentative object involves a motion and the classifier handshape (indexed with 'i') being the Figure moves upwards towards the handshape (indexed with 'j') that represents the Ground in the space. In the conceptual schema, adding something to an object makes its volume augmented and causes an increase in it and eventually causes a State Change. Basing on this observation, the main event that is realized by the Figure (indexed with 'i') occurs simultaneously with a Cause co-event and then the Figure (originally encoding Ground, indexed with

‘j’) realizes the motion. In the resultative event, the classifier handshape prototypically carries the properties of the Ground (indexed with ‘j’) which moves upward and becomes another Ground that is higher than the previous position in the locus of the space. In the actualization of each cyclical phase of the verb INCREASE the classifier handshape having the properties of Figure (indexed with ‘i’) moves towards the Ground which is at the highest position (see Figure 13).

Figure 13. Cause in TİD: Change of State



INCREASE



In line with Talmy's conceptual framework, besides classifier predicates, Figure and Ground have dynamic roles in the conceptual structure of lexical verbs. This finding gives support to the claim that there is a mapping relation among lexical structure of verb, conceptual primitives and representation of verb meaning (see Jackendoff, 1990; Levin & Pinker, 1992; among many others). Motion which functions as one of those core semantic components of the event along with Figure and Ground also presents evidence regarding the decomposable nature of natural languages. (Tang & Yang, 2007). While at present it is uncertain how formal analyses of lexical verbs that encode complex event structure is to be conducted, it is evident that, the role changing of Figure and Ground implies even more complicated semantic structure.

#### **4 Conclusion**

In this study, following Talmy (2000)'s theoretical framework on motion events and adopting Tang and Yang (2007)'s model on SLs the semantic component of event in TİD lexical verbs and the construction of event structure at lexical level are investigated. In predicates semantic component in the construction of event structure carries thematic roles such as agent, patient etc. and event schema is formed at the sentence level. On the other hand, lexical verbs belong to the lexical level yet they have similar semantic components just as predicates and the construction of event structure in lexical verbs is also decomposable. This property of lexical verbs clearly shows that in SLs construction of event structure has similar conceptual schema at lexical and predicative levels.

It is known that in SL lexicons the production of many verbs is encoded by following the schematization of the real world event actualization and by maintaining structure preseving correspondance. Considering the lexicalization process, lexical verbs have the event structure that takes the real world event as their basis. This observation gives support to the view that the internal mechanism of event is constituted within the frame of cognitive perspective and the sub-event formation is semantically decomposable (see Taylor, 2002; Jackendoff, 1983; 1990).

In this study it is also argued that in TİD lexicon pairs or clusters of lexical items having similar conceptual contents and being seemingly near-synonymous in nature being differentiated in terms of phonology can be explained through the properties of underlying semantic components. As explained in part 3.1 the concept ATTACK emerges in two different lexicalized verbs ([ATTACK1](#); [ATTACK2](#)) as the result of the change in the dominant handshape (see Figures 5 and 6). In the construction of an event structure two lexical items display the same properties of movement along with common

features in phonological movement and their sub-components indicate that these two lexical items are having a same event structure.

In TİD's lexicon the semantic components of event structure underlying many lexical items such as COME, GO, FLY, RIDE cause them to appear in various phonological forms (ID-gloss) and to create variety in the lexicon. In the light of this, the role of phonological parameters in the construction of event structure in these verbs should be examined to reach more universal assumptions

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