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A SYNTACTIC AND SEMANTIC ANALYSIS OF CHANGE OF STATE VERBS IN TURKISH

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ÖZET

Bu çalışma, konu rolleri ve sözdizimi konumları arasında bir örtüşmenin varlığını önvarsayan bağlama / örtüşme kuramı çerçevesinde durum değişikliğine yol açan eylemlerin Türkçedeki görünümlerinin betimsel bir çözümlemesini sunar ve bu eylemler için bir sınıflandırma önerir.

İlk bölümde durum değişikliğine yol açan eylemlerin davranışlarını açıklamaya çalışan farklı ölçütlere dayandırılmış yapı ve anlama ilişkin yaklaşımları özetler.

İkinci bölümde, Türkçede durum değişikliğine yol açan eylemler, üyelerinin konu rolleri, durum ekleri ve sözdizim konumları temel alınarak bir sınıflamaya gidilir. Geçişli ve geçişsiz eylemlere göre sınıflandırma gerçekleştirilir.

Çalışma, Türkçenin verimli bir şekilde kullandığı durum değişikliğine yol açan eylemleri anlambilim ve durum temelli bir yaklaşımla inceler.

Son bölümde durum değişikliğine yol açan eylemlerin isim, sıfat, hallerinin türetim özellikleri biçim ve anlam yönünden ele alınır.

ABSTRACT

This study, describes the change of state verbs in Turkish according to the universal linking and mapping theories among the thematic roles, case and the syntactic positions.

The first section of the study summarizes the structural and semantic approaches which explain the behavior of change of state verbs based on different criteria.

The second section Turkish change of state verbs are analyzed according to the classification on the semantic roles, the case marking and the syntactic position of the arguments. According to the classification, there are two main groups of COS verbs in Turkish. The first one is the transitive verbs with patient objects. The second is the transitive and intransitive verbs with experiencer subjects. COS verbs exhibit distinctive argument realization properties. In particular, the patient argument — the entity undergoing the change of state — must be expressed and can only be expressed as a direct object. Although other verbs are found in any of a number of frames with an argument left unexpressed, COS verbs are never found in such frames without their patients.

The compound forms which seem to be productive are also examined with a semantic and case marking based approach.

Furthermore, the derivational properties of the change of the state verbs are also examined both morphologically and semantically.

Finally, the behavior of Turkish COS verbs with respect to causativity, passivization, reciprocity and compound forms was analyzed.

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INTRODUCTION

Background Information

The use of the word Lexicon is to be understood in a more extended meaning than its traditional or standard one, which reduces it to a list of words, encoded in our mental lexicon. More precisely, we mean by Lexicon the part of the mind / brain that is responsible for the decision whereby a lexical item is needed and therefore has to be projected into whatever is the process of sentence making. Different versions of generative grammar differ in the way how syntactic rules and lexical entries interact. In classical generative grammar, the output of syntactic rules "looks for" lexical entries of particular type; in lexicalist approaches such as Lexical Functional Grammar or Head-Driven Phrase Structure Grammar, lexical entries enable particular syntactic structures. Quite similar in classical formal semantics, the meaning of simple expressions is assumed to be given, and the main interest is in the rules that allow deriving the meaning of complex expressions.

Lexical Inclusiveness in the Minimalist Program proposed that the output representations are just the properties of lexical items in the lexicon. The derivation of the sentences starts from these lexical items which carry the syntactic, semantic, morphological and phonological information. They merge together and create constituent trees. Finally, the term lexicon is typically reserved for the linguistic aspects of words and word meaning, whereas encyclopedia is used for other aspects that include world knowledge.

Argument structure and alternations have been a topic of recent interest in both generative and functional linguistics. The term Argument Structure stems from the

observation that the 'same' verb may be associated with a different number of arguments in different uses, and there may be changes in the grammatical relations of the arguments. Some researchers have used argument structure alternations as criteria for distinguishing verb classes, most notably Pinker (1989) and Levin (1993). They have noticed that there are semantic and syntactic features shared by all the verbs that participate in a given alternation. These features are said to define verb classes.

Generative syntacticians have come to agree that almost all syntactic relations can be subsumed under the three basic categories of head, complement, and specifier. Phrases at all levels are expansions of heads, which may be lexical (e.g. Verb) or functional (e.g. Tense). At the initial level a head is associated with a phrase in the complement relation. The conjunction of a head and its complement in turn may be associated with another phrase at the next level, i.e. a specifier. Arguments are typically either complements or specifiers of heads, since they are phrases. In this respect, an argument is a noun phrase which is subcategorized, or required, by a verb. In generative grammar, argument structure has come to represent a classification of arguments on which syntax is based, but which does not itself constitute a level of syntax. There are two distinctions that are commonly made, according to whether arguments are internal or external (Williams 1981), and direct or indirect (Marantz 1984). Subjects are external arguments, and objects, which can be direct or indirect, are internal arguments. Under this terminology, since these relations are structurally defined, argument structure is basically the same as D-structure, the underlying level of syntax, the main difference being that at D-structure constituents are ordered according to the parameters of a specific language, whereas at argument structure they are not ordered. Most generative researchers accept the idea that the head complement and specifier-head orderings can vary from language to language, so that a particular argument

structure could be shared by two languages, but could be realized by two different D-structure orderings.

With the help of the argument structure we can now explain the semantic similarity between the object of transitive break and the subject of intransitive break. Both are direct internal arguments, but the direct internal argument of intransitive break moves to surface subject position simply because subjects are required, and there is no external argument to occupy the subject position. That is, intransitive break is unaccusative (Perlmutter 1978, Burzio 1986). Most recent generative approaches accept this to linking. There are significant differences from one approach to another. In early generative grammar, it was proposed that verbs be classified according to the semantic roles their arguments could be associated with. Various lists of such thematic roles were proposed, the influential was of Jackendoff (1972) based on Gruber's (1965) earlier research, which listed the following roles as central:

a. Agent

b. Theme

c. Location

d. Source

e. Goal

According to this view, verbs are prototypically motion events, and relations which do not involve literal motion are seen to involve motion in a metaphorical way. This idea is formalized as The Thematic Relations Hypothesis. It is sure that problems have been encountered as researchers have tried to use such lists of thematic roles to account for the linking of arguments to syntax.

The MIT Lexicon Project Theory with Levin and Hovav shaped the discussions about the theta roles in Government and Binding in a different way.

According to Levin and Hovav the semantic class that a verb belongs to determine its thematic relations and determines its syntactic behavior and the member of the verb classes show the same properties.

One approach is to redefine theme, and this is what Baker (1997) has cited that the telicity of the sentences is determined wholly by the definiteness of the object and not at all by the definiteness of the oblique argument, independent of what the linking is of the physical roles The theme role is redefined as the argument that determines the telicity of the sentence. Baker also redefines the agent relation, noting that Levin and Hovav's (1995) term 'internal cause' is more accurate. This is to account for the linking of the experiencer to subject in verbs. Baker also refers to Dowty's (1991) theory of canonical agents and patients. An experiencer, being sentient, is more like a canonical agent than the argument corresponding to the stimulus. The argument linked to subject is not always an agent, but it is always a cause. Finally, all locative arguments are combined by Baker into one, including benefactives and recipients. He ends up with only three core thematic roles: agent/causer, patient/theme, and path/location. Using these three roles, he is able to propose the Uniformity of Theta Assignment Hypothesis (UTAH), according to which grammatical functions should be completely predictable from thematic roles.

In general, the idea that the verb is the main determinant in the syntactic structure of sentences has caused the lexical semantics to gain more significance. It is believed that the semantic properties are inherent in the meaning of verbs and this specify the syntactic structure that the verb necessities.

The Purpose of the Study

Different approaches have been presented in order to explain the behaviors of change of state verbs in different languages. The aim of this study is to describe the syntactic and semantic properties of these verbs in Turkish and contribute to the universal linking rules finding out cross linguistic commonalities if there are any.

The syntactic and semantic properties of change of state verbs in Turkish have received little or no attention in traditional Turkish grammars. Therefore, it has been expected that the present study may contribute to the description of Turkish grammar in some or other way with a clear identification.

Research Questions

The syntactic and semantic properties of change of state verbs are going to be investigated through the following questions:

1. Which verbs constitute the change of state verb class in Turkish?
2. What kind of a change of state verb class can be proposed according to their syntactic and semantic properties?
3. What structural and semantic properties do the change of state verbs have in the interaction with voice markers?
4. What are the structural and semantic properties of change of state nouns, change of state compounds, and change of state adjectives?

Hypotheses

The following hypotheses are presupposed:

1. An analysis of the Dictionary of Turkish Language Institute will partially provide the data needed to create a database of change of state verbs in Turkish.
2. The exceptional behavior of change of state verbs is also observed in their Interaction with voice markers in Turkish parallel to the universal tendencies.
3. The derivation of change of state nouns, change of state compounds, and change of state adjectives is supposed to be highly rich.

Data Collection Techniques and Limitations

The data for the change of state verbs, change of state compounds, change of state nouns, change of state adjectives in Turkish is constituted of the verbs in the Dictionary of Turkish Language Institution Volume I and II (1988) and the natural data needed for identification of semantic differences is constituted of both the sentences from native speakers and electronic sources.

The Method of Analysis

The data for change of state verbs in Turkish is going to be analyzed according to their syntactic and semantic properties creating a database to examine through a set of specific criteria.

The methods of classification and description are going to be compared with the studies of change of state verbs in different languages.

I. REVIEW OF LITERATURE

I.1. Lexicon

In this chapter, a general account on the analysis of lexicon, argument structure, theta roles, verb classes and Jackendoff's Conceptual Semantics theory will be introduced.

Bloomfield (1933:274) wrote that 'The lexicon is really an appendix of the grammar, a list of basic irregularities' this view offers an incomplete picture of lexical knowledge as a whole. Theoretical linguists treated the lexicon as a static set of word senses tagged with features for syntactic, morphological, and semantic information. These theories have done little to address two important issues:

- The creative use of words in novel contexts;
- An evaluation of lexical of semantic models on the basis of compositionality(Pustejovsky:1996)

In classical transformational grammar and in later versions of generative grammar, such as Government and Binding theory, the lexicon specified the necessary basis for syntactic rules.

The lexicon was seen as a set of words together with a specification of their syntactic categories and (in the case of predicates) their subcategorization frame, This lexical entry then allows for the formation of sentences according to syntactic rules. The notion of the "lexicon" has gained tremendous importance in modern linguistic theory, both in syntax and semantics.

Therefore, there should be more to knowledge than knowledge of idiosyncratic word specific properties in the knowledge of a speaker demonstrates.

The use of the word Lexicon is to be understood in a more extended meaning than its traditional or standard one, which reduces it to a list of words, encoded in our mental lexicon. More precisely, we mean by Lexicon the part of the mind / brain that is responsible for the decision whereby a lexical item is needed and therefore has to be projected into whatever is the process of sentence making. Different versions of generative grammar differ in the way how syntactic rules and lexical entries interact. In classical generative grammar, the output of syntactic rules "looks for" lexical entries of particular type; in lexicalist approaches such as Lexical Functional Grammar or Head-Driven Phrase Structure Grammar, lexical entries enable particular syntactic structures. Quite similar in classical formal semantics, the meaning of simple expressions is assumed to be given, and the main interest is in the rules that allow to derive the meaning of complex expressions.

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I.2. Argument Structure Basicly, a syntactic representation is organized into two levels of information: grammatical relations structure and argument structure and that one locus of variation among languages is in the linking between the two levels of representation.

Gr-structure corresponds roughly to a surface level of grammatical relations. The structural or syntactic realization of certain semantic relations is called argument structure.

Verbs are certainly the most complex words, from a semantic viewpoint. They don't only incorporate semantic features such as tense, aspect, mood, agreement, but also govern arguments of any number, from zero to at least four or even five. The number of arguments of a verb is clearly a lexical property; the verb of a grammatical sentence should support the indicated number of arguments In addition to the number of arguments, the type of arguments varies for predicates.

Originally it began as the simple listing of the parameters or arguments associated with a predicate has developed into the way arguments are mapped onto syntactic expressions For example, Chomsky's (1981) Theta-Criterion require arguments to be expressed as syntactic constituents, and syntactic constituents to be bound to the argument structure.

Argument structure has been used to refer to various things in the literature. In the logical tradition, argument structure refers to the number and type of arguments that are associated with a predicate (e.g., a verb).

Kageyama (1997) points out that verbs have the central role in the composition and interpretation of the sentences since they determine the number, the kind and the semantic properties of arguments that will exist in the sentence.

So, this characteristic of lexical knowledge is easily illustrated with verbs. Projection of verbs and their arguments from the lexicon into the computational system, syntax to refer to what Chomsky (1995) calls the computational system, has to be legitimized both semantically and syntactically. More exactly, while verbs syntactically legitimize their arguments thanks to their head status by providing syntactic positions they

subcategorize for, arguments semantically legitimize verbs because they refer to entities in the universe. (Chomsky,1995)

Moreover, that is, the stage where lexical items are being ordered and reordered so that the derivation (sentence) the speaker intends to form will correspond to the right one and in concordance both with their idea (thought) and the rules of the Grammar of the language in use. For lexical items, Pustejovsky (1996) made a distinction between four types of arguments;

- True Arguments: Syntactically realized parameters of the lexical item

  e.g. John arrived late

- Default Arguments: Parameters which participate in the logical expressions in the qualia, but which are not necessarily expressed syntactically

  e.g. John built the house out of bricks

- Shadow Arguments: Parameters which are semantically incorporated into the lexical item. They can be expressed only by operations of subtyping or discourse specification

  e.g. Mary buttered her toast with an expensive butter

- True Adjunts: Parameters which modify the logical expression but are the part of the situational interpretation

  e.g. Mary drove down to New York on Tuesday.

Ravin argues that, the arguments are place holders for entities. Since predicates have as many arguments as there are entities represented in their meaning, whether these are syntactically realized or not, there are four types of relations logically possible for arguments and complements…. (1990:160) He then lists the linking possibilities as;

- There are arguments that inherently exist in the meaning of the verb but never have syntactic realizations
- There are arguments which are inherent and compulsorily realized
- There are arguments which are inherent but optionally realized
- There are some other syntactic arguments which do not correspond to semantic arguments

In the analysis of verbs we observe three levels;

- Argument structure
- Lexical conceptual structure
- Event structure

Furthermore, two approaches on the verb semantics and syntax have been focused on

- Role centered approaches
- Predicate centered approaches

Manning (1996), who views the argument structure as a syntactic representation, he believes that grammatical structure is a result of the gramaticization of discourse roles. He states that we need two mappings between the gr-structure and a-structure. The first mapping is the argument projection which is based on the meaning of predicates. The second is the linking which links the argument structure to grammatical structure.

I.3. Thematic Roles

The relationship between word order and meaning involves the interaction between the syntactic rules governing the structure of sentences and the semantic rules of reference and thematic role assignment. Terms such as agent, patient, experiencer and theme which identify the semantic roles of the participants in the event or situation described by the

sentence are known as thematic roles or θ-roles. The participants that these θ- roles are associated with are known as the arguments of the verb. Each θ-role is assigned to a particular syntactic position in the sentence.

The study of thematic roles started in the mid-1960s (EAGLES 1996) in order to answer the questions; how do entities carry out events and what roles do entities play in events? It is the classifying the arguments of predicates into participant types according to the manner of their involvement in an event, characterized by a process, an action or a state. The term is called *semantic cases* (Fillmore 1968, 1977), *semantic roles* (Dillon 1977), *thematic relations* (Gruber 1976*;* Jackendoff 1972), θ (theta) *roles* (Chomsky 1981) Since then, there has been a considerable amount of work on defining a set of thematic roles for describing the role that each of the participants plays within an event structure, and abstracting the relationship between these thematic roles and the syntactic functions appearing in different sentences.

However, since the nature of natural languages is infinite, highly irregular and continually evolving, it is very difficult to come up with a classification for the types of arguments that can satisfy every natural language predicate. Up till now, a universally accepted set of guidelines on defining the set of thematic roles and on defining what properties each thematic role in the set possesses is still not available. Different linguists, therefore, have different interpretations of the types of participants involved in different event structures and their semantic properties. Before listing the thematic roles it should be noted that, thematic roles are different from *grammatical roles*. Thematic roles are semantic relations of entities and events while the grammatical roles are the formal, syntactic relations of nouns and verbs. In the sentence *It is sunny today. It* is the subject because it determines the singular form of the verb but it does not represent an argument

and has no thematic role. Moreover, thematic roles cannot be derived from morphological cases, like nominative, accusative, dative, genitive. However, it should not be concluded that morphological cases, grammatical relations and thematic roles are completely unrelated. They are linked up at some point. Thematic roles can be defined as grammatically relevant semantic relations between predicates and arguments. Finally thematic role is a semantic role assigned by verb or other head to its argument.

According to Gruber (1965) the set of thematic relations are; agent, theme, location, source, goal and Jackendoff (1990) added experiencer, instrument, situation and path.

I.3.1. Agent

An agent is generally accepted as the *animate* participant who willfully *initiates* the action characterized by the verb.

" *I*-can't-define-it-but-I-know-it-when-I-see-it" (Dowty,1989:70)

". . . *the typically animate perceived instigator of the action identified by the verb.*"

(Fillmore, 1968: 24)

"*The Agent NP is identified by the semantic reading which attributes to the NP will or volition toward the action expressed by the sentence. Hence only animate NPs can function as Agents.*" (Jackendoff 1972:32)

In the following sentences, the underlined NPs are examples of an agent:

<u>John</u> cooked a meal.

<u>John</u> knocked Mary down.

<u>John</u> gave a book to Mary.

<u>John</u> bought some flowers for Mary

I.3.2. Beneficiary, Recipient and Experiencer

Giv´on (1984; 88) regards the term 'recipient' as a synonym of the case-role 'dative'. The participant 'dative', according to Giv´on, is a *conscious participant* which is being *in a state* or *undergoing a change*. It also commonly registers a change of mental state, e.g. the NP 'Mary' in

"John told Mary a story."

"John taught Mary a lesson.".

Fillmore also used the term 'dative' to describe the animate participant who was affected by the state or action identified by the verb (Fillmore 1968, page 24), like Giv´on, regarding the case-roles 'beneficiary', 'experiencer' and 'recipient' as a kind of dative. A dative is often a *conscious goal* of the transaction in an event

I.3.3.Instrument

The thematic role 'instrument' is generally used to describe the participant of an event which was used to cause the event to take place. Fillmore suggests that ,"the case of the inanimate force or object causally involved in the action or state identified by the verb." (Fillmore 1968, 24) and according to Giv"on "unconscious instrument used by the agent in bringing about the event" (Giv´on 1984, 126) The instrument of an event often appears as a prepositional phrase which is marked by the preposition 'with'. For instance:

John broke a window with a hammer.

John killed Mary with a snake.

John filled the kettle with water.

An instrumental case can also appear in a sentence as the subject or be marked by other prepositions, e.g.:

The wind opened the window.

The rock shattered the window.

Fillmore suggested that an instrument is an inanimate object. However, this does not mean that only inanimate object can act as an instrument in an event. In fact, as pointed by Fillmore (1977), any object can function as an agent, an instrument, a patient, etc., depending on the meaning of the sentence. For instance, the snake in "John killed Mary with a snake."

I.3.4. Theme and Patient

Unlike the thematic role 'agent', the terms 'theme' and 'patient' are not generally adopted indifferent proposals on thematic relations. For instance, although the term 'patient' is widely used in much research work involving Case Grammar, amongst the cases proposed by Fillmore (1968) for describing the general participant types appeared in different event structures, both the theme and the patient roles do not exist. The thematic role 'theme', but not patient, appears in the thematic relations presented by Jackendoff (1972); whereas patient, but not theme, is found in Giv´on's work (Giv´on 1984). Although the terms 'theme' and 'patient' are not generally used, the case or role description which is similar to the thematic role represented by patient and theme can be found in all of the above cited works.

Jackendoff (1972) suggested that every sentence contains a theme role. With verbs of motion, the theme is the participant which undergoes the motion; with verbs of location, the theme is the participant whose location is subcategorized by the verb. For instance, in the following sentences, the underlined NPs function as the theme according to the definition given by Jackendoff:

The book fell on the floor.

John gave Mary a book.

John cooked a chicken in the garden.

John put the book on the table.

According to Giv´on (1984), a state is an existing condition which does not involve change across time; a patient (also referred to as 'accusative') is the participant who exhibits a state or undergoes the change in state. The underlined NP in the following sentences are some examples of a patient given by Giv´on:

Soon the water warmed up.

The rock sank first.

John painted a picture.

They demolished a house.

Mary cracked the pot.

They bleached his hair.

They moved the barn.

John murdered Mary.

Both Jackendoff and Giv´on did not suggest any distinction over the roles played by a theme and a patient. From the lists of thematic roles suggested by Jackendoff and Giv´on, they seemed to ignore the possibility that the thematic roles 'theme' and 'patient' should exist together. One possible reason for this is that the theme role suggested by Jackendoff and the patient role described by Giv´on are in fact referring to the same kind of participants in an event structure. For instance, according to Giv´on's definition of patient, the theme NP 'a chicken' in "John cooked a chicken in the garden." is also functioning as a patient since it was the participant who underwent the change in state (i.e. from uncooked to cooked). The theme NP 'the book' in "The book belonged to John." can also be considered as a patient in Giv´on's terms because it was the participant who was in

the state of belonging to John. Similarly, since the patient NP 'the barn' in "They moved the barn." underwent the motion 'move', it is also a theme in Jackendoff's sense.

According to Dowty (1991:561) semantic distinctions are the results of distinctions in the real world. It would be wrong to try to identify clear cut boundaries for these classes and try to find out the limits of our cognitive ability by referring to those classes. Nobody has proposed a complete list of thematic roles; lots of disagreement on how many there are and which ones (do stative predicates assign Theme? Is Theme = Patient?); new thematic roles are proposed all the time (including Pereltsvaig 2001). By argument selection he means a kind of constraint only on some lexical predicates out of a great number of others. The arguments selection principles that he define are about two place predicates which have a subject and a direct object. In his argument indexing θ-roles serve two purposes: distinguishing 'real' and dummy arguments (it, there) helping to keep track of identity and distinctness of NPs during the course of a derivation (θ Criterion) thematic roles are discrete, non-overlapping; an NP "cannot be permitted to hover over two roles, or to 'fall in the cracks' between roles" (1990: 549) P this is a very strong claim about natural language predicates and one to be empirically confirmed or disconfirmed

Thematic role types vs. individual thematic roles ('the hitter role', 'the kisser role', 'the builder role' = Agent?); the former approach is too strong and the latter approach is too weak (doesn't allow to talk about theta-role hierarchies)

He defines five criteria (1990:572,573) for the properties of Agent Proto Role; Volition, sentence/ perception, causing event or change of state of another participant, movement and the independent existence of event described by verb. He defines five criteria for the properties of a Proto Patient Role which are change of state, incremental Theme, causally

affectedness, relative stationeries and the dependent existence of the event described by the verb.

The selections of arguments he formulated (1991:576) are as follows;

1. The argument which has the most proto Agent properties as the subject
2. The argument which has the most proto Patient properties is lexicalized a the direct object.
3. If there are two arguments which have the same number of proto agent and proto patient properties both of them can be lexicalized as subjects/objects
4. If the predicate is a three place predicate the argument which has the most proto patient properties is lexicalized as the direct object and the one which has the less proto patient properties is lexicalized as the oblique object or the prepositional object.
5. If there are two arguments which have the same number of proto patient properties both of them can be lexicalized as direct objects.
6. Some argument may have none of these roles.
7. Some argument may share the same role.
8. Some argument may have the properties of both proto roles either in an equal or a partial degree.

Finally Dowty's goals can be listed as; (p. 551):

1) to lay methodological groundwork for studying thematic roles with the tools of model-theoretic semantics, and to propose some new strategies for attacking the area one step at a time

2) to propose one new account of thematic roles that seems to have merit as the first

step

3) to make linguists recognize the dangers of continuing to take this notion for granted and of assuming that thematic roles are as well motivated as phonemes or phrase-markers

4) to point out what psycholinguistic implications the proposal could have and what questions it raises

Having been aware of the regularities between argument realizations of different predicates, the idea that the syntax of sentences is determined by the meaning of predicates has gained popularity. Levin and Hovav (1996:487) called these regularities 'linking regularities' and the rules which map semantic roles onto syntactic positions are called 'linking rules' They claim that the best way to find out the syntactically relevant aspects of meaning of a predicate is to express the lexical semantic representations of predicates with a predicate centered approach. Since they believe that the mapping between the semantic representation and syntactic expression of arguments is fully predictable. They also believe that, languages may even differ in the linking of the arguments of two verbs which seem to be the translations of each other.

According to their basic suggestion that the meanings of verbs have some kind of internal structure and have some primitive elements, they group the verbs into semantically coherent classes.

I.4. Conceptual Structure

Jackendoff suggests that there must be two restrictions placed on any possible theories of semantics: a grammatical (Jackendoff, 1983. 1.5) and a cognitive (Jackendoff, 1983. 1.6) constraint. The cognitive constraint simply points out some areas regarding the nature of thought that could be problematic if some considerations are not taken into

account. Not solely concerned with the syntax_ semantics interface, Jackendoff suggests that there ought to be some level of mental representation at which language becomes compatible with other sensory systems (i.e. visual, auditory, etc.) Without such a level of representation, says Jackendoff, we would be unable to perform tasks like talking about what we see. Other than linguistic tasks would also be impossible, for example, playing the piano would be difficult with no method of converting auditory information into instructions for the motor centres ("move my hand to the right if the next note should be higher").

According to Jackendoff Meaning in natural language is an information structure that is mentally encoded by human beings. So the meaning of a sentence is a conceptual structure. He also believes that sentence meaning is constructed from word meaning Jackendoff makes an assumption about conceptual structure such that it should be governed by a set of finite, universal, and innate rules.it could be thought that conceptual structure is an abstract level entirely beyond semantics and that there would be some rules for generating semantic expressions and then further rules for mapping semantics onto conceptual structure.

Jackendoff explains that conceptual structure is made up of a set of entities (conceptual primitives, ontological categories) that combine to perform a number of meaning functions. The list of entities is not meant to be exhaustive or even absolutely right, a case may present itself which requires a further entity to be added to the list or to replace one with something more general. Keeping minimalism in mind, it should be clear that the number of distinct categories should remain as low as is possible. The clearest way of demonstrating what the primitives are is to show them along with their (approximate) equivalents in syntax and traditional semantics:

Conceptual primitive	Syntactic category	Traditional semantics
[THING]	Noun phrase	Agent, patient, theme, etc.
[PLACE]	Prepositional phrases	Location
[PATH]	Prepositional phrases	Source, goal
[EVENT]	Verb (action, e.g. “go”)	Predicateslikego(Mary,London)
[STATE]	Verb (state, e.g. “is”)	Predicateslike. in(Mary,London)

The above gives a rough guide to what the primitives in conceptual structure represent. [THINGS] are pointers to physical entities (or at least concepts of them).

[PLACES] are pointers to exact points in physical space, and similarly [PATHS] point to routes through physical space. [EVENTS] and [STATES] form the main clauses of conceptual structures; they indicate the type of action taking place in a given representation.

A formalization for forming conceptual structures from the primitives outlined above follows:

[THING]: [Thing X]

[PLACE]: [Place X] _ [Place PLACE_ FUNCTION [Thing Y]]

[PATH]: [Path X] _ [Path PATH_ FUNCTION [Thing Y]]

[Path PATH_ FUNCTION [Place Y]]

[EVENT]: [Event X] _ [Event GO [Thing Y] , [Path Z]]

[Event STAY [Thing Y] , [Place Z]]

[Event CAUSE [Thing Y] , [Event Z]]

[STATE]: [State X] _ [State BE [Thing Y] , [Place Z]]

[State ORIENT [Thing Y] , [Path Z]]

[State EXTEND [Thing Y] , [Path Z]]

I.5. Transitivity and the Unaccusative Phenomenon

In theories of argument structure, unaccusative phenomenon has an important place since it effects on agreement, case marking and subject object distinctions. In his Unaccusative Hypothesis Perlmutter (1978) mentioned that some intransitive verbs have two classes as unaccusatives which have a derived subject and unergatives which have an actual syntactic subject. Unergative is a term introduced by Perlmutter (1978) for transitive verbs whose single argument is an agent and whose grammatical behaviour contrasts with Unaccusative verbs which are intransitive verbs whose single argument is patient This idea is implemented differently in different syntactic frameworks. In the Government-Binding framework (Chomsky 1981) Unaccusative verbs have a d-structure object but no subject, while unergative verbs have a d-structure subject but no object

According to Burzio there is a correlation between the accusative case and the external argument. Unergative possesses external arguments but not an internal accusative argument. Ergatives have internal arguments but not external ones.

Dowty (1991) sees the unaccusative - unergative distinction as a grammatical distinction and deals with syntactic accusativity and semantic accusativity. He predicted that his argument selection principles do not apply to syntactically ergative languages. His observation is that the unaccusative verbs have arguments with patient like meanings while unergative ones have arguments with agent like meanings.

Levin and Hovav (1996) claimed that Unaccusative and unergative classes can be predicted semantically. These verbs have more than one meaning. When they display unaccusative behavior, they have a different meaning and when they are unergative, they have another meaning.

Turkish is also sensitive to the Unaccusative and unergative distinction. According to Nakipoğlu (1998) there are three classes of unaccusatives in Turkish which are the endpoint, measure, path unaccusatives.

I.6. Voice Alternations and Causativity

Causative constructions are derived from simple non causative sentences just like passive sentences derived from their active constructions. Palmer (1994). Causative constructions add a causer argument to the argument structure. Turkish has a morphological passive and causative structure. However, some languages like English do not have any grammatical causative morphemes. Such languages use periphrastic verbs.

In a causative construction there should be;

- a morphological or periphrastic mark on the verb
- a causer addition to the subject position
- other arguments should be demoted
- a causative meaning

Levin and Hovav (1996) devide verbs in two groups in terms of their Causativity internally caused eventualities and externally caused eventualities. They define a linking rule named Causer Linking Rule (1996:501) From their point of view, agents and causers are not the same arguments. Since an agent is also responsible for the eventuality of the verb, it is also a kind of a causer argument.

The causer argument may be an argument of an intransitive verb or a stative verb. Causer arguments can also be an agent as well as a natural force. They identify unergative verbs as externally caused intransitive verbs and unaccusatives as internally caused intransitives.

Levin and Hovav point out the rule of Theme Linking Rule which links the Theme argument to the deep structure argument position and argue that Theme Linking Rule has precedence over Causer Linking Rule (1996:502)

The events having complex internal structures are analyzed in two parts as the inner event and outer event. Tenny and Pustejovsky relates the outer event to causation and agency, and relates the inner event to telicity and change of state. (2000:7). The outer event causes the inner event.

I.7.Verb Classes

Verb classes based on syntactic behaviour (alternations), and verb classes formed from semantic criteria such as thematic roles and elements of Lexical Conceptual Structure. The main practical aim of verb semantic classifications is to contribute to structure the lexicon and to allow for a better organized, more homogeneous, description, of their semantics. From a more formal point of view, the main aims are the identification of meaning components forming the semantics of verbs, the specification of more subtle meaning elements that differentiate closely related verbs and the study of the cooperation between syntax and semantics.

Beth Levin (Levin 1993) shows, for a large set of English verbs (about 3200), the correlations between the semantics of verbs and their syntactic behavior. More precisely, she shows that some facets of the semantics of verbs have strong correlations with the syntactic behavior of these verbs and with the interpretation of their arguments. She first

precisely delimits the different forms of verb syntactic behavior. Each of these forms is described by one or more alternation (e.g. alternations describe passive forms, there-insertions and reflexive forms). Then, she proposes an analysis of English verbs according to these alternations: each verb is associated with the set of alternations it undergoes. Beth Levin has then defined about 200 verb semantic classes, where, in each class, verbs share a certain number of alternations.

I. 8. The Alternation System

An alternation, roughly speaking, describes a change in the realization of the argument structure of a verb. The scope of an alternation is the proposition. Beth Levin has defined 79 alternations for English. Here are a few types of alternations;

The Transitivity alternations introduce a change in the verb's transitivity. In a number of these alternations the subject NP is deleted and one of the objects becomes the subject, which must, in English, be realized. The Middle alternation is typical of this change:

John cuts the cake → The cake cuts easily.

As can be noticed, it is often necessary to add an adverb to make the sentence acceptable.
The Causative/inchoative alternation concerns a different set of verbs:

Edith broke the window → The window broke.

Verbs undergoing this alternation can roughly be characterized as verbs of change of state or position.

It is clear that these alternations are specific to English. They are not universal, even though some are shared by several languages (e.g. the passive alternation). Every language has its own alternation system, and has a more or less important number of alternations. The characteristics of the language, such as case marking, are also an

important factor of variation of the form, the status and the number of alternations. Having dealt with alternations, let's turn to thematic relations and their role in the classification of verbs.

Thematic relations express generalizations on the types of lexical functions that are established between the verb and its arguments in the predication. There is a consensus among researchers that assignment of thematic roles to the arguments of the predicate imposes a classification on the verbs of the language. Since the type of thematic roles and their number are determined by the meaning of the verb, the lexical decomposition of verb meanings seems to be a prerequisite for semantic classification of verbs.

Conceptual Categories (Jackendoff 1983) introduces the notion of conceptual constituent defined from a small set of ontological categories (also called conceptual parts of speech), among which the most important are: thing, event, state, place, path, property, purpose, manner, amount, time. These categories may subsume more specific ones, e.g. the category thing subsumes: human, animal, object. These categories may be viewed as the roots of a selectional restriction system.

1. 9. Change-of-State Verbs

First, observe the following examples:

(1) a. The boy broke the glass to pieces.

b. Mary tinted her hair blonde.

c. John dried it out in the sun.

Each of the verbs (i.e., break, tint, dry) inherently contains the meaning of causing a change of state of the object referent. That is, each of the verbs in (1) implies the resulting state of the object referent denoted by the resultative predicate.

This is reflected in the definitions of these verbs given Longman Dictionary of Contemporary English, as shown below :

(1) a. break: to (cause to) separate into parts suddenly or violently

b. tint: to give a slight or delicate colour to (the hair)

c. dry: to (cause to) become dry

We understand that the events denoted by the verbs break, tint and dry have necessarily endpoints. If we follow lexical semantics incorporating lexical decomposition, we can say that, as partly shown in (c), the verbs in (1) have the conceptual feature BECOME in their lexical conceptual structures (or semantic representations), and their conceptual structures can be shown as in the following

(1) a. break: [ ]x CAUSE [[ ]y BECOME [[ ]y BE AT-[SMALL PIECES]]]

b. tint: [ ]x CAUSE [[ ]y BECOME [[ ]y BE AT-[COLORED]]]

c. dry: [ ]x CAUSE [[ ]y BECOME [[ ]y BE AT-[NOT [WET]]]]

Hence, we can say that each of the resultatives in (1) specifies the resulting state of the object referent induced by the feature BECOME. Resultatives essentially serve to indicate a change of state of an object.

Intransitive verbs can also be distinguished between change-of-state verbs and non-change-of state verbs, and this difference also plays a crucial role in the acceptability of the resultative construction. Observe the following sentences:

(2) a. The pond froze solid. (=4a)

b. The butter melted to a liquid. (=4b)

c. The potatoes have burned black.

The intransitive verbs in (2) (i.e., freeze, melt, burn) are change-of-state verbs, inherently containing the meaning of causing a change of state of an object. For example, if something melts, it changes from a solid state to a liquid state. Dictionary of Contemporary English makes the following definitions of these verbs

(2) a. freeze: to become solid at a very low temperature

b. melt: (of a solid) to become liquid

c. burn: to change for the worse or be destroyed by fire or heat

the above definitions that the verbs in (2) contain the meaning of causing a change of state, as shown by the verb become or change.

I.10. The Relationships between Verbs and Resultatives

In order to consider, the semantic relationships between change-of-state verbs and resultatives. Observe the following;

(3) a. The boy broke the glass to pieces.

b. The pond froze solid.

(4) a. Mary tinted her hair blonde.

b. The field dried up because of the long drought.

(5) a. The man was burned to death in the fire.

b. The mountaineer froze to death.

(6) a. *Mary tinted her hair short/curly.

b. *The man died famous/forgotten.

We have seen in 3.1 that the verbs (break, freeze, tint, dry, burn) are all change-of state verbs, and die in (6b) is also a change-of-state verb, as shown in the following lexical conceptual structure of the verb:

(6b) die: [ ]y BECOME [[ ]y BE AT-[NOT [ALIVE]]]

However, there are some significant differences among the pairs of examples in (3)-(6) with respect to the semantic relationships between the verbs and the resultatives.

In (3), the resultatives to pieces and solid, are part of the meanings of the change-of-state verbs break and freeze, respectively. The lexical conceptual structures of the verbs are;

(3) a. break: [ ]x CAUSE [[ ]y BECOME [[ ]y BE AT-[SMALL PIECES]]]

b. freeze: [ ]y BECOME [[ ]y BE AT-[SOLID]]

In (4), on the other hand, the resultatives blonde and up are not part of the meanings of the change of- state verbs tint and dry, respectively, but are clearly implied by their meanings. This is shown in the following (see Kageyama (1996: 217)):

(4) a. tint: [ ]x CAUSE [[ ]y BECOME [[ ]y BE AT-[COLORED]]]

b. dry: [ ]y BECOME [[ ]y BE AT-[NOT [WET]]]

The features COLORED and NOT WET in (4a, b) imply or induce the resultatives blonde and up in (4a, b), respectively, because blonde is a hyponym of the word color, and up indicates one end of the degrees that the state of being not wet has.

The resultative sentences (3) and (4), though different with respect to the semantic

relationships between the verbs and the resultatives, seem to be collapsed as one type of resultative constructions, because they are similar in the sense that the resultatives are closely related with the lexical meanings of the verbs. Therefore, this type of resultative sentences is called “lexical resultatives.”

In contrast to (3) and (4), the resultative to death in (5) is neither part of the meanings of the verbs burn and freeze, nor implied by the verbs, as understood from the following conceptual structures:

a. burn: [ ]x CAUSE [[ ]y BECOME [[ ]y BE AT-[ON FIRE]]]

b. freeze: [ ]y BECOME [[ ]y BE AT-[SOLID]]

However, we can easily expect or infer from our pragmatic knowledge of the world the cause-result relationship denoted by the verbs and the resultative. That is, it is readily understood that if someone is burned or freezes, he/she will eventually die. In short, this type of resultative sentences is dependent on our reasoning or pragmatic knowledge, and therefore it is called “pragmatic resultatives.”

The unacceptable (6). The resultative short/curly in (6a) is neither a part of the meaning of tint, nor implied by the verb. Further, we do not find any logical cause-result relationship between tint and short/curly; one’s hair does not necessarily become short or curly as a result of tinting it. In (6b) as well, the verb die neither contains nor implies the meaning of famous/forgotten in its lexical conceptual structure. We cannot pragmatically infer the cause-result relationship between them, either; one may or may not be famous or forgotten after he/she dies.

It is clear that the resultative construction is acceptable only to the extent that the semantic cause-result relationship expressed in the sentence is incorporated in the verb meaning, or is logically inferred in light of our pragmatic knowledge. To put differently,

the resultative construction is understood as a construction in which two propositions expressing a cause and its result can be lumped together as one clause only when the expressed cause-result relationship is lexically or pragmatically reasonable. Otherwise, the two propositions have to be expressed as two separate clauses. Hence, the unacceptable (6), to express the intended meanings, must be split up into two clauses, as in the following:

(6) a. Mary tinted her hair and it became short/curly.

b. The man died and after that he got famous/forgotten.

The English resultative construction is acceptable to the extent

(i) that the expressed semantic cause-result relationship is either specified or implied in the verb meaning (lexical resultatives), or

(ii) that it is reasonably inferred from our pragmatic knowledge (pragmatic resultatives).

I.11. The Change-of-State Linking Rule

Version (a): An NP that refers to the entity that undergoes the change of state in the eventuality described in the VP must be governed by the verb heading the VP.

Version (b): An NP that refers to the entity that undergoes the change of state in the eventuality described in the VP must be the direct object of the verb heading the VP.

Levin and Rappaport Hovav (1995: 51) state that "the version (a) formulation will be necessary if the postverbal NP in a resultative construction based on an unergative verb is not the direct object of the verb, but the subject of a small clause."

In connection with this, Hoekstra (1988, 1992) argues that a resultative phrase and the NP that it is predicated of form a small clause (SC) no matter what type of verb is used in the resultative construction. Thus, (1a), (4a) and (6a) have the following structures, respectively:

(1) a. Mary [VP wiped [SC the table clean]].

b. The lake$_i$ [VP froze [SC e$_i$ solid]].

c. *Dora$_i$ [VP shouted [SC PRO$_i$ hoarse]].

Each of the small clauses in (1a-c) is (Lexical)-marked by the verb (Chomsky 1986), and therefore it is transparent to government, allowing the subject of the small clause to be either a lexical NP (as in (1a)), or an NP-trace (as in (1b)). On the other hand, in (1c) PRO is also governed by the verb shouted, thereby violating the PRO Theorem requiring that PRO be ungoverned (Chomsky 1981). Carrier and Randall (1992) critically examine the small clause analysis, and alternatively argue for a ternary-branching VP analysis.

I.12.Externally and Internally Caused Change of State Verbs

According to the lexical semantic structures of change-of-state verbs, these verbs can be divided into two classes, those for which the change of state is internally caused and those for which it is externally caused (Levin & Rappaport Hovav 1995, cf. Smith 1970). External causation change-of-state verbs have been hypothesized to denote two subevents, internal causation change-of-state verbs only one event

That verb meanings have aspectual and temporal structure is not a new idea; Aristotle wrote about a typology of events based on their internal temporal structure (Aristotle's Metaphysics). These matters were discussed in the philosophical literature

(Kenny 1963, Ryle 1949), and in the linguistic literature. In 1967 Vendler's influential paper marks the beginning of this tradition in the lexical semantics literature. Vendler laid out a four-way typology of aspectual verb classes, identifying four classes of verbs based on temporal properties such as

temporal duration

temporal termination

internal temporal structure

the lack of it

In the Vendler classification, verbs may denote states, activities, achievements or accomplishments. States have no internal structure or change during the span of time over which they are true

(e.g., love as in Boris loves Keiko).

An activity is an ongoing event with internal change and duration, but no necessary temporal endpoint

(e.g.,walk as in Boris walked along the river).

Accomplishments are events with duration and an obligatory temporal endpoint

(e.g., consume as in Keiko consumed the pineapple).

Achievements, on the other hand, have an instantaneous culmination or endpoint and are without duration

(e.g., arrive as in Keiko arrived in Pittsburgh).

These four classes have been organized by various authors into different subgroups, the most basic distinction being made between statives on the one hand and non-statives (or events) on the other. This use of the term events prompted Bach 1981 to coin the term "eventualities" to include all aspectual types, both stative and eventive.

Recent work has adopted the use of ‘event’ as the cover term for Bach’s eventuality, particularly within the computational semantics community (cf. Briscoe et al. 1990, Pustejovsky 1995).

The terminology associated with these ideas can be confusing. The property of an event having or not having a temporal endpoint has been referred to in the literature as;

the bounded/non-bounded distinction (Verkuyll972, Jackendoff 1990),

the culminating/non-culminating distinction (Moens and Steedman 1988),

the telic/atelic distinction (Smith 1991),

the delimited/non-delimited distinction (Tenny 1987, 1994).

accomplishment and achievement verbs Dowty (1979)

The distinction between telic and atelic events defined in terms of homogeneity (cf.Quine, 1960, Hinrichs 1985) or cumulativity (Taylor 1977, Krifka 1992).

The idea of homogeneity in the event domain parallels the well-known mass-count distinction from the nominal domain. An activity or a state can be considered a homogeneous event because it may be divided into any number of temporal slices, and one will still have an event of the same kind (i.e, if Boris walked along the road is true for ten seconds, then a one-second slice of that walking is still an event of walking along the road). An accomplishment is not a homogeneous event however, because if Keiko consumed the pineapple is true over a duration of ten seconds, then a one-second slice of that event is not going to be an event of Keiko consuming the pineapple. It is more likely to be an event of Keiko consuming part of the pineapple.

Dowty 1979 uses the following simple adverbial test for the telic/atelic distinction; with certain qualifications, temporal adverbial expressions with in modify sentences

representing bounded events, and temporal adverbial expressions with for modify non-bounded events:

Boris walked along the road *in ten minutes/ for ten minutes.

Keiko consumed the pineapple in ten minutes/ *for ten minutes.

This type of adverbial distinction appears to be widely available across languages and is generally used as one test for a telic/atelic distinction in aspectual class.

Over the past thirty years since Vendler's 1967 paper, a large body of research on the structure of verb meanings has emerged. This research has developed the idea that the meaning of a verb can be analyzed into a structured representation of the event that the verb designates. This literature has further contributed to the realization that the grammar does

not treat events only as unanalyzeable atomic units, but recognizes the existence of complex events having an internal structure. Various streams of research have converged on the idea that complex events are structured into an inner and an outer event, where the outer event is associated with causation and agency, and the inner event is associated with telicity and change of state.

Under this view, a canonical accomplishment predicate as in John sliced the bread for example, can be represented as composed of an inner and an outer event. The inner event is the telic event in which the bread undergoes a change of state in a definite amount of time (such that it becomes sliced where it was not sliced before). The outer event is the event in which John acts agentively (to do whatever is involved in the act of slicing). Since the outer event causes the inner one, it is associated with causation. The linguistic approaches generally represent causation as a relation, either between (a) two propositional expressions, (b) two events, or (c) between an agent and an event.

In contemporary models of natural language semantics this idea has only recent currency. For example, Carter 1976, one of the earlier researchers in this area, represents the meaning of the verb darken as follows:

x CAUSE ((y BE DARK) CHANGE))

paraphraseable as, “x causes the state of y being dark to change”. The predicate CAUSE is represented as a relation between a causer argument x and an inner expression involving a change of state in the argument y.

In 1983, Jackendoff , building on his previous work on predicate decomposition, introduces explicit reference to events as part of the vocabulary of conceptual primitives. In 1990, he introduces causation as a relation between an individual and an event, without an interpretation, however. Levin and Rapoport 1988 follow a similar strategy, with a CAUSE predicate relating a causer argument and an inner expression involving a change of state in the argument y. The change of state is represented with the predicate BECOME: wipe the floor clean:

x CAUSE [y BECOME (AT) z] BY [x ’wipe’ y]]

Levin and Rapoport 1988

x CAUSE [floor BECOME (AT) clean B Y [x ’wipe’ floor]]

The large body of work by Levin and Rappaport, building on Jackendoff’s Lexical Conceptual Structures, has been quite influential towards making sense of the internal structure of verb meanings. Jackendoff 1990 develops an extensive system of what he calls Conceptual Representations, which parallel the syntactic representations of sentences of natural language. These employ a set of canonical predicates including CAUSE, GO, TO, and ON, and canonical elements including Thing, Path and Event. Under his system, Jackendoff represents the sentence

Harry buttered the bread as:

[Event CAUSE ([Thing li,[Event ([Thing]j)])])])]

(The indices i and j indicate the binding of the arguments in the syntactic structure). Again we see the event represented by this sentence analyzed into a CAUSE relation between a Thing and an inner Event. The Thing will be linked to the agent Harry in this case, and the inner event is that of the "butter going onto the bread". In this work we see Jackendoff making explicit reference to the event argument as part of the verbal semantic representation.

This work owes obvious debt to the innovative work within generative semantics, as illustrated by McCawley's (1968) analysis of the verb kill

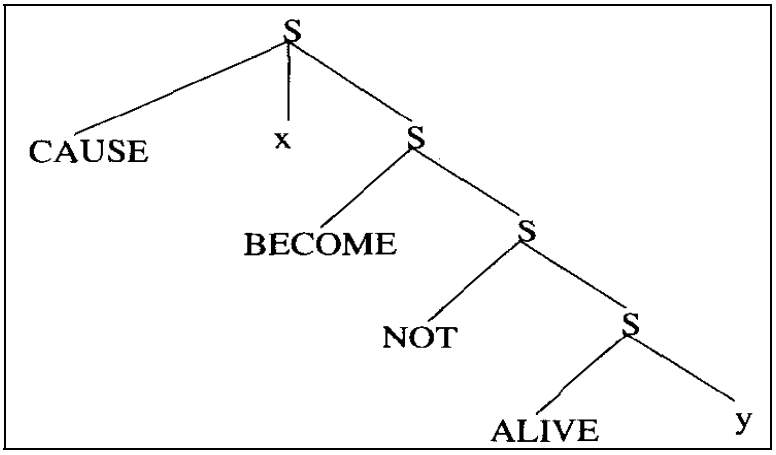

Figure 1. McCawley's (1968) analysis of the verb kill

Recent versions of lexical representations inspired by generative semantics can be seen in the Lexical Relational Structures of Hale and Keyser 1993: 1

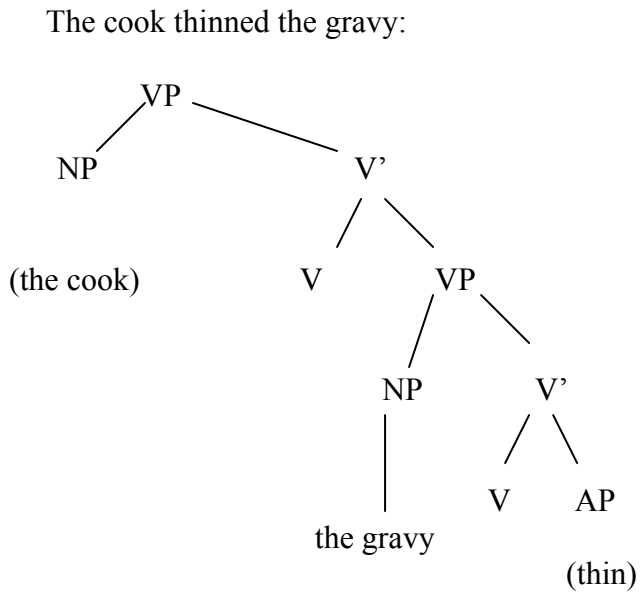

Figure 2. Lexical Relational Structures of Hale and Keyser

The syntactic tree structures capture the same elements of causation and change of state as in the representations of Carter, Levin and Rapoport, Jackendoff, and Dowty. McCawley's tree, as part of the generative semantics tradition which put semantics in the syntax, is both a syntactic and a semantic representation. Hale and Keyser's tree is intended to be a purely lexical representation, employing syntactic tools in the lexicon. In Hale and Keyser's tree, the upper verb is an implicit causative, and the lower verb is an implicit inchoative, or change of state verb. In fact, this sentence could be paraphrased as The cook caused the gravy to become thin.

The lower verb phrase represents that subpart of the event of the cook's thinning the gravy, which is the change of state of the gravy itself; i.e., the gravy's becoming thin. This approach makes explicit the resultant state (thin) of the event, treating it as a predicate, as do Levin and Rapoport and Dowty.

Dowty (1979) differs from the authors above in two respects. Most importantly, he explicitly rejects adopting a subeventual analysis as part of his lexical strategy. The

relation of CAUSE in his decompositional semantics takes propositional expressions as its arguments rather than events.

As a result, causation is not a relation between an individual agent and a proposition but stands in relation between two propositions. Dowty's decompositional strategy relates propositional expressions.

He sweeps the floor clean:

[[He sweeps the floor] CAUSE [BECOME [the floor is clean]]]

Dowty differ on whether CAUSE is a relation between two propositions, two events, or between an agent and a proposition.

I.13. COS Verbs in Levin and Hovav

According to Levin and Hovav (2002), COS verbs have long been known to exhibit distinctive argument realization properties. What is most striking are the severe constraints on their argument realization options. In particular, the patient argument — the entity undergoing the change of state — must be expressed and can only be expressed as a direct object. Although other verbs are found in any of a number of frames with an argument left unexpressed, COS verbs are never found in such frames without their patient. Specifically, they aren't found with unspecified objects, as in

* Pat broke/dimmed.

nor are they found in nonsubcategorized NP resultatives, as in

*My kids broke me into the poorhouse.

b.* The stagehand dimmed the scene dark

nor do they allow out-prefixation, as in

a.*The two-year old outbroke the three-year old.

b. *The stagehand outdimmed the director.

These last two frames resemble the unspecified object frame in that the verb's normal direct object is left unexpressed. Goldberg (2001) points out that COS verbs are sometimes found with unspecified objects or in resultatives with nonsubcategorized NPs. However, as Goldberg herself notes, this happens with COS verbs only in generic or habitual contexts, while other verbs appear in these constructions even outside of these contexts. Thus, COS verbs are special, though such data must be accommodated within a full theory of argument realization.

Furthermore, the patient must be the direct object and cannot be an oblique, as in

a. Alex broke the vase/*Alex broke at the vase.

b. Sam dimmed the lights/*Sam dimmed at/from the lights

Consequently, COS verbs aren't found in object alternations in which the argument which is normally the direct object "vacates" its position for another NP, being expressed instead as an oblique, as in

a. Kelly broke my arm

b. Kelly broke me on the arm. (cf. Kelly hit me on the arm.)

The lack of argument alternation also emerges when the interpretation of the sentence pair in

a. Sam broke the fence with the stick.

b. Sam broke the stick against the fence.

with break is compared to that of the superficially parallel sentence pair with the non-COS verb hit in .

a. Sam hit the fence with a stick.

b. Sam hit a stick against the fence. (Fillmore 1977:75)

As Fillmore (1977) points out, the hit sentences, as near paraphrases, qualify as an argument alternation. The break sentences, however, are not near paraphrases; rather, in each the direct object is understood as the patient. These differences are another manifestation of the constraint that the patient of a COS verb must be its direct object. This restricted behavior is unexpected from the perspective of hypothesis, that argument projection is aspectually driven, finds perhaps its earliest explicit statement as Tenny's (1987, 1992, 1994), which is often understood to mean that arguments project freely. Nonetheless, if argument expression is taken to be aspectually determined, the uniformity in argument expression of COS verbs might be attributed to a shared aspectual property. However, COS verbs lack a uniform aspectual characterization, at least in terms of traditional notions. When COS verbs take a definite, singular object, they can be necessarily telic (e.g., break, dry, explode, flatten, freeze) or either telic or atelic (e.g., cool, darken, dim, widen). Variable telicity, in fact, is the distinguishing property of the much-discussed set of COS verbs known as "degree achievements" (Abusch 1986, Dowty 1979, Hay, Kennedy & Levin 1999). Furthermore, when telic, some COS verbs are punctual (e.g., break, crack, explode), while others are durative (e.g., cool, dim, dry, freeze, widen). Despite these differences in aspectual potential, all COS verbs show the same behavior. Levin and Hovav illustrated the properties of COS verbs using the verbs break and dim, which were chosen because they differ along aspectual dimensions. First, break is necessarily telic, while dim — a degree achievement — may be telic or atelic. Second, break is punctual and dim is durative. Yet both verbs show the same argument realization patterns. COS verbs, then, share a constrained set of argument projection possibilities, but

aren't uniform aspectually. These observations suggest that lexical aspectual classification alone does not determine argument expression.

In her book English Verb Classes and Alternations Beth Levin analyses the Verbs of Change of State and classifies them as follows

Break verbs

Break, chip, crack, crash, crush, fracture, rip, shatter, smash, snap, splinter, split, tear

These verbs refer to actions that bring about a change in the material integrity (Hale and Keyser 1987) They are often contrasted with the cut verbs but the break verbs are pure verbs of change of state and their meaning unlike the cut verbs provides no information about how the change of state came about. The most distinguishing property is their ability to turn up in the causative /inchoative alternation. They are both found in the middle alternation. Some of the break verbs allow unintentional, as well as intentional, action interpretations with body part objects. Not all the break verbs have zero related nominals. When they do, the nominals describe the result of the action named by the verb. This interpretation is also associated with nominals zero-related to the cut verbs.

Bend verbs

Bend, crease, crinkle, crumple, fold, rumple, wrinkle

The bend verbs relate to a change in the shape of an entity that does not disrupt its material integrity. These verbs show the same properties as the break verbs, except that they name reversible actions.

Cooking verbs

Bake, barbecue, blanch, boil, brown, charbroil, charcoal-broil, coddle, cook, crisp, deep-fry, French fry, fry, grill, hardboil, heat, microwave, oven-fry, oven-poach, overcook, pan-broil, pan-fry, parboil, parch, percolate, perk, plank, poach, pot-roast, rissole, roast, sauté, scald, scallop, shirr, simmer, softboil, steam, steam-bake, sew, stir, stir fry, toast

These verbs describe different ways of cooking food. Many of these verbs show properties of both change of state verbs and the prepare type verbs of creation and transformation.

Other alternating Verbs of Change of State

Abate, advance, age, air, alter, atrophy, awake, balance, blast, blur, burn, burst, capsize, change, char, chill, clog, collapse, collect, compress, condense, contract, corrode, crumble, decompose, decrease, deflate, defrost, degrade, diminish, dissolve, distend, divide, double, drain, ease, enlarge, expand, explode, fade, fill, flood, fray, freeze, frost, fuse, grow, halt, heal, heat, hush, ignite, improve, increase, inflate, kindle, light, loop, mature, melt, multiply, overturn, pop, quadruple, rekindle, reopen, reproduce, rupture, scorch, sear, short, short-circuit, shrink, shrivel, singe, sink, soak, splay, sprout, steep, stretch, submerge, subside, taper, thaw, tilt, tire, topple, triple, unfold, vary, warp

ZERO-RELATED TO ADJECTIVE: blunt, clear, clean, cool, crisp, dim, dirty, double, dry, dull, empty, even, firm, level, loose, mellow, muddy, narrow, open, pale, quiet, round, shut, slack, slim, slow, smooth, sober, sour, steady, tame, tense, thin, triple, warm

CHANGE OF COLOR: blacken, brown, crimson, gray, green, purple, redden, silver, tan, whiten, yellow

***—en* VERBS:** awaken, brighten, broaden, cheapen, coarsen, dampen, darken, deepen, fatten, flatten, freshen, g]adden, harden, hasten, heighten, lengthen, lessen, lighten, loosen, moisten, neaten, quicken, quieten, ripen, roughen, sharpen, shorten, sicken, slacken, smarten, soften, steepen, stiffen, straighten, strengthen, sweeten, tauten, thicken, tighten, toughen, waken, weaken, widen, worsen

—**ify VERBS:** acetify, acidify, alkalify, calcify, carbonify, dehumidify, emulsify, fructify, gasify, humidify, intensify, lignify, liquefy, magnify, nitrify, ossify, petrify, purify, putrefy, silicify, solidify, stratify, vitrify

***—ize* VERBS:** americanize, caramelize, carbonize, crystallize, decentralize, demagnetize, democratize, depressurize, destabilize, energize, equalize, fossilize, gelatinize, glutenize, harmonize, hybridize, iodize, ionize, magnetize, neutralize, oxidize, polarize, pulverize, regularize, stabilize, unionize, vaporize, volatilize, westernize

***—ate* VERBS:** accelerate, agglomerate, ameliorate, attenuate, coagulate, decelerate, de-escalate, degenerate, desiccate, deteriorate, detonate, disintegrate, dissipate, evaporate, federate, granulate, incubate, levitate, macerate, operate, proliferate, propagate, ulcerate, vibrate

This subsection includes a variety or verbs that relate to externally caused changes of *state.* Many of these changes of state involve changes of physical state. Many of these verbs are dc-adjectival; as noted in Dixon (l982b), dimensional and physical property adjectives often give rise to such verbs, while human propensity adjectives (cg, *bold. proud. modest* do not) The most cited property of these verbs is their ability to participate in the causative/inchoative alternation. They also permit instrument subjects. These verbs differ from verbs of existence and appearance in not showing certain alternations that are typically restricted to intransitive verbs: the swarm-type locative alternation, locative inversion, and there-insertion (unless they also permit a verb of appearance or existence sense). This behavior appears to be characteristic of verbs of change of state in general, although it has not been illustrated with the other subclasses of those verbs here.

Verbs of Entity-Specific Change of State: blister, bloom, blossom, burn, corrode, decay, deteriorate, erode, ferment, flower, germinate, molder, molt, tot, rust, sprout, swell, tarnish, wilt, wither

These verbs describe changes of state that are specific to particular entities. That is, these verbs impose very narrow selectional restrictions on their arguments. For example, silver and some other metals tarnish, lowers amid plants wilt, and so on. The changes of state these verbs describe often cannot be directly caused, but rather are inherent to the entities that undergo them. ln contrast, the alternating verbs of change of state of sees describe changes that can be brought about externally by an agent. A few of the verbs listed here describe changes of state that can be brought about either through inherent properties of the entity undergoing the change of state or by an external cause; these verbs are cross-listed under other alternating verbs of change of state . Usually such verbs show a causative form only with a very narrow range of causers. Some of the verbs in this class, such as *blossom* and *burn,* allow both an entity—specific change of state use and an entity-specific mode of being use; these verbs are also cross-listed**.**

Verbs of Calibratable Changes of State: appreciate, balloon, climb, decline, decrease, depreciate, differ, diminish, drop, fall, fluctuate, gain, grow, increase, jump; mushroom, plummet, plunge, rocket, rise, skyrocket, soar, surge, tumble, vary

These verbs describe positive or negative changes along a scale. They involve entities that themselves

I.14. Dixon's Property Concepts

Adjectival states (Dixon's "property concepts", are a privileged class of states. No matter how small a class of adjectives a language has, they always include dimension, age, value, and color notions (Dixon 1982). Dixon's classes of adjectival states (Dixon 2004)

Dimension: big, small, long, tall, short, wide, deep, etc.

Age: new, young, old, etc.

Value: good, bad, lovely, atrocious, perfect, proper(/real), etc.

Color: black, white, red, etc.

Phys. prop.: hard, soft, heavy, wet, rough, strong, clean, hot, sour, etc.

Speed: fast, quick, slow, etc.

human propensity: jealous, happy, kind, clever, generous, cruel, proud, ashamed, eager, etc.

The names given to these stative eventualities are always morphologically simple, regardless of lexical category (Koontz-Garboden 2006a,b; Koontz-Garboden and Levin 2005). Adjectival states are a morphosyntactically privileged lexical semantic class; might not be surprising to find that changes into these kinds of states are encoded differently from other types of COS events (e.g., break-type COS events).

According to Andrew Koontz-Garboden & Beth Levin (2004) words denoting non-causative and causative change of state (COS) predicates often are morphologically related to words denoting the related state predicate. The morphological relationship among them has received little systematic attention

- The cup is broken. (state predicate is deverbal, no morphologically simple adj.)
- The knot is loose. (state predicate is simple adjective)

An important finding of these studies is that for certain types of COS events, languages tend to have morphologically simple words denoting the causative predicates, morphologically deriving the corresponding word denoting the non-causative COS predicate. Haspelmath (1993) argues that the direction of morphological derivation correlates with the likelihood that the event can occur spontaneously—events more likely to occur spontaneously are lexicalized in their morphologically basic form as words denoting non-causative COS predicates (e.g. *melt*), while those less likely to occur

spontaneously are lexicalized in their morphologically basic form as words denoting causatives (e.g. *break*).

According to Hale and Keyser (2002) and Baker (2003), they predict a very specific type of relationship between states and their causative and non-causative COS counterparts. Namely, causative and non-causative COS predicates are derived morphologically and semantically from their state counterparts.

Dixon's study suggests that property concepts are denoted by morphologically simple words, being lexicalized as either stative verbs, nouns, or adjectives, depending on the language.

Generalization: If X is a property concept meaning, then the word Y denoting X is morphologically simple.

However, Andrew Koontz-Garboden and Beth Levin mentions that What has gone unnoticed is that it is only in languages where states are lexicalized as verbs that this strategy is used to derive non-causative COS meanings: Mokilese (Chung and Timberlake 1985:238),

Lao (Enfield 2003:6-7), Mandarin (Comrie 1976:19-20), and Tongan (16). As a conclusion they claim that property concepts and result states are lexicalized as words with different morphological make ups. While property concepts are lexicalized as morphologically simple words, this is not always the case for result states.

Some languages seem to have a systematic lexical gap: they lack words denoting non-causative COSs. In these languages, non-causative COS meanings arise via the perfective aspect marking of a word denoting a state. As aspect can only modify verbs, only languages that lexicalize property concepts as verbs exhibit this phenomenon.

II. ANALYSIS OF THE COS VERBS IN TURKISH

II. 1. What is Change of State?

This section presents a brief introduction to change of state verbs in Turkish to clarify the basic assumptions of the study with an initial analysis of semantic and morphological aspects of thse verbs. According to the classification of COS verbs in Levin (1993) a similar classification is applied on Turkish and it is understood that COS verbs in Turkish can be classified in the same way and show similar properties. In Turkish you can recognize a COS verb easily if you apply a test of - haline getirmek- or – durumuna getirmek- (become X) for example;

(1) Ali kağıdı buruşturdu.

Now apply our test;

Ali kağıdı buruşuk hale getirdi.

The result of the action done by the agent Ali, the paper in (1) became 'buruşuk' and this is a COS adjective derived by the verb. In this respesct, the whole process is shown by a COS verb and the result can be represented by an adjective at the end of the process.

In order to be a COS verb, a verb should cause a change on the patient. This change can be internal or external. The change can be observed directly or indirectly. In fact the change in nature is constant, one can observe the changes around him through his senses or at the end of the change he realizes the result as that kind of change can not be observed by the sense organs. Some COS verbs, should have an animate Agent argument who causes the change. However, some of COS verbs do not have an agent argument on the surface but in fact there is an unknown Agent which does not have a lexical projection in the deep structure that causes the change. Finally any COS verbs should have a Patient argument since there should be something to be changed in order to be a change.

II.2 The Input of COS Verbalization

A morphological analysis of change of state (COS) verbs in Turkish is given in this section. Morphologically COS verbs can be classified into groups

1. Non Derived Simple Base COS Verbs

aç-
ak-
art-
aşın-
bat-
bile-
bit-
boz-
böl-
buda-
büyü-
büz-
çek-
cent-
çoğal-
çök-
çöz-
çürü-
değiş-
del-
devir-
don-
dur-
düş-
eğ-
eri-
ez-
geliş-
ger-
kabar-
kapa-
karar-
kas-
kavur-
kayna-
kemir-
kert-
kes-

kır-
kıvır-
kıy-
kok-
kop-
oy-
öl-
patla-
sol-
sök-
sus-
sür-
süz-
şiş-
tıka-
tutuş-
yak-
yan-
yar-
yay-
yık-
yırt-
yont-
yor-
yumuşa-

Table 1. Non derived simple base COS verbs

2. Derived COS Verbs

The COS verbs are derived from nouns. The majority of them are derived with –lan. **NOUN+-lAn = COS verb**

NOUN	-lAn	COS VERB
ağaç	-lan	ağaçlan-
ağda	-lan	ağdalan-
asphalt	-lan	asfaltlan-
asit	-len	asitlen
bal	-lan	ballan-
çiçek	-len	çiçeklen
çim	-len	çimlen
dalga	-lan	dalgalan
dem	-len	demlen
fırın	-lan	fırınlan-
filiz	-len	filizlen

gümüş	-len	gümüşlen-
hız	-lan	hızlan
iplik	-len	ipliklen-
kalay	-lan	kalaylan-
kav	-lan	kavlan-
kaymak	-lan	kaymaklan-
kırçıl	-lan	kırçıllan-
kireç	-len	kireçlen-
klor	-lan	klorlan-
köpük	-len	köpüklen-
kutup	-lan	kutuplan
küf	-len	küflen-
lif	-len	liflen-
maya	-lan	mayalan
mıknatıs	-lan	mıknatıslan-
mikrop	-lan	mikroplan-
mum	-lan	mumlan-
nem	-len	nemlen
oksit	-len	oksitlen
pamuk	-lan	pamuklan-
parka	-lan	parçalan
pas	-lan	paslan
pıhtı	-lan	pıhtılan-
pürüz	-len	pürüzlen
pütür	-len	pütürlen-
renk	-len	renklen-
saçak	-lan	saçaklan
şiddet	-len	şiddetlen
tuz	-len	tuzlan-
tumor	-len	tümörlen-
tüy	-len	tüylen-
zımpara	-lan	zımparalan-

Table 2. NOUN+-lAn = COS verb

The second group is derived with -laş

Noun+-lAş = COS Verb

NOUN	-lAş	COS VERB
abanoz	-laş	abanozlaş-
abide	-leş	abideleş-
acem	-leş	acemleş-
ağaç	-laş	ağaçlaş-
ağda	-laş	ağdalaş-

apse	-leş	apseleş-
buhar	-laş	buharlaş
fosil	-leş	fosilleş
keçe	-leş	keçeleş-
kemik	-leş	kemikleş
kent	-leş	kentleş-
kerpiç	-leş	kerpiçleş-
kömür	-leş	kömürleş-
kutup	-laş	kutuplaş
mantar	-laş	mantarlaş-
melez	-leş	melezleş
mum	-laş	mumlaş-
olgun	-laş	olgunlaş
ozon	-laş	ozonlaş-
pıhtı	-laş	pıhtılaş
sabun	-laş	sabunlaş-
sıvı	-laş	sıvılaş
silis	-leş	silisleş
tahta	-laş	tahtalaş-
taş	-laş	taşlaş
tirit	-leş	tiritleş-
tortu	-laş	tortulaş-
tortul	-laş	tortullaş-
tunç	-laş	tunçlaş-
tümör	-leş	tümörleş-

Table 3. NOUN+-lAş = COS verb

In the third group the COS verbs are derived with –lA

Noun + -lA = COS Verb

NOUN	-lA	COS VERB
ağaç	-la	ağaçla-
asfalt	-la	asfaltla-
asit	-le	asitle-
ateş	-le	ateşle-
azot	-la	azotla-
büzgü	-le	büzgüle-
dem	-le	demle-
düzen	-le	düzenle-
ek	-le	ekle-
emaye	-le	emayele-
fırın	-la	fırınla-
galvaniz	-le	galvanizle-
gümüş	-le	gümüşle-

ilmik	-le	ilmikle-
iyot	-la	iyotla-
kalay	-la	kalayla-
kav	-la	kavla-
kertik	-le	kertikle-
kireç	-le	kireçle-
klor	-la	klorla-
leke	-le	lekele-
maya	-la	mayala-
mıknatıs	-la	mıknatısla-
mine	-le	minele-
mum	-la	mumla-
mürekkep	-le	mürekkeple-
nakış	-la	nakışla-
nötr	-le	nötrle-
oksijen	-le	oksijenle-
oksit	-le	oksitle-
ozon	-la	ozonla-
parça	-la	parçala-
planya	-la	planyala-
rende	-le	rendele-
renk	-le	renkle-
sepi	-le	sepile-
silikat	-la	silikatla-
siyanür	-le	siyanürle-
soğan	-la	soğanla-
süs	-le	süsle-
tabak	-la	tabakla-
taraz	-la	tarazla-
taş	-la	taşla-
top	-la	topla-
tunç	-la	tunçla-
tuz	-la	tuzla-
vernik	-le	vernikle-
yaldız	-la	yaldızla-
yara	-la	yarala-
yoğurt	-la	yoğurtla-
zımpara	-la	zımparala-

Table 4. NOUN+-lA = COS verb

Another way to derive COS verbs from base is to use the passive morpheme –Il .

They seem to be reflexive but according to the change of state rules they are not.

Verb + Seemingly Passive Morpheme = COS Verb

INPUT V	PASSIVE MORPHEME	OUTPUT V
aç	-ıl	açıl-
boz	-ul	bozul-
çek	-il	çekil-
çöz	-ül	çözül-
dağıt	-ıl	dağıl-
devir	-il	devril-
eğril	-il	eğril-
kas	-ıl	kasıl-
kavur	-ul	kavrul-
kır	-ul	kırıl-
yar	-ıl	yarıl-
yay	-ıl	yayıl-
yık	-ıl	yıkıl-

Table 5. Verb + Seemingly Passive Morpheme = COS Verb

Another way to derive COS verbs from base verbs is to use the causative morpheme –(D)Ir, or –t.

Verb + seemingly causative Morpheme

INPUT V	CAUSATIVE MORPHEME	OUTPUT V
ak	-ıt	akıt-
art	-ır	artır-
aşın	-dır	aşındır-
ayrış	-tır	ayrıştır-
azal	-t	azalt-
bulan	-dır	bulandır-
buruş	-tur	buruştur-
büyü	-t	büyüt-
çoğal	-t	çoğalt-
çök	-ert	çökert-
çürü	-t	çürüt-
daral	-t	daralt-
değiş	-tir	değiştir-
dol	-dur	doldur-
dur	-dur	durdur-
eksil	-t	eksilt-
eri	-t	erit-
geliş	-tir	geliştir-
kabar	-t	kabart-
kapa	-t	kapat-

karar	-t	karart-
karış	-tır	karıştır-
kırış	-tır	kırıştır-
kısal	-t	kısalt-
kok	-ut	kokut-
körel	-t	körelt-
küçül	-t	küçült-
sıkış	-tır	sıkıştır-
soğu	-t	soğut-
sol	-dur	soldur-
sön	-dür	söndür-
sus	-tur	sustur-
tutuş	-tur	tutuştur-
uyan	-dır	uyandır-
yumuşa	-t	yumuşat-

Table 6. Verb + Seemingly Causative Morpheme = COS Verb

There are COS verbs derived from adjectives with -lAş

Adjective + -lAş = COS Verb

ADJECTIVE	-lAş	COS VERB
acı	-laş	acılaş-
ağır	-laş	ağırlaş-
akışkan	-laş	akışkanlaş-
ak	-laş	aklaş-
arı	-laş	arılaş-
ensiz	-leş	ensizleş-
esnek	-leş	esnekleş-
gergin	-leş	gerginleş
gevrek	-leş	gevrekleş
hafif	-leş	hafifleş-
ılık	-laş	ılıklaş-
iri	-leş	irileş-
kalın	-laş	kalınlaş-
katı	-laş	katılaş-
keskin	-leş	keskinleş-
kırmızı	-leş	kırmızılaş-
kıvırcık	-laş	kıvırcıklaş-
kızıl	-laş	kızıllaş-
koyu	-laş	koyulaş-
olgun	-laş	olgunlaş
serin	-leş	serinleş
sert	-leş	sertleş-

sıcak	-laş	sıcaklaş-
siyah	-laş	siyahlaş-
solgun	-laş	solgunlaş-
şeffaf	-laş	şeffaflaş-
tatlı	-laş	tatlılaş-
tatsız	-laş	tatsızlaş-
yassı	-laş	yassılaş-
yumuşak	-laş	yumuşaklaş-
yuvarlak	-laş	yuvarlaklaş-

Table 7. Adjective + -lAş = COS Verb

Some of the verbs are derived from adjectives with –lAn

Adjective + -lAn = COS Verb

ADJECTIVE	-lAn	COS VERB
temiz	-len	temizlen-
pak	-lan	paklan-
cıvık	-lan	cıvıklan-

Table 8. Adjective + -lAn = COS Verb

Some of the verbs are derived from adjectives with –Ar / -Al

Adjective + -Ar / -Al = COS Verb

ADJECTIVE	-Ar / -Al	COS VERB
az	-al	azal-
boş	-al	boşal-
dar	-al	daral-
düz	-el	düzel-
ince	-el	incel-
seyrek	-el	seyrel-
sarı	-ar	sarar-

Table 9. Adjective +-Ar / -Al = COS Verb

As a conclusion there are 10 means for the derivation of COS verbs in Turkish which can be summarized in the following formulas:

1. Non derived simple base COS verbs

2.NOUN+-lAn = COS verb

3.NOUN+-lAş = COS verb

4.NOUN+-lA = COS verb

5.Verb + Seemingly Passive Morpheme = COS Verb

6.Verb + Seemingly Causative Morpheme = COS Verb

7.Adjective + -lAş = COS Verb

8.Adjective + -lAn = COS Verb

9.Adjective +-Ar / -Al = COS Verb

10. Compound Base = COS Verb

II.3. Subsets of Change of State Verbs in Turkish

II.3.1.Type1a

The verbs in this group correspond to break verbs of Levin (1993). These verbs bring a change in the material integrity. They provide no information about how the change of state came about unlike the cut verbs. These verbs are transitive and cause an external change.

COS VERB		**Transitive**
böl-	split	+
buda-	trim	+
çent-	chip	+
ez-	crush	+
kır-	break	+
parçala-	smash	+
sök-	rip	+
yar-	split	+
yırt-	tear	+
yont-	hew	+

Table 1. Type1a COS verbs

(1) a. Ali ekmeği böldü.
Agent Patient
(NOM) (ACC)

b. Ali ekmeği ikiye böldü.
Agent Patient
(NOM) (ACC)

c. Ali ekmeği eliyle böldü.
Agent Patient Instrument
(NOM) (ACC)

d. *Ali çocuğu böldü.
Agent Patient
(NOM) (ACC)

e. *Ali suyu böldü.
Agent Patient
(NOM) (ACC)

(2) a. Ali ağacı budadı
Agent Patient
(NOM) (ACC)

b. *Ali ağacı ikiye budadı
Agent Patient
(NOM) (ACC)

c. Ali ağacı makasla budadı
Agent Patient
(NOM) (ACC)

d. *Ali cocuğu budadı
Agent Patient
(NOM) (ACC)

e. *Ali suyu budadı
Agent Patient
(NOM) (ACC)

(3) a. Ali yaprağı ezdi.
Agent Patient
(NOM) (ACC)

b. *Ali yaprağı ikiye ezdi.
Agent Patient
(NOM) (ACC)

c. Ali yaprağı ayağıyla ezdi.
Agent Patient
(NOM) (ACC)

d. Ali çocuğu ezdi
Agent (NOM) Patient (ACC)

e. Ali suyu ezdi.
Agent (NOM) Patient (ACC)

(4) a. Ali elbiseyi söktü.
Agent (NOM) Patient (ACC)

b. *Ali elbiseyi ikiye söktü.
Agent (NOM) Patient (ACC)

c. Ali elbiseyi makasla söktü.
Agent (NOM) Patient (ACC) Instrument

d.* Ali çocuğu söktü.
Agent (NOM) Patient (ACC)

e.* Ali suyu söktü.
Agent (NOM) Patient (ACC)

Semantically, The patients of the Break Verbs should be – animate, + solid, +concrete, - human. These verbs allow unintentional as well as intentional actions. If you want to show that the action is being done unintentionally you add 'kazara' – by mistake- before the patient;

(5) a. Ali elbiseyi kazara söktü.
Agent (NOM) Patient (ACC)

In Turkish there are compound Type1a COS verbs like; tuzla buz et-, paramparça et-

II.3.2. Type1.b.

The verbs in this group correspond to bend verbs of Levin (1993)

COS VERB		Transitive
buruştur-	crinkle	+
bük-	bend	+
eğ-	bend	+
katla-	fold	+
kırıştır-	wrinkle	+

Table 2. Type1b COS verbs

These verbs are transitive and relate to a change in the shape of an entity that does not disrupt the material integrity. They are reversible actions.

(1) Ali kağıdı buruşturdu.
Agent (NOM) Patient (ACC)

(2) Ali mektubu katladı.
Agent (NOM) Patient (ACC)

(3) Ali teli eğdi.
Agent (NOM) Patient (ACC)

(4)* Ali suyu eğdi
Agent (NOM) Patient (ACC)

Semantically, The patients of the Break Verbs should be – animate, + solid, +concrete, - human.

II.3.3.Type1c

Cooking verbs describe the cooking process or describe the basic methods of cooking.

In cooking there is a creation of a product through the transformation of raw materials. These verbs describe the preparation of food. Usually the raw material is not

expressed at all. Some of these verbs take as direct objects NPs that can refer to either the raw material or the product.

COS VERB		Transitive
gevret-		+
haşla-		+
ısıt-		+
kavur-		+
kaynat-		+
kızart-		+
kızdır-		+
pişir-		+
yak-		+

Table 3. Type1c COS verbs

(1) Ayşe kek pişirdi.
Agent (NOM) Patient (NOM)

(2) Ayşe yemek pişirdi.
Agent (NOM) Patient (NOM)

(3) Ayşe yumurta kaynattı.
Agent (NOM) Patient (NOM)

(4) Ali et kızarttı.
Agent (NOM) Patient (NOM)

In the use of cooking verbs another argument can be added. That is the locative one which describes where the cooking process is done.

fırında kızart-

fırında pişirmek

ızgarada pişirmek

mangalda pişirmek

mikro dalgada pişirmek

tavada kızartmak

tavada pişirmek

toprak kapta pişirmek

ateşe tutmak

ateşte kızartmak

bol yağda kızartmak

buharda pişirmek

et suyunda pişirmek

hafif ateşte kaynatmak

haynama noktasının altında pişirmek

tavuk suyunda pişirmek

With the usage of locative argument this time the patient argument is not nominative but accusative.

(5) *Ali et tavada kızarttı.
Agent (NOM) Patient (NOM) Locative (LOC)

(6) Ali eti tavada kızarttı
Agent (NOM) Patient (ACC) Locative (LOC)

II.3.4.Type1d

These verbs include a variety of COS verbs. They relate to externally caused changes of state. They involve changes of physical state. Many of these verbs are de adjectival.

According to their input verbalization there are four sources for this process.

1. a non derived / simple base: yak-, boz-, bat, …..
2. a verb: patla -t, ak -ıt, büyü -t,…..
3. a noun: süs-le, top-la,
4. an adjective: dar-al, az-al,düzel,…

(1) Terzi elbiseyi daralttı.
Agent (NOM) Patient (ACC)

(2) Barmen içkileri soğuttu.
Agent (NOM) Patient (ACC)

(3) Ali arabayı süsledi.
Agent (NOM) Patient (ACC)

(4) Kuaför saçımı düzeltti.
Agent (NOM) Patient (ACC)

II.3.5.Type2a

The verbs in this group correspond to verbs of Entity Specific Change of State (Levin 1993). These verbs are internally caused COS verbs.

Internally Caused: (BECOME (x < STATE>))

It is assumed that such verbs could only occur in transitive verbs (Levin and Hovav 1995). These verbs describe changes of state that are specific to particular entities for example only plants and flowers wilt. The change of state is inherent to the entities that undergo them.

The input for the Type 2a COS verbalization is four types:

1. **A non-derived simple base:**

COS VERB	Transitive
aşın-	-
bozul-	-
çürü-	-
kabar-	-
karar-	-
karart-	-
sol-	-
şiş-	-
yak-	-
yan-	-

Table 4. Type2a1 COS verbs

(1) * Ali çicek soldu.
Agent Patient
(NOM) (NOM)

(2) * Ali çiçeği soldurdu.
Agent Patient
(NOM) (ACC)

(3) Çiçek soldu.
Patient
(NOM)

(4) Hamur kabardı.
Patient
(NOM)

(5) Hava karardı.
Patient
(NOM)

2. A noun + -len:

COS VERB	Transitive
çiçeklen-	-
çimlen-	-
filizlen-	-
kaymaklan-	-
küflen-	-
lekelen-	-
paslan-	-
tüylen-	-

Table 5. Type2a2 COS verbs

(6) Toprak çimlendi.
Patient
(NOM)

(7) Peynir küflendi.
Patient
(NOM)

3. A noun + -leş:

COS VERB	Transitive
apseleş-	-
fosilleş-	-
keçeleş-	-
kemikleş-	-
kömürleş-	-

pıhtılaş-	-
sıvılaş-	-

Table 6. Type2a3 COS verbs

(8) Kan pıhtılaştı.
Patient
(NOM)

(9) Yara apseleşti.
Patient
(NOM)

4. **An adjective + -leş**:

COS VERB	Transitive
ağırlaş-	-
durgunlaş-	-
gerginleş-	-
gevrekleş-	-
hafifleş-	-
ılıklaş-	-
kötüleş-	-
olgunlaş-	-
sertleş-	-
yumuşaklaş-	-

Table 7. Type2a4 COS verbs

(9) Hasta kötüleşti.
Patient
(NOM)

(10) Fırtına sertleşti.
Patient
(NOM)

II.3.6. Type2b

The verbs in this group correspond to verbs of calibratable changes of state. These verbs describe positive or negative changes along a scale. They involve entities that themselves have a measurable attribute, when the attribute is the subject it is expressed as a genitive modifier.

These verbs are;

COS VERB	Transitive
artır-	-
azalt-	-
büyüt-	-
çık-	-
eksilt-	-
geliş-	-
kabar-	-
küçült-	-
şişir-	-
ucuzlat-	-
uzaklaş-	-
yaklaş-	-

Table 8. Type2b COS verbs

(1) Ali'nin kilosu arttı.
Patient
(ACC)

(2) Ali'nin boyu uzadı.
Patient
(ACC)

(3) Evlerin değeri arttı
Patient
(ACC)

(4) Hava soğudu.
Patient
(NOM)

(5) Hava ısındı.
Patient
(NOM)

General Features of Turkish COS Verbs

COS TYPE	EXTERNAL	INTERNAL	TRANSITIVE	INTRANSITIVE	REVERSIBLE ACTION	CHANGE THE MATERIAL INTEGRITY	CHANGE IN SHAPE	CREATION A PRODUCT
Type1a	+	-	+	-	-	+	-	-
Type1b	+	-	+	-	+	-	+	-

Type1c	+	+	(+)	(+)	-	+	+	+
Type1d	+	-	+	-	-	-	+	-
Type2a	-	+	-	+	-	+	+	+
type2b	-	+	-	+	+	-	+	-

Table 9. General Features of Turkish COS Verbs

II.4.COS Verbs and Passivization in Turkish

Passivization process in Turkish deletes or absorbs the subject argument. Needless to say, it can be expressed by an optional tarafından (by). In COS sentences, the patient argument — the entity undergoing the change of state — must be expressed and can only be expressed as a direct object. In this case, it is the Agent argument that is optionally deleted and it is only the Patient argument that survives the surface.

	TRANSITIVE COS VERBS	**OTHER TRANSITIVE VERBS**
DELETED ARGUMENT	Subject Agent Argument	Subject Argument
SURVIVING ARGUMENT	Subject or Object Patient Argument	Object Argument

Table 1. Passivization in COS Verbs in Turkish

(1) a. <u>America</u> <u>küresel dengeyi</u> bozdu**.**
Agent Patient
(NOM) (ACC)

America demaged the global balance.

b. <u>Küresel denge</u> (ırak tarafından) bozuldu.
Patient
(NOM)
The global balance was demaged by Iraq.

(2) a. <u>Kasap</u> <u>boğanın başını</u> **kesti**
Agent Patient
(NOM) (ACC)

<u>Boğanın başı</u> (kasap tarafından) kesildi.

Patient
(NOM)

(3) a. Ali pencereyi kırdı
Agent Patient
(NOM) (ACC)

Pencere (Ali tarafından) kırıldı.
Patient
(NOM)

II.4.1. Type 1a COS Verbs and Passivization

The phonological conditions determine the attachment of either – (I)l or – (I)n to give a passive meaning. – (I)l is attached to the ones which end with a consonant:

VERB	Morpheme	FUNCTION
böl-	– (I)n	passive
buda-	– (I)n	passive
çent-	– (I)l	passive
ez-	– (I)l	passive
kır-	– (I)l	passive
parçala-	– (I)n	passive
sök-	– (I)l	passive
yar-	– (I)l	passive
yırt-	– (I)l	passive
yont-	– (I)l	passive

Table 2. Type 1a COS Verbs with – (I)l and – (I)n

Among these only the COS verb böl- is passivized not as böl(Il)- but as böl (In)-

(1) a. Ali tebeşiri böldü.
Agent Patient
(NOM) (ACC)
Ali devide the chalk.

b. *Tebeşir (Ali tarafından) bölüldü

c. Tebeşir (Ali tarafından) bölündü.
Patient Agent
(NOM)

d. * Tebeşiri (Ali tarafından) bölündü.
Patient Agent
(NOM)

It should be noted that sometimes the accusative object Patient changes into subject

nominative Patient.

In the case of passivization the voice suffixes give their original meaning to the first sense of the verb. As type1a are all have primarily a cos meaning, the passive counterparts are all COS verbs.

II.4.2. Type1b COS Verbs and Passivization

VERB	MORPHEME	FUNCTION
buruştur-	– (I)l	passive
bük-	– (I)l	passive
eğ-	– (I)l	passive
katla-	- (I)n	passive
kırıştır-	– (I)l	passive

Table 3. Type 1b COS Verbs with – (I)l and – (I)n

(1) a. Ali (Agent, NOM) kağıdı (Patient, ACC) buruşturdu.

b. Kağıt (Patient, NOM) (Ali tarafından) (Agent) buruşturuldu.

II.4.3.Type1c COS Verbs and Passivization

VERB	MORPHEME	FUNCTION
gevret-	– (I)l	passive
haşla-	- (I)n	passive
ısıt-	– (I)l	passive
kavur-	– (I)l	passive
kaynat-	– (I)l	passive
kızart-	– (I)l	passive
kızdır-	– (I)l	passive
pişir-	– (I)l	passive
yak-	– (I)l	passive

Table 4. Type 1c COS Verbs with – (I)l and – (I)n

(1) a. Ayşe (Agent, NOM) yemeği (Patient, ACC) pişirdi.

b. Yemek (Ayşe tarafından) pişirildi.

Patient (NOM) Agent

II.4.4.Type1d COS Verbs and Passivization

VERB	MORPHEME	FUNCTION
akıt	– (I)l	passive
azal	– (I)l	passive
boz	– (I)l	passive
büyüt	– (I)l	passive
daral	– (I)l	passive
düzel	– (I)l	passive
patlat	– (I)l	passive
süsle	-(I)n	passive
topla	-(I)n	passive
yak	– (I)l	passive

Table 5. Type 1d COS Verbs with – (I)l and – (I)n

(1) a. Ali tekeri patlattı.
Agent (NOM) Patient (ACC)

b. Teker (Ali tarafından) patlatıldı.
Patient (NOM) Agent

II.4.5.Type2a and Type 2b COS Verbs and Passivization

Type2a and Type2b COS verbs are intransitive verbs. Therefore the passivization of these verbs are impossible according to the passivization rules.

(1) a. Çiçek soldu

b. * Çiçek soluldu.

(2) a. Ekmek çürüdü.

b. * Ekmek çürüldü

(3) a. Ev yandı.

b. * Ev yanıldı.

In Turkish, intransitive COS verbs are first derived by a seemingly causative morpheme than these verbs can be passivized

Input Verb	**Seemingly Causative Morpheme**	**Passive Morpheme**	**Passive COS**
öl-	-Dır	-(I)l	öldürül-
sön-	-Dır	-(I)l	söndürül-

Table 6. Intransıtıve COS Verbs with seemingly Causative Morpheme –Dır and Passive form

Verb	**Causative Morpheme**	**Passive Morpheme**	**Passive COS**
ekşi-	-t	-Il	ekşitil-
eri-	-t	-Il	eritil-
eski-	-t	-Il	eskitil-
genişle-	-t	-Il	genişletil-
gevşe-	-t	-Il	gevşetil
kayna-	-t	-Il	kaynatıl-
soğu-	-t	-Il	soğutul-
yumuşa-	-t	-Il	yumuşatıl-

Table 7. Intransıtıve COS Verbs with seemingly Causative Morpheme –t and Passive form

(4) a. Elbise genişledi
Patient (NOM)

b. *Ali elbiseyi genişledi
Agent (NOM) Patient (ACC)

c. Ali elbiseyi genişletti
Agent (NOM) Patient (ACC)

d. *Elbise (Ali tarafından) genişlendi.
Patient (NOM) Agent

e. Elbise (Ali tarafından) genişletildi.
Patient (NOM) Agent

II.5.COS Verbs and Reflexivity in Turkish

In reflexive structure the subject and the object are usually the same argument. However, in COS sentences, the patient argument — the entity undergoing the change of state — must be expressed and can only be expressed as a direct object. And the agent is the argument that cause that change. Therefore, both the agent and patient must be observed. In Type2a and Type2b COS verbs as the change of state is internal the agent is not seen in the surface structure but it is known that the change is not caused by the experiencer itself. In fact the natural forces do the action and cause the change of state as in these examples;

(1) a. Ağaç çiçeklendi

b. *Ağaç kendini çiçekledi

c. Toprak çimlendi

d.* Toprak kendini çimledi

II.6. **COS Verbs and Causativity in Turkish**

Unlike passive constructions causative ones add a subject Causer argument to the argument structure. Some languages have morphological causative forms like Turkish. Some languages have periphrastic forms which utilize a specific helping verb for causation. English does not have any grammatical causative morpheme but it rather uses periphrastic verbs.

In causative constructions we observe four principles; first, there should be a morphological or periphrastic mark on the verb, second, there should be a Causer addition to the subject position, third, other arguments should be demoted, and fourth, there should be a causative meaning.

A causative verb is formed by attaching a special causative suffix to the stem of the verb. The two main alternants of the suffix are –Dır and –It. The first comes after consonants, the second after polysyllabic stems in vowels, r and l. Multiple causativization is possible and is realized by alternating the allomorphs. These morphological facts are the same for transitive and intransitive verbs. Periphrastic causatives are formed with predictions like *sağla-*, *neden ol-*, etc.

An intransitive verb is made transitive by making its subject, the cause, with the accusative suffix. The verb is marked with the appropriate causative suffix.

A transitive verb is made causative by marking its subject, the cause, with the dative case suffix. The original accusative direct object retains its marking after causativization. The verb is marked with the appropriate causative marker.

An intransitive verb with both direct and indirect object is made causative in the same way in which a transitive verb is made causative.

II.6.1. Morphologically Causative COS Verbs

Type 1a COS Verbs and Morphological Causativity

VERB	Morpheme	FUNCTION
böl-	-DIr	causative
buda-	– t	causative
çent-	-DIr	causative
ez-	-DIr	causative
kır-	-DIr	causative
parçala-	-t	causative
sök-	-DIr	causative
yar-	-DIr	causative
yırt-	-DIr	causative
yont-	-DIr	causative

Table 1. Type1a COS Verbs and Causativity

(1) a. Ali kalemi kırdı.
Agent (NOM) Patient (ACC)
Ali broke the pencil.

b. Ali kalemi Ayşe'ye kırdırdı.
Causer (NOM) Patient (ACC) Agent (DAT)
Ali made Ayşe break the pencil.

c. Ali Ayşe'ye kalemi kırdırdı.
Causer (NOM) Benefective (DAT) Patient (ACC)
Ali made Ayşe break the pencil.

d. Ali kalemi kırdırdı.
Causer (NOM) Patient (ACC)
Ali made the pencil be broken

e. *Ali Ayşe'ye kırdırdı
Causer (NOM) Agent (DAT)
Ali made Ayşe break

Type 1b COS Verbs and Morphological Causativity

VERB	MORPHEME	FUNCTION
buruştur-	-t	causative
bük-	-DIr	causative
eğ-	-DIr	causative
katla-	-t	causative
kırıştır-	-t	causative

Table 2. Type1b COS Verbs and Causativity

(1) a. Ali kağıdı buruşturdu.
Agent (NOM) Patient (ACC)

b. Ali kağıdı Ayşe'ye buruşturttu.
Causer (NOM) Patient (ACC) Agent (DAT)

c. Ali Ayşe'ye kağıdı buruşturttu.
Causer (NOM) Benefactive (DAT) Patient (ACC)

Type 1c COS Verbs and Morphological Causativity

VERB	MORPHEME	FUNCTION
gevret-	-Dir	causative
haşla-	-t	causative
ısıt-	-Dir	causative
kavur-	-t	causative
kaynat-	-Dir	causative
kızart-	-Dir	causative
kızdır-	-t	causative
pişir-	-t	causative
yak-	-Dir	causative

Table 3. Type1c COS Verbs and Causativity

(1) a. Ali (Agent, NOM) yemeği (Patient, ACC) ısıttı.

b. Ali (Causer, NOM) yemeği (Patient, ACC) Ayşe'ye (Agent, DAT) ısıttırdı.

c. Ali (Causer, NOM) Ayşe'ye (Beneffactive, DAT) yemeği (Patient, ACC) ısıttırdı

Type1d COS Verbs and Morphological Causativity

VERB	MORPHEME	FUNCTION
akıt	-DIr	causative
azal	-t	causative
boz	-DIr	causative
büyüt	-DIr	causative
daral	-t	causative
düzel	-t	causative
patlat	-DIr	causative
süsle	-t	causative
topla	-t	causative
yak	-DIr	causative

Table 4. Type1d COS Verbs and Causativity

(1) a. Ali (Agent, NOM) odayı (Patient, ACC) süsledi

b. Ali (Causer, NOM) odayı (Patient, ACC) Ayşe'ye (Agent, DAT) süsletti.

c. Ali Ayşe'ye odayı süsletti.
Causer (NOM) Beneffactive (DAT) Patient (ACC)

Type2a COS Verbs and Morphological Causativity

Type 2a COS verbalization is four types

1. A non-derived simple base

Type1d COS Verbs and Morphological Causativity

VERB	MORPHEME	FUNCTION
aşın-	-DIr	Causatıve
bozul-	-t	Causatıve
çürü-	-t	Causatıve
kabar-	-t	Causatıve
karar-	-t	Causatıve
karart-	-DIr	Causatıve
sol-	-DIr	Causatıve
şiş-	-It	Causatıve
yak-	-DIr	Causatıve
yan-	-DIr	Causatıve

Table 5. Type2a1 COS Verbs and Causativity

(1) a. Et çürüdü
Patient (NOM)

b. *Ali eti çürüdü
Agent (NOM) Patient (ACC)

c. ?Ali eti çürüttü
Agent (NOM) Patient (ACC)

d. *Ali eti Ayşe'ye çürüttürdü.
Causer (NOM) Patient (ACC) Agent (DAT)

An example from Type2a2 COS data;

(2) a. Kuş tüylendi.
Patient (NOM)

b. *Ali kuşu tüyledi.
Agent Patient

(NOM) (ACC)

c. *Ali kuşu tüyletti.
Agent Patient
(NOM) (ACC)

d. *Ali kuşu Ayşe'ye tüyletti.
Causer Patient Agent
(NOM) (ACC) (DAT)

In (1) a the verb is Type2a COS verb and it internally causes a change in the material integrity and the shape of the experiencer role subject. It is obvious that in (1) b. Ali can not cause this kind of change on the material by himself or make someone else do it for him. It is impossible as the natural forces are in charged at this point. The same is true with Type2a 2, Type 2a 3 and type 2 a 4. Finally Type 2a COS verbs can not be used causatively.

Type2b COS Verbs and Morphological Causativity

VERB	MORPHEME	FUNCTION
artır-	-t	Causatıve
azalt-	-DIr	Causatıve
büyüt-	-DIr	Causatıve
çık-	-t	Causatıve
eksilt-	-DIr	Causatıve
geliş-	-DIr	Causatıve
kabar-	-DIr	Causatıve
küçült-	-DIr	Causatıve
şişir-	-t	Causatıve
ucuzlat-	-DIr	Causatıve
uzaklaş-	-DIr	Causatıve
yaklaş-	-DIr	Causatıve

Table 6. Type2b COS Verbs and Causativity

(6) a. Hava soğudu.
Patient
(NOM)

b. *Ali havayı soğuttu.
Agent Patient
(NOM) (ACC)

c. * Ali Ayşe'ye havayı soğuttu
Causer (NOM) Agent (DAT) Patient (ACC)

Like Type2a COS verbs Type 2b COS verbs can not be used causatively .Since the Human Agents do not have an ability or power to achieve or cause the change of state on the patient object.

II.6.2. Periphrastic Causative COS Verbs

In Turkish, causativity can be expressed with periphrastic constructions as well as by lexical means. Morphological causativity is a verbal process though periphrastic causativity is nominal one. In periphrastic causative *sağla-* and *neden ol-* are the most used predications

Type 1a COS Verbs and Periphrastic Causativity

All of the verbs in Type1a can be morphologically causativized and can also be used in periphrastic constructions.

(1) a. Ali ekmeği böldü.
Agent (NOM) Patient (ACC)

b. Ali Ayşe'nin ekmeği bölmesini sağladı.
Causer (NOM) Agent (GEN) Patient (ACC)

c. Ali Ayşe'nin ekmeği bölmesine neden oldu
Causer (NOM) Patient (GEN)

Type 1b COS Verbs and Periphrastic Causativity

All of the verbs in Type1b can be morphologically causativized and can also be used in periphrastic constructions.

(1) a. Ali elbiseyi kırıştırdı.
Agent Patient
(NOM) (ACC)

b. Ali elbiseyi Ayşe'ye kırıştırttı.
Causer Patient Agent
(NOM) (ACC) (DAT)

c. Ali elbisenin kırışmasını sağladı.
Causer Patient
(NOM) (GEN)

d. Ali elbisenin kırışmasına neden oldu.
Causer Patient
(NOM) (GEN)

e. Ali Ayşe'nin elbiseyi kırıştırmasına neden oldu.
Causer Agent Patient
(NOM) (GEN) (ACC)

f. *Ali Ayşe'nin elbiseyi kırıştırmasını sağladı.
Causer Agent Patient
(NOM) (GEN) (ACC)

Type 1c COS Verbs and Periphrastic Causativity

The cooking verbs in Type 1c can be used in periphrastic causativity.

(1) a. Ayşe yemek pişirdi.
Agent Patient
(NOM) (ACC)

b. Ayşe Ali'ye yemeği pişirtti.
Causer Agent Patient
(NOM) (DAT) (ACC)

c. Ayşe Ali'nin yemeği pişirmesine neden oldu.
Causer Agent Patient
(NOM) (GEN) (ACC)

d. Ayşe Ali'nin yemeği pişirmesini sağladı.
Causer Agent Patient
(NOM) (GEN) (ACC)

Type 1d COS Verbs and Periphrastic Causativity

Type 1c COS verbs can be used in periphrastic causativity.

(1) a. Terzi elbiseyi daralttı.
Agent Patient
(NOM) (ACC)

b. Ali terziye elbiseyi daralttı.
Causer Agent Patient
(NOM) (DAT) (ACC)

c. Ali terzinin elbiseyi daraltmasını sağladı.
Causer (NOM) Agent (GEN) Patient (ACC)

Type 2a and Type 2b COS Verbs and Periphrastic Causativity

These types of COS verbs can not be used in periphrastic causativity because of internal change of state features.

II.7. COS Verbs and Reciprocity

The data shows that cos verbs do not allow the reciprocal morpheme to be attached. It is known that the direct object of the verb heading the VP is the entity that undergoes thechange of state. Semantically, the change of a state cannot be done reciprocally or cooperatively. This means that change of state is only one way; one argument causes the other argument to change.

(1) a. Ali ile Ayşe birbirlerini öldürdüler.
Experiencer (NOM) Theme (ACC)
Ali and Ayşe killed each other.

b. *Ali ile Ayşe öldürüştüler
Experiencer (NOM)

It is sure that to kill someone causes a great change, however in this sentence the verb kill works as an action verb not as a COS verb. Two persons cannot kill each other at the same time. Pragmatically we know that a dead person can not kill the other person.

Some cos verbs can be used with the reciprocal morpheme but the meaning is not reciprocal.

(2) a. Deniz yatıştı.
Patient (NOM)

b. Ali değişti.
Patient

(NOM)

II.8. Compound COS Uses in Turkish

There are two ways of expressing COS events in Turkish; first by lexical means and second by compound constructions. The helping verbs which are the components of these compound constructions are as follows; et-, yap-, ol-, çöz-, indir-, at-, tut-, al-, getir-, çıkar- kapla- ,bağla, dök-.

These helping verbs can either be combined with an adjective, a noun or a complex nucleus.

II.8.1.Compound COS Verbs which Derive with a Nominative COS Nominal

Most of the compound constructions are combined with a nominative COS nominal and a helping verb:

NOMINAL	CASE	HELPING VERB	SENSE	TYPE
adapte	nominative	et-	COS	type 1
aforoz	nominative	et-	COS	type 1
badana	nominative	et-	COS	type 1
dezenfekte	nominative	et-	COS	type 1
hadım	nominative	et-	COS	type 1
imha	nominative	et-	COS	type 1
modernize	nominative	et-	COS	type 1
nötralize	nominative	et-	COS	type 1
tahrip	nominative	et-	COS	type 1
tahriş	nominative	et-	COS	type 1
tercüme	nominative	et-	COS	type 1
yok	nominative	et-	COS	type 1

Table 1. Compound COS Verbs which Derive with a Nominative COS Nominal

(1) Öğretmen öğenciyi okula adapte etti.
Agent (NOM) Patient (ACC)

(2) Polis bombayı imha etti.
Agent (NOM) Patient (ACC)

(3) Ali mektubu tercüme etti.
Agent (NOM) Patient (ACC)

(4) Devlet okulları modernize ediyor.
Agent (NOM) Patient (ACC)

This compound construction of et- helping verb has a different type of usage;

NOMINAL	CASE	HELPING VERB	SENSE	TYPE
infilak	nominative	et-	COS	Type 2

Table 2. compound construction of et-

(5) Araba infilak etti.
Patient (NOM)

(6) * Ali arabayı infilak etti

The following nominals with yap- derive type 1 cos verbs:

NOMINAL	CASE	HELPING VERB	SENSE	TYPE
akort	nominative	yap-	COS	type 1
paspas	nominative	yap-	COS	type 1
pres	nominative	yap-	COS	type 1

Table 3. nominals with yap-

(7) Ali gitarı akort yaptı
Agent (NOM) Patient (ACC)

(8) Ali demiri pres yaptı
Agent (NOM) Patient (ACC)

The helping verb ol- can be combined with these nominals and derive type 2 cos verbs:

NOMINAL	CASE	HELPING VERB	SENSE	TYPE
adapte	nominative	ol-	COS	Type 2

altüst	nominative	ol	COS	Type 2
ambele	nominative	ol	COS	Type 2
deforme	nominative	ol	COS	Type 2
leke	nominative	ol	COS	Type 2

Table 4. nominals with ol-

(9) Öğrenci adapte oldu.
Patient
(NOM)

(10) Elbise leke oldu.
Patient
(NOM)

The helping verb bağla- can be combined with these nominals and derive type 2 cos verbs:

NOMINAL	CASE	HELPING VERB	SENSE	TYPE
buz	nominative	bağla-	COS	Type 2
küf	nominative	bağla-	COS	Type2

Table 5. nominals with bağla-

(11) Göl buz bağlamıştı.
Patient
(NOM)

The helping verb tut- can be combined with this nominal and derive type 2 cos verbs:

NOMINAL	CASE	HELPING VERB	SENSE	TYPE
buz	nominative	tut-	COS	Type 2

Table 6. nominals with tut-

(12) Su buz tuttu.
Patient
(NOM)

The helping verb at- can be combined with this nominal and derive type 2 cos verbs:

NOMINAL	CASE	HELPING VERB	SENSE	TYPE
rengi	accusative	at-	COS	Type 2

Table 7. nominals with at-

(13) Elbisenin rengi attı
Patient
(GEN)

The helping verb al- can be combined with this nominal and derive type 2 cos verbs:

NOMINAL	CASE	HELPING VERB	SENSE	TYPE
ateş	nominative	al-	COS	Type 2

Table 8. nominals with al-

(14) Ev ateş aldı.
Patient
(NOM)

II.8. 2. Compound COS verbs which Derive with an Adjective

The helping verb can be combined with a COS adjective. The resulting compound verb can be a Type 1 verb as in the following:

ADJECTIVE	HELPING VERB	SENSE	TYPE
berbat	et-	COS	Type 1
hasta	et-	COS	Type 1
karmakarışık	et-	COS	Type 1
kupkuru	et-	COS	Type 1
sağır	et-	COS	Type 1
restore	et-	COS	Type 1

Table 9 Compound COS verbs which Derive with an Adjective

(15) Ali Ayşe'yi sağır etti.
Agent Patient
(NOM) (ACC)

(16) Ali evi restore etti.
Agent Patient
(NOM) (ACC)

The helping verb ol- can be combined with these adjectives and derive type 2 cos verbs:

ADJECTIVE	HELPING VERB	SENSE	TYPE

sağır	ol-	COS	Type 2
sarhoş	ol-	COS	Type 2
kör	ol-	COS	Type 2

Table 10 Compound COS Adjective +ol-

(17) Ali sarhoş oldu.
Patient
(NOM)

(18) Ali kör oldu.
Patient
(NOM)

II.8.3. Compound COS Verbs with Three Components

In Turkish there are also a few compound COS verbs with three components. These are as follows:

ADJECTIVE	COMPONENT	HELPING VERB	SENSE	TYPE
iki	katına	çık-	COS	Type 2

Table 11. Compound COS Verbs with Three Components

(19) Fiyatlar iki katına çıktı
Patient
(NOM)

(20) Para bankada iki katına çıktı.
Patient
(NOM)

NOMINAL	CASE	COMPONENT	HELPING VERB	SENSE	TYPE
toz	nominative	haline	getir-	COS	Type1
federasyon	nominative	haline	getir	COS	Type1

Table 12. Compound COS Verbs with Three Components

(21) Ali tebeşiri toz haline getirdi
Agent Patient
(NOM) (ACC)

II.9. COS Adjective Derivation

This section analyzes the adjectives which have change of state. The analysis show that morphologically, change of state adjectives can be classified into groups according to their roots which enter as the input of the adjectivalization process. There are:

1. those have verbal roots
2. those have nominal roots
3. those which are non derived cos adjectives

Semantically, in the event described by the COS adjective there are two participants. First there is a causer which is an animate or inanimate NP, an act or a change of state event which causes the patient to become the change of state. Second, there is an animate or inanimate patient that experiences the mentioned change of state. As a result of this action the experiencer gains some new qualities through the effect of the change and these qualities are expressed by a modifying COS adjective.

II.9.1.COS Adjectives Derived from Verbal Roots

In this group derived from verbal roots, there are COS adjectives which modify the patient which has changed its state.

-Ik is one of the most productive morpheme which derive COS adjective from verbs

INPUT VERB	MORPHEME	COS ADJECTIVE
boz-	-Ik	bozuk
bulan-	-Ik	bulanık
buruş-	-Ik	buruşuk
bük-	-Ik	bükük
carp-	-Ik	çarpık
çatla-	-Ik	çatlak
çek-	-Ik	çekik
çık-	-Ik	çıkık

çök-	-Ik	çökük
çürü-	-Ik	çürük
del-	-Ik	delik
devir-	-Ik	devrik
eğ-	-Ik	eğik
ez-	-Ik	ezik
göç-	-Ik	göçük
oy-	-Ik	oyuk
patla-	-Ik	patlak
sil-	-Ik	silik
sol-	-Ik	soluk
sön-	-Ik	sönük
yan-	-Ik	yanık
yar-	-Ik	yarık
yırt-	-Ik	yırtık

Table 1. COS adjective from verbs -Ik

-GAn is one of the morphemes which derive cos adjective from the cos verbs.

INPUT VERB	**MORPHEME**	**COS ADJECTIVE**
bit-	-GAn	bitgin
dur-	-GAn	durgun
ger-	-GAn	gergin
sol-	-GAn	solgun
süz-	-GAn	süzgün
şiş-	-GAn	şişgin
yor-	-GAn	yorgun

Table 2. COS adjective from verbs -GAn

Cos Adjectives Derived from Nominal Roots

The most productive cos adjective deriving morpheme from nominal roots is –Il.

INPUT NOUN	**MORPHEME**	**COS ADJECTIVE**
acı	–Il	acılı
ağda	–Il	ağdalı
akort	–Il	akortlu
apre	–Il	apreli
azot	–Il	azotlu
bal	–Il	ballı
boya	–Il	boyalı
buz	–Il	buzlu
büzgü	–Il	büzgülü

cam	–Il	camlı
cilt	–Il	ciltli
çelik	–Il	çelikli
kabartı	–Il	kabartılı
kat	–Il	katlı
maya	–Il	mayalı
oyma	–Il	oymalı
pas	–Il	paslı
ütü	–Il	ütülü

Table 3 COS adjective from nouns+ -Il

II.9.2.Non- Derived Cos Adjectives

In this group, there are cos adjectives which are non derived with any of the morphemes. These adjectives modify the resultative patient at the end of the changing process.

NON-DERIVED ADJECTIVE	POSSIBLE VERB FORM	
	-lAş	-lAn
buruk	+	-
ak	+	+
arı	+	+
cılk	+	+
gevrek	+	-
hafif	+	-
ılık	+	-
ıslak	+	-
iri	+	-
kalın	+	-
kaskatı	+	-
katı	+	-
keskin	+	-
kırmızı	+	-
kıvırcık	+	-
kızıl	+	+
koyu	+	+
olgun	+	-
serin	-	-
sert	+	-
sıcak	+	+
siyah	+	+
solgun	+	-

sterilize	-	-
şeffaf	+	-
şiş	-	-
yassı	+	-
yumuşak	+	-
yuvarlak	+	-

Table 4. Non- Derived Cos Adjectives

Mostly these verbs have verbal counterparts with either –lAş or –lAn.

II.10. Change of State Noun Derivation

This section analyzes the nouns which have state meanings and the result of a change in the state. The analysis shows that morphologically change of state nouns can be classified into groups according to their roots. These are:

1. those which have verbal roots
2. those which have adjectival roots
3. those which have noun roots

In the event of described by change of state verb the state of the patient is changed and becomes to another state. The change of state noun describes the way of doing the verb and can be defined as the name of the change of state activity.

II.10.1.COS Nouns Derived from Verbal Roots

-Iş is one of the morphemes which derive a noun from a verb

Verb + -Iş → Noun

VERB	MORPHEME	COS NOUN
çök	-Iş	çöküş
kayna	-Iş	kaynayış
kemir	-Iş	kemiriş
kıvrıl	-Iş	kıvrılış
kızar	-Iş	kızarış
kopar	-Iş	koparış
pişir	-Iş	pişiriş
sıyır	-Iş	syırış
sil	-Iş	siliş

Table 1. COS Nouns Derived with –Iş

The most common noun derivation morpheme in Turkish is –mE

Verb + -mE → Noun

VERB	MORPHEME	COS NOUN
aşın	-mE	aşınma
büz	-mE	büzme
çak	-mE	çakma
çatla	-mE	çatlama
döşe	-mE	döşeme
ergit	-mE	ergitme
incel	-mE	incelme
kıs	-mE	kısma
kızar	-mE	kızarma
kop	-mE	kopma
kopart	-mE	kopartma
kuru	-mE	kuruma
küçül	-mE	küçülme
pişir	-mE	pişirme
sarar	-mE	sararma
sıyır	-mE	sıyırma

Table 2. COS Nouns Derived with –mE

An other morpheme is –Im

VERB	MORPHEME	COS NOUN
kısalt	-Im	kısaltım
kıvır	-Im	kıvrım
karış	-Im	karışım
eğ	-Im	eğim

dür	-Im	dürüm
boşal	-Im	boşalım
boğ	-Im	boğum

Table 3. COS Nouns Derived with –Im

An other morpheme is –IcI

VERB	MORPHEME	OUTPUT STATE NOUN
damıt	-ıcı	damıtıcı
dik	-ici	dikici
dirilt	-ici	diriltici
karıştır	-ıcı	karıştırıcı
kır	-ıcı	kırıcı
parlat	-ıcı	parlatıcı

Table 4. COS Nouns Derived with –IcI

II.10.2. COS Nouns Derived from Adjective Roots

-lIk is one of the morphemes which derive a noun from an adjective

Adj + -lIk → Noun

ADJECTIVE	MORPHEME	OUTPUT STATE NOUN
dolgun	-luk	dolgunluk
eğik	-lik	eğiklik
esmer	-lik	esmerlik
esnek	-lik	esneklik
ezik	-lik	eziklik
kızıl	-lık	kızıllık
kör	-lük	körlük
loş	-luk	loşluk

Table 5. COS Nouns Derived with –lIk

Another derivation way is Adj → Verb → Noun

ADJECTIVE	MORPHEME	MORPHEME	OUTPUT STATE NOUN
berrak	-laş	-ma	berraklaşma
billur	-laş	-ma	billurlaşma
çıplak	-laş	-ma	çıplaklaşma
çorak	-laş	-ma	çoraklaşma
esmer	-leş	-me	esmerleşme
esnek	-leş	-me	esnekleşme

ham	-laş	-ma	hamlaşma
kel	-leş	-me	kelleşme
kızıl	-laş	-ma	kızıllaşma
koyu	-laş	-ma	koyulaşma
kör	-leş	-me	körleşme
kuru	-laş	-ma	kurulaşma
loş	-laş	-ma	loşlaşma
mavi	-leş	-me	mavileşme
saydam	-laş	-ma	saydamlaşma
siyah	-laş	-ma	siyahlaşma
soğuk	-laş	-ma	soğuklaşma

Table 6. COS Nouns Derived with adj + -lEş + -mE

Another derivation way is Adj+ -lEn + -mE → Noun

ADJECTIVE	MORPHEME	MORPHEME	OUTPUT STATE NOUN
alaca	-lan	-ma	alacalanma
ergin	-len	-me	erginlenme
kör	-len	-me	körlenme
mum	-lan	-ma	mumlanma
pas	-lan	-ma	paslanma
pelte	-len	-me	peltelenme
siyah	-lan	-ma	siyahlanma

Table 7. COS Nouns Derived with adj + -lEn + -mE

Another derivation way is Adjective +-laş + -tIr + -mE → Noun

ADJECTIVE	MORPHEME	CAUSATIVE MORPHEME	MORPHEME	OUTPUT STATE NOUN
ak	-laş	-tır	-ma	aklaştırma
esmer	-leş	-tir	-me	esmerleştirme
esnek	-leş	-tir	-me	esnekleştirme
katı	-laş	-tır	-ma	katılaştırma
loş	-laş	-tır	-ma	loşlaştırma
soğuk	-laş	-tır	-ma	soğuklaştırma
saydam	-laş	-tır	-ma	saydamlaştırma

Table 8. COS Nouns Derived Adjective +-laş + -tIr + -mE

II.10.3. COS Nouns Derived from Noun Roots

In order to derive a COS noun Turkish first derives a verb and then derives a noun by using the morphemes -laş + -tIr + -mE

Noun +-laş + -tIr + -mE → Noun

NOUN	MORPHEME	CAUSATIVE MORPHEME	MORPHEME	OUTPUT STATE NOUN
eter	-leş	-tir	-me	eterleştirme
gaz	-laş	-tır	-me	gazlaştırma
gen	-leş	-tir	-me	genleştirme
orman	-laş	-tır	-ma	ormanlaştırma
süblim	-leş	-tir	-me	süblimleştirme

Table 9. COS Nouns Derived Noun +-laş + -tIr + -mE

Noun +-lEş + -mE → Noun

NOUN	MORPHEME	MORPHEME	OUTPUT STATE NOUN
alafranga	-laş	-ma	alafrangalaşma
alman	-laş	-ma	alafrangalaşma
apse	-leş	-me	alafrangalaşma
arnavut	-laş	-ma	alafrangalaşma
bakır	-laş	-ma	alafrangalaşma
başka	-laş	-ma	alafrangalaşma
beton	-laş	-ma	betonlaşma
buzul	-laş	-ma	buzullaşma
eter	-leş	-me	eterleşme
fosil	-leş	-me	fosilleşme
ırmak	-laş	-ma	ırmaklaşma
katmer	-leş	-me	katmerleşme
kemik	-leş	-me	kemikleşme
macun	-laş	-ma	macunlaşma
nasır	-laş	-ma	nasırlaşma
orman	-laş	-ma	ormanlaşma
ozon	-laş	-ma	ozonlaşma
pas	-laş	-ma	paslaşma
pelte	-leş	-me	pelteleşme
pıhtı	-laş	-ma	pıhtılaşma
sabun	-laş	-ma	sabunlaşma
sülfat	-laş	-ma	sülfatlaşma

Table 10. COS Nouns Derived Noun +-laş + -mE

Noun + -lE + mE → Noun

NOUN	MORPHEME	MORPHEME	OUTPUT STATE NOUN
apre	-le	-me	apreleme
asfalt	-la	-ma	asfltlama
badana	-la	-ma	badanalama
cam	-la	-ma	camlama
düğüm	-le	-me	düğümleme
dürum	-le	-me	dürümleme
emaye	-le	-ma	emaylama
fırın	-la	-ma	fırınlama
filiz	-le	-me	filizleme
format	-la	-ma	formatlama
galvaniz	-le	-me	galvanizleme
ilmek	-le	-me	ilmekleme
kertik	-le	-me	kertikleme
mumya	-la	-ma	mumyalama

Table11. COS Nouns Derived Noun +-lE + -mE

Noun+ -lEn + -mE → Noun

NOUN	MORPHEME	MORPHEME	OUTPUT STATE NOUN
elektirik	-len	-me	elektriklenme
fırın	-lan	-ma	fırınlanma
filiz	-len	-me	filizlenme
galvaniz	-len	-me	galvanizlenme
iplik	-len	-me	ipliklenme
kav	-lan	-ma	kavlanma
küf	-len	-me	küflenme
maya	-lan	-ma	mayalanma
mumya	-lan	-ma	mumyalanma
oksit	-len	-me	oksitlenme
mum	-lan	-ma	mumlanma
pas	-lan	-ma	paslanma
pelte	-len	-me	peltelenme

Table12. COS Nouns Derived Noun +-lEn + -mE

CONCLUSION

The study aimed at providing a descriptive account of structural and semantic aspects of Turkish Change of State verbs which were not thoroughly analyzed in Turkish.

Section I.1. summarized the basic discussions about the argument structure, thematic roles, conceptual structure and transitivity and unaccusative phenomenon in the change of state verbs literature. Furthermore, a brief summary of approaches to change of states is discussed in this section.

Section II. gave a brief introduction to change of state verbs in Turkish. An analysis of the Dictionary of Turkish Language Institute (1988) partially provided the data needed to create a database of change of state verbs in Turkish which answers the first question of the study.

In this section, first the criteria of being a change of state verb, the properties of the agent and patient arguments of change of state verbs were identified. Then the inputs of change of state verb verbalization which are non derived, derive verbs and compound forms were exemplified with the verbs from the data.

According to the classification of change of state verbs, the thematic roles, the case marking and the syntactic position of the arguments and semantic properties have shown that there are six types of change of state verbs. These types were introduced and exemplified. Thus the second hypothesis of the study which claims that Turkish change of state verb classes have similar properties with the ones proposed in the literature for different languages was proven to be true.

Section II.4. ,II.5. , II.6. , II.7. , analyzed the interaction of voice markers and change of state verbs in Turkish according to their transitivity, causativity, passivization,

reflexivity and reciprocity. The third hypothesis of the study that the exceptional behaviour of change of state verbs are also observed.

Transitive analysis shows that Type 1a (e.g. böl-, buda-, yar-, yont-), Type1b (e.g., buruştur-,bük-, eğ-),Type1c (e.g. gevret-, haşla-, kavur-) and Type1d (e.g. yak-, boz-,patlat-) are transitive and Type 2a (e.g. aşın-,bozul-, kabar-) Type2b (e.g. küçül-,ucuzla-,çık-) are intransitive

Section II.6. focused on the change of state verbs and causativity. It was exemplified that change of state verbs can be morphologically and periphrastic causativized.

Section II.7. analyzed the change of state of verbs according to their reciprocal features. In general these verbs do not have a reciprocal meaning. Semantically this is due to the reason that change of sate is a one way action caused by the agent on the patient. This kind of action can not be done reciprocally.

Section II.8. shows that change of state verbs are expressed with compound forms as well as by lexical means. Section II.9. section analyzed the derivational properties of the adjectives which have change of state senses. Morphologically, their input can be a verbal, an adjectival or a nominal root.Section II.10. analyzed the derivational properties of the nouns which have change of state senses

Finally it is certain that, the further analyzing of change of state verbs is going to help to gain new insights to the nature of Turkish change of state verbs.

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