Argument Homogeneousness and Structure Simplicity

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Abstract

Subjects and objects are arguments of verbs. They show either homogeneous or heterogeneous properties, with respect to time. The subject of *sleep* and the subject of *fall* are homogeneous and heterogeneous, respectively. In this research, we develop a novel analysis of the organization of arguments of various types of verbs. We argue that heterogeneous arguments are hosted in two levels of Verb Phrase, whereas homogeneous ones are hosted in one level of Verb Phrase. Therefore, homogeneous events and states are encoded in simpler syntactic structures than heterogeneous ones in natural language.

Keywords: argument; verb, syntax; language, simplicity; homogeneous; heterogeneous; transitive; intransitive.

1. Introduction

The goal of this study is to try to explore the cognitive view that different conceptualizations will lead to different syntactic structures and that the complexity of the former should correlate with the complexity of the latter. This study develops Klein's (2010) new theory of the arguments of verbs and proposes a novel analysis of the structures of the arguments of various kinds of verbs. Instead of the traditional triple division of transitive verbs (e.g., *kiss*), unaccusative intransitive verbs (e.g., *arrive*), and unergative intransitive verbs (e.g., *sleep*), we argue that verbs are first divided into homogeneous and heterogeneous ones, and then each type is further divided into transitive and intransitive subtypes. The two major types are different in the number of Verb Phrases (VPs) are involved in the syntactic structures: homogenous ones have only one-layer of VP, while heterogeneous ones have two-layers of VP. Therefore, in our understanding, homogeneous events and states are encoded in simpler syntactic structures than heterogeneous ones.

We will introduce a new classification of verbs based on Klein (2010), then present our proposal, in Section 2 and 3, respectively. In Section 4, we list our supporting facts. Finally, in Section 5, we make some general remarks about this new syntactic analysis.

2. Classification of Verbs

Based on the homogeneousness of the properties of an argument with respect to time, Klein (2010) discusses certain types of verb stems in their default readings. As pointed out by an anonymous reviewer, Klein's term time should be understood as state. I thus use the term state rather than Klein's term time. There are one-state arguments, which are homogeneous in the event or state, such as the subject of *laugh*. There are also two-state arguments, which have a source state and a target state, and thus they are not homogeneous in the event or state, e.g., the subject of *fall*.

Homogeneous Intransitive (HOI) verbs have one argument with respect to one state, e.g., *sleep, dance, vibrate, be*.

Homogeneous Transitive (HOT) verbs have two arguments with respect to the same state over time, e.g., *weigh* with a measure phrase, *resemble, admire*.

Heterogeneous Intransitive (HEI) verbs have one argument with source time state and target time state, e.g., *die,* (intransitive) *drown, rise, remain.*

Heterogeneous Transitive (HET) verbs have two arguments — one at one time state, one with source time state and target time state. The state of the one-time state argument can overlap the source or target time states of the other argument, e.g., *leave, close, slay*, (transitive) *drown, observe.*

We summarize the classification in the following table (AS = Argument-State; Ss = source time state; St = target time state):

(1) Common AT-structures (cf. Klein 2010: 1231)

type	description	typical examples	AS skeleton
HOI	1 argument at one state	*sleep, dance, vibrate, be*	A | S
HOT	2 arguments at the same state	*weigh* with a measure phrase	A1 A2 ◡ S
HEI	1 argument with source state and target state	*die,* (intransitive) *drown, rise, remain*	A ◠ Ss St
HET	2 arguments—1 at one state, 1 with a source state and a target state.	*leave, close, slay*, (transitive) *drown, observe*	A1 A2 | ◠ Ss St

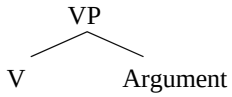
3. The Structure-Positions of Arguments

A well-adopted assumption is that all verbs are represented by a two-layer verbal projection: a vP to host the external argument of a transitive verb, or the unique external argument of an unergative verb, and a VP to host the internal argument of either a transitive verb or an

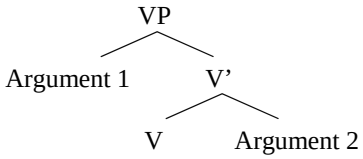
unaccusative verb. The assumption does not consider the contrast between HO and HE verbs at all. All external arguments are assumed to have the same syntactic position, i.e., Spec of vP.

We propose that arguments of the four types of verbs are base-generated as in (2).

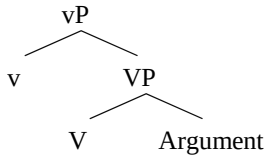
(2) a. HOI: [$_{VP}$ V Argument]



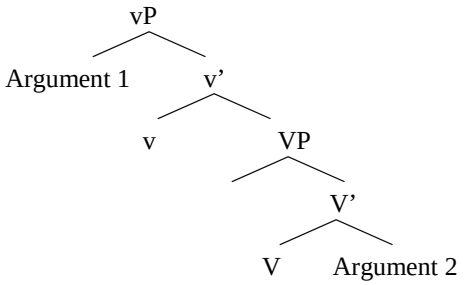
b. HOT: [$_{VP}$ Argument 1 [V Argument 2]]



c. HEI: [$_{vP}$ v [$_{VP}$ V Argument]]



d. HET: [$_{vP}$ Argument 1 v [$_{VP}$ V Argument 2]]



One can see that HE verbs have vP, whereas HO ones do not, regardless of how many arguments occur. In (2b), the two arguments are hosted in the same VP; but in (2d), the two arguments are hosted in vP and VP, respectively.

In the structures for HO verbs, only one-layer of VP is projected, and there are maximally two positions for arguments: one is at Spec and the other is at Complement of V. In contrast, in the structure for HE verbs, there are two layers of VP, and thus one more position is available for an additional argument.

4. Supporting Facts

Three kinds of evidence supports our proposal in (2): the integrity of the verbs and the arguments of HO constructions (4.1); the structural richness of HE constructions (4.2); and the special contrasts between HO and HE verb constructions (4.3).

4.1 Structure Integrity

All of the arguments that support severing the subject from VP or projecting of a vP shell (Marantz, 1984; Larson, 1988; Kratzer, 1996) come from HE, rather than HO, constructions. Typical tests are pseudo-cleft and the do-so replacement.

4.1.1 Pseudo-cleft Unlike HE verbs, HO verbs fail in pseudo-cleft (Zucchi, 1998: 349) (* means the sentence is not acceptable).

(3) a. What John did was eat an apple. [HE]
b. *What John did was resemble his father. [HO]

4.1.2 vP-proform *do so* Unlike HE verbs, HO verbs fail in replacement by the vP-proform *do so* (Ross, 1970; cf. Stroik 2001: 367).

(4) a. Chris is leaving now, and Sam is doing so too. [HE]
b. *Mary likes Sam, and Chris does so too. [HO]
c. *The shoes cost 5 dollars, and the gloves do so too. [HO]

The two restrictions on HOT verbs are covered by (2b), where the whole VP is composed of two arguments and the verb. In the structure, the combination of V and Argument 2 is just part of a VP, which lacks syntactic visibility (Chomsky 1995). The combination is not a vP, either, since vP does not exist for this type of verbs. Therefore, it may not be replaced by *do so*.

4.2 Structure Richness

HE constructions have more argument positions than those of HO constructions. This can be seen in the following four facts.

4.2.1 Double object constructions Why is there no double object or applicative HO verb (5)? If only HE verbs may host their arguments in two layers of VP, the contrast is explained. (2b) does not have enough positions for three arguments.

(5) a. I gave him the clothes. (HET)
b. *I like him the clothes. (HOT)
Intended: 'I like him with respect to his clothes.'
(6) a. John rented Bill a room. (HET)
b. *John resembles Bill the eyes.
Intended: 'John looks like Bill with respect to their eyes.'

4.2.2 Object control constructions There is no HO object-control construction, which has two internal arguments: a nominal and a clause.

(7) a. Mary forced John to feed the baby.
b. *Mary admired John to feed the baby.
Intended; 'Mary admired John for his feeding of the baby.'

4.2.3 Expansion from HO to HE constructions Many verbs may occur in either HO or HE constructions (e.g. Dowty 1979: 60; Rosen 1999). It is easy to change an otherwise HO construction into a HE one by adding a delimitable element. But we do not add material to a HE structure to change it into a HO one (Thompson 2006: 218). HE structures are thus richer than HO ones.

(8) ADDITION OF DIRECT OBJECT
a. Bill ran (*in 5 minutes). [HO]
b. Bill ran the mile in 5 minutes. [HE]
(9) ADDITION OF INDIRECT OBJECT
a. That book costs three dollars. [HO]
b. That book has cost me three dollars. [HE]
(10) ADDITION OF COGNATE OBJECT
a. Terry sang (*in an hour). [HO]
b. Terry sang the ballad in an hour. [HE]
(11) ADDITION OF X'S WAY EXPRESSION
a. Terry sang (*in an hour). [HO]
b. Terry sang her way to the Met in 10 years. [HE]
(12) ADDITION OF FAKE REFLEXIVE
a. Terry sang (*in an hour). [HO]
b. Terry sang herself to sleep in an hour. [HE]
(13) ADDITION OF RESULTATIVE
a. Terry ran (*in an hour). [HO]
b. Terry ran us ragged in an hour. [HE]

Note that heterogeneous events can be repeated (*Mary dried the dishes in an hour*. vs. *Mary dried the dishes for hours before being released from duty*) (Thompson 2006: 218; Ramchand 2008: 31). It is just like all nominals can be counted if an appropriate unit is identified (*two drops of water* as well as *two books*).

4.2.4 Verb affix marking Certain formatives mark the HE status of the verb, and their absence marks the HO status, e.g., *meg-* in Hungarian (Hopper & Thompson 1980: 267) (O means object):

(48) a. *A gazda MEG-verte az inasokat.*
the boss PERF-beat(OBJ) the apprentices(ACC)
'The boss beat the apprentices.'
b. *A gazda verte az inasokat.*
the boss beat(OBJ) the apprentices(ACC)
'The boss would beat the apprentices.'

With the prefix *meg-* (Hetzron's 'effective aspect'), 48a means that the boss did beat all the apprentices on one occasion; the action is thus perfective and punctual, and the object is totally affected. But 48b, without *meg-* (Hetzron's 'descriptive aspect'), means that the boss was not above beating the apprentices, that he did it from time to time, but that not all the apprentices were necessarily involved; the action is claimed, then, to be imperfective and iterative, and the O is not totally affected.

From the above citation, we can see that the event reported in (48a) is bounded and thus the sentence is a HE construction, whereas the event reported in (48b) is unbounded and thus the sentence is a HO construction. Presumably, formatives such as *meg-* are licensed by vP, and thus the HE reading correlates with a richer structure.

4.3 Special Contrasts Between HO and HE Verbs

Three further contrasts between HO and HE verbs are reported as below.

4.3.1 Intransitive verbs exhibit HO-HE contrasts Only HEI verbs allow the expletive *there*, but HOI verbs may not, as seen in (14).

(14) a. There arrived a train in the station. [HE]
b. *There laughed a man in the hallway. [HO]

This contrast can be captured by the assumption that the expletive is base-generated in vP only (Deal, 2009). (2c), but not (2a), has vP, although both are for intransitive verbs.

4.3.2 Transitive verbs exhibit HO-HE contrasts We have seen the contrasts between HOT and HET in English in (4). Moreover, in some languages (e.g. Finnish, Hungarian) only HE structures have accusative case marker. The following Finnish examples are cited from (Hopper & Thompson 1980: 262):

(15)
a. *Liikemies kirjoitti kirjeen valiokunnalle.*
businessman wrote letter (ACC) committee-to
'The businessman wrote a letter to the committee.'
b. *Liikemies kirjoitti kirjettä valiokunnalle.*
businessman wrote letter (PART) committee-to
'The businessman was writing a letter to the committee.'

In (15a), the presence of the ACC (accusative) marker with the direct object *kirjeen* 'letter' indicates a bound event: a letter was created at the target time, and thus the event was not homogeneous. In (15b), however, there is no ACC marker with the direct object, and the event could be homogeneous. See Rosen (1999) for more such examples.

The contrast can be captured in the contrast between (2b) and (2d): the overt accusative case marking is licensed by vP (cf. Chomsky 1995). Only in (2d), which is for HET, vP is projected and thus the ACC marker can be licensed. Since

there is no vP in (2b), which is for HOT, no ACC marker can be licensed in the structure.

4.3.3 The prefix *re-* Certain rules apply to HE constructions only, but not HO ones, regardless of whether the verb is transitive or intransitive. The English prefix *re-* occurs with HE verbs only, as seen in (16) (Horn, 1980). Since *again* behaves differently, the issue is not semantic.

(16) a. The door reopened. [HE]
b. I reopened the door. [HE]
c. John {*resmiled/smiled again}. [HO]
d. *John re-admired his father. [HO]

Note that *re-* scopes over either the HE root or the affected nominal (Marantz, 2005). But the ambiguity is independent of the HE restriction.

4.3.4 The time frame preposition phrases Preposition phrases like *in an hour* are licensed by HE verbs, regardless of whether the verb is transitive or intransitive, as seen in (17). Thompson (2006) shows that such PPs are licensed by a projection higher than VP. Their absence in HO constructions indicates that the structure of HO constructions are lower and thus simpler than that of HE ones.

(17) a. John walked to the store in two hours. [HE]
b. John destroyed the toy in two hours. [HE]
c. *John slept in two hours. [HO]
d. *John admired his father in two hours. [HO]

5. General Remarks

In this proposed new analysis of the time-argument structures of various types of verbs, the structures of homogeneous eventuality constructions are simpler than those of heterogeneous ones.

A parallel analysis of noun constructions is found in Borer (2005) and Zhang (2012). In Borer's analysis, CLP or DivP is projected for count nominals, but not for mass nominals. In Zhang (2012), DelimitP is projected for non-mass nominals, but it is absent in the structures of mass nominals. In both analyses, the structures of mass nominals are simpler than those of count nouns. The former shows homogeneousness, whereas the latter does not.

The significance of this study is that, like Borer's (2005) and Zhang's (2012) studies of nominal structures, our research of verbal structures here also show that the perceived homogeneousness in our understanding of the world, including events and individuals, correlates with the simplicity of linguistic structures.

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