Verb-Initial Constructions in Modern Hebrew

by

Nurit Melnik

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Committee in charge:
Professor Andreas Kathol, Chair
Professor Paul Kay
Professor Johanna Nichols

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Abstract

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This dissertation provides an analysis of verb-initial (V1) constructions in Modern Hebrew (MH). The two main foci of the analysis are the grammatical function of the postverbal NP in V1 and the licensing condition of the constructions.

Subjects in MH are generally assumed to appear preverbally, display full agreement with the verb, and have nominative case. In contrast, 'subjects' of V1 constructions are, by definition, never preverbal. In some cases the verb agrees with the postverbal 'subject', while in others it exhibits invariant 3SM morphology. In addition, the case of V1 'subjects' alternates between nominative and accusative.

The grammatical function of the 'subjects' of V1 are examined by using Keenan's (1976) subject properties list and hierarchies as guidelines. The conclusion is that only agreement-triggering arguments exhibit the properties necessary to be considered syntactic subjects. The proposal is presented in the form of a formal analysis in the framework of Head-Driven Phrase Structure Grammar (HPSG).

The question of the licensing conditions of V1 in MH stems from the observation that most of the V1 constructions have an SV(O) counterpart, yet not all sentences with SV(O) order can be 'transformed' into V1. Lexically-based constraints that have been suggested in the literature are evaluated empirically and argued to capture

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frequent correlations but not hard constraints. The alternative approach views the constructions in their entirety. It is proposed that V1 constructions are used as INFORMATION PACKAGING devices which encode THETIC JUDGMENTS in such a way as to make them minimally distinct from 'unmarked' CATEGORICAL JUDGMENTS, expressed by an SV(O) order. V1 constructions are licensed when they are compatible with a thetic judgment. The alternative proposal accounts for the data accounted for by the lexically-based approach, as well as for its counterexamples.

Finally, the syntactic and information-packaging aspects of V1 constructions come together in a multi-inheritance type hierarchy in which types of phrases are cross-classified according to the two dimensions. A preliminary step is the introduction of information packaging notions into an HPSG-based grammar. The constructional approach (Fillmore & Kay 1996 and Sag 1997) adopted here, provides a way of attributing non-compositional properties to phrasal constructions.

Professor Andreas Kathol
Dissertation Committee Chair

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Chapter 1

Introduction

The goal of this study is to provide an integrative analysis of verb-initial (V1) constructions in Modern Hebrew (MH). These construction pose a challenge to a syntactic analysis, since the NP dependents which can be considered subjects in the constructions do not exhibit the properties associated with prototypical subjects in the language. In addition, most of the V1 constructions considered here have an SV(O) counterpart whose propositional content is identical to that of V1. The converse statement is not valid, as not all sentences with SV(O) word order can be 'transformed' into V1. This poses two interesting questions:

- Why would a language employ two different ways of expressing the same thing?
- Why is it not the case that all SV(O) sentences have a V1 counterpart?

These questions, as well as the question of the grammatical function of the postverbal NP in V1, are considered and ultimately answered in this study. The answer is presented in the form of a constructional HPSG grammar-fragment.

The structure of this dissertation is as follows. Chapter 2 is dedicated to a definition of the type of constructions under discussion, as well as a presentation of the data. This is preceded by a review of the data resources used for this study as well

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as a short introductory section on Modern Hebrew syntax. Chapter 3 presents the theory of syntax assumed here—Head-Driven Phrase Structure Grammar (HPSG). The purpose of this chapter to introduce to readers who are not familiar with HPSG the concepts and principles necessary to follow the analysis.

Chapter 4 contains the syntactic analysis of V1 constructions. It begins with a review of Shlonsky's (1987, 1997) transformational analysis of a subsection of the data. An alternative analysis is then developed by first considering V1 constructions and the grammatical functions of their 'subjects' from a typological perspective. The conclusion is that only agreement-triggering arguments exhibit the necessary properties to be considered syntactic subjects. The proposal is then formulated in the HPSG framework. In the process, the Possessive Dative Construction, which plays a prominent role in V1 constructions, is considered and an HPSG-based analysis is presented.

Chapter 5 addresses the two questions raised above. More specifically, it considers the licensing conditions of V1 in MH. Once we identify the licensing conditions of V1 we are in a position to answer the second question, that is what distinguishes between those SV(O) sentences that have a V1 counterpart from those which do not. As it turns out, the answer to the second question includes the answer to the first. V1 constructions are employed by MH as an information packaging devices which encodes thetic expressions in distinction from 'unmarked' categorical expressions. Thus, although SV(O) sentences and their V1 counterparts contain the same propositional content, they are pragmatically divergent. V1 constructions are licensed when they express a thetic judgment.

Chapter 6 completes the analysis by integrating the syntactic component with the information packaging one. This is achieved via a multi-inheritance type hierarchy in which types are cross-classified according to the two components. A preliminary step is the presentation of a proposal regarding the representation of information

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packaging, and more specifically judgment types in HPSG.

Chapter 7 presents the conclusions of this study.

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Chapter 2

The data

In this chapter I present the data on which this study is based. As will be discussed subsequently, some of the constructions in which I am particularly interested are part of the colloquial register of Modern Hebrew, which is quite distinct from the literary/normative register. Thus, literary resources are not adequate for data gathering. This difficulty is aggravated by the fact that native speakers of MH are particularly insecure about their grammar.[1] A great deal of the high school Hebrew grammar curriculum is centered on 'correcting language errors' of native speakers. Indeed, informal data collection which I have conducted has shown that the some of the V1 constructions described below are used much more often than native speakers would like to admit. In fact, when it was pointed out to speakers that they had uttered such a construction, they immediately retracted and "corrected their error". Consequently, reliable grammaticality judgments were hard to come by. For this reason, I concentrated my effort on gathering data from actual usage.

Unfortunately, at this time, a comprehensive corpus of Spoken Israeli Hebrew (CoSIH) is in its early stages of design and is therefore unavailable.[2] There is, how-

[1] See Glinert 1989 and Ravid 1995, among others.

[2] But see http://spinoza.tau.ac.il/hci/dep/semitic/cosih.html for a detailed documentation of the program.

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ever, the Family Discourse Project (Blum-Kulka 1997), which includes (untagged and unparsed) transcriptions of eight, approximately one hour long, dinner-table conversations of native Israeli families. This corpus is a part of the Child Language Data Exchange System (CHILDES) (MacWhinney 2000). Examples taken from this corpus are given along with the file name from which they were taken (e.g. (= Blum-Kulka (1997:IS05B))).

An additional resource is informal conversations of native speakers of Hebrew in which I participated or which I overheard. These examples are marked as 'attested examples'. The same native speakers provided me with grammaticality judgments to test sentences that I constructed. Such constructed sentences are included here whenever I did not find a good example from actual usage, or in order to simplify the presentation and facilitate the readers' comprehension. Finally, an obvious resource—example sentences taken from other research. Such examples appear in this text with the appropriate reference.

Before we turn to the data, two preliminary steps are in order: an introduction to the syntax of Modern Hebrew, given in section 2.1, and a definition of which constructions are included and excluded from the category of 'verb-initial constructions' in section 2.2.

2.1 Modern Hebrew syntax—Background

The goal of this section it to provide non-speakers of Modern Hebrew with the necessary information needed to follow this study. However, before we proceed, a number of technical notes are in order. The Hebrew transcriptions used in this study are phonemic. Distinctions, such that between x and $\underset{.}{h}$, are ignored, in keeping with the speech of most native speakers. Phonetically, a glottal stop precedes word-initial vowels and separates consecutive vowels. In the transcription employed here, the

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glottal stop is included only in the second case (e.g. *etmol* ('yesterday') vs. *te'una* ('accident')). Hebrew morphology has concatenative and non-concatenative forms. Concatenative forms are glossed with a dash separating the morphemes (e.g. *le-rina* ('to-Rina')). Non-concatenative aspects are indicated at the end of the gloss, separated by a dot (e.g. *aktsa* ('stung.3SF')). Tense is translated in the gloss.

The unmarked word order of main and subordinate clauses in Modern Hebrew is SV(O). Nevertheless, the verb may precede the subject in particular contexts. Identifying these contexts is precisely the goal of chapter 5.

Verbs in MH have a full gender-number-person-tense inflectional paradigm, with the exception of present tense verbs, which are not inflected for person. In general, finite verbs agree with their subjects in number, person, and gender.

- Past tense verbs have full agreement with their subjects. An exception is 3rd person plural verb forms in which the gender distinction is neutralized.
- Future tense verbs have full agreement with their subject except 2nd and 3rd person plural in which gender agreement is neutralized.
- Present tense verbs in Hebrew agree with their subjects only in number and gender.

The following sentences illustrate subject-verb agreement in the past tense.

(1) a. ha-yeled **axal** tapuax
the-boy.3SM ate.3SM apple.3SM
'The boy ate an apple.'

b. ha-yalda **axla** tapuax
the-girl.3SF ate.3SF apple.3SM
'The girl ate an apple.'

c. ha-yeladim **axlu** tapuax
the-children.3PM ate.3P apple.3SM
'The children ate an apple.'

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Modern Hebrew is considered a *pro*-drop language. First and second person pronominal subjects may be omitted in past and future tense. In these context, overt pronouns are used for emphasis or contrastively. Examples of *pro*-drop are given in (2).

(2) a. **axalta** tapuax
ate.2SM apple.3SM
'You ate an apple.'

b. **axalnu** tapuax
ate.1P apple.3SM
'We ate an apple.'

Subjects in Hebrew are marked with nominative case, which is realized overtly only on pronominal forms. For example, in sentence (3a) the third person-singular-masculine subject and object have distinct forms. The accusative case marker *et* appears before definite object non-pronominal NPs. Indefinite objects do not have overt case marking (compare (3b) to (1)).

(3) a. hu axal oto
he.NOM ate ACC.3SM
'He ate it/him.'

b. hu axal **et** ha-tapuax
he.NOM ate ACC the-apple
'He ate the apple.'

The notion of 'subject' and the role it plays in syntax are central issues in this study. The working assumption on which I base this investigation is that the three coding properties of subjects in Hebrew are: preverbal position, full agreement with the verb, and nominative case.

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2.2 Defining V1 constructions

Although Modern Hebrew is considered an SVO language, many types of constructions in the language can be classified as verb-initial. Nevertheless, some of these verb-initial constructions are not the focus of this work, because they do not contain an argument which can be considered a subject. Before I proceed to present the relevant data, I will list the types of constructions which are excluded from this research.

- '*pro*-drop' constructions, in which the subject is unexpressed:

(4) axalti/axaltem tapu'ax
ate.1S/2P apple
'I/you ate an apple.'

- Imperatives:

(5) lex lishon
go.2P(imperative) to-sleep
'Go to sleep!'

- Impersonal sentences with third-person plural verbs:

(6) bonim bayit xadash ba-shxuna sheli
building.3P house.3SM new.3SM in-the-neighborhood of-me
'They are building a new house in my neighborhood'

- Raising verbs with sentential complements:[3]

(7) yatsa ba-sof she-lo hitslaxnu la-hagi'a
turned-out in-the-end that-NEG manage.1P to-arrived
'It turned out that in the end we didn't manage to get there.'

[3]The subject of the finite sentential complement cannot raise to matrix subject position.

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The verb-initial (V1) constructions which are the focus of this study are those in which there is a phonologically expressed NP dependent which can be considered a subject. In this study I refer to this NP dependent as 'subject' (with single quotes) without committing myself to a particular analysis of its grammatical function. The term SUBJECT (without single quotes) is reserved to those 'subjects' whose subject status has been established according to particular criteria.[4] The noteworthy characteristic of the V1 constructions in this study is that, with the exception of the existentials and possessives, there is an alternative construction to V1, one in which the 'subject' appears preverbally. It is in fact the alternative SV(O) construction which is considered to be the 'unmarked' construction. Thus, V1 constructions are viewed as cases of SUBJECT-VERB INVERSION, and are also referred to as Free Inversion (FI).

2.3 The data

In the following section I present the data, starting with intransitive verbs and continuing to 2-place predicates. In the process, I describe the types of constructions in which each verb type can appear, concentrating mainly on the three subject coding properties (word order, agreement, and case) and their application to the 'subject'.

The term INTRANSITIVES in this work is used as a cover term for three different verb types.

- unergatives
- existentials
- unaccusatives

[4] An analysis of the status of those 'subjects' is presented in sections 4.2.2 and 4.2.3.

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The distinction between unergatives and unaccusatives is the topic of section 4.3.2. In a nutshell, only the unaccusatives are compatible with a possessor dative (PD) argument, which is construed as the possessor of the referent of the NP 'subject'. Thus, in (8) the 'subject' of the unaccusative verb *nikre'u* ('tore') is understood to be possessed by the referent of the dative *li* ('to-me'). The dative in (9), where the verb is unergative, can only have an ethical interpretation.

(8) nikre'u li ha-mixnasayim
tore.3PM to-me the-pants.3PM
'My pants tore.'

(9) ha-tinok yashan li
the-baby slept to-me
'The baby slept (and it affected me).'
not: 'My baby slept.'

The list of intransitive verb types above distinguishes between unaccusatives and existentials, but if we apply the unaccusativity diagnostic we find that the existential predicates are compatible with a PD, on a par with the unaccusatives.[5] In order to preserve the necessary distinctions between existentials and "garden variety" unaccusative verbs, I refer to them with distinct terms. UNACCUSATIVES, then, refer to 'regular' unaccusatives, while EXISTENTIALS refer to a smaller class of predicates used in existential, locative, and possessive constructions.

Unergatives

'Subjects' of unergatives generally exhibit prototypical subject properties: the nominative NP precedes the verb which obligatorily agrees with it.

[5]This is one way in which possessives are formed in MH.

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(10) ha-yeladim/hem tsaxaku
the-children.3PM/they.3PM.NOM laughed.3P
'The children/they laughed.'

There are, however, cases where the order is reversed. In this case pronominal subjects are excluded and agreement between the verb and the 'subject' is obligatory. This verb-initial construction is referred to in this work as VS_{agr}. The subscripted *agr* indicates that the verb exhibits full agreement with the 'subject'.[6]

(11) tilfen aba shel izi ve-sha'al im anaxnu rotsim lehipagesh
telephoned.3SM father.3SM of Izzy and-asked if we want to-meet
'Izzy's father called and asked if we want to meet.'
(attested example)

The sentence in (11) was attested in its verb-initial form. Its SV counterpart is grammatical as well.

Existentials

Haya and *yesh* are the existential predicates. *Haya* has past and future tense forms and a full gender-number-person inflectional paradigm.[7] *Yesh* indicates present tense. It has a full inflectional paradigm, yet it is mostly used in its uninflected form in colloquial Hebrew.[8]

Haya and *yesh* have two different functions which should be differentiated. In their copular function, these elements are used to join a subject and a non-verbal predicate, such as a preposition phrase (12) or an adjective phrase (13), and to indicate tense. A non-agreeing copula is never grammatical in copular constructions. The absence

[6]This is contrasted with *nonagr* cases, described below, in which the verb exhibits invariant 3SM morphology.

[7]The citation form of verbs in MH is past tense 3SM (e.g. *haya* 'was.3SM').

[8]The negative counterpart of *yesh* is *eyn*. The syntactic and morphological behavior of *eyn* in the existential context is similar to *yesh*. For this reason, I omit *eyn* from this study to facilitate the exposition.

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of a copula in these constructions denotes present tense. An agreeing present tense *yesh* is allowed only when the predicate is a prepositional phrase. The occurrence of *yesh* in this case is marked and used for emphasis.

(12) ha-yeladim hayu/(yeshnam)/yihyu ba-xatser
the-children.3PM were.3P/is.3PM/will-be.3P in-the-yard
'The children were/are/will be in the yard.'

(13) ha-yeladim hayu/*yeshnam/yihyu ayefim
the-children.3PM were.3P/is.3PM/will-be.3P tired.PM
'The children were/will be tired.'

In their copular use, *haya* and *yesh* are ordinary subject-taking predicates: they fully agree with their nominative NP dependents, which in turn obligatorily precede them. These predicates are not involved in the constructions that are the focus of this work.[9]

Existence and possession in Modern Hebrew can be expressed in two ways, distinct with respect to the subject coding properties that the 'subject' exhibits. The normative constructions are illustrated by (14) and (15). The existential construction in (14) is an instance of the VS_{agr} construction. The possessive construction in (15) is formed by adding a PD argument to the existential construction in (14). This verb-initial construction is referred to in this work as the 'VDS_{agr} construction', where 'D' stands for the 'dative' argument positioned between the verb and the 'subject'.

(14) hayu/yeshnam/yihyu balonim ba-xeder
was.3P/is.3PM/will be.3P balloons.3PM in-the-room
'There were/are/will be balloons in the room.'

[9]Note that this presentation of the functions of *haya* and *yesh* is contrary to Shlonsky's (1987) analysis, presented in 4.1, which considers (12) an existential construction.

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(15) hayu/yihyu le-dani balonim ba-xeder
was.3P/will.3P to-Danny balloons.3PM in-the-room
'Danny had/has/will have balloons in the room.'

Naturalistic corpus examples of the normative existential construction in past and present tense, as well as the possessive construction, are given in (16) and (17), respectively.

(16) a. hayta fashla ktana
was.3SF screw-up.3SF little.3SF
'There was a little screw-up.'
(= Blum-Kulka (1997:IS08B))

b. yeshna be-yerushalayim makelat yeladim
is.3SF in-Jerusalem chorus.3SF children
'There is a children's chorus in Jerusalem.'
(= Blum-Kulka (1997:IS08B))

(17) hayta lo pgisha ha-shavua im Fridlander
was.3SF to-him meeting.3SF the-week with Fridlander
'He had a meeting with Fridlander this week.'
(= Blum-Kulka (1997:IS01A))

In the normative construction the agreeing existential predicate precedes its nominal dependent. This word order is obligatory in this case, thus eliminating one subject property of the 'subject' (i.e. preverbal position). *Yesh* appears in its inflected form in present tense existentials, while the use of the inflected form of *yesh* in the possessives is of a literary register, and is not used in everyday speech. As for case, it is not possible to ascertain the case of the dependent as it is always indefinite. When the NP is definite, an alternative constructions, described presently, is used.

Haya and *yesh* may also appear in a construction in which the predicate is marked with impersonal agreement and thus does not agree with the 'subject'. In past and

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future tense the use of impersonal *haya* is by no means normative, yet it is becoming more and more acceptable in colloquial Hebrew. As an example, consider the existential construction in (18) and the possessive in (19), both with 3SF 'subjects'.

(18) (ani xoshev she-)haya shama xaluda
I think.SM that-was.3SM there rust.3SF
'I think that there was rust there.'
(attested example)

(19) haya la-nu mishpaxa me'araxat
was.3SM to-us family.3SF host.3SF
'We had a host family.'
(= Blum-Kulka (1997:IS05B))

Agreement markings on *yesh* are morphologically distinct from ordinary verbal agreement markings. In addition, when used impersonally, *yesh* remains uninflected, in contrast to ordinary verbs, which exhibit 3SM agreement.[10] The construction with uninflected *yesh* is the unmarked option for expressing existence and possession in present tense. Examples are given in (20)–(21).

(20) yesh eze makela me-sfarad
is some chorus.3SF from-Spain
'There is some chorus from Spain.'
(= Blum-Kulka (1997:IS08B))

(21) yesh le-Meirav xavera she-lomedet po...
is to-Meirav friend.3SF that-studies here...
'Meirav has a friend who studies here...'
(= Blum-Kulka (1997:IS08B))

[10]The impersonal (uninflected) form of *yesh* is glossed in this study as 'is'.

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These constructions are referred to as VS_{nonagr} (for existentials) and VDS_{nonagr} (for possessives), in distinction from VS_{agr} and VDS_{agr}, in which the initial verb agrees with the 'subject'. The 'subject' in these constructions does not exhibit the word order and agreement characteristics of prototypical subjects. Case marking cannot be ascertained in examples such as (18)–(21), where the dependent is indefinite and the accusative marker *et* cannot be used. Nevertheless, in certain circumstances a definite NP can be used in this construction, as can be seen in the existential and possessive examples below ((22) and (23), respectively):[11]

(22) (gam ba-shavua she-'avar) haya bidiyuk et ota ha-ba'aya
also in-the-week that-passed was.3SM exactly ACC same the-problem.3SF
'There was the exact same problem last week too.'
(attested example)

(23) haya la-nu ba-bayit et ha-sipur ha-ze be-meshex shanim
was.3SM to-us in-the-house ACC the-story.3SM the-this in-duration years
'We had this issue in our house for years.'
(= Blum-Kulka (1997:IS04))

The 'subject' in these sentences is unquestionably marked as definite by the definite prefix *ha-*. Moreover, it is preceded by the accusative case marker *et*. It is interesting to note that this construction is rather unexpected in light of Burzio's generalization, which states that a verb which lacks an external argument fails to assign accusative case.[12]

[11]The attested example in (22) is not strictly V1, since the verb is preceded by an adverbial. Nevertheless, the sentence is just as grammatical with the same adverbial following the 'subject' *ha-ba'aya* ('the-problem').

[12]Culicover (1997:109) makes a similar point, also involving existential constructions in certain varieties of Spanish.

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Unaccusatives

Turning now to the unaccusatives, the normative and unequivocally acceptable environment for unaccusative verbs groups them with the unergative verb class. Thus, the 'subject' of the unaccusatives exhibits all subject coding properties in the subject-initial construction (24), and lacks only the positional property in the VS_{agr} construction (25).

(24) ha-nura nisrefa
the-lightbulb.3SF burned.3SF
'The light bulb burned out.'

(25) nisrefa ha-nura
burned.3SF the-lightbulb.3SF
'The light bulb burned out.'
(attested example)

In addition, in distinction from the unergatives and on a par with the existentials, the unaccusatives license the occurrence of a PD. Consequently, they can appear in the VDS_{agr} construction. Examples are given in (26)-(27).

(26) ko'evet li ha-beten
hurts.3SF to-me the-stomach.3SF
'My stomach hurts.'

(27) nikre'u li ha-mixnasayim
tore.3PM to-me the-pants.3PM
'My pants tore.'

Similarly to the existentials, unaccusatives may also appear in the VS_{nonagr} and VDS_{nonagr} constructions, in which the verb exhibits invariant 3SM morphology. Examples are given in (28) and (29).

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(28) nish'ar kama tapuxim
remained.3SM some apples.3PM
'There are some apples left.'

(29) nish'ar le-dani kama tapuxim
remained.3SM to-Danny some apples.3PM
'Danny has some apples left.'

The impersonal constructions with unaccusatives are more stigmatized than their existential and possessive counterparts, yet they are attested in everyday speech. Thus, although the acceptability of (28) and (29) is questionable, the acceptability of these examples is clearly distinct from that of unquestionably ungrammatical sentences such as (30), where an impersonal verb follows the subject.

(30) *kama tapuxim nish'ar
some apples.3PM remained.3SM
('There are some apples left.')

The case of the postverbal 'subject' in this construction can only be determined with definite NPs. As this is a stigmatized constructions, examples are more difficult to come by, and even more so for definite subjects.[13] Nevertheless, the picture that emerges from the data is not unequivocal. There exist examples of accusative postverbal 'subjects' (31), as well as 'subjects' marked with nominative case (32)–(33).[14]

(31) katuv et kol ha-dvarim ha-'ele ba-'iton
written.SM ACC all the-things.3PM the-those.3PM in-the-paper
'All these things are written in the paper.'

(32) nishpax ha-mayim
spilled.3SM the-water.3PM
'The water spilled.'

[13]The topic of the definiteness of the 'subject' is discussed extensively in subsequent chapters.

[14]The construction illustrated in (31) seems to be restricted to a fixed set of predicates. Shlonsky (1987) refers to Shoshani 1980 regarding this construction. Unfortunately I could not get hold of it.

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(33) ko'ev li ha-beten
hurts.3SM to-me the-stomach.3SF
'My stomach hurts.'

Thus, the 'subjects' of the construction exemplified by (32) and (33) retain one subject property—their nominative case. Accusative 'subjects', on the other hand, exhibit none of the coding properties associated with MH subjects.

2-place predicates

2-place predicates, too, may appear in inverted construction. One type of construction is referred to by Shlonsky (1987) as 'triggered inversion' (TI). TI, unlike the verb-initial constructions discussed above, is similar to V2 constructions in Germanic, as some constituent (the *trigger*) precedes the verb. The existence of a clause-initial trigger is what distinguishes TI from verb-initial constructions, referred to by Shlonsky as 'free inversion' (FI). Examples of TI are given in (34). Note that (34c), where the verb is clause-initial, is ungrammatical. Moreover, the inverted subject must occur immediately following the verb, ruling out the VOS order in (34d).

(34) a. etmol katav dani shlosha mixtavim
yesterday wrote.3SM Danny three letters
'Yesterday Danny wrote three letters.'

b. et ha-mixtavim katav dani etmol
ACC the-letters wrote.3SM Danny yesterday
'Danny wrote the letters yesterday.'

c. *katav dani shlosha mixtavim/et ha-mixtavim etmol
wrote.3SM Danny three letters/the letters yesterday

d. *etmol katav shlosha mixtavim dani
yesterday wrote.3SM three letters Danny

Triggers can be temporal adverbs (34a), direct objects (34b), indirect objects, negative phrases, wh-expressions, etc. In short, anything that can appear clause-initially can trigger inversion. However, the occurrence of a non-subject clause-initial

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constituent does not necessarily imply inversion. Thus, the non-inverted counterparts of (34a-b) are perfectly grammatical. As TI is not a V1 construction, it is not the focus of this study, yet it is mentioned in comparison with the V1 constructions under discussion.

The verb-initial structure in (34d) is ungrammatical, yet examples of clauses with VOS word order can be found in the language. This type of construction, referred to here as 'VOS' is, to the best of my knowledge, not discussed in the literature. Nevertheless, I found numerous examples of VOS sentences.[15]

The classification of the postverbal element in VOS as 'O' does not imply that it is a direct object, nor that it is strictly subcategorized for. In fact, what I refer to as the O argument in the VOS construction is found to be of different lexical and syntactic categories. Following are examples of a direct object (35), NP adverbial (36), PP[on] (37), PP[from] (38)-(39), and PP[to] (40).

(35) aktsa oti dvora
stung.3SF ACC.1S bee.3SF
'A bee stung me.'

(36) karta kan te'una
occurred.3SF here accident.3SF
'An accident occurred here.'
(= Shlonsky's (1987) ex. 7-34)

(37) nafla alai kufsa
fell.3SF on-me box.3SF
'A box fell on me.'
(attested example)

[15]It is not the case that a VOS word order is always possible. The licensing conditions of VOS are discussed in chapter 5.

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(38) noflim mi-ze bgadim
fall.PM from-this clothes.3PM
'Clothes are falling out of it.'
(attested example)

(39) ...ki yotse mi-menu ha-avir
because come-out.3SM from.3SM the-air.3SM
'...because air is coming out of it.'
(attested example)

(40) ve-megia elai xavera she-lamada az latinit
and-arrives.3SF to-me friend.3SF that-studied.3SF then Latin
'and a friend who studied Latin at the time comes over.'
(= Blum-Kulka (1997:IS01B))

A final, yet important generalization regarding the VOS construction is that it always has a grammatical SVO counterpart, which is the 'unmarked' option. An analysis of the VOS construction is given in sections 4.4 and 5.3.

2.4 Summary

To conclude this chapter, I list each of the verb-initial constructions which are the topic of this work, along with an example sentence which is used in subsequent sections.

- VS_{agr}

(41) tilfenu ha-horim shelxa
telephoned.3PM the-parents.3PM your.2SM
'Your parents called.'

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- VS_{nonagr}

(42) nish'ar kama tapuxim
remained.3SM some apples.3PM

'There are some apples left.'

(= (28))

- VDS_{agr}

(43) nikre'u li ha-mixnasayim
tore.3P to-me the-pants.3PM

'My pants tore.'

(= (27))

- VDS_{nonagr}

(44) ko'ev li ha-beten
hurts.3SM to-me the-stomach.3SF

'My stomach hurts.'

(= (33))

- VOS

(45) aktsa oti dvora
stung.3SF ACC.1S bee.3SF

'A bee stung me.'

(= (35))

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Chapter 3

Head-Driven Phrase Structure Grammar (HPSG)—Background

The purpose of this chapter is to make this study accessible to readers not familiar with HPSG. For this reason, it focuses on issues that are relevant to the study, ignoring others, important as they may be. The version of HPSG which I assume in this study is referred to as 'constructional HPSG'. More specifically, it is 'standard HPSG' (Pollard & Sag 1994) augmented with the theory of constructions, as is presented in Sag 1997, and Minimal Recursion Semantics (Copestake *et al.* 1999, Pollard 1999).

HPSG is a declarative, monostratal (non-derivational) theory of grammar. The fundamental linguistic object in the theory is called a SIGN, and includes words, phrases, clauses, and sentences. Signs in HPSG are "structured complexes of phonological, syntactic, semantic, discourse, and other phrase-structural information" (Pollard & Sag 1994), modeled by FEATURE STRUCTURES (FSs). FSs are information-bearing objects that contain ATTRIBUTES (or FEATURES) and VALUES notated by Attribute-Value Matrices (AVMs). The theory defines the types of FSs that are necessary in order to model the language, and, for each attribute/feature, the types of values that it can have. Additionally, a set of constraints further restricts the potential

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linguistic objects.

The basic mechanism by which linguistic objects are related to each other is STRUCTURE-SHARING. Structure-sharing occurs when two paths in a feature structure lead to the very same (token-identical) node. As a result, the information content associated with that node is the "unification" of the information provided by the various shared paths. That is, unification merges consistent information from different sources. A linguistic expression is said to be grammatical when the information contributed by components of the linguistic object is compatible and can accumulate to form a complete description of the expression.

3.1 The lexical level

In what follows I first present the basic concepts and principles of HPSG by focusing on a concrete example—the sentence in (1).

(1) John eats vegetables.

A partial description of the lexical entry of the head of the clause, *eats*, is given in the AVM in (2). Note that features always appear in CAPS. The italicized label at the top left of a pair of square brackets indicates the *type* of the structure. Values of features can be atoms, such as $\left[\text{PERSON } \textit{3}\right]$, or FSs, such as the value of AGR in (2) below. An additional case is one where the value of a feature is left underspecified, such as in $\left[\text{HEAD } \textit{noun}\right]$, where *noun* is a type of a FS. Boxed numbers, or tags, are used to indicate structure-sharing with another feature. Thus, two FS with identical tags are token-identical.

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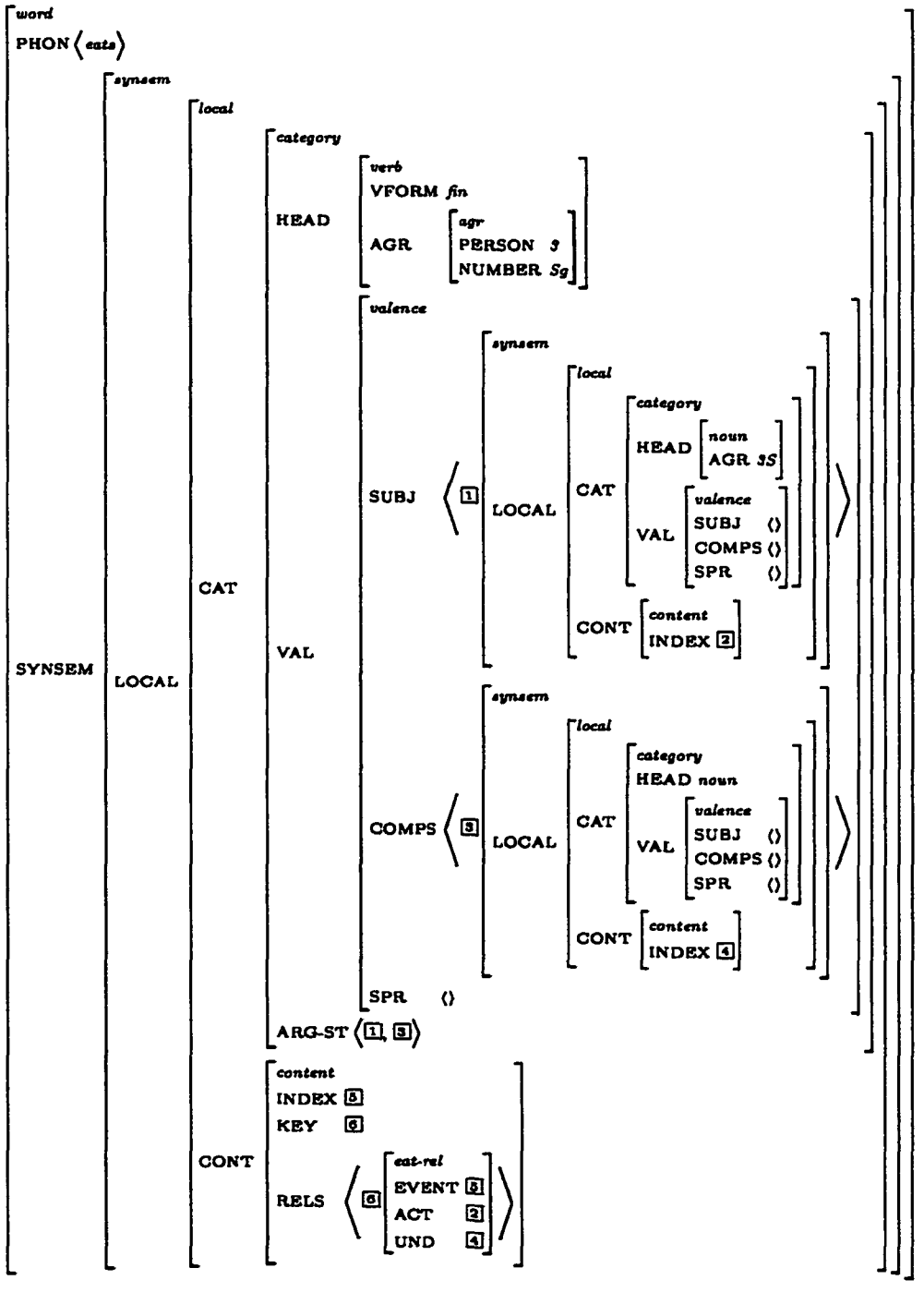
(2)



A representation of *eats* is presented in (2). The first feature in the description of a sign in general, and a *word* in particular, is PHONOLOGY (PHON). Since phonology is not of a concern here, the value of PHON in this work is limited to the orthography of the sign, for English, and its phonetic transcription, for Hebrew. At the same level

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of PHON is the feature SYNSEM, in which the syntactic and semantic properties of the sign are defined. SYNSEM is further divided into LOCAL and NONLOCAL features. Nonlocal features are associated with long distance dependency constructions, such as extraction and topicalization. Since these issues are mostly not relevant to the current study, I omit them when possible for ease of exposition. LOCAL features are divided into CATEGORY (CAT) and CONTENT (CONT), the former associated with syntax and the latter, with semantics.

The first feature in CAT, the HEAD feature, contains part of speech and agreement properties.[1] The verb *eats* in our example is a finite 3rd person singular verb. The values of PERSON and NUMBER are atoms. The VALENCE (VAL) feature consists of SUBJECT (SUBJ), COMPLEMENTS (COMPS), and SPECIFIER (SPR), defining the verb's dependents. The value of each of these features is defined to be a list of SYNSEM objects. In the case of transitive *eats*, the value of both SUBJ and COMP is a list with a single NP. A specifier is not subcategorized for, hence the empty list ($\langle\rangle$). Restrictions on dependents are encoded in the description of the SYNSEMs in their respective list. Thus, while the verb dictates restrictions on the agreement features of its subject (i.e. $\left[\text{HEAD}\left[\begin{array}{l}\textit{noun}\\ \text{AGR } \textit{3S}\end{array}\right]\right]$), its only requirement of its complement is that it be a noun (i.e. $\left[\text{HEAD } \textit{noun}\right]$).

The next feature in CAT is ARGUMENT-STRUCTURE (ARG-ST), which contains a list of the verb's dependents, listed in increasing order of obliqueness.[2] The ARG-ST list in (2) contains two boxed numbers (or 'tags'), each referring to a SYNSEM of a dependent. In the example above, $\boxed{1}$ is structure-shared between the first element of ARG-ST and the single element in the SUBJ list of the verb, thus indicating token-

[1]The inclusion of agreement features in the HEADs of verbs is a deviation from standard HPSG (Pollard & Sag 1994) and is discussed in more detail in section 4.2.3.

[2]The motivation behind the apparent redundancy of using both VAL and ARG-ST is discussed in section 4.2.1.

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identity.

The CONTENT feature of signs defines their semantic content. The type of semantic representation that I adopt in this work is Minimal Recursion Semantics (MRS) (Copestake *et al.* 1999, Pollard 1999).[3] The value of the CONTENT of verbs contains three features: INDEX, KEY, and RELATIONS (RELS). The value of RELS is a list of semantic relations. In our example the list contains one relation, *eat-rel*, with three arguments. The ACTOR (ACT) is identified as the subject by its token-identity with the INDEX value of the subject [2], while the UNDERGOER'S (UND) value [3] is identical to the INDEX of the complement. Thus, the semantic role of the subject is 'actor', while the complement is the 'undergoer'. The KEY feature is used to pick out the key semantic relation among the RELS list.[4] The INDEX feature's value is identical to the Davidsonian EVENT variable of the key relation, [5] in our case.

In order to facilitate the exposition and to focus on the relevant issues, I use an abbreviated style of description, including only the important features. Thus, the abbreviated AVM of the lexical entry above is given in (3).

[3]In my representation I ignore quantification, as it is not relevant to the proposed analysis.

[4]MRS employs a labeling mechanism, not shown here, in which every REL in an MRS list is linked to another REL. The 'chain' is headed by the KEY REL.

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(3)
$$\left[\begin{array}{l} \textit{word} \\ \text{PHON}\ \langle \textit{eats} \rangle \\ \text{SYNSEM}\ \left[\text{LOCAL}\ \left[\begin{array}{ll} \text{CAT} & \left[\begin{array}{ll} \text{HEAD} & \left[\begin{array}{ll} \textit{verb} & \\ \text{VFORM} & \textit{fin} \\ \text{AGR} & \textit{3S} \end{array}\right] \\ \text{VAL} & \left[\begin{array}{ll} \text{SUBJ} & \langle \boxed{1} \rangle \\ \text{COMPS} & \langle \boxed{3} \rangle \\ \text{SPR} & \langle\rangle \end{array}\right] \\ \text{ARG-ST} & \langle \boxed{1}\ \text{NP}_{\boxed{2}},\ \boxed{3}\ \text{NP}_{\boxed{4}} \rangle \end{array}\right] \\ \text{CONT} & \left[\begin{array}{ll} \text{INDEX} & \boxed{5} \\ \text{RELS} & \left\langle \left[\begin{array}{ll} \textit{eat-rel} & \\ \text{EVENT} & \boxed{5} \\ \text{ACT} & \boxed{2} \\ \text{UND} & \boxed{4} \end{array}\right] \right\rangle \end{array}\right] \end{array}\right] \end{array}\right]$$

Note that 'NP' is shorthand for a sign whose HEAD feature is *noun*. In ARG-ST the boxed numeral preceding the NP refers to the SYNSEM value. The subscripted boxed numeral in $\text{NP}_{\boxed{2}}$ refers to its INDEX value.

Not all the information defined in the lexical entry of *eats* is specific to this verb. In fact, most of the information is shared by verbs in general, and transitive verbs in particular. The architecture of HPSG provides a way of capturing generalizations and avoiding redundancy. This is achieved by way of organizing types in hierarchies where supertypes dominate subtypes. The domination relationship in the hierarchy represents subsumption. Thus, subtypes are more detailed than their supertypes, yet they inherit all the information specified for their supertypes. A very simple lexical hierarchy is given in (4).[5]

[5]The simplified hierarchy is given for explanatory reasons. A more elaborate lexical hierarchy is presented in 4.2.3.

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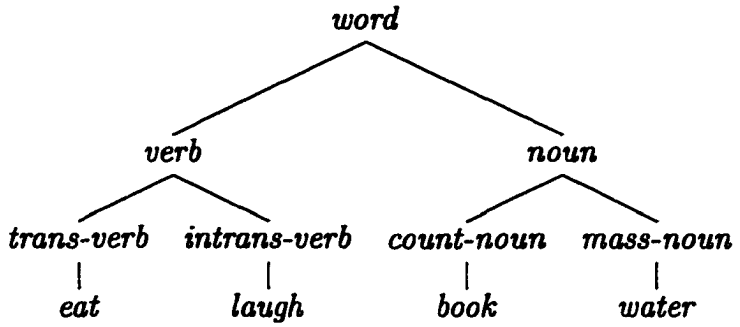
(4)



Abstracting away from tense and agreement, the verb *eat*, by virtue of being a subtype of *verb*, is defined as $\left[\text{HEAD } \textit{verb}\right]$. The particular valence pattern which we saw in the lexical entry above (i.e. NP subject and NP complement) is shared by all transitive verbs (*trans-verb*). The only item-specific information that needs to be specified for the verb is its semantic content, in the form of the relation *eat-rel*.

3.2 The phrasal level

The combination of lexical items is licensed by phrases. Two types of phrases are required to license the example sentence in (1): *hd-comp-ph* and *hd-subj-ph*. A simplified syntactic tree is given in (5).[6]

[6]'SS' in this tree is an abbreviation for 'SYNSEM'.

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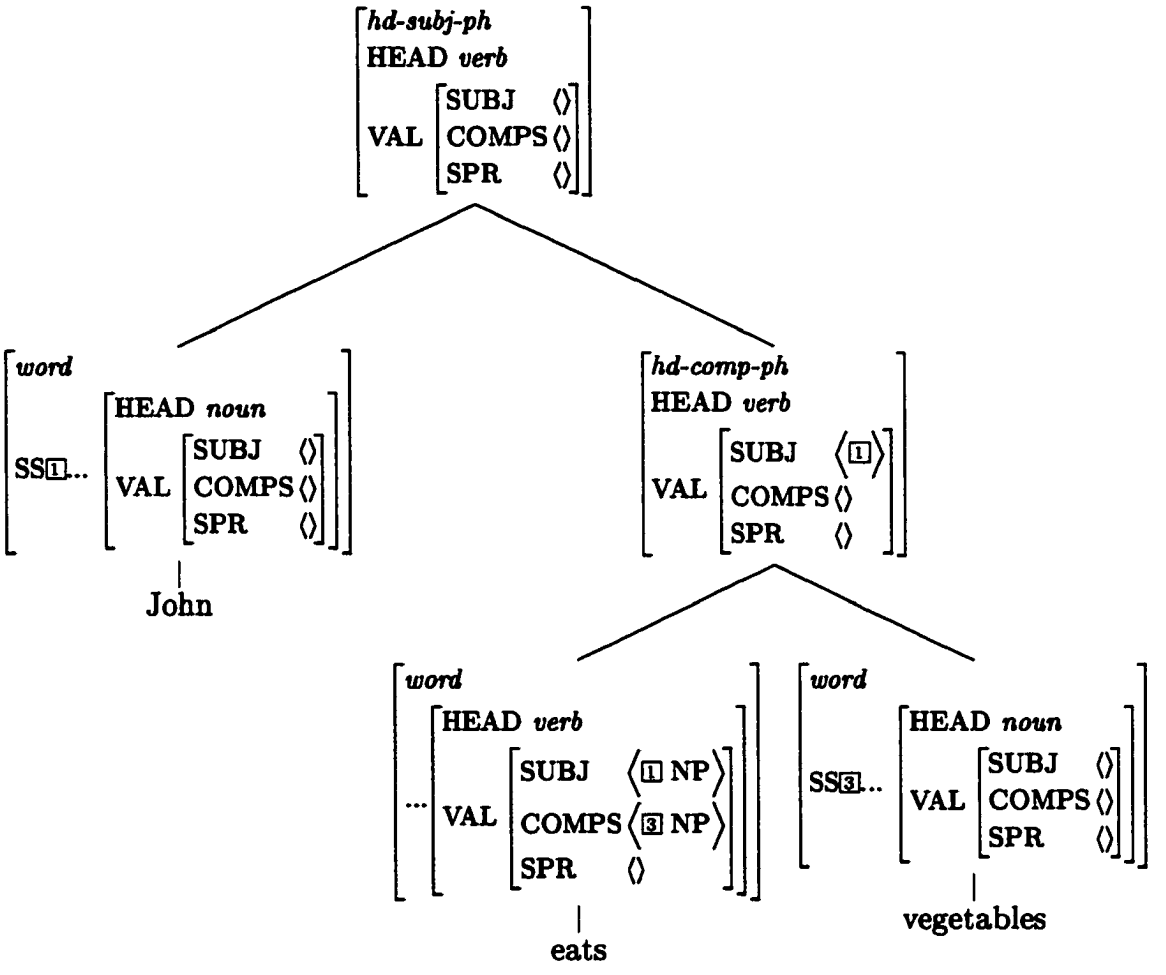
(5)



The terminal nodes in the tree are lexical items of type *word*, while the nonterminal ones are *phrases*. Phrases in HPSG are 'sisters' of words in the type hierarchy, both being subtypes of *sign*. Phrases, in distinction from words, have two additional features: HEAD-DAUGHTER (HD-DTR) and NON-HEAD-DAUGHTERS (NON-HD-DTRS), not included in the schematic tree above, which encode the syntactic tree structure of the phrase.[7]

HPSG grammars are declarative, as opposed to derivational. For this reason, there is no particular order according to which the elements in the tree are combined. A

[7]The conventional tree notation is used for the sake of familiarity. The AVM equivalent of the tree in (5) is given in (i).

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sentence is grammatical as long as its description is consistent with phrase types and other principles (to be discussed later). Nevertheless, it is more intuitive to describe the syntactic structure of (5) in a bottom-up fashion.

Starting from the head of the clause, the verb *eats* subcategorizes for an NP subject [1] and an NP complement [3]. It 'first' combines with the NP complement to produce a *hd-comp-ph* verb phrase. In the resulting VP, the COMPS requirement is cancelled off, hence the empty list. The VP then combines with the NP tagged [1] to satisfy the subject requirement. This combination is licensed by a phrase of type *hd-subj-ph*. The topmost node is a fully saturated verb phrase, in which the value of all the valence features is the empty list.

Now, turning from the specific example to a more general perspective, we review the types of phrases assumed in HPSG and their representation. Phrase types in HPSG are classified in a hierarchy, similar to the one described for lexical items above. Sag's (1997) phrase-type hierarchy is given in (6), with the addition of the *hd-subj-comp-ph*.

(i)
$$\left[\begin{array}{l} \textit{hd-subj-ph} \\ \text{SS}\,|\,\ldots\,|\,\text{CAT} \left[\begin{array}{l}\text{HEAD } \textit{verb} \\ \text{VAL } \left[\begin{array}{l}\text{SUBJ } \langle\rangle \\ \text{COMPS } \langle\rangle\end{array}\right]\end{array}\right] \\ \text{HD-DTR} \left[\begin{array}{l} \textit{hd-comp-ph} \\ \text{SS}\,|\,\ldots\,|\,\text{CAT} \left[\begin{array}{l}\text{HEAD } \textit{verb} \\ \text{VAL } \left[\begin{array}{l}\text{SUBJ } \langle \boxed{1} \rangle \\ \text{COMPS } \langle\rangle\end{array}\right]\end{array}\right] \\ \text{HD-DTR} \left[\begin{array}{l} \textit{word} \\ \text{SS}\,|\,\ldots\,|\,\text{CAT} \left[\begin{array}{l}\text{HEAD } \textit{verb} \\ \text{VAL } \left[\begin{array}{l}\text{SUBJ } \langle \boxed{1} \rangle \\ \text{COMPS } \langle \boxed{3} \rangle\end{array}\right]\end{array}\right]\end{array}\right] \\ \text{NON-HD-DTR} \langle \boxed{3} \rangle \end{array}\right] \\ \text{NON-HD-DTRS} \langle \boxed{1} \rangle \end{array}\right]$$

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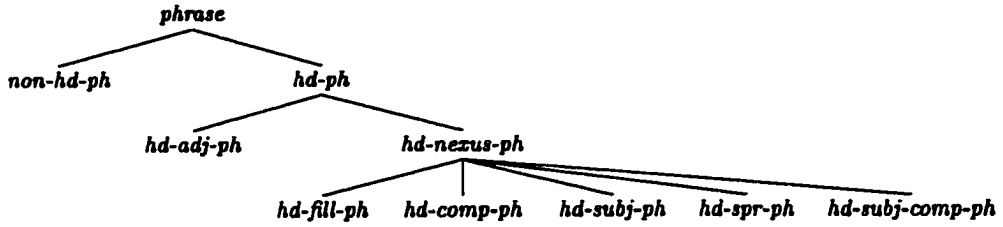
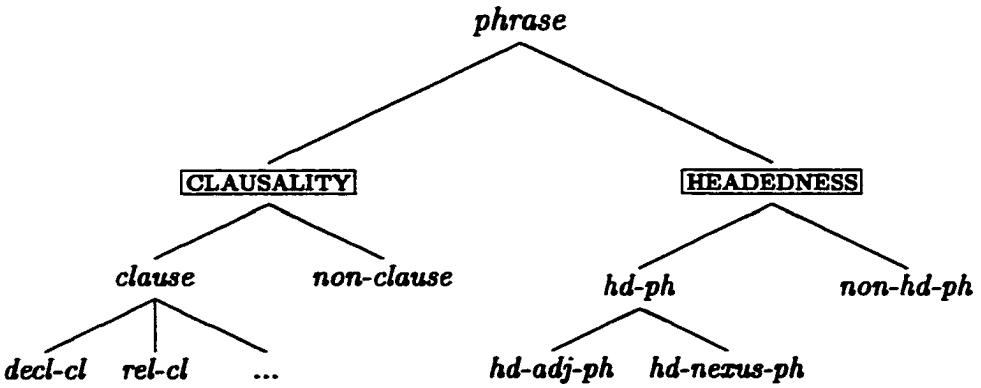
(6)



Phrases are classified as either headed phrases (*hd-ph*) or non-headed phrases (*non-hd-ph*). Headed phrases are further broken down into two types: head-adjunct phrase (*hd-adj-ph*) and head-nexus phrase (*hd-nexus-ph*), which in turn dominates five more specific phrase types. By defining a supertype such as *hd-nexus-ph*, properties shared by the five subtypes as well as constraints which apply to them can be stated only once as those pertaining to the supertype. Whatever applies to a supertype is 'inherited' by its subtypes.

For the sake of completeness, it should be mentioned that the hierarchy presented above is only a part of the hierarchy proposed by Sag (1997). The more complete hierarchy is a multi-inheritance hierarchy in which types may inherit from more than one supertype. The additional dimension proposed by Sag is CLAUSALITY. Thus, phrase types are cross-classified in terms of 'headedness', as is described in (6), as well as in terms of clausality. The top levels of the augmented hierarchy are given in (7).[8]

(7)



[8]The boxed nodes CLAUSALITY and HEADEDNESS are partition labels and do not correspond to subtypes. Rather, they partition the subtypes of *phrase* so that no type can ever inherit from more than one type in the same partition.

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The two types of phrases required for the licensing of the sentence in (1), as well as other headed phrases are subject to a number of general principles (Sag 1997).

- The Head Feature Principle (HFP), which defines that the HEAD value of the phrase be structure-shared with that of the head daughter.[9]
- The Valence Principle (VALP), which ensures that by default the valence features of a phrase be identical to those of its head daughter.
- The Empty COMPS Constraint (ECC) requires that by default the head daughter's COMPS list be empty.

It should be noted that the latter two constraints are default constraints which can be overridden by subtypes of *hd-ph*.

The four phrase types that are relevant for this work are: *hd-subj-ph*, *hd-comp-ph*, *hd-subj-comp-ph*, and *hd-filler-ph*. In what follows I'll give a brief description of each phrase type.[10]

The *head-comp* phrase type is an instance of *hd-nexus-ph* which overrides the default Empty COMPS Constraint by defining the COMPS list of the head daughter to be non-empty. It licenses the combination of a *head* with all its complements. This is reflected in the token-identity of the elements in the COMPS list with the SYNSEMS of the non-head daughters. The COMPS list of the *head-comp-ph* phrase is empty, as the COMPS requirement is satisfied. The canceling out of valence requirements is an override of the Valence Principle, as well. It is important to note that this description is abstract—the syntactic category of the head is not specified, and neither is the number of complements.

[9]The 'translation' of this principle into more formal notation is as follows.

(i) $\textit{hd-ph} \Rightarrow \begin{bmatrix} \text{HEAD} & \boxed{1} \\ \text{HD-DTR} & \left[\text{HEAD } \boxed{1}\right] \end{bmatrix}$

[10]In the following tree diagrams H, S, C stand for head, subject, and complement, respectively.

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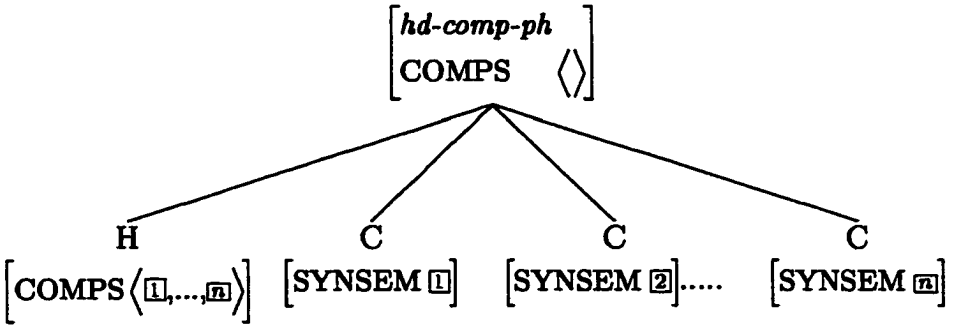
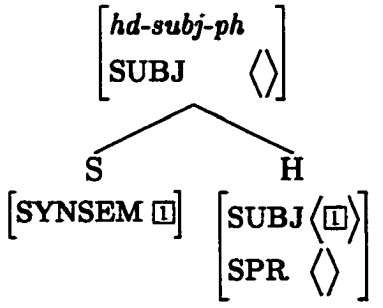
(8) Sag's (1997) Head-complements phrase



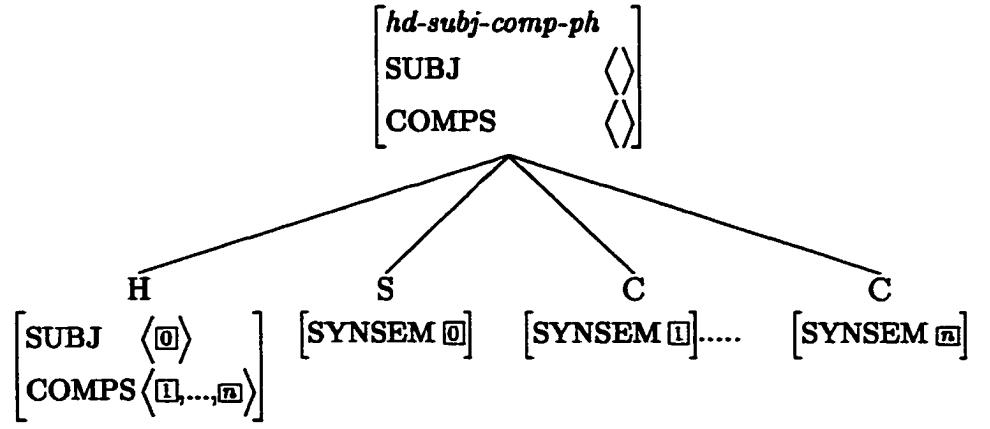
The head-subject phrase (*hd-subj-ph*) specifies that its non-head daughter satisfies the SUBJ requirement of the head daughter.

(9) Sag's (1997) Head-subject phrase



The *hd-subj-comp-ph* phrase type is analogous to Pollard & Sag's (1994) Schema 3, which accounts for English inverted sentences.

(10) Pollard & Sag's (1994) Head-subject-complement phrase



Hd-subj-comp-ph is a fully saturated phrase which results from the simultaneous combination of a lexical head with its SUBJ and COMPS requirements.

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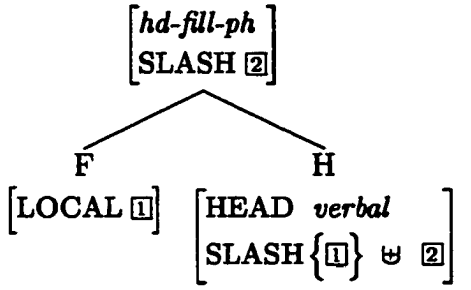
The head-filler phrase type *hd-fill-ph* has a verbal head-daughter which has at least one 'slashed' constituent, tagged [1], and a non-head daughter, the filler daughter, whose LOCAL value is structure-shared with one of the head-daughter's SLASH elements.[11] The combination of a 'slashed' verbal phrase and a filler results in the binding of the SLASH and the elimination of the element corresponding to the filler from the SLASH set of the *hd-fill-ph* phrase.[12]

(11) Sag's (1997) Head-filler phrase



The semantic information of phrases is a function of the semantics of their components. Under MRS, the percolation of semantic information from lexical items to phrases is subject to the following two principles (Pollard 1999).

- The RELS principle defines the RELS value of a phrase to be the union of the RELS values of its daughters.
- The KEY principle defines the KEY value of a headed phrase to be identical to that of its head daughter.

Returning to our initial example, following is a description of the VP *eats vegetables*, which illustrates most of the concepts and principles listed above.

[11] ⊎ designates disjoint set union.

[12] A simple, often cited example of a head-filler phrase is *Bagels, I like*, in which the direct object of the matrix verb is slashed and bound off with *Bagels*.

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(12)
$$\left[\begin{array}{l}\textit{hd-comp-ph}\\ \text{PHON } \boxed{10}\langle \textit{eats}\rangle \oplus \boxed{11}\langle \textit{vegetables}\rangle\\ \text{SYNSEM}\left|\text{LOCAL}\left[\begin{array}{ll}\text{CAT} & \left[\begin{array}{ll}\text{HEAD } \boxed{7} & \left[\begin{array}{l}\textit{verb}\\ \text{VFORM } \textit{fin}\\ \text{AGR } \quad \textit{3S}\end{array}\right]\\ \text{VAL} & \left[\begin{array}{ll}\text{SUBJ} & \langle \boxed{1}\rangle\\ \text{COMPS} & \langle\rangle\end{array}\right]\end{array}\right]\\ \text{CONT} & \left[\begin{array}{ll}\text{INDEX } \boxed{5}\\ \text{KEY } \quad \boxed{6}\\ \text{RELS } & \boxed{8}\left\langle \boxed{6}\left[\begin{array}{l}\textit{eat-rel}\\ \text{EVENT } \boxed{5}\\ \text{ACT } \quad \boxed{2}\\ \text{UND } \quad \boxed{4}\end{array}\right]\right\rangle \oplus \boxed{9}\left\langle \left[\begin{array}{l}\textit{veggies-rel}\\ \text{INST } \boxed{4}\end{array}\right]\right\rangle\end{array}\right]\end{array}\right]\right.\\ \text{HD-DTR}\left[\begin{array}{ll}\text{PHON } \boxed{10}\\ \text{SYNSEM}\left|\text{LOCAL}\left[\begin{array}{ll}\text{CAT} & \left[\begin{array}{ll}\text{HEAD } \quad \boxed{7}\\ \text{VAL} & \left[\begin{array}{ll}\text{SUBJ} & \langle \boxed{1}\rangle\\ \text{COMPS} & \langle \boxed{3}\rangle\end{array}\right]\\ \text{ARG-ST} & \langle \boxed{1}\ \text{NP}_{\boxed{2}}, \boxed{3}\ \text{NP}_{\boxed{4}}\rangle\end{array}\right]\\ \text{CONT} & \left[\begin{array}{ll}\text{INDEX } \boxed{5}\\ \text{KEY } \quad \boxed{6}\\ \text{RELS } \quad \boxed{8}\end{array}\right]\end{array}\right]\right.\end{array}\right]\\ \text{NON-HD-DTRS}\left\langle \left[\begin{array}{l}\text{PHON } \boxed{11}\\ \text{SYNSEM } \boxed{3}\left[\text{LOCAL}\left|\text{CONT}\right|\text{RELS } \boxed{9}\right]\end{array}\right]\right\rangle\end{array}\right]$$

The VP *eats vegetables* is a *hd-comp-ph* phrase. Its HD-DTR is the verb *eats*, while its NON-HD-DTR is the NP complement *vegetables*. The value of HD-DTR in (12) is an even more abbreviated description of the lexical entry of *eats*. The information included here for NON-HD-DTRS is only that which is passed on to the phrase. Its phonological content, tagged [11], is appended to that of the head daughter [10] in the PHON feature of the phrase.[13] In addition, according to the RELS principle, the RELS

[13]The operator for the concatenation of lists is ⊕.

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value of the phrase is the concatenation of the RELS list of the non-head-daughter, tagged [9], with the RELS of the head-daughter [8].[14] The 'contribution' of the head daughter to the phrase is the HEAD feature, as is required from the Head Feature Principle. Thus, the HEAD feature of the phrase is equal to that of the HD-DTR, both tagged [7]. In addition, the KEY value of the phrase [6] is identical to that of the head daughter, in accordance with the KEY principle. Consequently, their INDEX value is identical too. The major role that the head daughter plays in the amalgamation of information is what makes HPSG 'head-driven'.

3.3 Summary

This chapter presents only a sketch of HPSG. The key concepts and principles described here serve as the foundations for the analysis that is developed in this study. In the following chapter I propose a syntactic analysis of V1 constructions in Modern Hebrew within the HPSG framework. HPSG is revisited later, in chapter 6, when the syntactic analysis proposed in chapter 4 is augmented with the information packaging analysis presented in chapter 5.

As I hope to show in this study, HPSG's multidimensional, constraint-based architecture lends itself well to an analysis of the constructions under discussion. The structuring of the lexicon in a multiple-inheritance hierarchy is particularly suitable for expressing generalizations that apply to subsets of the lexicon. The multifaceted approach to subjecthood in HPSG is appropriate for accounting for the non-prototypical subjects of V1 constructions. The constructional approach provides a way of attributing to constructions properties which cannot be computed from their components. Finally, a multidimensional approach to grammar allows us to consider linguistic phenomena from different aspects of the grammar and their interface.

[14] In this implementation the value of RELS is a list of relations, rather than a set. For this reason, the RELS value of the phrase is a ***concatenation*** of its daughters' RELS, as opposed to a ***union***, as is indicated in the RELS principle.

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Chapter 4

The syntax of verb-initial constructions in Modern Hebrew

In this chapter I adopt Shlonsky's (1987) strategy in his analysis of Hebrew inversion: "...to idealize inversion and assume that it is always possible IN PRINCIPLE" (p. 90). Thus, the goal of this chapter is to provide an account of only the syntactic aspects of verb-initial construction in MH, couched in the HPSG framework. Nevertheless, verb-initial constructions are not "always possible". Chapter 5 is dedicated to defining their licensing conditions.

The first section of this chapter reviews Shlonsky's transformational analysis of a subsection of the data. The second section addresses the question of the argument structure of verbs in MH verb-initial constructions and then provides an HPSG-based analysis of these verbs. In the third section I take a slight detour in order to provide an analysis of the Possessive Dative Construction (PDC) in MH. This is a necessary step, as the PDC plays a prominent role in V1 constructions. Finally, in section four, I put the pieces together and describe the types of phrases that are needed to license V1 in MH.

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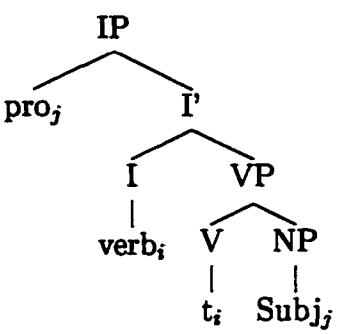
4.1 A transformational analysis of V1 in Modern Hebrew

An analysis of MH verb-initial constructions in the transformational grammar framework is proposed by Shlonsky (1987, 1997). The first step that Shlonsky takes is to distinguish between two notions of 'subject'—a semantic subject and a syntactic subject. Shlonsky assumes, in the spirit of the framework in which he works, that "...while not all sentences have semantic subjects, they all have syntactic subjects" (Shlonsky 1987:1). By 'syntactic subjects', Shlonsky refers to the subject POSITION, the specifier of IP, which must be occupied by an element that can be either expressed or unexpressed phonologically.

When the semantic subject does not occupy the subject position it is considered a 'displaced' subject. One such case is subject-verb inversion, where the verb precedes the semantic subject. Assuming that the verb occupies the V or I position at surface structure entails that the 'subject' must be a phonologically unexpressed element, possibly coindexed with a phonetically realized semantic subject 'lower' in the tree.

(1)



As was described in chapter 2, a number of inverted constructions are found in MH. Shlonsky distinguishes between two different types of inversion: TRIGGERED INVERSION (TI) and FREE INVERSION (FI). Triggered Inversion involves some constituent (the *trigger*) preceding the verb, similarly to V2 constructions in Germanic. An example of TI where the trigger is an adverbial is given in (2).

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(2) etmol katav dani shlosha mixtavim
yesterday wrote.3SM Danny three letters
'Yesterday Danny wrote three letters.'

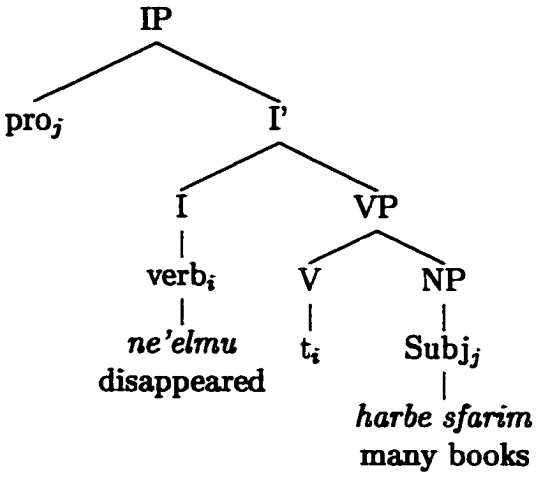
Free Inversion is referred to as 'free' since no constituent needs to precede the clause-initial verb. In what follows I review Shlonsky's analyses of two types of verb-initial constructions. The first type, referred to by Shlonsky as FI, is restricted to unaccusative, passive, and 'presentational' verbs.[1] The second type is the existential and possessive constructions.

4.1.1 Shlonsky's analysis of Free Inversion in Modern Hebrew

A prototypical case of FI is given in (3). The analysis that Shlonsky (1997) gives to FI in MH is illustrated in (4).

(3) ne'elmu harbe sfarim me-ha-sifriya
disappeared.3PM many books.3PM from-the-library
'Many books disappeared from the library.'
(= Shlonsky's (1997) ex. 8-45)

(4)



[1]This issue is discussed in detail in section 5.1.

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In his analysis, the postverbal (semantic) subject *sfarim* in (3) appears in its base (object) position and is coindexed with an expletive *pro* in subject position. Shlonsky claims that FI in MH is sensitive to the Definiteness Effect, which constrains the type of NPs that can appear as the complement to a verbal head. This, in his view, is strong evidence for positing that the postverbal subject in fact occupies the VP-internal complement position, where it is assigned its thematic role. Moreover, he maintains that the only verbs that are licensed in this construction are unaccusatives and passives, which do not have an external argument.

Since Shlonsky (1997) assumes that every sentence must have a (structural) subject, he posits a null expletive *pro* in subject (i.e. Spec-IP) position. This expletive subject is a bare NumP devoid of a DP layer and as such has no person features. It is coindexed with the postverbal subject, thus accounting for the subject-verb agreement which is checked in a Spec-head relationship under IP. In addition, the expletive *pro* checks the nominative features of I.

Shlonsky follows Belletti (1988) in assuming that the postverbal subject is licensed by virtue of the verb assigning it inherent ("partitive") case. This ability to assign partitive case is limited to unaccusatives and passives and for this reason, according to Shlonsky, only subjects of these verb types can remain in their base position. In cases where the postverbal is assigned accusative case and the verb has impersonal agreement, Shlonsky (1987) assumes that the verb is reanalyzed as an accusative-case assigner (instead of partitive case) and that the link/chain between the expletive and the postverbal subject is eliminated.

4.1.2 Shlonsky's analysis of the possessive construction

The existential and possessive constructions in MH are headed by the verb *yesh* in present tense and forms of the verb *haya* in past and future tense. The main idea behind Shlonsky's (1987) analysis of *yesh* is that it has two different 'guises'—possessive

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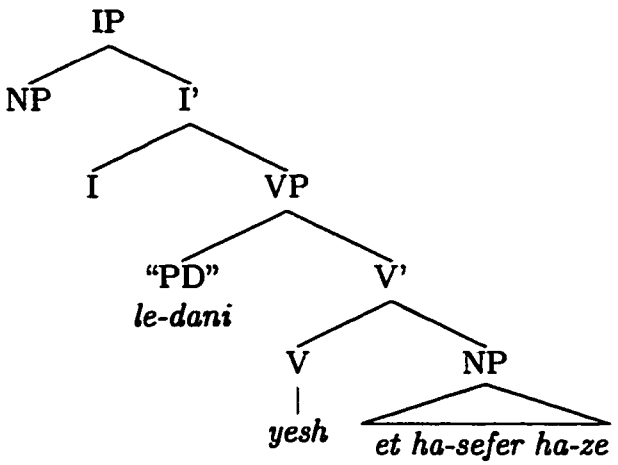
'have' and existential 'be'. Under his analysis, in the possessive construction the impersonal *yesh* takes a possessor dative subject and an accusative case marked theme object. Thus, the structure that Shlonsky assigns to the example sentence in (5) is given in (6).

(5) le-Dani yesh et ha-sefer ha-ze
DAT-Danny is ACC the-book.3SM the-this.3SM
'Danny has this book.'
(= Shlonsky's (1987) ex. 23b)

(6)



(= Shlonsky's (1987) ex. 38)

An alternative word order, exemplified by (7), is derived by the verb raising from V to I.

(7) yesh le-Dani et ha-sefer ha-ze
is DAT-Danny ACC the-book.3SM the-this.3SM
'Danny has this book.'

This construction is analogous to the English possessive construction (e.g. *Danny has a book*), where the possessor is the subject and the possessed is the object, the only difference being the case of the subjects in the two languages (i.e. nominative in English and dative in Hebrew). Shlonsky's main argument for the subject status

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of the PD is the fact that it can occur clause-initially and not be identified as a topic (5).[2] The PD, under his analysis, is an internal argument, thus analyzing *yesh* on a par with the unaccusatives. Nevertheless, 'unaccusative' is a misnomer in this case, as it does assign accusative case to its object.

The existential (locative) construction is more complex. Shlonsky distinguishes between three different instantiations. In the first, "the paradigm examples of the existential *yesh* construction" (Shlonsky 1987:1), *yesh* behaves like the English verb *be*. The theme argument is nominative, it appears in subject position, and it triggers agreement on the verb (8).

(8) ha-sefer ha-ze yeshno ba-sifriya ha-le'umit
the-book.3SM the-this.3SM is.3SM in-the-library the-national
'This book is (can be found) in the national library.'
(= Shlonsky's (1987) ex. 36a)

In this case, the VP-internal NP theme moves into the subject position, similarly to passive movement or raising. This instantiation is analogous to English unaccusatives. It should be noted that the fact that the NP theme is restricted in this case to definite NPs is not mentioned nor accounted for by Shlonsky.

The two additional instantiations are verb-initial constructions. The first construction is described by Shlonsky as 'quasi-possessive' and is exemplified by (9). The analysis which Shlonsky proposes for the quasi-possessives is given in (10).

(9) yesh et ha-sefer ha-ze / oto ba-sifriya ha-le'umit
is ACC the-book.3SM the-this.3SM / ACC.3SM in-the-library the-national
'This book/it is (to be found) in the national library.'
(= Shlonsky's (1987) ex. 33a)

[2]Shlonsky's evidence for the non-topic status of the clause-initial PD is from intonation and from a comparison with other types of datives, which are topics when they appear clause-initially

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(10) pro_i yesh book$_{ACC}$ [$_{PP}$ in the library]$_i$

(= Shlonsky's (1987) ex. 57)

The theme NP remains in situ, where it is assigned accusative case. The locative PP is coindexed with the subject *pro* and is "...interpreted as a clausal subject of a possessive *yesh* to the degree that it can mimic the semantics of possession or of 'belonging to'..." (p. 161). For this reason, according to Shlonsky, the locatives in this construction are restricted to those which can be construed as possessors. Thus, the analysis of the quasi-possessives is analogous to that of the possessives, with the locative PP playing the same syntactic role as the PD.

The second construction is purely existential and in it *yesh* is analogous to what Shlonsky assumes is the analysis of *be* in an English 'there'-sentence. More specifically, the complement of *yesh* is a small clause which replaces *pro* in subject position at LF, as is illustrated in (11). The difference between English and MH, in this case, is that English requires a phonologically expressed subject, hence the presence of the expletive *there*, while MH does not.

(11) *pro* yesh [$_{SC}$ such a book in the library]

(= Shlonsky's (1987) ex. 55a)

In this case the range of locative PPs that can appear in the small clause is not as restricted as in the former case, where the locative is coindexed with the subject *pro*, the reason being that the locative does not need to be compatible with a (quasi-)possession interpretation.

One issue that is not mentioned nor accounted for in this work is the complementary distribution of definite and indefinite themes in the existential construction. The theme-initial construction, exemplified in (8), is restricted to definite themes. Indefinite themes cannot appear clause-initially in the existential construction, as is illustrated by the ungrammatical (12).

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(12) *sefer yeshno al ha-madaf
book is.3SM on the-shelf

('There is a book on the shelf.')

Conversely, in the verb-initial construction, which Shlonsky attributes the structure in (11), the theme cannot be definite.[3]

(13) *yesh ha-sefer ha-ze ba-sifriya ha-le'umit
is the-book.3SM the-this.3SM in-the-library the-national

('This book is (to be found) in the national library.')

It is not clear from Shlonsky's (1987) text whether the underlying structure of the theme-initial construction is the one shown in (11) and whether the (definite) theme rises from the subject position of the small clause to assume the clausal subject position. If this is indeed the case, one may propose that due to the Definiteness Effect[4], a definite theme cannot remain in the VP-internal position (in the SC complement) and must 'escape' to the matrix subject position. Alternatively, definite themes can be licensed in the 'quasi-possessive' construction as accusative case marked objects.

The situation with the verbal forms of *haya* is slightly different. The main difference between possessives with *yesh* and those with the *haya* forms is that in the latter case the verb may agree with the theme rather than exhibit impersonal agreement.

(14) hayu le-dani sfarim
were.3PM to-Danny books.3PM

'Danny had books.'

(= Shlonsky's (1987) ex. 68a)

Nevertheless, impersonal agreement in this case is not ruled out, yet it is not as normative. In this case, when the theme is definite, it is (overtly) marked with accusative case, similarly to the possessive construction with *yesh*.

[3]While this sentence is grammatical according to the prescriptive grammar of MH, it is completely unacceptable in both spoken and literary MH.

[4]The Definiteness Effect is discussed in chapter 5.

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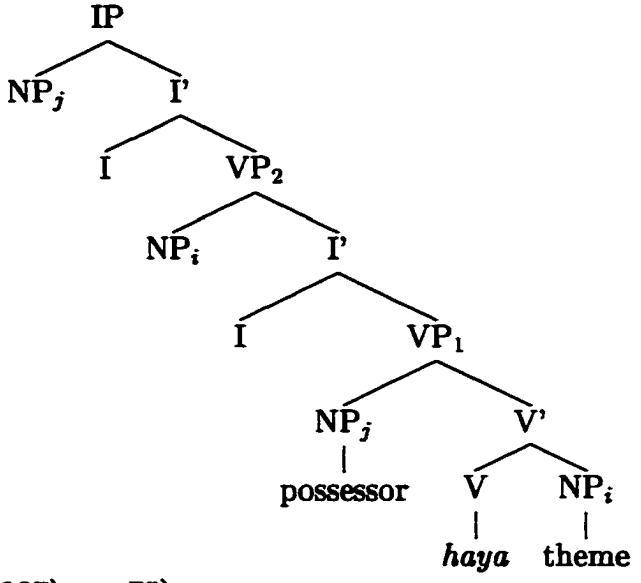
(15) a. haya le-dani sfarim
was.3SM to-Danny books.3PM
'Danny had books.'
(= Shlonsky's (1987) ex. 69a)

b. haya le-dani et ha-sfarim ha-elu
was.3SM to-Danny ACC the-books.3PM the-these
'Danny had these books.'
(= Shlonsky's (1987) ex. 71a)

The construction with the agreeing *haya* creates a problem for an analysis where the PD is a subject and the theme an object—how can the verb agree with the object?

Shlonsky's solution is that *haya*, unlike *yesh*, does not alternate between a 'have' form, where the subject is the possessor, and a 'be' form, where the subject is the possessed. Rather, *haya* assigns accusative case and has impersonal agreement, on a par with the possessive *yesh*. This accounts for the examples in (15). However, when the verb agrees with the theme, as is the case in (14), it is because "...the theme is a subject in some sense" (p. 168). In this case the verb projects a bi-clausal construction, illustrated in (16).

(16)



(= Shlonsky's (1987) ex. 75)

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The verb raises to I and agrees with the theme which is coindexed with the 'subject' of the lower VP. The clausal subject is an expletive that is coindexed with the possessor (indexed *j*).

4.1.3 Conclusion

As is obvious from the analysis presented above, cases of displaced subjects are very problematic for a theory that associates subjecthood with a universal (crosslinguistic) structural position. Shlonsky's solution, to distinguish between semantic subjects and syntactic subjects, is motivated only by theory-internal reasons. Consequently, Shlonsky posits a phonetically empty expletive (*pro*) subject in the case of free inversion. Moreover, subject-verb agreement is viewed in this theory as a specifier-head relation, yet the argument with which the verb agrees is the *semantic* subject, which is not located in the specifier position of IP, where agreement is checked. This entails an additional theory-internal solution—the coindexation between the expletive subject and the postverbal semantic subject (see (4) above).

An additional weakness of the proposed analysis is the failure to associate the possessive construction, where a PD appears with an existential predicate, with those constructions in which a PD appears with unaccusative verbs.[5]

(17) a. hayu le-dani shlosha balonim
were.3P to-Danny three balloons
'Danny had three balloons.'

b. hitpotsetsu le-dani shlosha balonim
popped.3P to-Danny three balloons.3PM
'Three balloons that belong to Danny popped.'

Shlonsky's analysis of (17a) is given in (16) above. Note, however, that in (17a) agreement is triggered by the clause-final NP (*shlosha balonim*) and not the one that

[5]The two cases are collapsed in the current proposal under a single construction—VDS.

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Shlonsky's analysis predicts (*le-dani*). The subjecthood of the possessor dative is expressed via its coindexation with the expletive in subject position. Now, although, at least on the surface, the sentence in (17b) is similar to the existential one, as far as I understand, in Shlonsky's analysis the PD in this case is not considered to be the subject. Moreover, the argument for attributing subjecthood to the PD is its preverbal position in sentences such as (5), where, in fact, the alternative (VDS) word order is just as 'natural' (cf. (7)).

In what follows I take the opposite direction from Shlonsky. Instead of starting out with a theory, I first step back and look at subject properties in MH from a typological perspective. Next, I set forth a proposal regarding the defining characteristics of subjects in MH, a proposal which I then represent in the framework of HPSG.

4.2 Argument structure and verb-initial constructions

Determining the argument structure of verbs is the first step in providing a syntactic analysis of a construction. However, as will become clear in this section, this is not a straightforward task when Modern Hebrew V1 constructions are considered. As was mentioned implicitly in previous sections, and will be now made explicit, the arguments which are assumed to be 'subjects' in V1 constructions are not prototypical subjects in the language. Even more so, the question of what constitutes a 'subject' or a 'prototypical subject' is one for which there is no simple answer, neither crosslinguistically, nor for MH.

In what follows I first briefly discuss the general notion of subject and then focus on MH and examine the syntactic identity of the arguments which are most likely to be 'subjects' in V1. Consequently, I argue that in MH only arguments which trigger verbal agreement are treated in the syntax as 'subjects'. Based on this, I subsequently

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provide an HPSG-based lexical description of the different types of verbs involved in verb-initial constructions.

4.2.1 On subjecthood

The question of what constitutes a subject is a complex one and has received much attention in the literature. Providing an answer to this question is not a goal of this work, yet in the process of providing an analysis of V1 it must be addressed. In what follows I first start with a typological approach and introduce Keenan's (1976) subject properties list (SPL) and hierarchies, which is later used as a guideline in an effort to determine the argument structure of the verbs in our constructions. Then, I shift to a formal framework, HPSG, and review its treatment of subjecthood.

The coding and behavior properties of subjects

In his attempt to arrive at a universal definition of 'subject', Keenan (1976) compiles a 30 item subject properties list (SPL). In addition, he distinguishes between semantically basic and non-basic sentences in a language. The set of subject properties in a given language is a subset of the SPL and is defined according to the properties that subjects of basic sentences have in the language. Keenan notes that cross-linguistically non-basic subjects (e.g. subjects of passive sentences) are never more subject-like (i.e. have more subject properties) than basic subjects. Based on this observation Keenan proposes the following hierarchy.

(18) The Promotion to Subject Hierarchy (PSH)

Coding Properties > Behavior and Control Properties > Semantic Properties

Within the coding properties, Keenan proposes the following sub-hierarchy:

(19) The Subject Coding Hierarchy (SCH)

position > case marking > verb agreement

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The prediction made by the PSH and SCH is that the subject properties which derived subjects exhibit are not arbitrary. Rather, if a derived subject in a particular language exhibits a certain property, it is predicted that it exhibits all the properties which appear higher than it in the hierarchy. Thus, for example, the subject of English passive sentences exhibits the coding, behavior, and control properties of subjects of basic sentences. It does not, however, exhibit the semantic properties associated with basic subjects, namely agentivity. In terms of the SCH, a derived subject cannot trigger agreement with the verb if it does not have the position and case marking properties of a basic subject.

Regardless of the hierarchy, Keenan's SPL along with its subdivision into coding and behavior properties can be used as a guideline for determining the status of the postverbal putative subjects in V1 in MH. Yet, before we do this, we will take a slight detour and discuss the way subjecthood is viewed in the lexicalist framework of HPSG.

Subjecthood in a Head-Driven Phrase Structure Grammar (HPSG)

Subjecthood in HPSG is a multifaceted notion. One aspect of subjecthood is syntactic valency. Valence subjects are those dependents which are token-identical to the single argument on the SUBJ list of their selecting heads. Such subjects may combine with their predicates to form a *hd-subj-ph* type of phrase, in which they are structurally distinguished from the predicate. Yet, they may also function as subjects in a flat structure such as the one proposed for English SUBJ-AUX inversion (*hd-subj-comp-ph*). In this case their subjecthood is expressed by their token identity with the SUBJ element in the valence specification of their selecting head.

For example, the English auxiliary 'will', which selects for an NP as SUBJ and a VP as COMPS, combines with its dependents in a hierarchical structure (20a) for declarative sentences and in a flat structure (20b) for interrogatives. In both cases,

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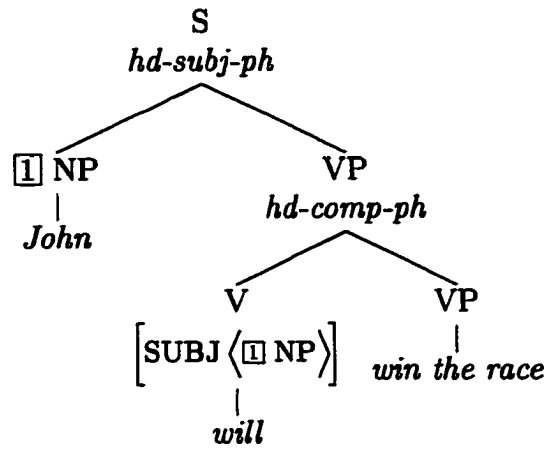
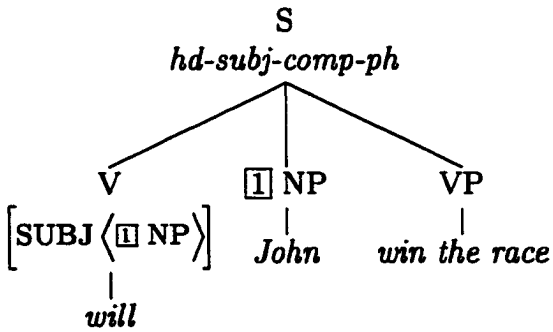
regardless of its syntactic position, the NP is the (valence) subject.

(20) a.



b.



Nevertheless, syntactic valency is not the only channel for expressing subject status in HPSG. At the level of argument structure (ARG-ST) dependents are listed in increasing order of obliqueness. Consequently, the first element on the list, the least oblique dependent, is the argument-structure subject (or 'a-subject' in Manning & Sag's (1998) terminology). Since the ARG-ST elements are ordered according to the obliqueness hierarchy, subjects occupy a higher place than objects regardless of the syntactic valence function that is assigned to them. Even when a dependent is analyzed as an a-subject but not as a valence SUBJ it still has superiority over the object (i.e. subject-object asymmetry). Thus phenomena that is linked to subject-object asymmetries, such as binding, is defined and accounted for in HPSG in terms of positions in ARG-ST.

An example of how the multifaceted notion of subjecthood in HPSG is applied is provided by Manning & Sag (1998). The Indonesian language Toba Batak has

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distinct verbal forms for active voice and objective voice. When the verb is in the active voice the logical subject is in subject position (21a), while the logical object occupies this position in objective voice (21b).

(21) a. Mang-ida si Ria si Torus
AV-see PM Ria PM Torus
'Torus sees/saw Ria.'

b. Di-ida si Torus si Ria
AV-see PM Torus PM Ria
'Torus sees/saw Ria.'
(= Manning & Sag's (1998) ex. 15)

Nevertheless, reflexivization shows that the only possible binding relationship is for the logical subject to bind the logical object, regardless of the verbal voice (and consequent word order). Thus, the logical subject *John* can bind the reflexive when it is in subject position (22a) or in the complement position (22b). The reflexive cannot bind *John*, regardless of its syntactic position and the verbal voice.

(22) a. [Mang-ida diri-na] si John
AV-saw self-his PM John
'John$_i$ saw himself$_i$.'
(= Manning & Sag's (1998) ex. 21a)

b. [Di-ida si John] diri-na
AV-saw PM John self-his
'John$_i$ saw himself$_i$.'
(= Manning & Sag's (1998) ex. 22b)

To account for this data, Manning and Sag propose that the ARG-ST list of the two voice forms is identical. The a-subject in both voices is the logical subject and therefore only it can be the binder. The difference is in the mapping from ARG-ST to VALENCE. The valence subject in the active voice is the logical subject, while in the objective voice it is the logical object.

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4.2.2 Subjecthood and verb-initial constructions in MH

Returning to MH and V1 constructions, we are now in a position to examine the subject properties of our putative postverbal subjects. This section is divided into two parts. The first focuses on coding properties and the distribution of these properties across the putative subjects of different verb types. It is proposed that agreement-triggering is a necessary coding property for subjecthood. Then, in the second part of this section, this proposal is put to test by examining the subject behavior properties of the dependents of verbs which alternate between agreeing and non-agreeing forms.

Coding properties in MH

The coding properties of basic subjects in Modern Hebrew are the following:

- Position: the subject precedes the verb (XV)
- Case Marking: the subject is marked with nominative case (NOM)
- Verb Agreement: the verb agrees with the subject (AGR)

An interesting fact about subject coding properties in MH is that they are not equally identifiable. The position of the dependent is relatively simple to discern. A potential complication is in cases of topicalization where linearly, a topicalized constituent in an inversion construction and a preverbal subject occupy the same position. Nevertheless, the intonation pattern and the pragmatics of the sentence reveal the 'true' syntactic status of the constituent (e.g. a pause separates a topicalized sentence-initial constituent from the rest of the sentence). Verbal agreement, too, is easily identifiable. An exception is 3SM agreement which is identical morphologically to impersonal agreement. This, however, can be controlled in constructed examples by using feminine or plural NPs.

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Case marking, on the other hand, is less obvious. Overt case marking is found only on pronominals and definite accusatives. The absence of the accusative case marker *et* on definite NPs indicates nominative case. Indefinite NPs, on the other hand, are never overtly marked for case. This is especially problematic considering the topic of this investigation, where some constructions appear to prefer indefinite NPs over definite ones.

As was discussed earlier, word order and pragmatics are closely linked in MH (as well as in many other languages). Therefore, in certain contexts where pragmatic considerations disfavor definite NPs, such as in the existential construction, it is impossible to ascertain the case of the indefinite NPs. In addition, assuming Givón's (1976) analysis of inversion in MH, it is the less topical indefinite NPs which tend to appear postverbally, making it difficult to disentangle case and position.

Bearing this in mind, of the eight possible combinations of the three coding properties I have identified four existing patterns, which can be viewed as four positions on a cline ranging from prototypical subjects, exhibiting all three coding properties, to arguments which exhibit none of them. These positions are characterized by the presence (+) or absence (−) of the three coding properties of Hebrew subjects: AGR+: the verb agrees with the nominal dependent, XV+: the nominal dependent precedes the verb, and NOM+: the nominal dependent is marked with nominative case. The following table summarizes the distribution of the different verb types along the subject-object cline.

(23)

	AGR+ XV+ NOM+	AGR+ XV− NOM+	AGR− XV− NOM+	AGR− XV− NOM−
unergative	√	√		
2-place predicates	√	√		
unaccusative	√	√	√	
existential		√		√

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There are three different options for dividing the subject-object cline in order to determine whether a dependent is realized as a subject or a complement. According to Keenan's (1976) Promotion to Subject Hierarchy (PSH), subject coding properties outrank behavior properties. Thus, the hierarchy predicts that a derived subject cannot acquire behavior properties before it acquires coding properties. In other words, you can't behave like a subject if you don't look like one. Continuing this mode of personification, the interesting question is how subject-like do you need to look in order to behave like a subject? Can you behave like a subject even if you don't have all subject coding properties? Are there subject coding properties that are necessary in order to assume behavior properties?

My proposal draws the proverbial line (realized as a double bar in the table above) for MH in a way that separates the dependents with which the verb agrees from those with which it does not. Thus, only arguments which trigger verbal agreement behave like subjects (and are therefore defined as subjects). Occupying a preverbal position, on the other hand, is not a necessary condition for subjecthood. Thus, my proposal differs from Shlonsky's (1987) who only recognizes syntactic subjects if they occur in the subject position. In what follows I turn to subject behavior properties and determine whether it is in fact agreement which determines whether a dependent has subject status (and can behave like a subject) or whether it is some other property or properties.

Agreement-triggering and subject behavior properties

Unfortunately, quite a lot of the subject behavior properties are not applicable to our intransitives. Passivization, for example cannot apply to unaccusatives,[6] existentials, and possessives. Accessibility to relativization is not revealing, since subjects, objects, and obliques can be relativized in Modern Hebrew. Moreover, since these

[6]The unaccusativity diagnostic in MH groups the passives together with the uncaccusatives.

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verbs assign a PATIENT or THEME role to their nominal dependents, subject behavior properties which are associated with agentivity are irrelevant. The dependents in question cannot be the agents, the causers in a causative construction, or the addressees of an imperative.

Nevertheless, an interesting contrast is found between the possessives, unaccusatives and the existentials in the equi NP deletion construction. Equi NP deletion is a term that originates in transformational grammar. It refers to the derivation of sentences in which the matrix subject (or object) is semantically identical to the (unexpressed) subject of an embedded phrase. The derivation deletes the lower NP subject under identity. An example of a subject-equi construction is given in (24) with the deleted lower subject in square brackets.

(24) I tried to [I] go.

The difference between equi and raising is that equi verbs assigns a thematic role to the matrix dependent, while raising verbs do not. Thus, in sentence (24) the subject is both the 'trier' and the 'goer'. The relevance of equi to this topic is that it is generally the lower subject which is deleted under equi verbs.

Returning to our data, Ziv (1976) found that possessed nominals fail to undergo equi NP deletion. Following are her example sentences with both definite and indefinite NPs .

(25) a. *xaverim tovim af pa'am lo rotsim liyot li
friends.3PM good.3PM even once not want.3PM to-be to me
'Good friends never want to be mine.'

b. *ha-xaverim ha-ele hexlitu lo liyot li
the-friends.3PM the-these.3PM decided.3PM not to-be to-me
'These friends decided not to be mine.'
(= Ziv's (1976) ex. 28)

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Ziv concludes that failure of possessed nominals to undergo equi deletion is not indicative of their losing subject properties but, rather, that they have never possessed this property in the first place. As evidence, Ziv shows that in literary Hebrew, which, according to her, reflects an earlier stage of the grammar, these constructions are ungrammatical as well. The suggestion that possessive construction could never have been compatible with the equi NP deletion construction is plausible, since there seems to be a semantic mismatch between the agentive matrix verb and the lower existential. Note that the English translations of the examples above are very awkward, if not completely ungrammatical.

However, if we try to embed an unaccusative verb under an equi verb the results are significantly different.

(26) ?hamayim nisu/ratsu/hixlitu/kivu le-hishafex al
the-water.3PM tried.3P/wanted.3P/decided.3P/hoped.3P to-spill on
ha-ritspa
the-floor

'The water tried/wanted/decided/hoped to spill on the floor.'

The sentences in (26) are strange since, just like their English counterparts, they attribute volition to the inanimate water. This anomaly, then, is semantic, and not an indication of the subjecthood of their dependents. This type of ungrammaticality is different from that of the possessives in (25), which are plainly ungrammatical and, to some extent, incomputable.

The existentials, on the other hand are perfectly compatible with equi NP deletion. Consider for example the existential construction in (27a) and the same construction embedded under equi verbs in (27b).

(27) a. hayu harbe yeladim ba-hatsaga
were.3P many children.3PM in-the-play
'There were many children in the play.'

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b. harbe yeladim nisu/ratsu/hixlitu/kivu lihyot
many children.3PM tried.3P/wanted.3P/decided.3P/hoped.3P to-be
ba-hatsaga
in-the-play
'Many children tried/wanted/decided/hoped to be in the play.'

The fact that existentials can appear in such constructions is very instructive. One can argue that the NP of the unaccusative verb in (26) is a preverbal dependent and therefore its licensing has no bearing on the question of position as a determining factor for subjecthood. This argument does not carry over to the existentials, whose indefinite dependents can only appear in a postverbal position. For this reason, the example above constitutes evidence for the claim that having a postverbal position does not prevent an NP from manifesting subject behavior properties.

The ability to undergo raising is one of Keenan's subject behavior properties and has been used extensively in the literature to argue for (or against) the subject status of certain dependents. Subjects of transitive verbs (28) and unergative verbs (29), when embedded under a raising predicate, raise to matrix subject position.

(28) ha-yeladim asuyim limtso et ha-matmon lifnei ha-zman
the-children.3PM likely.3PM to-find ACC the-treasure before the-time
'The children are likely to find the treasure too early.'

(29) ha-yeladim asuyim litsxok be-emtsa ha-hatsaga
the-children.3PM likely.3PM to-laugh in-middle the-play
'The children are likely to laugh in the middle of the play.'

The story changes when it comes to the possessives, existentials, and unaccusatives. With respect to the possessives, Ziv (1976) claims that definite and indefinite possessed nominal differ with respect to their 'raisability'. According to Ziv, indefinite possessed nominals, as opposed to definite ones, can undergo subject-to-subject raising. As evidence for the 'raisability' of the indefinite possessed nominal, Ziv provides

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sentence (31a), which is the main clause in (30) embedded under the raising predicate *tsfuyot* ('expected.3PF').[7]

(30) iyu la tsarot lo regilot im hi titgaresh
will-be.3P to-her troubles.3PF not usual.3PF if she will-divorce.3SF
'She will have unusual troubles if she gets a divorce.'
(= Ziv's (1976) ex. 22a)

(31) a. tsarot lo regilot tsfuyot lihyot la im hi
troubles.3PF not usual.3PF expected.3PF to-be to-her if she
titgaresh
will-divorce.3SF
(= Ziv's (1976) ex. 22b)

b. tsfuyot lihyot la tsarot lo regilot im hi
expected.3P to-be to-her troubles.3PF not usual.3PF if she
titgaresh
will-divorce.3SF

c. *tsafuy lihyot la tsarot lo regilot im hi
expected.3SM to-be to-her troubles.3PF not usual.3PF if she
titgaresh
will-divorce.3SF
'It is expected that she will have unusual troubles if she gets a divorce.'

Although superficially (31a) seems to be a raising construction, thus providing evidence for the subjecthood of the NP 'troubles', I believe that it is in fact a case of topicalization. This is evident from the pragmatic contexts in which this sentence can be uttered and from the intonation that needs to be used.[8] The unmarked construction is the one in (31b), where the position of the nominal *tsarot lo regilot* ('unusual troubles') is after both the raising predicate and the lower verb. Agreement in this case is obligatory as is evident from the ungrammatical (31c).[9] It should be pointed

[7] *tsfuyot* is the 3PF passive participle of the verb *tsafa* ('to expect').

[8] The same conclusion is reached independently by Falk (1999).

[9] Falk (1999) notes: "We thus agree with the analysis of Doron (1983), who also argues that the possessed nominal is not the subject. Doron also claim that Raising is impossible, and accounts for the agreement in the untopicalized structure in terms of cosuperscripting (fn. 11)."

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out that this position is ungrammatical for the subjects of intransitive and unergative verbs.[10]

The existential construction is identical in its behavior to the possessive construction. Thus, the examples in (32) mirror those in (31). Clause-initial NPs are most likely topicalized (32a). The unmarked word order is that in which the raising verb and the lower verb precede the NP with which they agree (32b). Agreement is obligatory (32c).

(32) a. hafganot alimot alulot lihyot ba-shtaxim
demonstrations.3PF violent.3PF liable.3PF to-be in-the-territories

b. alulot lihyot hafganot alimot ba-shtaxim
liable.3PF to-be demonstrations.3PF violent.3PF in-the-territories

c. *alul lihyot hafganot alimot ba-shtaxim
liable.3SM to-be demonstrations.3PF violent.3PF in-the-territories
'There are liable to be violent demonstrations in the (occupied) territories.'

Finally, unaccusatives combine the properties of the unergatives and the existentials. Subjects of unaccusatives may raise to matrix subject position (33a), on a par with the unergatives. In addition, they may 'remain' in the postverbal position of the embedded verb (33b), on a par with the existentials. Similarly to the existentials, the raising verb must agree with the subject, as is evident from the ungrammatical (33c).

(33) a. (ha-)mayim asuyim le-hishapex im lo tizaher
(the)-water.3PM likely.3PM to-spill if not will-be-careful.2SM

[10]This option is not available for the unergatives, as is evident from the ungrammatical sentence in (i).

(i) *asuyim litsxok ha-yeladim be-emtsa ha-hatsaga
likely.3PM to-laugh the-children.3PM in-middle the-play
('The children are likely to laugh in the middle of the play.')

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b. asuyim le-hishapex (ha-)mayim im lo tizaher
likely.3PM to-spill (the)-water.3PM if not will-be-careful.2SM

c. *asuy le-hishapex (ha-)mayim im lo tizaher
likely.3SM to-spill (the)-water.3PM if not will-be-careful.2SM
'(The) water is likely to spill if you are not careful.'

Consequently, the agreement-triggering dependents of the unaccusatives are just as raisable as the subjects of the transitives and unergatives. The existentials and possessives, on the other hand, are licensed only in a construction in which their dependents remain within the lower VP and at the same time trigger agreement on the raising verb.[11] Thus, although the NP dependents of existentials may trigger agreement they do not exhibit the subject behavior property of 'raisability'.

In her attempt to test the subject behavior properties of possessed nominals, Ziv (1976) considers reflexivization. The following four possessive constructions in which the possessed nominal is a reflexive are taken from Ziv's footnote 27. Of the four, only the last example is grammatical.

(34) a. *hayu lahem rak acmam
were.3P to-them only themselves

b. *hayu lahem rak et acmam
were.3P to-them only ACC themselves

c. *haya lahem rak acmam
were.3SM to-them only themselves

d. haya lahem rak et acmam
were.3SM to-them only ACC themselves
'They had only themselves.'

Ziv notes that "this suggests, at the least, that loss of subject behavior properties (in this instance the ability to be reflexivized) cannot be overtly manifested when the NP in question still retains its coding properties" (fn. 27). Ziv's paradigm is

[11]An analysis of this construction (e.g. (33b) and (32b)) is left for future research.

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missing the following example which illustrates that the possessed nominal cannot be an antecedent to a reflexive.

(35) *haya le-acmam rak otam
were.3P to-themselves only ACC.3PM
'They had only themselves.'

We now turn to the unaccusatives, whose dependents are realized in a number of constructions, each with a different degree of subject coding properties. However, unlike the possessives, their dependents always retain at least one coding property (nominative case). Consider the four examples given in (36).

(36) a. hamayim nishpexu me-atsmam
the-water.3PM spilled.3P from-themselves

b. nishpexu ha-mayim me-atsmam
spilled.3P the-water.3PM from-themselves

c. *nishpax ha-mayim me-atsmam/me-atsmo
spilled.3SM the-water.3PM from-themselves/from-himself.3SM
'The water spilled by itself.'

The first two examples are perfectly acceptable while the third is completely ungrammatical. Thus, the position of the NP dependent does not interfere with its ability to antecede a reflexive, as long as it triggers agreement on the verb. Once the verb exhibits impersonal agreement, this behavior property is lost.

The ability to be deleted from a second conjunct under coreference with the subject of the first conjunct is an additional subject behavior property which should be considered. A simple example of this phenomenon is given in (37).

(37) a. dani pagash et yossi ve ∅ xibek oto
Danny met ACC Yossi and ∅ hugged.3SM ACC.3SM
'Danny met Yossi and (Danny) hugged him (Yossi).'
not: 'Danny met Yossi and (Yossi) hugged him (Danny).'

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b. *dani pagash et yossi ve hu xibek ∅
Danny met ACC Yossi and he hugged.3SM ∅

Example (37a) shows that the subject of the second conjunct can be deleted and that the unexpressed subject can only refer to the subject of the first conjunct. Thus, this example establishes the subjecthood of *Danny* as the subject of *met* (only the subject can be the antecedent) and of the 'hugger' as the subject of 'hug' (it can be deleted). Example (37b) is additional evidence for the subjecthood of the 'hugger'—the 'huggee' cannot be deleted.

This type of test, too, distinguishes between the unaccusatives and the existentials. Let us first examine the behavior of the unaccusatives in coordinated constructions. As is evident from examples (38a) and (38b), the NP dependent, whether in a preverbal or postverbal position, can be an antecedent to a deleted subject in the second conjunct.[12] The contrast between the (a) and (b) examples and that of (c) reveals that verbal agreement is necessary in order for the NP dependent to assume this subject behavior property.

(38) a. mayim nispexu ve ∅ hitsifu et ha-xeder
water.3PM spilled.3P and ∅ flooded.3P ACC the-room

b. nispexu mayim ve ∅ hitsifu et ha-xeder
spilled.3P water.3PM and ∅ flooded.3P ACC the-room

c. *nispax mayim ve ∅ hitsif/hitsifu et ha-xeder
spilled.3SM water.3PM and ∅ flooded.3P/.3SM ACC the-room
'Water spilled and flooded the room.'

The ability of the NP dependent to be deleted in the second conjunct is demonstrated in (39).[13] There is no evidence as to the position of the 'deleted' NP. It could be preverbal, as is indicated in the following examples by ∅, or in the position following the verb.

[12]It should be noted that the unexpressed subjects are not instances of *pro-drop*, since in Hebrew only first and second person subject pronouns can be left unexpressed.

[13]The type of coordination exemplified in (39b) is discussed in more detail in section 4.4.3.

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(39) a. ha-mayim zarmu ve ∅ nishpexu al ha-ritspa
the-water.3PM flowed.3P and ∅ spilled.3P on the-floor
'The water flowed and spilled on the floor.'

b. pit'om zarmu ha-mayim ve ∅ nishpexu al ha-ritspa
suddenly flowed.3P the-water.3PM and ∅ spilled.3P on the-floor
'Suddenly the water flowed and spilled on the floor.'

The existentials and possessives, on the other hand, do not possess this subject behavior property, as is evident from the examples in (40). The NP dependents of the existentials and possessives cannot function as antecedents to the deleted subject in the second conjunct. Hence the second conjunct must contain a pronoun.

(40) a. hayu yeladim ba-xatser ve-*(hem) sixku be-kadur
were.3P children in-the-yard and-*(they) played.3P with-ball
'There were children in the yard and they played ball.'

b. haya/hayu la-yeladim tsa'atsu'im ve-*(hem) hayu
was.3SM/were.3P to-the-children toys.3PM and-*(they) were.3P
xadashim
new.3PM
'The children had toys and they were new.'

Turning to the second configuration, where the dependent in question is in the second conjunct, an example with the existential construction is impossible to construct. It is pragmatically infelicitous to assert the existence of an entity in the second conjunct of a coordination when it is already mentioned in the first conjunct. With the possessives, on the other hand, the following example is slightly odd but nevertheless demonstrates that a pronoun is required in the second conjunct. Thus, the possessed nominal does not exhibit this subject behavior property.

(41) ha-sfarim hayu yeshanim ve-haya le-dani *(otam)
the-books.3PM were.3P old.3PM and-was.3SM to-Danny *(ACC.3PM)
mizman
from-time
'The books were old and Danny had them for a long time.'

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Finally, we examine the behavior of the dependents in a relative clause context. As Keenan (1976) notes, resumptive pronouns are rarely possible in subject position. Indeed, in MH resumptive pronouns are optional in direct object position, obligatory in obliques, and impossible in subject position, as is shown in (42).

(42) ze ha-yeled she-(*hu) makir et dani
this the-boy that-(*he) knows ACC Danny
'This is the boy who knows Danny.'

As is predictable by now, the unaccusatives do not permit a resumptive pronoun to appear in their subject position. Note that pronouns in general cannot appear postverbally in MH and consequently there is only one position where the resumptive pronoun can be potentially possible.

(43) elu ha-mayim she-(*hem) nishpexu
these the-water that-(*they) spilled.3PM
'This the water that spilled.'

The possessive and unaccusatives, on the other hand, exhibit an interesting behavior. Consider the following examples of possessives (44) and unaccusatives (45).

(44) a. elu ha-sfarim she-(*hem) hayu li kshe-hayiti yalda
these the-books.3PM that-(*they) were.3P to-me when-I-was girl

b. elu ha-sfarim she-haya li **otam** kshe-hayiti yalda
these the-books.3PM that-was.3SM to-me ACC.3PM when-I-was girl
'These are the books that I had when I was a girl.'

(45) a. elu sfarim she-(*hem) hayu ba-yarid
these the-books.3PM that-(*they) were.3P in-the-fair

b. elu sfarim she-haya **otam** ba-yarid
these the-books.3PM that-was.3SM in-the-fair
'These are the books that were in the fair.'

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When the predicate *haya* agrees with the NP, as is the case in (44a) and (45a), a resumptive pronoun is impossible, indicating subject status. Conversely, when the verb exhibits impersonal agreement ((44b) and (45b)), an accusative marked resumptive pronoun is possible, albeit optional.

To summarize, the data presented above clearly sets the unaccusatives apart from the existentials and possessives. The dependents of unaccusative verbs are found to exhibit all the subject behavior properties examined, provided that they trigger agreement on the verb. The position of the dependent has no effect on the outcome of the subjecthood tests. Thus, the behavior of the unaccusatives can be taken as supporting evidence for the proposal that the coding property which is crucial for subject behavior is agreement triggering.[14]

The existentials and possessives, on the other hand, were not found to be prototypical subjects, to say the least. Nevertheless, some evidence for the importance of agreement was detected. The NP dependents of the existentials were able to delete in the equi NP deletion construction ((27)) when they triggered agreement. Additionally, both the existentials and the possessives did not license resumptive pronouns when the predicate agreed with the NP ((44a) and (45a)). Thus, I conclude that, in spite of the questionable grammatical status of the dependents in the existential and possessive constructions, agreement, not position, was found to be a determining factor for subjecthood in Modern Hebrew.

4.2.3 An HPSG implementation

Implementing our conclusions so far with respect to the argument structure of MH intransitive verbs in an HPSG grammar requires addressing a number of issues:

- accounting for the unaccusatives, which alternate between subject-taking and

[14]The case property was not relevant for the unaccusatives since their dependents are always nominative.

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subjectless realizations

- accounting for the existential predicates *yesh* and *haya*
- handling subject-verb agreement

The following two sections are dedicated to these issues. The first section provides the means of handling the various agreement patterns found in MH. In the second section I address the issue of the argument structure of intransitive verbs in MH and how it is mapped into the valency features.

Subject-verb agreement

Subject verb agreement is handled in standard HPSG (Pollard & Sag 1994) not by attributing agreement features to the verb itself but rather by stating the agreement requirement on the verb's valence list elements. Thus, the fact that verbs such as the English verb *likes* appear only with 3rd person singular subjects is defined as a property of the verb's subject requirement.

The verb agreement patterns in the data presented above are not as straightforward as those of English verbal agreement. As was shown, the verb alternates between agreeing fully with its dependent and having impersonal agreement. In a framework such as Pollard & Sag 1994 there is no immediate way for specifying agreement features on the verb without reference to its dependents.

Kathol (1999a) proposes an alternative to the standard HPSG treatment of agreement. Under his analysis, agreement features are included in the verb's HEAD feature and are matched with the INDEX features of its dependent. Additionally, Kathol defines, as a subtype of *category*, a general agreement pattern for finite verbs (*fin-agr-pattern*). This agreement pattern is a general statement about the kind of agreement patterns that verbs and their subjects display. In his paper, Kathol defines the subject-verb agreement patterns in German. Only minor adaptations are needed in

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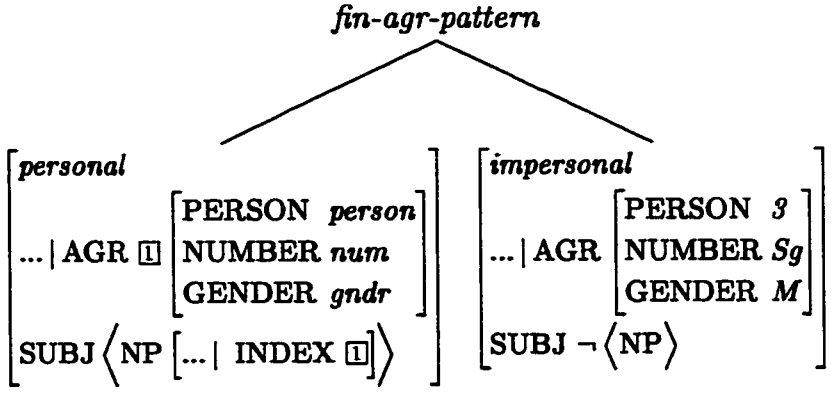
order to capture the Hebrew data.

(46) Subject-verb agreement in Hebrew



Verbs, under this proposal, are specified as [CAT *fin-agr-pattern*]. Actual verbs are sort-resolved with exactly one of its subtypes. Since the constraints associated with *fin-agr-pattern* are complementary (i.e., the SUBJ value can be either an NP or not), each verb in a syntactic context is compatible with only one of *personal* or *impersonal*.

More concretely, Hebrew finite verbs with NP subjects inherit the *personal* agreement subtype and thus display full person-number-gender agreement with their subjects. Finite verbs which inherit the *impersonal* agreement pattern are subjectless verbs or verbs with sentential subjects, which display impersonal (3SM) agreement.

Defining valence in the lexical hierarchy

The bulk of the account lies in the lexical entries of the verbs under discussion and in the structure of the lexicon. In accounting for the diatheses of the unaccusative verbs, which surface as both subject-taking and subjectless verbs, I adopt "tools" provided in Davis & Koenig's (2000) (D&K) work on linking.

D&K propose a constraint-based verb-class-based account of the principles governing the mapping of semantic arguments into syntactic functions. The machinery for this analysis includes a hierarchy of word classes, a homomorphic hierarchy of

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semantic relations, and a condition on the relations between a semantic role (i.e. ACTOR, UNDERGOER) and characteristic semantic entailments.

The semantic relations hierarchy represents the different relations that can be denoted by predicators (i.e. the value of their CONTENT attribute). Specific relations inherit from one or more of primitive relations (i.e. *act-rel*, *und-rel*) which are defined by their semantic entailments. Thus, for example, according to the "attribute-to-entailment condition", an ACTOR participant in an *act-rel* relation is licensed if one or more of the following characteristics hold: (Davis & Koenig 2000:72)

- Causally affects or influences other participant(s) or event(s)
- Volitionally involved in event
- Has a notion or perception of other participant(s) in event
- Possesses an entity

The word-class hierarchy reflects the mapping of ARG-ST elements onto the VALENCE attributes and the matching of ARG-ST elements with the semantic components. Thus, an active verb with an ACTOR and an UNDERGOER associates its first ARG-ST element with the ACTOR and maps it to the SUBJ attribute in its VALENCE. The second ARG-ST element is the semantic UNDERGOER and the syntactic COMPLEMENT.

The linking properties of a verb, according to D&K, are constrained by its semantics. Their Semantic Subtype Linking Condition requires that the hierarchy of the semantic relations be mirrored in the word-class hierarchy. Thus, if two verb-types are in a subtype-supertype relation, the relations specified in their semantic content must be in the same type of relation.

The verb types in our data set inherit from two verb supertypes:[15] *act-vb* and

[15]The proposed word-class hierarchy is limited to those types necessary to account for the constructions discussed in this paper.

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und-vb. The definitions of the two types, as proposed by Davis & Koenig (2000), are presented in (47) and (48).

(47)
$$\left[\begin{array}{l} \textit{act-vb} \\ \\ \text{SS}\,|\,\text{LOC} \left[\begin{array}{l} \text{CAT}\,|\;\text{ARG-ST}\left\langle \text{NP}_{\boxed{1}}\,(,\ldots)\right\rangle \\ \\ \text{CONT}\,|\,\text{RELS}\left\langle \left[\begin{array}{l}\textit{act-rel}\\ \text{ACTOR}\;\boxed{1}\end{array}\right]\right\rangle \end{array}\right] \end{array}\right]$$

(48)
$$\left[\begin{array}{l} \textit{und-vb} \\ \\ \text{SS}\,|\,\text{LOC} \left[\begin{array}{l} \text{CAT}\,|\;\text{ARG-ST}\left\langle \ldots,\ \text{NP}_{\boxed{1}}\right\rangle \oplus \text{listof}(\neg\text{NP}\ ) \\ \\ \text{CONT}\,|\,\text{RELS}\left\langle \left[\begin{array}{l}\textit{und-rel}\\ \text{UND}\quad\boxed{1}\end{array}\right]\right\rangle \end{array}\right] \end{array}\right]$$

The *act-vb* verb class is defined such that the value of ACTOR is structure-shared with the content of the first NP in the ARG-ST (tagged [1] in (47)). The *und-vb* class, on the other hand, has the UNDERGOER associated with the last NP on the ARG-ST list.

The semantic relations of the two verb types, *act-rel* and *und-rel*, are defined in the hierarchy of semantic relations. The participants in these relations, ACTOR and UNDERGOER, are denoted by an *index* type, which is part of the CONTENT type of nominal objects.[16]

[16]For example, the content of the common noun *book*, according to standard assumptions (e.g. P&S 1994, p. 26), is as given in (i):

(i)
$$\left[\begin{array}{l} \textit{nom-obj} \\ \\ \text{INDEX}\;\boxed{1}\left[\begin{array}{l}\textit{index}\\ \text{PERS}\;\;\textit{3}\\ \text{NUM}\;\;\textit{sg}\\ \text{GEND}\;\textit{neut}\end{array}\right] \\ \\ \text{RELS}\quad\left\{\left[\begin{array}{l}\textit{book}\\ \text{INSTANCE}\;\boxed{1}\end{array}\right]\right\} \end{array}\right]$$

In their paper, D&K define the value of UND and ACT to be of type *nom-obj*. However, as far as I can tell, this is incompatible with the description above which defines the value of the feature INSTANCE to be of type *index*. A *nom-obj* value for INSTANCE would result in a circular structure. For this reason I diverge from D&K and define the value of UND and ACT to be of type *index*.

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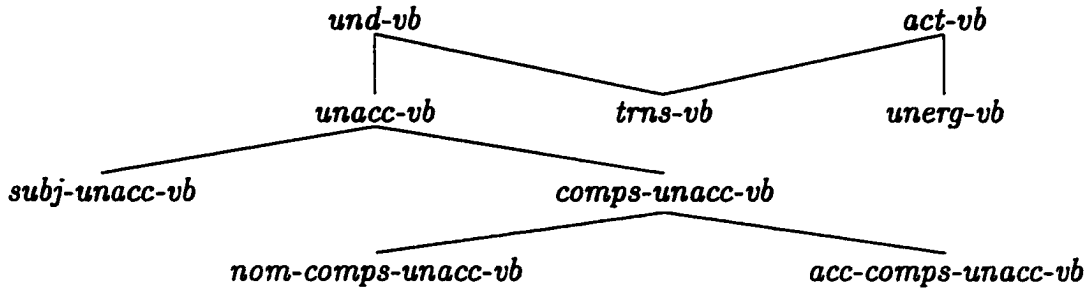
The basic verb-type hierarchy, as defined by D&K, stems from the supertypes *und-vb* and *act-vb* and the three subtypes resulting from their combination. The diatheses of the unaccusative verbs in Hebrew requires a further elaboration of the verb-type hierarchy, which is presented in the sub-tree dominated by *unacc-vb*.

(49)



The transitive verb type (*trns-vb*) is an immediate subtype of both *act-vb* and *und-vb*. Nothing more will be said about this verb type, as the other two subtypes, *unerg-vb* and *unacc-vb*, are the focus of this section.

An unergative verb is an *act-vb* in which the ARG-ST list consists of a single NP which is the semantic ACTOR and the syntactic SUBJ. As an NP-subject taking verb, its agreement pattern is sort-resolved as *personal* (i.e., full person-number-gender subject-verb agreement).

(50)
$$\left[\begin{array}{l}\textit{unerg-vb} \\ \\ \\ \\ \\ \\ \end{array}\right.\left.\begin{array}{l} \\ \\ \text{SS}\,|\,\text{LOC}\left[\begin{array}{l}\text{CAT}\left[\begin{array}{l}\textit{personal} \\ \text{VAL}\left[\begin{array}{l}\text{SUBJ}\ \langle \boxed{2} \rangle \\ \text{COMPS}\ \langle\rangle\end{array}\right] \\ \text{ARG-ST}\ \langle \boxed{2}\ \text{NP}_{\boxed{1}} \rangle\end{array}\right] \\ \text{CONT}\,|\,\text{RELS}\left\langle\left[\begin{array}{l}\textit{act-rel} \\ \text{ACTOR}\ \boxed{1}\end{array}\right]\right\rangle\end{array}\right] \\ \\ \\ \\ \\ \\ \end{array}\right]$$

An unaccusative verb (*unacc-vb*) is a subtype of *und-vb* in which there is only one NP. The mapping of the NP dependent to a syntactic position is left unspecified, and

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so is the *category* type (i.e. *personal* or *impersonal*).

(51)
$$\left[\begin{array}{l}\textit{unacc-vb} \\ \text{SS}\,|\,\text{LOC}\left[\begin{array}{l}\text{CAT}\left[\begin{array}{l}\textit{fin-agr-pattern} \\ \text{ARG-ST}\left\langle \text{NP}_{\boxed{1}}\right\rangle \oplus \text{listof}(\neg\text{NP})\end{array}\right] \\ \text{CONT}\,|\,\text{RELS}\left\langle\left[\begin{array}{l}\textit{und-rel} \\ \text{UND}\ \ \boxed{1}\end{array}\right]\right\rangle\end{array}\right]\end{array}\right]$$

Two immediate subtypes for *unacc-vb* are required in order to account for the data presented above: *subj-unacc-vb* and *comps-unacc-vb*. The two subtypes correspond to what is referred to by Levin & Hovav (1995) as 'deep unaccusativity' and 'surface unaccusativity', respectively. 'Deep unaccusativity' refers to the case where the NP argument occupies its VP-internal position only in d-structure, and moves to the syntactic subject position in s-structure. 'Surface unaccusativity', on the other hand, describes the case where the NP remains in its VP-internal position in s-structure. Thus, the UNDERGOER dependent surfaces as SUBJ in *subj-unacc-vb* and as COMPS in *comps-unacc-vb*. The description of *subj-unacc-vb* is given in (52).

(52)
$$\left[\begin{array}{l}\textit{subj-unacc-vb} \\ \text{SS}\,|\,\text{LOC}\left[\begin{array}{l}\text{CAT}\left[\begin{array}{l}\textit{personal} \\ \text{VAL}\left[\begin{array}{ll}\text{SUBJ} & \left\langle\boxed{2}\right\rangle \\ \text{COMPS} & \boxed{3}\end{array}\right] \\ \text{ARG-ST}\left\langle\boxed{2}\,\text{NP}_{\boxed{1}}\right\rangle \oplus \boxed{3}\,\text{listof}(\neg\text{NP})\end{array}\right] \\ \text{CONT}\,|\,\text{RELS}\left\langle\left[\begin{array}{l}\textit{und-rel} \\ \text{UND}\ \ \boxed{1}\end{array}\right]\right\rangle\end{array}\right]\end{array}\right]$$

This type of verb appears in constructions in which the subject and predicate are in full person-number-gender agreement (hence the type *personal* as the value of CAT). As an example, consider the pair of sentences in (53).

(53) a. ha-mayim nishpexu
the-water.3PM spilled.3P

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b. nishpexu ha-mayim
spilled.3P the-water.3PM
'The water spilled.'

Thus, in accordance with the proposed analysis, the word order variation in (53) does not influence the subject status of the NP—in both cases it is the valence subject. Word order in this case is a function of the phrase types that license the constructions.[17]

In addition, as was discussed in chapter 2, unaccusative verbs in Modern Hebrew may appear in constructions in which the verb displays impersonal agreement and obligatorily precedes its nominal dependent. Under this analysis, the nominal dependent in these constructions does not exhibit the necessary subjecthood properties and consequently is not considered a (valence) subject. Thus, the *comps-unacc-vb* verb type maps its UNDERGOER argument to the COMPS attribute, leaving the SUBJ value empty. The appropriate maximal subtype of *fin-agr-pattern* for subjectless finite verbs is *impersonal*, thus defining the agreement features of the verb to be 3SM, as shown in (54).[18]

(54)
$$\left[\textit{comps-unacc-vb}\ \left[\text{SS}\,|\,\text{LOC}\ \left[\text{CAT}\ \left[\textit{impersonal}\ \left[\text{HEAD}\ \left[\text{VFORM}\ \textit{fin}\right]\right]\right]\right]\right]\right]$$

$$\left[\text{HEAD}\ \left[\text{AGR}\ \left[\begin{array}{l}\text{PERSON 3}\\ \text{NUMBER Sg}\\ \text{GENDER M}\end{array}\right]\right]\right]$$

$$\left[\text{VAL}\ \left[\begin{array}{l}\text{SUBJ}\ \langle\rangle\\ \text{COMPS}\ \boxed{1}\end{array}\right]\right]$$

$$\left[\text{ARG-ST}\ \boxed{1}\ (\langle \text{NP}_{\boxed{2}}\rangle \oplus \text{listof}(\neg\text{NP}))\right]$$

$$\left[\text{CONT}\,|\,\text{RELS}\ \left\langle\left[\begin{array}{l}\textit{und-rel}\\ \text{UND}\ \ \boxed{2}\end{array}\right]\right\rangle\right]$$

[17]The types of phrase that license these constructions are discussed in 4.4.

[18]The purpose of the parentheses in ARG-ST is to define the scope of the structure-sharing tag [1].

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This verb type is further split into two subtypes, distinguished by the case marking of their NP dependents. The verbs used in the existential and possessive constructions, as well as in some of the unaccusative VS_{nonagr} and VDS_{nonagr} constructions, have dependents which function as object-like dependents. Consequently, their verb type, *acc-comps-unacc-vb*, specifies for their dependents default structural case (*str*), which surfaces as accusative case.[19] A description of the existential verb *haya* in example (55) is given in (56).

(55) haya/yesh et ha-sfarim ha-'ele ba-yarid.
was.3SM/is ACC the-books.3PM the-these.3PM in-the-fair.
'These books exist/existed in the fair.' (They had/have these books in the fair.)

(56)
$$\left[\begin{array}{l}\text{PHON}\ \langle haya \rangle \\ \text{SS}\,|\,\text{LOC}\left[\begin{array}{ll}\text{CAT} & \left[\begin{array}{ll}\textit{impersonal} & \\ \text{HEAD} & \boxed{5}\left[\begin{array}{ll}\text{VFORM} & \textit{fin} \\ \text{AGR} & \left[\begin{array}{l}\text{PERSON}\ 3 \\ \text{NUMBER}\ \text{Sg} \\ \text{GENDER}\ \text{M}\end{array}\right]\end{array}\right] \\ \text{VAL} & \left[\begin{array}{ll}\text{SUBJ} & \langle\rangle \\ \text{COMPS} & \langle \boxed{1}, \boxed{2} \rangle\end{array}\right] \\ \text{ARG-ST} & \langle \boxed{1}\ \text{NP}\left[\textit{str}\right]_{\boxed{3}}, \boxed{2}\ \text{PP}_{\boxed{4}} \rangle\end{array}\right] \\ \text{CONT}\,|\,\text{RELS} & \left\langle \left[\begin{array}{ll}\textit{exist-rel} & \\ \text{UND} & \boxed{3}\end{array}\right], \left[\begin{array}{ll}\textit{fig-grnd-rel} & \\ \text{FIG} & \boxed{3} \\ \text{GRND} & \boxed{4}\end{array}\right] \right\rangle\end{array}\right]\end{array}\right]$$

The figure-ground relation (*fig-grnd-rel*) captures the semantics of the locative construction. In the example above, the FIGURE 'books' is located with respect to the GROUND 'the fair'.

[19]Morphological case can be determined structurally (*str*) or lexically (*lex*). Predicates which do not impose particular case restrictions on their dependents specify a supertype, *str*, as their case requirement. This type is sort-resolved in the syntactic context. Other predicates may define their case requirements lexically by way of a maximal *case* type (e.g. *l-nom*). See Heinz & Matiasek 1994 for a detailed discussion.

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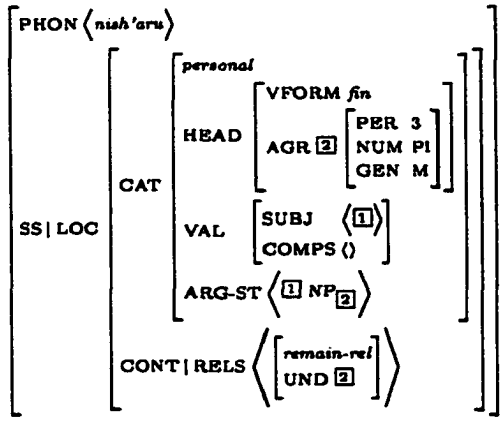
The second verb type, *nom-comps-unacc-vb*, has a dependent which lacks the distinguishing property of true objects: accusative case. Thus, the dependent appears in ARG-ST as having lexical nominative case (*l-nom*). An example is given in (57).

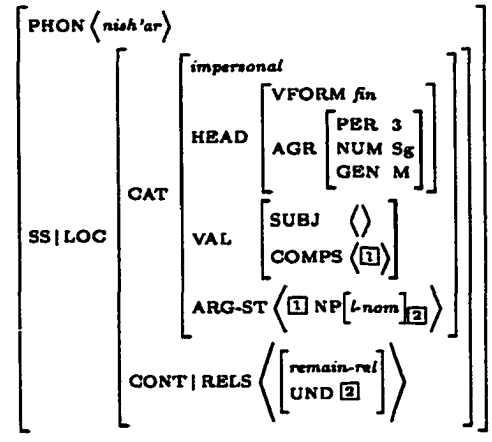
(57) nish'ar kama tapuxim
remained.3SM some apples.3PM
'There are some apples left.'

Unaccusatives can alternate between a "regular" subject taking verb and a non-canonical subjectless verb, such as the one in (57). However, as was mentioned earlier, the second is not a normative construction and its use is not widespread, especially in careful monitored speech. (58) illustrates the two realizations of the unaccusative verb *nish'ar* ('to remain').

(58) Agreeing, subject-taking verb



Non-agreeing, subjectless verb



To summarize, I have identified two types of intransitive verbs: subject-taking verbs and subjectless verbs. Among the subject-taking verbs are the unergatives (*unerg-vb*) and the subject-taking unaccusatives (*subj-unacc-vb*). Subject-taking verbs are characterized as exhibiting personal agreement with their subjects. As for the subjectless intransitives, there are two sub-types, depending on the case that is assigned to the NP dependent: the unaccusatives that assign nominative case to their dependent (*nom-comps-unacc-vb*) and the existentials, whose NP dependents are realized

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with accusative case (*acc-comps-unacc-vb*). Both types of subjectless verbs exhibit impersonal agreement. The verb types and their VALENCE and ARG-ST features are given in (59), which is based on the distribution table in (23).[20]

(59)

	AGR+ XV+/− NOM+	AGR− XV− NOM+	AGR− XV− NOM−
unergative	[*unerg-vb* SUBJ ⟨1⟩ COMPS ⟨⟩ ARG-ST ⟨1 NP⟩]		
unaccusative	[*subj-unacc-vb* SUBJ ⟨1⟩ COMPS ⟨⟩ ARG-ST ⟨1⟩]	[*nom-comps-unacc-vb* SUBJ ⟨⟩ COMPS ⟨1⟩ ARG-ST ⟨1 NP[*l-nom*]⟩]	
existential	[*subj-unacc-vb* SUBJ ⟨1⟩ COMPS ⟨⟩ ARG-ST ⟨1⟩]		[*acc-comps-unacc-vb* SUBJ ⟨⟩ COMPS ⟨1⟩ ARG-ST ⟨1 NP[*str*]⟩]

The next natural step in this analysis is to proceed to the phrasal level. However, before we consider the phrase types that license the combination of these intransitive verbs with their dependents, we will take a slight detour and discuss the Possessive Dative Construction (PDC).

4.3 The Possessive Dative Construction

The Possessive Dative Construction (PDC) is interesting in and of itself — the possessor dative (PD) is a semantic argument of the possessed NP, yet it behaves like

[20]The two leftmost columns in (23) are collapsed into one column in (59). This is appropriate since it is argued here that position alone does not determine the syntactic identity of a dependent and thus has no bearing on the verb's argument structure and valence.

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a syntactic argument of the verb. This notwithstanding, the PDC is clearly relevant to our topic, as two verb-initial constructions, VDS_{agr} and VDS_{nonagr}, are subtypes of the PDC. Moreover, as is discussed in detail in section 5.3.1, the existence of a PD in some verb-initial constructions interacts with the licensing of definite postverbal subjects. An analysis of the PDC then, serves as a building block in the analysis of verb-initial constructions in MH.

This section begins with a general overview of the ways possession is expressed in MH. Next it focuses on how the PDC is used to distinguish between unaccusatives and unergatives. The big bulk of this section is dedicated to a lexicalist analysis of the PDC. In a nutshell, the PDC is analyzed as a case of argument raising, thus accounting for the aforementioned syntax-semantics mismatch.

4.3.1 Possession in Hebrew

The Possessive Dative Construction (PDC) is one of three ways of expressing possession in Hebrew. In the next section I restrict my discussion to this possession construction, addressing the other two only when relevant to the topic. However, before we delve into an analysis of the PDC, a short illustration of the three constructions is in order.

- Free-Genitive(FG)

  The possessor appears as the complement of the genitive preposition *shel* ('of').

(60) ha-bayit **shel ha-yeled**
the-house of the-boy
'the boy's house'

- Construct State (CS)

  The head noun appears in a reduced phonological form referred to as a *construct state* and glossed as 'CS'. The possessor is an NP.

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(61) beit **ha-yeled**
house.CS the-boy
'the boy's house'

- Possessive Dative Construction

The possessor appears with the dative marker/preposition *le*. The possessor and possessed appear to be co-arguments of the verb.

(62) dani tsava **la-yeled** et ha-bayit
Danny painted to-the-boy ACC the-house
'Danny painted the boy's house.'

4.3.2 A diagnostic of unaccusativity

Borer & Grodzinsky (1986) propose a diagnostic for Hebrew unaccusativity, which applies both to predicate-initial and argument-initial constructions. Their diagnostic is based on the distribution of dative clitics/arguments, which have three distinct uses in Modern Hebrew:

- possessive

The dative clitic or argument indicates the possessor of the object.

(63) ha-yalda axla **li/le-dana** et ha-tapu'ax
the-girl ate to-me/to-Dana ACC the-apple
'The girl ate my/Dana's apple.'

- reflexive

The reflexive dative clitic is co-indexed with the subject and, in the words of Berman (1982:170), "highlights the *autonomy* of the event". Thus, reflexive datives tend to appear with agentive subjects.

(64) ha-yalda$_i$ axla **la$_i$** et ha-tapu'ax
the-girl ate to-her ACC the-apple
'The girl ate the apple.'

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- ethical

The dative clitic in this case is used to express dismay at a situation.

(65) be-'emca ha-seret hem nixnasim **li**
in-the-middle the-movie they enter to-me
'They enter in the middle of the movie (aggravating me).'

The possessor dative is formally distinct from the reflexive and ethical in that only the possessor dative can appear with a lexical NP (as well as in a clitic form). Reflexive and ethical datives are restricted to pronominal clitics.

The key to the unaccusativity diagnostic lies in the generalization that the distribution of possessive datives is limited to verbs that have an internal argument. Unergative verbs do not allow a possessor dative unless some VP-internal material is added. Thus, the dative clitic in (66) could only have an ethical interpretation.

(66) ha-tinok yashan li
the-baby slept to-me
'The baby slept (and it affected me).'
not: 'My baby slept.'

Once a nominal is introduced into the VP the dative clitic could be interpreted as the possessor of that nominal. In fact, in this case the dative clitic is ambiguous. It could be interpreted as either possessive or ethical. Replacing the clitic *li* ('to-me') with a lexical NP (e.g. *le-rina* ('to-Rina')) would disambiguate it, leaving only the possessive reading.

(67) ha-tinok yashan li ba-mita
the-baby slept to-me in-the-bed
'The baby slept in my bed.'
'The baby slept in the bed (and it affected me).'

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With unaccusative verbs, on the other hand, dative clitics can only have a possessive interpretation, where the dative is construed as the possessor of the nominal dependent. A reflexive interpretation of the dative is impossible.[21]

(68) ha-maftexot naflu la-hem
the-keys.3PM fell.3P to-them
'Their keys fell.'

The compatibility with dative possessives is the main diagnostic distinguishing unaccusatives from unergatives in Hebrew.

4.3.3 A lexicalist analysis of the PDC

Overview

Different analogs of the PDC have been identified in numerous languages from diverse regions and language families. These cases, where the possessor is coded as a constituent separate from the possessed, are referred to by Payne & Barshi (1999) as 'external possession'. In their paper they present a comprehensive inventory of the phenomenon, its properties, and alternative analyses that have been proposed in the literature.

The proposal that I present in the following section views the PDC as an instance of argument raising, in which an unexpressed argument of an embedded constituent surfaces as the argument of a higher predicate. True to the spirit of lexicalist theories in general and HPSG in particular, raising is viewed in this proposal as a structure-sharing relationship between a dependent of a predicate which subcategorizes for an

[21] Compare the unaccusative in (68) with the unergative (66), in which the dative cannot be interpreted as the possessor of the NP, but can be coindexed with the NP as a reflexive dative.

(i) ha-tinok$_i$ yashan lo$_i$
the-baby slept to-him
'The baby slept.'

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unsaturated complement phrase and the unexpressed dependent of the complement phrase. This analysis is distinct from the transformational grammar one, in which an argument is moved from its d-structure position to assume its s-structure position.[22]

Possession constructions in MH

My analysis of Free Genitives (FGs) and Construct States (CSs) adopts the essence of Wintner's (2000) proposal.[23] Wintner (2000) proposes an analysis of the FG and CSs constructions in which the possessor is viewed as the complement of the head noun.[24] Wintner argues that the (revised) standard HPSG analysis (Pollard & Sag 1994, Chapter 9) in which the possessor and the possessed are combined through the *specifier-head* schema to create a full NP is not appropriate for Hebrew. Instead, he proposes that the possessor in the aforementioned constructions is realized as the least oblique argument on the head noun's COMPS list and is combined with the head via the *head-complement* schema.[25]

Wintner assumes that subcategorized elements in Hebrew are optional in the appropriate contexts.[26] Consequently, in his analysis, the free genitive, realized as a PP[of] in the COMPS list of a noun, appears in parentheses, as an optional complement. The CS construction is generated by a morphological process which picks out

[22]This type of a movement analysis is precisely the one which Landau (1999) proposes for the PDC. In a nutshell, Landau argues that the PD is generated in the Spec position of the possessed DP and raises by A-movement to check its case in the Spec-VP position.

[23]Wintner does not discuss in his paper, which focuses on the NP, the third construction—the PDC.

[24]Note that this is a cursory presentation of Wintner's proposal, limited to whatever is necessary for the topic at hand. The interaction of possession and definiteness, for example, is overlooked in this section. The reader is referred to Wintner's work for the detailed analysis of this issue and others, related to the Hebrew NP.

[25]The reasons which Wintner lists for his proposal are:

- The possessors in Hebrew follow the head noun
- The possessor co-occurs with pre-nominal determiners such as the quantifier *kol* ('every').
- Hebrew is similar to Welsh and Arabic in this respect and the same arguments which Borsley (1995) gives for positing a post-nominal 'subject' in these languages apply to Hebrew.

[26]See the discussion in Wintner's (2000) section 5.2 and fn. 17.

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a genitive PP from the COMPS list of the absolute noun and changes it to an NP. Moreover, to capture the fact that this NP is an obligatory complement, as the construct state forms is prosodically dependent on its complement, Wintner proposes an additional feature, DEP, whose value is structure-shared with that of the possessor complement. Finally, a phonological function, *phon_reduce* computes the reduced form of the head noun. It should be noted that Wintner does not address semantic aspects of the Hebrew NP and for this reason he omits the CONTENT feature altogether from his lexical descriptions.

My proposal adopts Wintner's analysis of possessors as complements in Hebrew. However, it diverges from his analysis by avoiding the use of optional complements and by utilizing ARG-ST and different mappings between it and VALENCE. More specifically, I assume that nouns are classified as either *possessed* or *independent*. The possessed noun is distinguished from the independent noun by having an abstract possessor argument as the least oblique element in its ARG-ST list and an additional *possession* relation in its CONTENT. The abstract nature of the possessor is expressed by an underspecified description in which only the INDEX value is specified. The INDEX of the possessor is structure shared with the PSR (possessor) role in the *possession* relation, while the PSD (possessed) role is identified with the index of the noun itself. An example of a possessed noun is given in (69), where the the index value of the possessed noun is [1] and that of the possessor is [2].

(69)
$$\begin{bmatrix} \textit{possessed} \\ \text{PHON } \textit{phon} \\ \text{SS} \mid \text{LOC} \begin{bmatrix} \text{CAT} \begin{bmatrix} \text{HEAD } \textit{noun} \\ \text{ARG-ST } \langle \text{XP}_{\boxed{2}}, \ldots \rangle \end{bmatrix} \\ \text{CONT} \begin{bmatrix} \text{INDEX } \boxed{1} \\ \text{RELS } \left\langle \ldots, \begin{bmatrix} \textit{possession} \\ \text{PSR } \boxed{2} \\ \text{PSD } \boxed{1} \end{bmatrix}, \ldots \right\rangle \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

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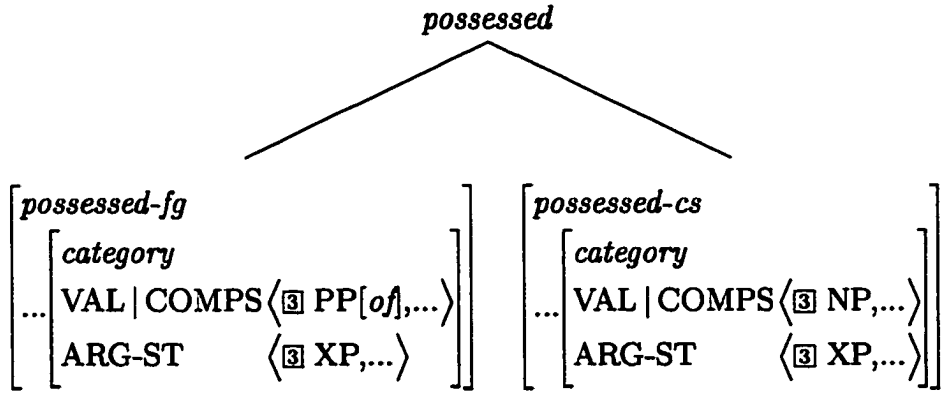
FG nouns and construct state nouns are defined as subtypes of *possessed*. The two subtypes are associated with different linking patterns between ARG-ST and the VALENCE attributes of the noun. The type hierarchy is given in (70).

(70)



The possessor argument in the ARG-ST of FG nouns is mapped to the COMPS list as a genitive PP[of], similarly to Wintner (2000). This type of a possessed noun is associated with *possessed-fg*, the left (subtype) daughter of *possessed* in (70). Mapping is expressed by the structure-sharing of the initial elements in ARG-ST and COMPS, both tagged [3]. The underspecified XP is unifiable with the more specific PP. Consequently, the indices of the XP and the PP are token-identical.[27]

Construct state nouns are associated with *possessed-cs*. In CSs, as opposed to FGs, the abstract possessor is mapped to the COMPS list as an NP. Under this analysis, which does not utilize optional complements, there is no need to include the DEP feature.

By defining FGs and CSs as subtypes of a more general *possessed* type, we are able to relate them to each other. Thus, properties shared by both types can be associated with the supertype, and, those properties which distinguish between them can be defined for the appropriate subtype.

There is, however, one property of CSs that has not been accounted for. As was mentioned earlier, the CS noun appears in a reduced phonological form. This means

[27]Case-marking prepositions such as *of* are assumed to inherit the CONTENT of their NP complements. This point will be elaborated shortly.

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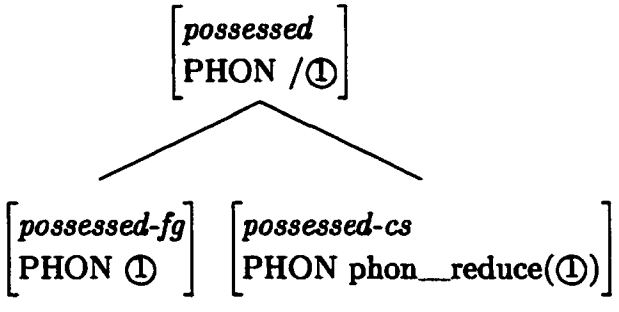
that the PHON value of a *possessed-fg* is identical to that of the supertype *possessed*, while that of *possessed-cs* is the output of a function (*phon_reduce*) in which the argument is a value of the supertype.

The fact that one subtype inherits a value and the other does not is handled by defining defaults. Default values were utilized in the Valence Principle and the Empty COMPS Constraint (ECC), described in section 3.2. There is, however, no existing mechanism for cross-referencing of values between levels in a type hierarchy.

The solution proposed here involves a new notation—a number surrounded by a circle (i.e. ①). When two nodes share a circled number it indicates that the values of these nodes are identical *copies* of each other. This type of identity, unlike token-identity, does not require that two paths lead to an identical node and therefore can be used to indicate identity between two values in a hierarchy. Thus, the PHON features of the types described in the hierarchy in (70) are given in (71).[28]

(71)



The FG noun type inherits the default PHON value of its supertype, while the CS inherits the value as an argument to the phonological function *phon_reduce*.

Finally, the possessed noun in the PDC, under this analysis, is characterized as a *possessed* noun. The possessor argument in ARG-ST is not necessarily mapped to a VALENCE feature, although it can be.[29] This possessor argument is realized as an

[28] A value preceded by a slash (/) is a default value.

[29] Consequently a possessor may be realized twice—as a complement of the possessed noun and as a PD. This double-instantiation is licensed in MH. An example of double-instantiation is given in (i).

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additional argument on the COMPS list of the selecting head. The mechanism by which this takes place is that of *raising.*

Argument raising

The technique of argument raising was introduced in HPSG by Hinrichs & Nakazawa (1989) to account for verbal cluster formation in German. The German case involved a class of verbal complement taking verbs and the constituent structure of the phrases they form. An example of such a sentence is given in (72).

(72) Peter das Buch finden können wird
Peter the book find can will
'Peter will be able to find the book.'
(= Hinrichs & Nakazawa's (1989) ex. 1)

The analysis which Hinrichs & Nakazawa (1989) propose accounts for this phenomenon lexically by a technique referred to as ARGUMENT COMPOSITION or ARGUMENT-RAISING. Under their analysis, the embedding verbs combine with the embedded verb to form a constituent, which takes over the subcategorization requirements of the embedded verb. When the main verb combines with an auxiliary the resulting complex verb 'inherits' the valence requirements of the main verb. In other words, the arguments of the main verb raise to the valence of the auxiliary. Thus, in the example above the main verb *finden* ('find') first combines with the auxiliaries *koennen* ('can') and *wird* ('will'). The verbal complex, then, selects for an NP subject and an NP complement, as is defined for the main verb *finden.*

The description of this type of argument-raising is illustrated in (73).

(i) ha-yalda axla le-dana$_i$ et ha-tapu'ax shel-a$_i$
the-girl ate to-Dana ACC the-apple of-her
'The girl ate Dana's apple.'

The possessor is encoded as a pronominal clitic on the genitive *shel* 'of' and as a lexical NP in the PD.

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(73) $\left[\text{SYNSEM} \mid \text{LOC} \mid \text{CAT} \mid \text{VAL} \mid \text{COMPS } \boxed{1} \oplus \left\langle \left[\text{LOC} \mid \text{CAT} \mid \text{VAL} \mid \text{COMPS } \boxed{1}\right]\right\rangle\right]$

The complements of the embedded verb, tagged [1], are 'raised' from the COMPS list of the embedded verb and appended to the beginning of the COMPS list of the embedding verb.

De Kuthy & Meurers (2001) take this type of analysis a step further by generalizing it over verbal heads with different kinds of complements. This extension is then used by De Kuthy (2000) to account for an interesting case in German where an NP and its PP modifier can be split to become co-arguments of a selecting verb. An example is given in (74).

(74) [Ein Buch] will er über Syntax ausleihen
a book wants he on syntax to-borrow
'He wants to borrow a book on syntax.'
(= De Kuthy's (2000) ex. 168)

Under De Kuthy's analysis, the NP *Ein Buch*, subcategorizes for a PP modifier, *über Syntax*.[30] The main verb, in turn, subcategorizes for its direct object NP as well as for the NP's complement, the PP. In other words, the PP is 'raised' from the COMPS list of the NP to that of its selecting head. A partial description of this type of raising is given in (75):

(75) $\left[\text{COMPS } \left\langle \boxed{3} \right\rangle \oplus \left\langle \boxed{1} \text{ NP}\left[\text{COMPS } \left\langle \boxed{3} \text{ PP} \right\rangle\right] \right\rangle\right]$

The argument-raising analysis separates the PP from the NP and accounts for their independent syntactic behavior in the domain of the VP.

[30] An analysis where adjuncts appear as subcategorized elements of a head is proposed in Bouma *et al.* 2001.

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The syntax-semantics split

The main characteristic of raising constructions is the syntax-semantics split, where a semantic argument of a lower constituent surfaces as a syntactic argument of a higher one. I believe that this type of an analysis is appropriate for the Hebrew PDC. In a nutshell, the possessor argument of an NP raises to become an independent syntactic argument of the selecting head.

The claim that the PD is a syntactic argument of the verb and not of the nominal is easily justifiable. As evidence, consider the following three pairs of examples which exemplify the ability of PDs to be questioned (76), relativized (77), and topicalized (78).

(76) a. le-mi dana axla et ha-tapuax?
to-whom Dana ate ACC the-apple
'Whose apple did Dana eat?'

b. le-mi ha-kelev yashan ba-mita?
to-whom the-dog slept in-the-bed
'In whose bed did the dog sleep?'

(77) a. zu ha-yalda she-dana axla la et ha-tapuax
this the-gril that-Dana ate to-her ACC the-apple
'This is the girl whose apple Dana ate.'

b. zu ha-yalda she-ha-kelev yashan la ba-mita
this the-girl that-the-dog slept to-her in-the-bed
'This is the girl in whose bed the dog slept.'

(78) a. le-gil, dana axla et ha-tapuax
to-Gil Dana ate ACC the-apple
'It was GIL'S apple that Dana ate.'

b. le-gil, ha-kelev yashan ba-mita
to-Gil the-dog slept in-the-bed
'It was GIL'S bed where the dog slept.'

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The issue of the semantic contribution of the PD is not as straightforward. That the PD is construed as a possessor is practically true by definition. However, it is not obvious which predicate assigns it this role. A number of suggestions have been made in the wide literature on external possession. Borer & Grodzinsky (1986) propose that the *possessor* role is assigned to the PD by the dative preposition *le*. As evidence they cite examples of what they analyze as verb-less clauses in which a dative argument is construed as a possessor.[31] Gueron (1982) assumes that the verbal head subcategorizes for an optional theta-role of possessor. Landau (1999), on the other hand, adopts a raising analysis in which the PD originates as an argument in the DP of the possessed noun and moves out of it to check its case, thus deriving its role as a *possessor* from the noun itself.

I assume, like Landau, that this is indeed a case of raising in which the possessor is a semantic argument of the possessed. In doing so I can provide a unified account of possession in MH (given above). Moreover, I am not required to posit a somewhat ad-hoc optional *possessor* argument slot in the semantic relation denoted by the verb.[32]

---

[31] See Borer & Grodzinsky (1986:214).

[32] An extra piece of evidence for the syntax-semantics split comes from control phenomena. Landau (1999) observes that PDs can control the unexpressed subjects of infinitival VPs provided that the PD and the VP are co-arguments. As an example he provides the following pair:

(i). *gil lixlex le-rina$_i$ et ha-shatiax [PRO$_i$ le-nakot]
Gil dirtied to-Rina ACC the-carpet PRO to-clean
'Gil dirtied Rina's carpet to clean.'
(= Landau's ex. 45)

(ii). gil haras le-rina$_i$ et ha-sikuy [PRO$_i$ lizkot be-atsma ba-taxarut]
Gil ruined to-Rina ACC the-chance PRO to-win in-herself in-the-contest
'Gil ruined Rina's chances to win the contest by herself.'
(= Landau's ex. 48)

In the (i) the PD *le-rina* ('to-Rina') cannot be interpreted as the subject of the infinitival VP *le-nakot* ('to clean'). For Landau, this suggests that the PD and the VP (CP, in his terminology) are not co-arguments (i.e. the PD is not an argument of the verb). In contrast, in (ii) the PD does control the subject of the adnominal VP. Thus, the PD and the VP are co-arguments of the noun *sikuy* ('chance').

In HPSG control is viewed as structure-sharing between two indices—the index of the controller and the index within the embedded soa (Pollard & Sag 1994). "Controller assignment principles are

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This, however, does not complete the picture. An additional question that is raised is whether the PD only functions as a *possessor* or, rather, whether it is assigned an additional semantic role and, if it is, by what. It has been widely noticed crosslinguistically that clauses with an external possessor are not identical paraphrases of their internal possessor counterparts. Indeed, the fact that there are two separate constructions in a language suggests some semantic or functional motivation. Therefore, it does not seem plausible to assign them the same interpretation, as would be the case if we assumed a strict syntax-semantics split.

Landau notes that "...these [PDC N.M.] sentences are not semantically equivalent to their genitive counterparts [...] They all imply that the possessor is somehow *affected* by the action denoted by the verb. Most commonly, an adversity reading is available, though benefactive readings are perfectly possible as well" (p. 3). This observation is consistent with others made regarding numerous other languages. Shibatani (1994) refers to this as extra-thematicity and writes: "A widely observed characteristic of the relevant dative constructions is the extra-thematic nature of the dative nominals in question. By 'extra-thematic,' I mean a situation where an argument exists that is not part of the case frame of the verb with which it occurs, or that does not bear a theta role specified by the verbal head" (p. 465).

This would suggest then that the PD is assigned an additional thematic role, that of being *affected*. Assuming that this role is assigned by the verb would require us to extend the semantic relation of the verb to include an additional optional argument. Doing so would not be consistent with our view of the PDC as exhibiting a syntax-semantics split. The PD in this case would function as a syntactic argument of the verb and as a semantic argument of both the verb and the noun. Moreover, by defining the PD as an argument on a par with the core arguments of the verb we do

tied to the psoas described by linguistic expressions rather than to linguistic expressions themselves" (p. 293). By proposing that the PD is a semantic argument of the construction (and of the possessed noun) but **not of the verb itself** we can account for the differences in control patterns. A complete analysis of these constructions is outside the scope of this work.

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not capture the insight that was expressed by Shibatani (above) and that is shared by many others working on external possession, namely that of extra-thematicity.

It is for these reasons that I propose that the role of being *affected* is attributed to the PD by the construction itself. Specifically, I propose that the rule which maps a description of an appropriate verb to its PDC counterpart adds an additional relation to the RELS list of the input verb, a relation which attributes the property of AFFECTED to the PD and EVENT to the event denoted by the verb. The KEY relation remains the one associated with the core semantics of the verb.

(79) $\begin{bmatrix} \textit{affectedness} \\ \text{AFFECTED } \textit{index} \\ \text{EVENT } \textit{index} \end{bmatrix}$

I believe that this is the appropriate implementation of the claim that the notion *affectedness* is a product of the construction in its entirety and not as function of the verbal head itself.

The PDC lexical rules

I have identified four different types of verbs to which the PDC can be applied.

- In a transitive verb, the PD is construed as the possessor of the first element in COMPS.

(80) ha-yalda axla li/le-dana et ha-tapu'ax
the-girl ate to-me/to-Dana ACC the-apple
'The girl ate my/Dana's apple.'
(= (63))

- In a personal unaccusative verb, the PD is construed as the possessor of the NP argument in SUBJ.

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(81) ha-maftexot naflu la-hem
the-keys.3PM fell.3P to-them
'Their keys fell.'
(= (68))

- In an impersonal unaccusative, the PD is construed as the possessor of the first NP argument in COMPS.

(82) haya la-nu mishpaxa me'araxat
was.3SM to-us family.3SF host.3SF
'We had a host family.'
(= Blum-Kulka (1997:IS05B))

- In a 2-place predicate with a PP complement, the PD is construed as the possessor of the NP-complement of the PP.

(83) ha-kelev shaxav le-dani al ha-mita
the-dog lay to-Danny on the-bed
'The dog lay on Danny's bed.'

The four cases can be collapsed into two distinct lexical rules. One lexical rule, given in (84), applies to the first three cases. The possessed NP is identified as the last NP argument in the ARG-ST list of the verb. In a transitive verb, it is the second NP in ARG-ST, the first NP being the one indexed [0] in ARG-ST. $NP_{[0]}$ is empty in the case of unaccusatives. The second NP, tagged [1] is mapped to SUBJ, in the case of personal verbs, and to COMPS, for impersonal verbs. In both cases, this NP is construed as the possessed NP in a PDC. By identifying the possessed NP in ARG-ST and not in VALENCE we can unify the three cases.

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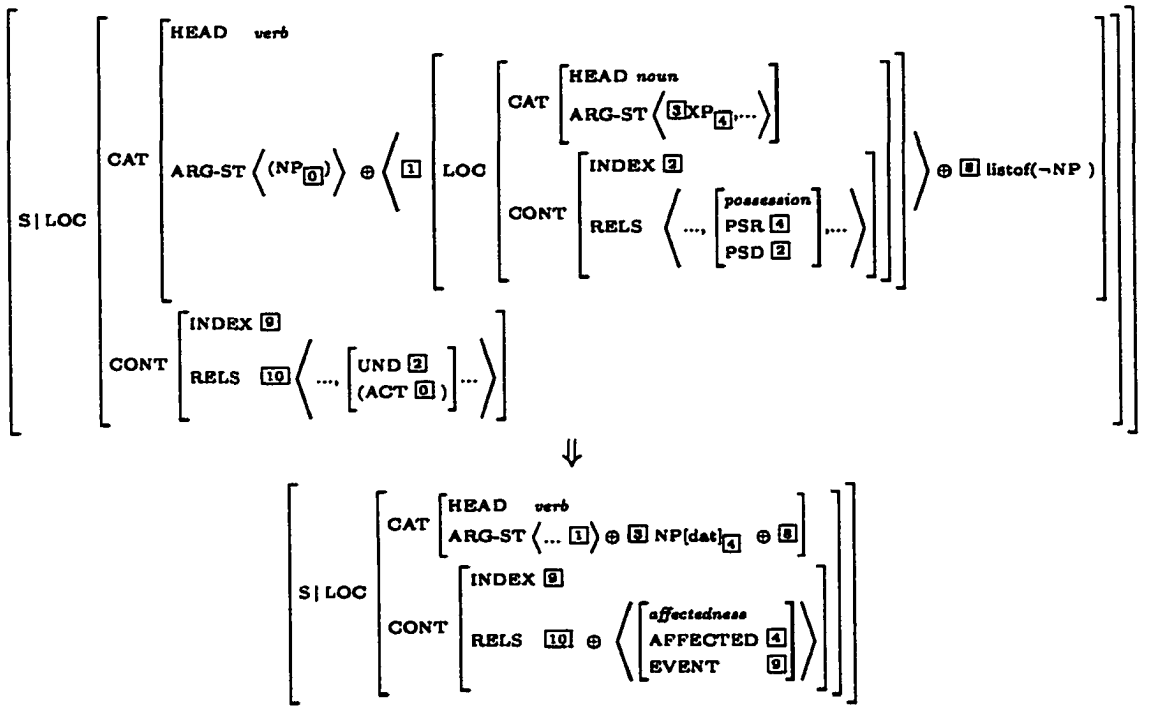
(84)



In the description of the input to the LR, the NP is defined as a possessed NP by virtue of the *possession* relation that is included in its CONT(ENT). In this relation the value of the feature PSD (possessed) is token-identical to the INDEX value of the possessed NP. The possessor (PSR), indexed [4], both in the *possession* relation and in the ARG-ST of the possessed NP, is the argument that raises. This can be seen in the description of the output to the LR, where the ARG-ST of the verb is augmented with an additional argument, the dative possessor, whose INDEX value is token-identical to the possessor in the input to the rule, namely [4].

The generalization that the PDC is licensed as long as the possessed NP is an internal argument (i.e. direct object of a transitive verbs and a-subject of unaccusative) is too permissive. It is generally assumed in the literature that constructions such as the PDC are limited to those cases where the possessed NP is an affected theme. Considering that external possession in most languages is limited to inalienable pos-

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session, this statement makes sense: if a body-part is affected its possessor must be affected too. In his paper Landau (1999) argues convincingly that, at least for MH, this claim is empirically false. Instead, Landau proposes that the correct generalization is that the PDC is incompatible with non-agentive transitives.[33] This is implemented in the LR by the semantic restriction stating that the subject NP of a transitive verb, indexed [0], is required to be an ACT(OR). In addition, in order to prevent the LR from applying to unergative verbs, the possessed NP is required to be an UND(ERGOER). This is achieved by limiting the input to those verbs whose content contains a relation in which the NP, indexed [2], is defined as UND(ERGOER). Finally, the semantic content of the output to the rule is identical to that of the input verb with the addition of an *affectedness* relation.

The PDC is not limited to cases where the possessed NP is an immediate dependent of the verb. The possessor-possessed relationship can hold between a possessor dative and an NP complement of an oblique argument of the verb (i.e. a complement in a PP). An example is given in (83) above. Recall, that the LR targets verbs with internal arguments of type *possessed*. Yet, when the possessed argument is embedded in a PP it is not necessarily accessible to the LR. An account of this seemingly nonlocal relationship requires a closer look at the analysis of PPs.

Heads of prepositional phrases are generally assumed to fall under one of two categories: 'semantically vacuous' case-marking preposition and contentful prepositions.

[33] An example of a possessed unaffected theme is given in (i). Conversely, an ungrammatical PDC sentence with a non-agentive (experiencer) subject is given in (ii).

(i) Gil madad le-rina et ha-salon
Gil measured to-Rina ACC the-living-room
'Gil measured Rina's living room.'
(= Landau's (1999) ex. 54c)

(ii) *Gil ahav le-rina et ha-tisroket
Gil loved to-Rina ACC the-hairstyle
'Gil loved Rina's hairstyle.'
(= Landau's (1999) ex. 52a)

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Pollard & Sag (1994) propose that in the case of the former the head preposition in a PP does not make a contribution to the CONTENT of the PP, and that its CONTENT is structure-shared with that of it NP complement. Thus, in such cases the index of the PP is token-identical to that of its complement.[34]

What complicates matters is that the PPs which may contain the possessed NP in the PDC are not limited to those headed by 'semantically vacuous' prepositions. Rather, as is evident from the following example, adapted from Borer & Grodzinsky's (1986) example (14), the heads of the PPs do make a contribution to the semantic content of the PP.

(85) ha-kelev shaxav le-dani al/mitaxat/leyad ha-mita
the-dog lay to-Danny on/under/near the-bed
'The dog lay on/under/near Danny's bed.'

In such cases, then, it is not plausible to argue that the CONTENT of the PP is structure-shared with the CONTENT of the NP. The question that is raised then is how to identify the possession relationship within an argument of an argument. In other words, what, if anything, that is related to the complement of PP is visible at the phrasal level?

Adopting the Minimal Recursion Semantics (MRS) approach to semantics, I assume that the value of the RELS of a phrase is the union of the RELS of its daughters. The semantic content of a PP then would include that of its NP complement.[35]

[34]One motivation for such an analysis is the following binding situation in which the complement of the PP is subject to Principles A & B of the Binding Theory.

(i) John$_i$ relies on himself$_i$/*him$_i$.

[35]The semantic content of the PP in this case contains the RELS value not only of the immediate daughters but of all of the daughters' 'descendants' as well. Thus, a possessed NP could be deeply embedded in the PP. Whether this reflects the data is a matter of debate. Landau (1999) argues for a locality restriction, yet in the following example the possessor is embedded within the complement of the preposition.

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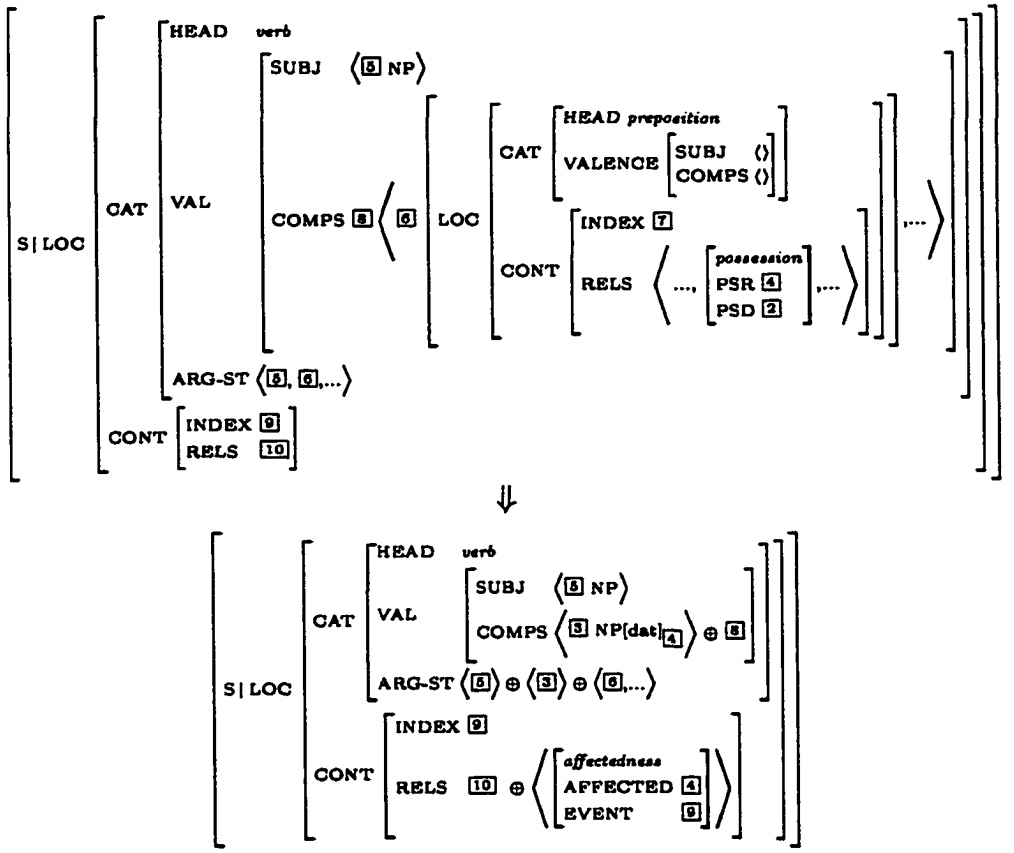
The PDC LR for intransitive verbs with PP complements is then given in (86).

(86)



The first argument in the COMPS list of the input to the LR is a PP tagged 6. The distinguishing property of this PP is that its CONT feature contains a *possession* relation, with the POSSESSOR indexed 4 and the POSSESSED indexed 2. The *index* value of the POSSESSOR is structure-shared with the INDEX value of the dative argument, tagged 3, that is added to ARG-ST and COMPS in the description of the output. This is the PD. The rest of the COMPS list of the input verb, tagged 8, is appended to the COMPS list of the output. In addition, similarly to the previous PDC LR (84),

(i) dani shatal le-gil etsim ba-migrash mul ha-bayit
Dana planted to-Gil trees in-the-field across the-house
'Danny planted trees in the field across from Gil's house'

It seems as if the locality restriction here is more pragmatic than syntactic. Nevertheless, a discussion of this issue is outside the scope of this work.

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an *affectedness* relation is appended to RELS.

Finally, one generalization that cuts across the different environments where the PDC is applied is the order of the arguments. Regardless of the type of verb and the position of the subject (i.e. postverbal or preverbal), the dative argument always appears immediately after the verb. This property is discussed further in section 4.4.3 and implemented by way of a linear precedence constraint.

4.3.4 Conclusion

In conclusion, this section was dedicated to the PDC in its various contexts. The analysis of this construction serves us later in this work when we consider the VDS_{agr} and VDS_{nonagr} constructions. A crucial issue in this analysis is the syntax-semantics split. The PD arguments which are added to ARG-ST via the PDC lexical rule are semantic arguments of an argument of the verb—the possessed NP—and are syntactic arguments of the verb. In the following section we examine the types of phrases that license the VDS constructions as well as VOS and VS.

4.4 Phrase types

At this point in our analysis we have established the different types of lexical items that appear in verb-initial constructions in MH. These verbs fall into two main categories: subjectless and subject-taking verbs. Subjectless verbs appear in two different types of verb-initial constructions:

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- VS_{nonagr}

(87) nish'ar kama tapuxim
remained.3SM some apples.3PM
'There are some apples left.'
(= (28))

- VDS_{nonagr}

(88) ko'ev li ha-beten
hurts.3SM to-me the-stomach.3SF
'My stomach hurts.'

In both cases the verbs are restricted to unaccusatives and existentials and are classified in the lexical hierarchy as *comps-unacc-vb*.

Subject-taking verbs appear in the following three verb-initial constructions:

- VS_{agr}

(89) tilfenu ha-horim shelxa
telephoned.3PM the-parents.3PM your.2SM
'Your parents called.'

- VDS_{agr}

(90) nikre'u li ha-mixnasayim
tore.3P to-me the-pants.3PM
'My pants tore.'

- VOS

(91) aktsa oti dvora
stung.3SF ACC.1S bee.3SF
'A bee stung me.'

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The first construction, VS_{agr}, involves all types of intransitive verbs (i.e. unergatives, unaccusatives, and existentials). The VDS_{agr} construction is based on the output of the application of the PDC lexical rule on an agreeing unaccusative or existential verb. The verb type involved in the third construction is a two-place predicate.

The next step in the analysis is to account for the phrase types that license the different constructions. In order to do so, I first argue that the VOS and VDS_{agr} constructions exhibit the same syntactic behavior. Having established this, I outline Borsley's (1995) account of verb-initial constructions in Syrian Arabic and Welsh, as an example of a lexicalist analysis of such constructions. Finally, I propose an analysis of the MH data.

4.4.1 The syntactic behavior of the VOS and the VDS_{agr} constructions

There are two main issues that need to be addressed regarding the VOS and VDS_{agr} constructions. First, the impression that we get from most of the VOS data is that the O argument tends to be a pronominal. This may suggest that it is not an independent argument but rather a clitic. While evidence for the argument status of the PD in the VDS_{agr} was presented in section 4.3.3, the status of the O argument in VOS is yet to be determined.

Second, on the surface, both VOS and VDS_{agr} seem to have the same structure. Yet, while the postverbal constituent in the VOS construction is a subcategorized argument, the postverbal dative constituent in VDS_{agr} is viewed here as a raised argument 'originating' lexically as a complement of the sole argument of an unaccusative or existential verb. This may have some bearing on the syntactic structure of the two constructions, possibly resulting in distinct structures.

In what follows I address each of these issues in turn, arguing that the O argu-

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ment in the two constructions is not necessarily a clitic and that the two types of constructions can in fact be treated uniformally with respect to the phrase types that license them.

The claim that the O argument in a VOS construction is not necessarily a clitic is supported by the following evidence. The O argument is not required to be a pronominal (92)–(94) and it can be a coordinated phrase (95).

(92) aktsa et dani dvora
stung.3SF ACC Danny bee.3SF
'A bee stung Danny.'

(93) hitxolela ba-xuc se'ara
raged.3FS in-the-outside storm
'A storm raged outside.'
(= Shlonsky's (1987) ex. 7-31)

(94) karta kan te'una
occured.3FS here accident
'An accident occurred here.'
(= Shlonsky's (1987) ex. 7-34)

(95) aktsu oti ve-et dani hamon dvorim
stung.3P ACC.1S and-ACC Danny many bees.3PF
'Many bees stung Danny and me.'

The independent argument status of the postverbal argument in the VOS and VDS_{agr} constructions implies that VDS_{agr} is a special case of VOS where the O argument is a possessor dative. In order to verify that this is in fact the case, we consider different syntactic contexts in which the two constructions can appear. The goal of this is

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twofold; to compare the two constructions and to lay out the facts needed in order to determine their syntactic structure.

The following two examples illustrate the ability of the O argument in both constructions to be relativized (96) and questioned (97).

(96) a. zu ha-yalda she-nikre'u la ha-mixnasayim
this the-girl that-tore.3P to-her the-pants.3PM
'This is the girl whose pants tore.'

b. zu ha-yalda she-tipsa aley-ha nemala
this the-girl that-climbed.3SF on-her ant.3SF
'This is the girl whom an ant climbed on.'

(97) a. le-mi nikre'u ha-mixnasayim?
to-whom tore.3P the-pants.3PM
'Whose pants tore?'

b. al mi tipsa nemala
on whom climbed.3SF ant.3SF
'On whom did an ant climb?'

In (96) a resumptive pronoun marks the position of the relativized argument, yet in (97) there is no indication whether the O argument 'originates' from a VOS or VSO clause.[36,37] However, if we deeply embed this question and leave a resumptive

[36]PPs are always 'pied-piped' in Modern Hebrew, as prepositions can never be stranded.

[37]In general, MH has optional resumptive pronouns in object position. However, when the object in a VOS construction is relativized, a resumptive pronoun is obligatory.

(i) ze ha-yeleld she-akats **oto** akrav
this the-boy that-stung.1SM ACC.3SM scorpion
'This is the boy whom a scorpion stung.'

Without a resumptive pronoun the sentences is interpreted as being a subject relative clause.

(ii) ze ha-yeleld she-akats akrav
this the-boy that-stung.1SM scorpion
'This is the boy who stung a scorpion.'

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pronoun in the 'extraction site', the result reveals that the O argument is more likely to be associated with a VOS position (98a) than a VSO position (98b).

(98) a. al mi shama'ata she-Dana amra she-tipsa **alav** nemala
on whom you-heard that-Dana told that-climbed.3SF on-him ant.3SF

b. *al mi shama'ata she-Dana amra she-tipsa nemala **alav**
on whom you-heard that-Dana told that-climbed.3SF ant.3SF on-him
'On whom did you hear that Dana said that an ant climbed?'

An additional syntactic environment in which VOS and VDS_{agr} exhibit parallel behavior is coordination. The type of coordination exemplified in (99) for the VOS construction and in (100) for VDS_{agr} is referred to as 'SGF Coordination' by Kathol (1999b). The subject in SGF coordinations appears to be shared by two conjuncts, yet it occurs in a position in which one would not expect a shared element to be. A more detailed discussion of SGF coordination is found in section 4.4.3. At this point it suffices to point out that both the VOS and VDS_{agr} constructions are licensed in this environment.

(99) tipes alai xarak ve-akats oti
climbed.3SM on-me bug.3SM and-stung.3SM ACC.1S
'A bug climbed on me and stung me.'

(100) nisraf li ha-bayit ve-neheras (?li) legamrey
burned.3SM to-me the-house.3SM and-ruined.3SM (to-me) totally
'My house burned down and was totally ruined.'

Similarly, both VOS and VDS_{agr} can appear in a gapping construction where the verb in the second conjunct is 'deleted' under identity with the verb of the first conjunct. Following are examples with VOS and VDS_{agr}, respectively.

(101) tipsu alai xarakim ve-∅ alav nemalim
climbed.3P on-me bugs.3PM and-∅ on-him ants.3PS
'Bugs climbed on me and ants, on him.'

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(102) nikre'u li ha-mixnasayim ve-∅ lo ha-xultsa
tore.3P to-me the-pants.3PM and-∅ to-him the-shirt.3SF
'My pants and his shirt tore.'

Turning to adverb placement, adverbs can appear before or after the VOS sequence. An adverb may not intervene between the V and a pronominal O, as is evident from the unacceptable VOS example in (103a) and its SVO counterpart in (103b).[38]

(103) a. *akats etmol oto akrav
stung.3SM yesterday ACC.3SM scorpion.3SM

b. *akrav akats etmol oto
scorpion.3SM stung.3SM yesterday ACC.3SM
'Yesterday a scorpion stung him.'

(104) a. ?akats etmol et dani akrav
stung.3SM yesterday ACC Danny scorpion.3SM

b. akrav akats etmol et dani
scorpion.3SM stung.3SM yesterday ACC Danny
'Yesterday a scorpion stung Danny.'

When the O argument is a lexical NP, an intervening adverb is acceptable, albeit not preferred, in the VOS construction (104a). Nevertheless, notwithstanding the so-called adjacency affect between V and O, an intervening adverb is perfectly grammatical in a SVO context, as is evident from (104b). The same results apply to VDS_{agr}.

Finally, VOS, as well as VDS_{agr}, can appear as an embedded clause, as is shown in the following examples. This property is not necessarily predictable, as V2 in German is restricted to main clauses.

[38]The tendency of pronominals to 'stay close' to the verb is a well known universal phenomena. An example in English is the case of verbal particles which can come between the verb and the direct object, as long as the direct object is lexical (e.g. ***look up a word*** vs. ****look up it*** vs. ***look it up***). Such pronominals are distinguished from clitics, which are completely dependent on their hosts.

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(105) shamati she-akats oto akrav
heard.1S that-stung.3SM ACC.3SM scorpion.3SM
'I heard that a scorpion stung him.'

(106) shamati she-hitkalkela lo ha-mexonit
heard.1S that-broke-down.3SF to-him the-car.3SF
'I heard that his car broke down.'

The evidence presented above confirms the hypothesis that the VDS_{agr} construction can be treated, syntactically, as a sub-type of the VOS construction. The question of the type of phrases which license these constructions is left open at this time. Before we attempt an analysis of these constructions, we will turn to a lexicalist analysis of two types of verb-initial constructions in other languages.

4.4.2 Borsley's analysis of VSO in Syrian Arabic and Welsh

I am not aware of any lexicalist analyses of inversion constructions in MH. Nevertheless, VSO constructions are the subject of a number of papers by Borsley (Borsley 1989 & 1995). In what follows I outline the two distinct analyses which Borsley proposes for Welsh and Syrian Arabic (SA) and then consider their applicability to the MH constructions.

Although both Welsh and SA have VSO constructions, a comparison of cliticization phenomena between the two languages leads Borsley (1995) to different analyses. While in SA it is the O arguments of VSO and SVO constructions that trigger cliticization (i.e. cliticization occurs when the O argument is pronominal), in Welsh it is the S argument in VSO (i.e. the postverbal argument) and the O argument in SVO. Thus, the two languages differ in their treatment of the S argument in VSO constructions, and consequently receive distinct analyses.

Under Borsley's (1995) proposal, transitive verbs in SA subcategorize for SUBJ and COMPS. The verbal head of a verb phrase simultaneously combines with its

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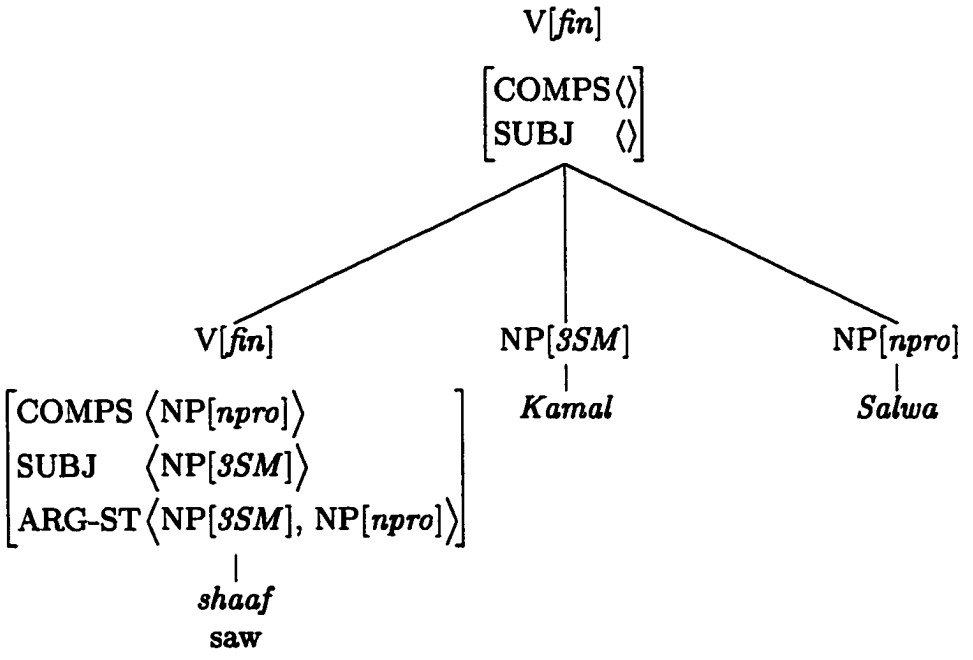
subject and complements to form a *hd-subj-comp-ph* phrase type. Thus, for example, sentence (107) is given the analysis outlined in (108) (Borsley's (90)).[39]

(107) shaaf Kamal Salwa
saw.3SM Kamal.3SM Salwa
'Kamal saw Salwa.'
(= Borsley's (1995) ex. 1a)

(108)



VSO constructions in Welsh are given a different analysis, as cliticization patterns in Welsh group postverbal S with postverbal O. For this reason, Borsley proposes that the two constituents are realized by means of the same valence feature — COMPS. Consequently, finite verbs in Welsh are syntactically subjectless and subcategorize only for complements. The phrase which licenses VSO clauses in Welsh is *hd-comp-ph*.

As an example, consider sentence (109), and its analysis (110).

[39]I have updated the representation to reflect recent developments in HPSG.

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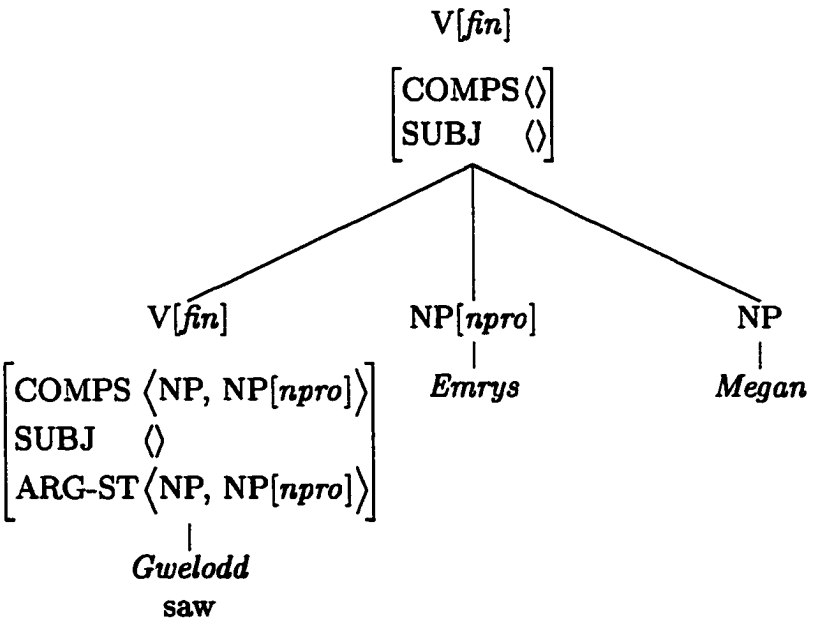
(109) Gwelodd Emrys Megan
saw Emrys Megan
'Emrys saw Megan.'
(= Borsley's (1995) ex. 1b)

(110)



Borsley (1989) himself admits that his analysis of Welsh VSO is not the most obvious one. However, he convincingly argues that the less obvious approach is preferable considering the alternatives. It is precisely the case of VSO in Welsh and SA where the HPSG approach to subjecthood comes into play. The S argument in SA VSO is a valence subject, yet it is not distinguished configurationally from the O argument. In Welsh, on the other hand, the S argument is not a valence subject, nor is it structurally prominent, yet at the argument structure level it is an 'a-subject'.

4.4.3 Subject-verb inversion in MH

Returning to Hebrew inversion constructions, recall that the current proposal considers the determining subject property in MH to be agreement triggering. Syntactic subjects (i.e., dependents selected via SUBJ) are those dependents with which the

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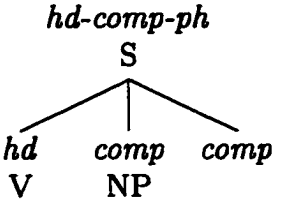
predicate agrees. Dependents which do not trigger agreement on the verb are selected via COMPS. Thus, MH combines properties of both SA and Welsh. In what follows I present an analysis of the five types of verb-initial constructions in MH, divided into subjectless and the subject-taking constructions.

Subjectless constructions

Postverbal dependents in V1 which do not trigger verbal agreement are analyzed as COMPS-subjects, on a par with Borsley's analysis of VSO in Welsh. Consequently, the VS_{nonagr} and VDS_{nonagr} constructions are licensed by the *hd-comp-ph* phrase type, shown in (111).

(111)



Recall that subjectless unaccusative verbs include two subtypes: *nom-comps-unacc-vb* and *acc-comps-unacc-vb*. Sentence (112) is an example of a *nom-comps-unacc-vb* verb type, in which the NP dependent is assigned nominative case. The second type, *acc-comps-unacc-vb*, is generally associated with the existential and possessive constructions and is exemplified by (113).

(112) nish'ar kama tapuxim
remained.3SM some apples.3PM
'There are some apples left.'
(= (28))

(113) haya et ha-sfarim ha-'ele ba-yarid
was.3SM ACC the-books.3PM the-these in-the-fair
'They had these books in the fair.'

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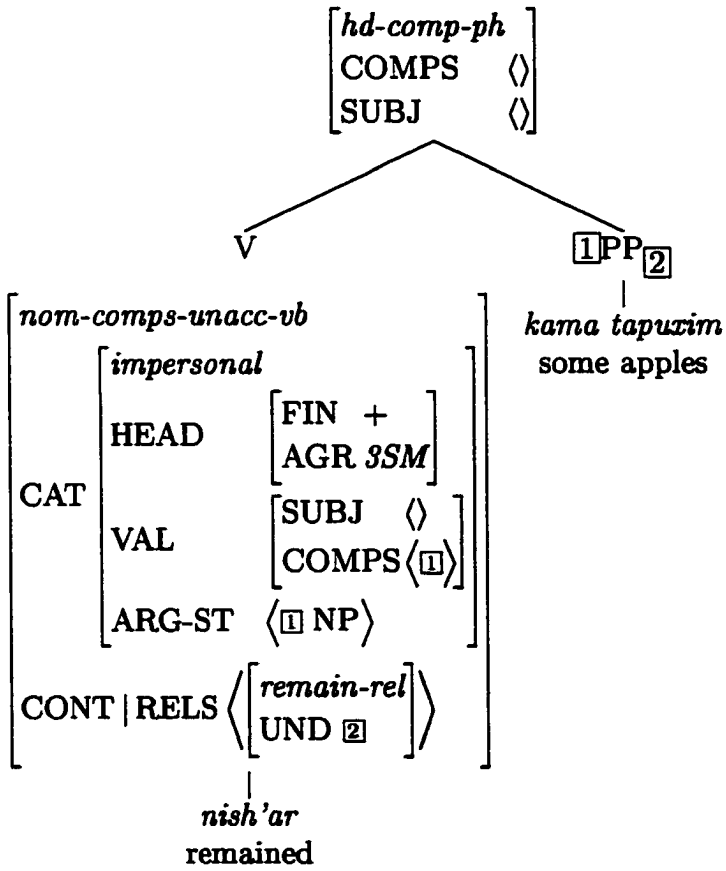
'These books exist/existed in the fair.' (They had/have these books in the fair.) (= (55))

Analyses of the two sentences are given in (114) and (115), respectively.

(114) The VS_{nonagr} Construction with a nominative a-subject



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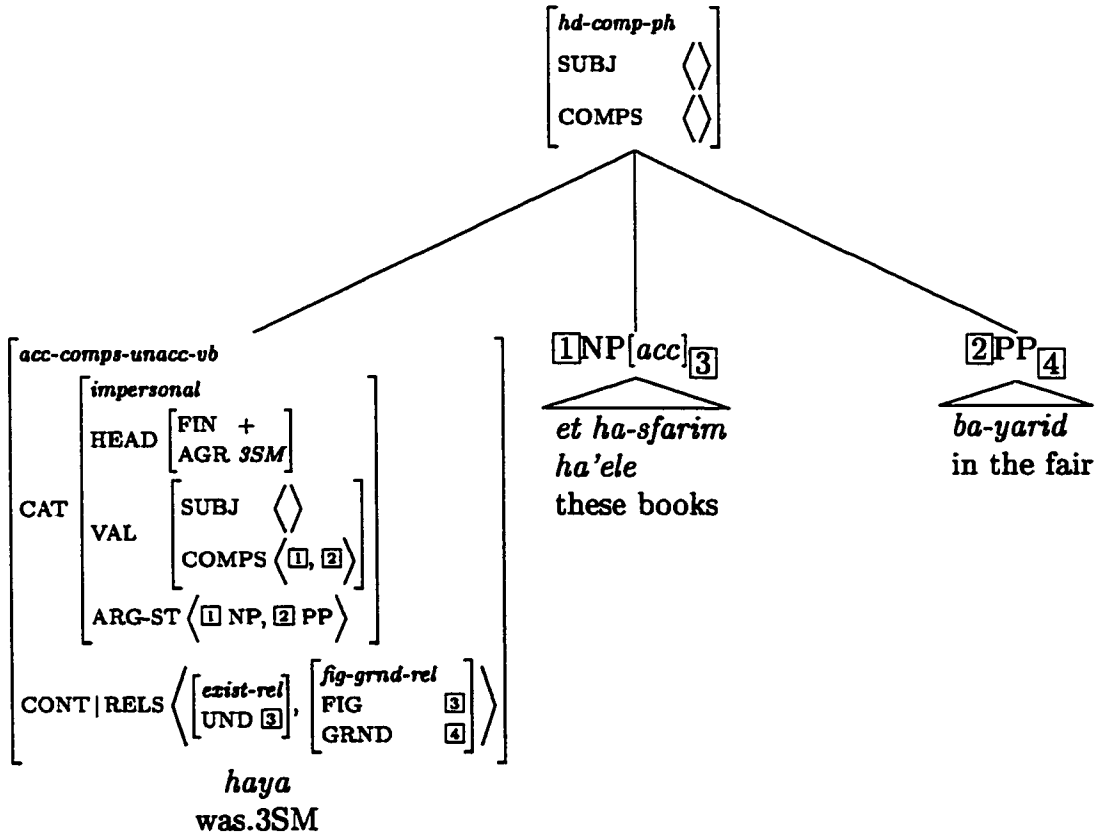
(115) The VS_{nonagr} Construction with an accusative a-subject



The VDS_{nonagr} construction, although similar to VS_{nonagr} in its analysis as a subjectless construction, requires additional considerations. This construction is based on subjectless unaccusatives which undergo the PDC lexical rule. The ARG-ST of these verbs contains two elements, the logical subject NP and the PD. Recall that elements in ARG-ST are ordered in increasing order of obliqueness, and therefore the logical subject ('the stomach' in (116)) appears before the PD ('to Danny'), contrary to the surface order.

(116) ko'ev le-dani ha-beten
hurts.3SM to-Danny the-stomach.3SF
'Danny's stomach hurts.'

The word order of arguments in the PDC was mentioned in section 4.3. The generalization that was made is that the PD *always* follows the verb, regardless of

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the type of verb (i.e. transitive, pseudo-transitive, or unaccusative). The linear precedence (LP) constraint that captures this is given in (117).

(117) *hd-ph* →

$$\left[\begin{array}{l} \textit{verb} \\ \text{ARG-ST}\left\langle \ldots\ \boxed{1}\ \text{NP}_{\boxed{2}}\left[\text{RELS}\left\langle \ldots, \left[\begin{array}{l}\textit{possession}\\ \text{PSR}\ \boxed{4}\\ \text{PSD}\ \boxed{2}\end{array}\right], \ldots\right\rangle\right], \boxed{3}\ \text{NP[dat]}_{\boxed{4}}\ \ldots\right\rangle \end{array}\right] \prec\prec \boxed{3}$$

The prose version of the LP constraint is that if a headed phrase contains a verb whose ARG-ST contains a possessed NP followed by a dative possessor NP, that dative NP, tagged [3] in the constraint, must follow the verb. The constraint is defined on the ARG-ST of the verb in order to unify three cases. For transitive verbs, the possessed NP is the second NP in ARG-ST (i.e. the direct object), preceded by the subject NP. The unaccusatives have one NP argument at the head of ARG-ST — the 'a-subject'. When the 'a-subject' surfaces as a valence subject, it can appear either before the verb (SVD word order) or after the dative (VDS)—both cases captured by the LP constraint. A subjectless instantiation of the unaccusative is restricted to one word order—VDS. A fourth case, where the possessed NP is the complement of a PP, does not require a linear precedence constraint, as the arguments are in the appropriate order in ARG-ST (i.e. the possessor precedes the PP).[40]

The phrase that licenses the combination of subjectless unaccusatives with their dependents is *hd-comp-ph*. The LP constraint described above is responsible for the correct surface order of the dependents. An analysis of the VDS_{nonagr} construction in (116) is given in (118) below. Due to space limitations, the RELS values of the constituents in (118) are listed separately in (119).

[40]The two PDC lexical rules are given in (84) for NPs, and in (86) for PPs.

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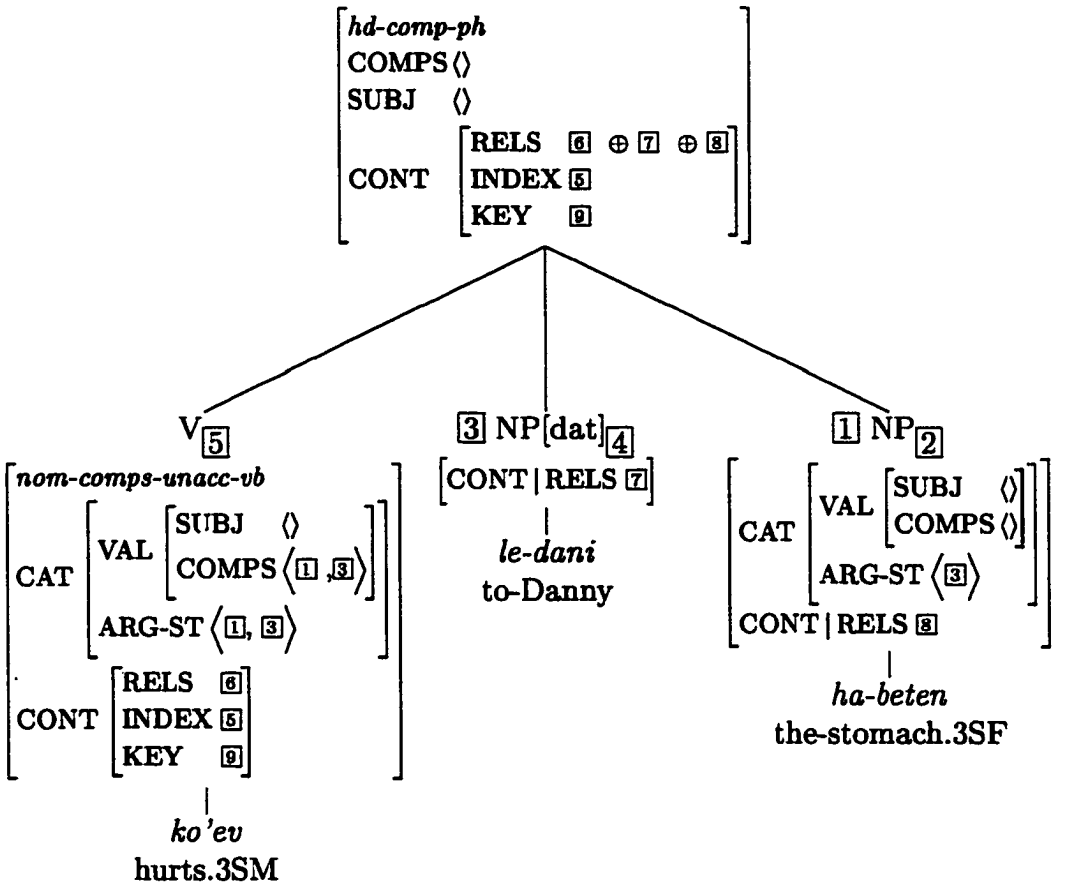
(118) The VDS_{nonagr} Construction



(119) a. $\boxed{8}\left\langle \begin{bmatrix} \textit{stomach-rel} \\ \text{INST } \boxed{2} \end{bmatrix}, \begin{bmatrix} \textit{possession} \\ \text{PSR } \boxed{4} \\ \text{PSD } \boxed{2} \end{bmatrix} \right\rangle$

b. $\boxed{6}\left\langle \boxed{9} \begin{bmatrix} \textit{hurt-rel} \\ \text{UND } \boxed{4} \end{bmatrix}, \begin{bmatrix} \textit{affectedness} \\ \text{AFFECTED } \boxed{4} \\ \text{EVENT } \boxed{5} \end{bmatrix} \right\rangle$

c. $\boxed{7}\left\langle \begin{bmatrix} \textit{named-rel} \\ \text{BEARER } \boxed{4} \\ \text{NAME Danny} \end{bmatrix} \right\rangle$

The syntax-semantics split of the PDC, which was argued for and analyzed in section 4.3.3, is incorporated here along with the analysis of the VDS_{nonagr} construction.

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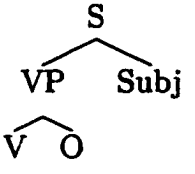
The NP 'the stomach' is a possessed NP which appears with an unrealized argument in its ARG-ST list (tagged [3]). The semantic role of this argument is identified as PSR (POSSESSOR) in the *possession* relation included in the RELS list of 'the stomach' (119c). With respect to its syntactic role, the possessor dative 'to Danny' appears in the verb's COMPS list and is realized as a complement daughter in the *hd-comp-ph* phrase. The RELS list of the verb contains two relation: the *hurt-rel* relation, tagged [9], which is identified as the KEY relation, and the *affectedness* relation, which is added to RELS by the PDC lexical rule. The RELS value of the entire phrase is the concatenation of the RELS of its daughter.

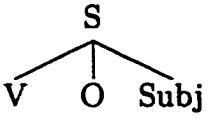
Subject-taking constructions

Postverbal 'subjects' which agree with the verb are analyzed here as syntactic subjects. There are however two options for analyzing VOS constructions, namely a hierarchical structure (120) and a flat one (121).

(120) *hd-subj-ph*



(121) *hd-comp-subj-ph*



Assuming that we want to preserve the subject-predicate bifurcation, the hierarchical structure is more appealing. There are, however, reasons against this choice. Consider for example the sentence in (122).

(122) hayu le-dani praxim ba-gina
were to-Danny flowers in-the-garden
'Danny had flowers in the garden.'

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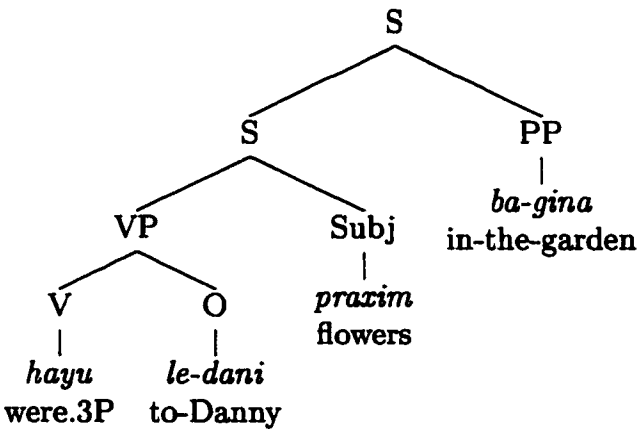
The final PP *ba-gina* ('in the garden') could be analyzed as either a complement or an adjunct. In a non-transformational framework, if we were to assign a hierarchical syntactic structure to (122), we would be lead to analyze the final PP as a sentence modifier, attached to the full clause.

(123)



Yet, it is not entirely convincing that the PP is in fact a modifier, let alone a sentence modifier.

A more difficult case is the one exemplified by (124).

(124) yashen le-dani kelev al ha-mita
sleeping to-Danny dog on the-bed
'A dog is sleeping on Danny's bed.'

In this case, the final PP 'on the bed' is less amenable to an adjunct analysis, especially since the licensing of the PD 'to Danny' depends on the existence of this internal argument.[41] Thus, we have a case of discontinuous complements. Some complements (O_1 in (125)) combine with the verb to form a VP constituent whose COMPS list is not fully saturated. The remaining complements (O_2) are combined with the clause 'after' the subject and the predicate combine.

[41] See the discussion of the PDC in section 4.3.

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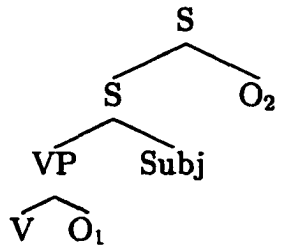
(125)



This type of analysis is contrary to standard assumptions of clause structure in any syntactic framework, and thus leads us to explore the possibility of assigning the VOS construction a flat structure.

The most conservative assumption in a monostratal non-transformational syntactic framework, such as HPSG, is that VSO phrases are licensed by the *hd-subj-comp-ph* phrase type, which is, in fact, a flat phrase structure. This is precisely the standard HPSG analysis of subject-auxiliary inversion in English (Pollard & Sag 1994) and is also the one proposed by Borsley (1989) for Syrian Arabic. VSO, unlike VOS, is less amenable to the configurational structure analysis, where the subject is structurally distinct from the VP constituent, since the S argument intervenes between the V and the O, thus preventing it from being a continuous constituent.

VSO word order occurs in MH in the triggered inversion construction (TI), where a clause-initial constituent is said to trigger subject-verb inversion, resulting in an XVSO word order. A possible analysis of TI in MH is one in which the VSO constituent in TI is licensed by a flat *hd-subj-comp-ph* phrase and in which the required clause-initial trigger is then assumed to be an 'extracted' constituent, which corresponds to clause internal SLASH element. Consequently, the combination of the inverted *hd-subj-comp-ph* phrase with the trigger is an instance of a head-filler phrase (*hd-fill-ph*). A schematic phrase structure of this construction is given in (126) and a more fleshed out analysis of a TI example in (127) is given in (128).

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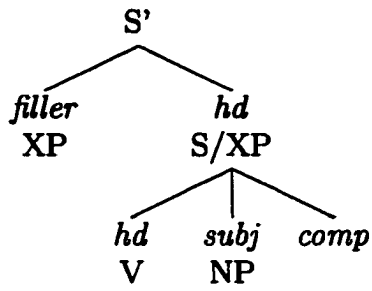
(126)



(127) et ha-mixtav katvu ha-yeladim
ACC the-letter wrote.3PM the-children.3PM

'The children wrote the letter.'

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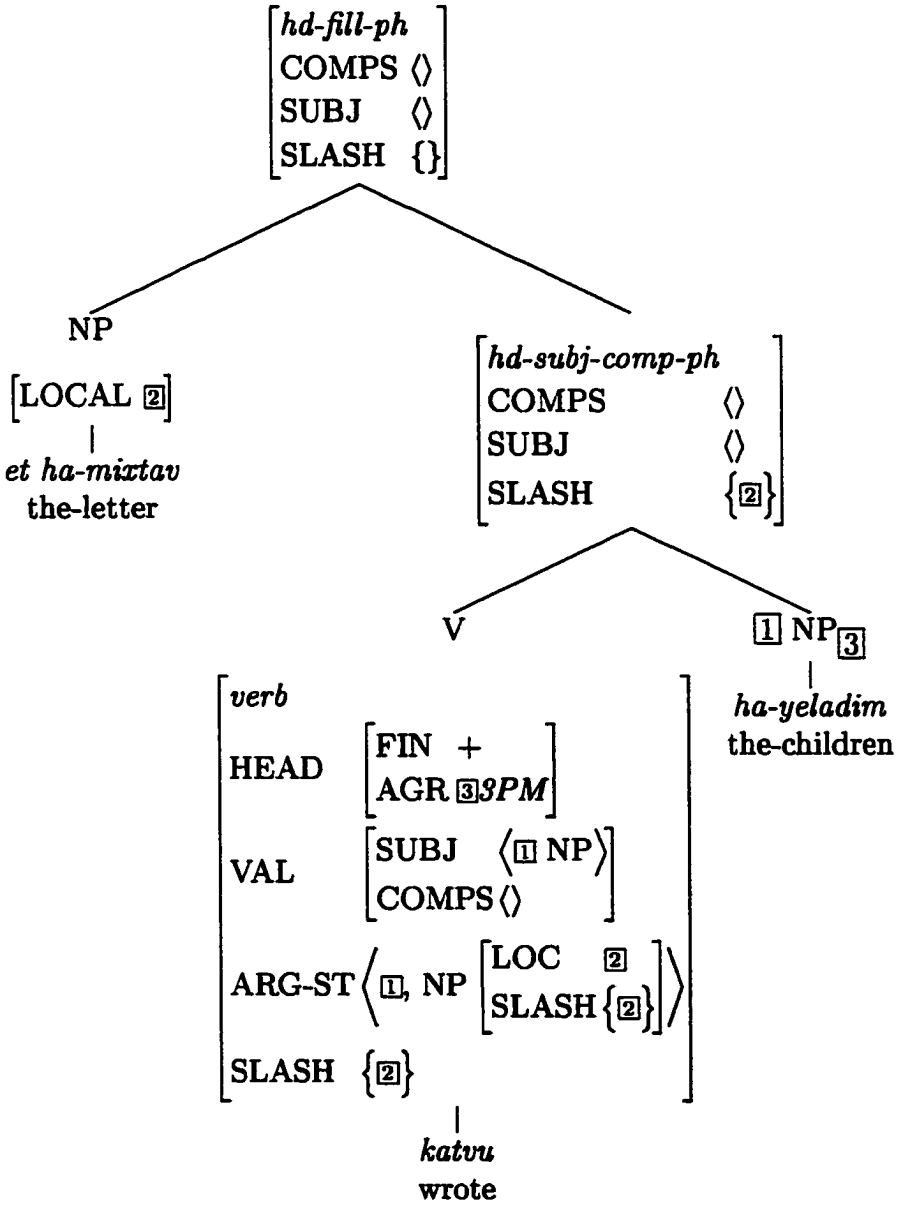
(128) Triggered Inversion



Returning to the VOS construction, I propose that the same phrase type which licenses VSO in MH is at the base of the VOS construction. The VOS construction, then, is a subtype of the *hd-subj-comp-ph* phrase type, one in which a linear precedence constraint accounts for the VOS(O) word order. Moreover, as will be apparent presently, the same phrase type licenses the VS_{agr} construction.

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The similarity between the three constructions is evident in a coordination pattern which they both exhibit. This pattern, illustrated for VSO (129), VS (130), and VOS (131).

(129) etmol higi'a dani la-'ir ve-biker ba-muze'on
yesterday arrived Danny to-the-city and-visited in-the-museum
'Yesterday, Danny arrived in the city and visited the museum.'

(130) zarmu mayim ve-nishpexu al ha-ritspa
flowed.3P the-water.3PM and-spilled.3P on the-floor
'Water flowed and spilled on the floor.'

(131) tipes alai xarak ve-akats oti
climbed on-me bug and-stung ACC.1S
'A bug climbed on me and stung me.'
(= (99))

This type of coordination is referred to as 'SGF Coordination'[42] by Kathol (1999b), who discusses a similar construction in German.[43] In SGF coordinations, the shared subject occurs within the first conjunct. This configuration deviates from the standard case of coordination where the two conjuncts are adjacent and of the same type (cf. the English glosses of the examples above). The fact that the VSO, VS_{agr}, and VOS constructions appear in the same type of coordination pattern suggests that they share the same basic combinatorics, namely the *hd-subj-comp-ph* phrase type.[44]

[42]SGF stands for 'subject gaps in finite/frontal sentences'.

[43]A German example is given in (i):

(i) In den Wald ging der Jäger und fing einen Hasen
into the forest went the hunter and caught a rabbit
'The hunter went into the forest and caught a rabbit.'
(= Kathol's (1999b) ex. 2)

[44]It should be noted, however, that if we view SGF coordination as parallel to VP coordination, as Kathol (1999b) does, a more adequate analysis is a hierarchical one in which a VP constituent

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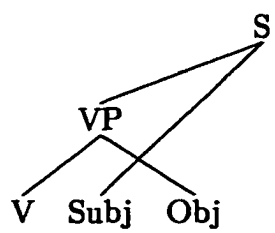
Thus, fleshed out example analyses of the VS_{agr} (133), VOS (135), and VDS_{agr} (138) constructions as phrases of *hd-subj-comp-ph* phrase type are given in (132), (134), and (136), respectively.[45]

is separate from the subject. The mismatch between constituent structure and linear order is not considered a problem in a linearization-based approach, such as the one proposed by Kathol, which recognizes a separate linear level of representation. Thus, under such an analysis, the hierachical constituent structure proposed for VSO order is given in (i).

(i)



A more detailed analysis in this direction is outside the scope of this work.

[45]For the sake of completeness, it should be mentioned that SV(O) constructions in MH are analyzed on a par with English SVO, as is illustrated in 3.2.

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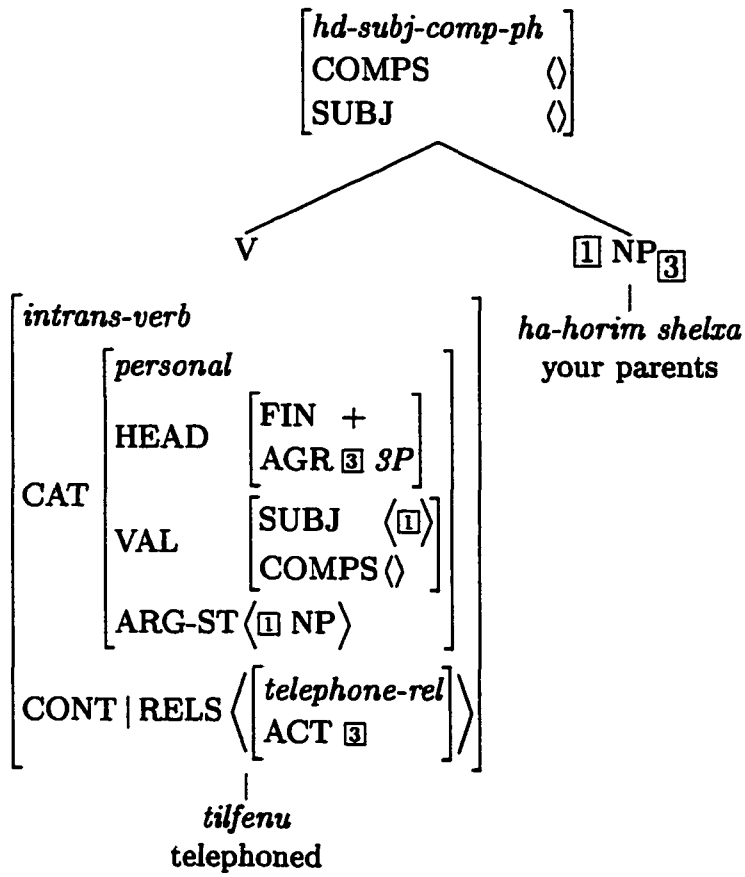
(132) The VS_{agr} Construction



(133) tilfenu ha-horim shelxa
telephoned.3PM the-parents.3PM your.2SM
'Your parents called.'
(= (89))

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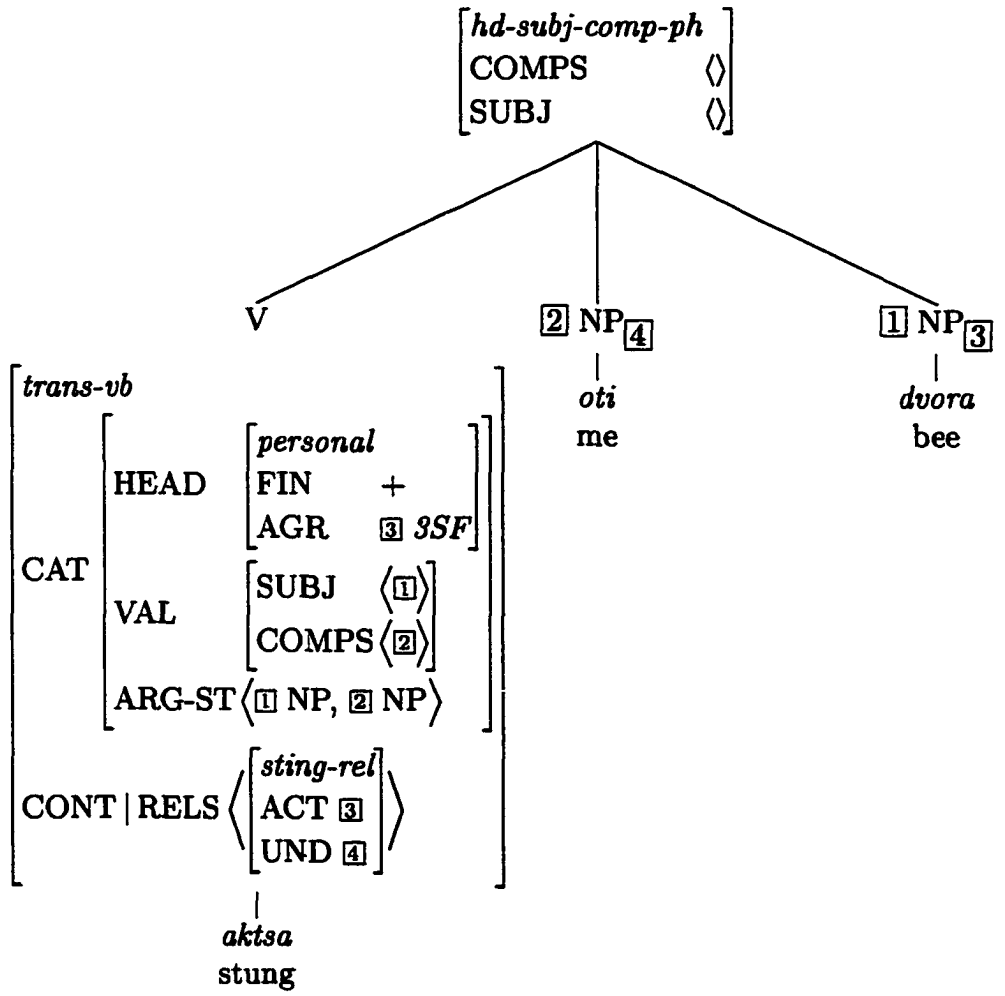
(134) The VOS Construction



(135) aktsa oti dvora
stung.3SF ACC.1S bee.3SF

'A bee stung me.'

(= (91))

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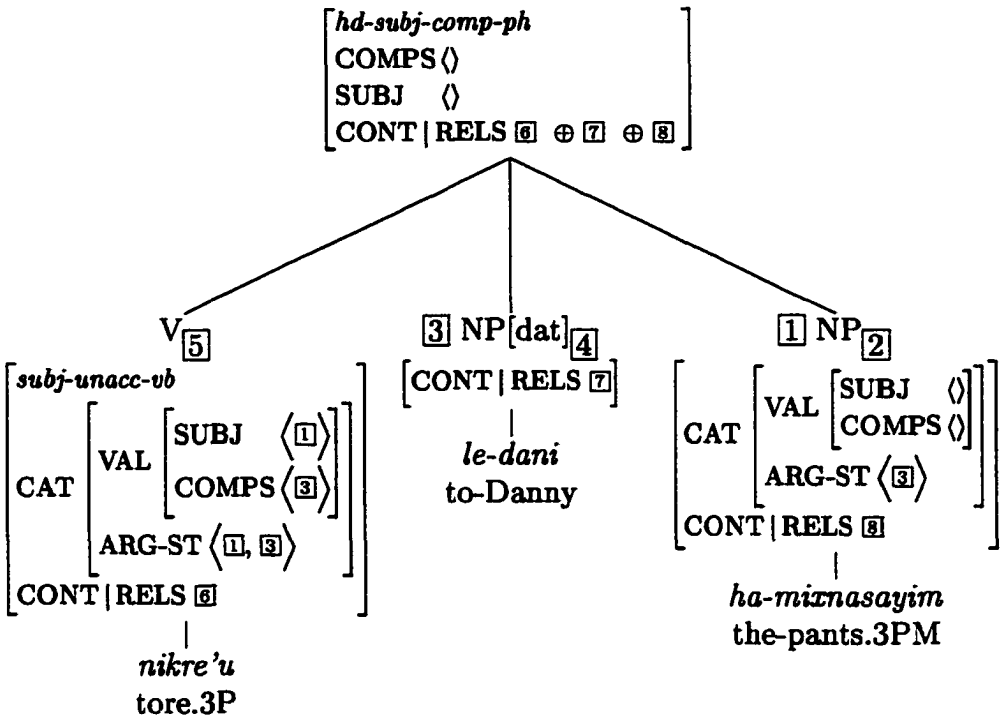
(136) The VDS_{agr} Construction



Due to space limitations, the RELS features of the constituents of (136) are given below.

(137) a. $\boxed{6}\left\langle \begin{bmatrix} \textit{tear-rel} \\ \text{UND } \boxed{4} \end{bmatrix}, \begin{bmatrix} \textit{affectedness} \\ \text{AFFECTED } \boxed{4} \\ \text{EVENT } \boxed{5} \end{bmatrix} \right\rangle$

b. $\boxed{7}\left\langle \begin{bmatrix} \textit{named-rel} \\ \text{BEARER } \boxed{4} \\ \text{NAME Danny} \end{bmatrix} \right\rangle$

c. $\boxed{8}\left\langle \begin{bmatrix} \textit{pants-rel} \\ \text{INST } \boxed{2} \end{bmatrix}, \begin{bmatrix} \textit{possession} \\ \text{PSR } \boxed{4} \\ \text{PSD } \boxed{2} \end{bmatrix} \right\rangle$

(138) nikre'u le-dani ha-mixnasayim
tore.3P to-Danny the-pants.3PM

'Danny's pants tore.'

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We have thus established that V1 subject-taking constructions in MH are licensed by *hd-subj-comp-ph*. There is, however, one issue which requires additional considerations—the linear order of the arguments. In the case of VS_{agr} the verb is intransitive and the COMPS list is empty, thus linear order is straightforward. In the VDS_{agr} construction the PD, which surfaces as the first element in COMPS, precedes the SUBJ, contrary to the order assumed by the phrase type. This deviation is handled by the PDC lexical precedence constraint, which was described in (117) above and repeated here for convenience.

(139) *hd-ph* →

$$\left[\begin{array}{l} \textit{verb} \\ \text{ARG-ST}\left\langle \ldots\ \boxed{1}\ \text{NP}_{\boxed{2}}\left[\text{RELS}\left\langle \ldots, \left[\begin{array}{l}\textit{possession}\\ \text{PSR}\ \boxed{4}\\ \text{PSD}\ \boxed{2}\end{array}\right], \ldots\right\rangle\right], \boxed{3}\ \text{NP[dat]}_{\boxed{4}}\ \ldots\right\rangle \end{array}\right] \prec\prec \boxed{3}$$

Recall that the ARG-ST of unaccusative verbs is identical, regardless of whether they surface as subject-taking or subjectless verbs. Thus, the lexical precedence constraint above, which refers to ARG-ST is applicable to both types of verbs.

The third case, the VOS construction, requires additional attention. There seems to be a preference for only one argument slot between the V and the S; the rest of the arguments and adjuncts appear after the S. This linear constraint accounts for the difference in grammaticality between the V-Adv-O sequence in VOS (140a) and SVO (140b), a difference that was noted in 4.4.1. The problem is not in the adverb increasing the distance between the V and O, but, rather, the distance between the V and S. When an adverb appears after the VO sequence and before the subject in a VOS construction, the result is equally marginal (140c).

(140) a. ?akats etmol et dani akrav
stung yesterday ACC Danny scorpion
(=(104a))

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b. akrav akats etmol et dani
scorpion stung yesterday ACC Danny
(=(104b))

c. ?akats et dani etmol akrav
stung ACC Danny yesterday scorpion
'Yesterday a scorpion stung Danny.'

This linear order constraint suggests that the licensing of VOS requires a more specific phrase type than *hd-subj-comp-ph*, one for which a construction-specific linear precedence constraint is defined. Thus, the VOS construction is licensed by the *FI-hd-subj-comp-ph* phrase type along with the following LP constraint.

(141) *FI-hd-subj-comp-ph* →

$$\left[\begin{array}{l} \textit{verb} \\ \text{ARG-ST}\left\langle \boxed{1}\ \text{NP},\ \boxed{2}\text{XP}\right\rangle \oplus \boxed{3} \end{array}\right] \prec \boxed{2} \prec \boxed{1} \prec \boxed{3}$$

The motivation for an independent phrase type (i.e. *FI-hd-subj-comp-ph*) is not exclusively word order. Other characteristics particular to the VOS constructions are discussed in the next chapter, where I explore the conditions under which verb-initial constructions are licensed.

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Chapter 5

The licensing conditions of verb-initial constructions in Modern Hebrew

Chapter 4 began with the stated goal of providing a syntactic analysis of verb-initial constructions with the assumption that they are always possible. At this point, however, I intend to take the analysis a step further by considering precisely the conditions under which they are licensed. In the first section I present lexically-based constraints that have been suggested in the literature and show that they are not compatible with empirical evidence. Next, I take a brief excursion to introduce the notions of INFORMATION STRUCTURE and THETIC and CATEGORICAL JUDGMENTS, which are used later, in section 5.3, to provide an alternative account of the licensing conditions of verb-initial constructions in MH.

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5.1 Lexically-based constraints

The claim that V1 constructions are not "always possible" is uncontroversial. What is subject to debate is a precise definition of the constraints that restrict the formation of these construction. One approach, the one presented in this section, targets the lexical items which make up the construction. Lexically-based constraints are those which restrict the type of lexical items that may appear in a given construction. In the following sections I discuss two lexically-based constraints: the first associates VS constructions with unaccusative verbs and indefinite subjects, and the second, with presentational verbs.

5.1.1 The unaccusative - Definiteness Effect connection

A standard description of subject inversion in the transformational syntactic literature is of a VP in which the verb occupies the head position and the subject the complement position. This configuration is generally associated with the projection in d-structure of unaccusative verbs, which are assumed to subcategorize only for an internal argument. An additional property of such a construction is that the postverbal position, when occupied by a subject, is restricted to 'weak' NPs.[1] This phenomenon is known as the Definiteness Effect (DE).

The correlation between unaccusativity and the DE is assumed to be found in numerous languages. Following are examples from French (1), Italian (2), and Hebrew (3).

(1) a. Il est arrivé trois filles
there is arrived three girls

b. *Il est arrivé la fille
there is arrived the girl

[1]Milsark (1974) distinguishes between NPs with a 'weak construal' such as *a dog* and *sm men*, and those with a 'strong construal' such as *the dog* and *every man*.

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(2) a. Era finalmente arrivato qualche studente a lezione
was arrived finally some student to the lecture

b. *Era finalmente arrivato ogni studente a lezione
was arrived finally every student to the lecture

(3) a. ne'elmu harbe sfarim me-ha-sifriya
disappeared.3P many books.3PM from-the-library
'Many books disappeared from the library.'

b. *ne'elmu ha-sfarim me-ha-sifriya
disappeared.3P the-books.3PM from-the-library
'The books disappeared from the library.'

The DE is also invoked to account for the following contrasting pairs in English.

(4) a. There is a man in the room.

b. *There is the man in the room.

Many syntactic analyses of inversion rely on the co-occurrence of the unaccusatives and the DE in that only subjects of unaccusatives are generated in the position that is associated with indefinites. Belletti (1988) bases her analysis of this phenomenon on the case-assigning properties of verbs. Relying mostly on Finnish examples with overt case marking,[2] Belletti proposes that accusative case is associated with a definite reading of the NP and partitive case, with an indefinite one (such as the English *some*). Unaccusatives, as the name suggests, do not assign accusative case to their internal arguments. They do, however, assign inherent partitive case and subsequently

[2]Belletti provides the following pair in which the reading of the direct object depends on its case.

(i) Hän pani kiriat põydälle
he put the books.ACC.PL on the table

(ii) Hän pani kirjoja põydälle
he put (some) books.PART.PL on the table

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appear with postverbal subjects only when the subject is indefinite. Transitive verbs, on the other hand, assign inherent partitive case and may also assign structural accusative case. For this reason direct objects are not sensitive to the DE.

Based on this correlation, many scholars use the DE as a diagnostic for the structural position of a postverbal NP subject. Constructions in which an NP is restricted to weak indefinites are analyzed with that NP located in the direct object position. Those NPs which may appear in both forms (i.e. weak and strong) are said to have 'escaped' the DE position to occupy a different position in the syntactic tree.[3]

Based on Hebrew sentences such as (3), Shlonsky (1987 & 1997) adopts Belletti's (1988) case-driven analysis of the unaccusative-DE correlation in free inversion (FI). However, as I show in the following section, which is devoted to an empirical evaluation of this generalization, at least for MH this correlation is not without exceptions. Consequently, I propose that the aforementioned lexically-based constraint (i.e. unaccusative verbs and indefinite subjects) is not a necessary nor sufficient condition for licensing FI in Modern Hebrew.

Definite inverted subjects with unaccusative verbs

Some counterexamples to the generalization that inversion with unaccusatives is sensitive to the DE are noticed by Shlonsky (1987). One such case is Triggered Inversion (TI) with unaccusative verbs. Shlonsky provides the following three sentences, given here with his grammaticality judgments.

(5) a. (noda li she-)partsa milxama nora'a
became known to-me that-broke-out war terrible
'I found out that a terrible war broke out.'

b. *(noda li she-)partsa ha-milxama
became known to-me that-broke-out the-war

[3]See Belletti 1988 for such an analysis of Italian inversion.

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c. (noda li she-)be 1967 partsa ha-milxama ha-nora'it
became known to-me that-in 1967 broke-out the-war the-terrible
be-yoter
the-most
'I found out that in 1967 the most terrible war broke out.'

In the grammatical V1 embedded clause (5a) the postverbal subject *milxama nora'a* ('terrible war') is indefinite while (5b), which contains a subordinate V1 clause with a definite postverbal subject, is ungrammatical, as is predicted by the DE. However, when a clause-initial PP trigger appears in the TI embedded clause in (5c), the DE is suspended. Shlonsky explains this contrast by proposing that in the third sentence the existence of a trigger creates the appropriate environment for the subject to 'escape' the DE position.

An additional type of counterexample is mentioned by Shlonsky (1987:119) in footnote 27. Shlonsky concedes that "... there are other factors which attenuate and even eliminate the DE. For example, the DE is completely suspended when a possessor dative is employed ..." (p. 100). This construction is the one referred to as the VDS construction in this work.[4] Examples of definite subjects in the VDS construction are given in (6)-(7)

(6) ne'exal le-ruti ha-kiwi
was-eaten to-Ruti the-kiwi
'Ruti's kiwi was eaten.'
(= Shlonsky's (1987) ex. 42a)

(7) ko'evet le-ruti ha-beten
hurts.3SF to-Ruti the-stomach.3SF
'Ruti's stomach hurts.'

Shlonsky does not provide the syntactic representation of the VDS construction and therefore the position of the postverbal subject is not made explicit. Nevertheless,

[4]The Possessive Dative Construction is discussed in section 4.3.

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he explains the function of the PD by referring to Givón's (1976) pragmatic account: "The presence of the dative sets up what Givón has termed as 'relevance link' by establishing a spatio-temporal presupposition with which the new participant can be connected" (p. 88). It is not clear from his presentation how this insight is incorporated into the syntactic structure, if at all.

An additional set of counterexamples attested in natural speech are given in (8). These examples do not fall under either of the two categories mentioned by Shlonsky (i.e. TI and VDS).

(8) a. nigmar ha-seret
finished the-movie
'The movie is over.'
(attested example)

b. nisrefa ha-nura
burned the-lightbulb
'The lightbulb burned out.'
(attested example)

These examples are the most difficult ones to account for in a purely syntactic framework, such as the one assumed by Shlonsky. In section 5.3 I consider an alternative approach which may provide the appropriate tools to characterize the licensing conditions of MH verb-initial constructions. However, before we turn to an alternative approach we will examine an additional generalization attributed to inversion in the literature.

5.1.2 The presentational—Free Inversion connection

A different characterization of inversion focuses on the semantics of the verb. The types of verbs which are generally assumed to appear in subject inversion are described as 'presentational'. The class of presentational verbs includes existential

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verbs as well as verbs of appearance, disappearance and change of state. The function of these verbs is to introduce their subject into the discourse as new information.

Shlonsky (1987) proposes that both unaccusatives and presentational verbs are licensed in V1 in MH. The difference between these two types of verbs, according to him, is syntactic; only unaccusative verbs generate their subjects VP-internally. Consequently, V1 with presentational verbs is analyzed as having a VP-adjoined subject, on a par with triggered inversion. Further, Shlonsky distinguishes between two types of presentational verbs: verbs which are intrinsically presentational and those which are presentational under more specific circumstances such as past tense. The latter type, according to Shlonsky, include some unaccusative verbs and are "an intermediate case between the free inversion of true existentials and triggered inversion" (p. 84). It is not clear to me how this classification is consistent with the syntactic distinction that Shlonsky makes between unaccusative and presentational verbs.

Assuming that it is the case that only unaccusative and presentational verbs are licensed in V1, how do we distinguish these verbs from those which are incompatible with V1? The diagnostic for unaccusativity in MH was described and discussed in detail in chapter 4.3.2. Furthermore, assuming Shlonsky's framework, these verbs are lexically distinguished by a lack of an external argument in their subcategorization frame. There remains, however, the question of defining the characteristics of presentational verbs.

Shlonsky provides a number of examples which seem to fit the vague definition of 'presentational'. These are given in (9) – (10).

(9) hofi'a katv-'et xadash
appeared journal new
'A new journal has appeared.'

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(10) parats viku'ax so'er
broke-out argument stormy
'A stormy argument broke out.'

Yet, the following examples, (11) – (14), are all verb-initial, yet the types of verbs that appear in them do not seem to be intrinsically presentational nor unaccusative.

(11) yored geshem
ascending.SM rain.3SM
'It's raining.'

(12) meyalel ba-xuts xatul
meowing.3SM in-the-outside cat.3SM
'A cat is meowing outside.'

(13) aktsa oti dvora
stung.3SF ACC.1S bee.3SF
'A bee stung me.'

(14) tilfen aba shel izi ve-sha'al im anaxnu rotsim lehipagesh
telephoned.3SM father.3SM of Izzy and-asked if we want to-meet
'Izzy's father called and asked if we want to meet.'
(attested example)

Shlonsky discusses the verb 'to telephone' which he claims is "... ambiguous between a presentational predicate and a verb reporting an action" (p. 85). He also mentions that *telefonare*, *parlare*, and *esclamare* in Italian are unergative yet they are licensed in inverted constructions on a par with ergative verbs such as *arrivare*. The vagueness of the definition of 'presentational' suggests that it may not be a semantic property of the verb, but rather a function of the construction.

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However, if we assume that these ambiguous types of verbs may appear in an inverted construction as long as they are presentational in the sense of introducing new referents into the discourse we would expect this to be reflected in the actual discourse. Thus, after uttering a sentence such as (11) 'the rain' should become an active participant in the discourse. Obviously, this is not necessarily the case.

5.1.3 Conclusion

Based on the empirical evidence presented in the previous sections we conclude that the two lexically-based constraints proposed in the literature for subject inversion do not hold for V1 in Modern Hebrew. Thus, as attractive as the proposal that V1 is limited to combinations of [UNACC+] verbs with [DEF−] subjects or to [PRESENTATIONAL+] verbs may be, it is not borne out by the data.

For this reason, in my attempt to identify the licensing conditions of V1 in MH, I look elsewhere. More specifically, I consider the properties of V1 from the angle of their discourse function and eventually propose that V1 is restricted by discourse considerations and by the context in which they are uttered. In order to do so, we first introduce some relevant concepts from the field of information packaging.

5.2 Information packaging and judgment types

The literature on sentence discourse is vast and encumbered with competing approaches and ambiguous terms. For this reason, I will first explicate the terms that will be used. Next, I will introduce the notion of JUDGMENT TYPES and discuss the ways in which they are realized in the grammar. Finally, I will consider two types of discourse functions associated with THETIC judgments.

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5.2.1 Terminology

The observation which drives the type of study, referred to in this work as INFORMATION PACKAGING, is that languages provides different means of 'packaging' propositional content in order to accommodate it to the discourse context. This results in sentences pairs which are semantically equivalent and pragmatically divergent. Daneš (1966) refers to such pairs as 'allosentences', in analogy to 'allophones' in phonology and 'allomorphs' in morphology.

Explaining why a speaker would choose one allosentence (i.e. one type of packaging) over another is the goal of this type of study. Different types of analysis focus on different aspects such as what the speaker assumes that the hearer knows or expects, how the speaker conceptualizes the situation, what has already been uttered in the current discourse, and more.

One type of study of information packaging, which I refer to here as INFORMATION STRUCTURE, focuses mostly on segmenting the sentence into parts which contain the 'old information' and those which contribute the 'new information'. The notions 'old information' and 'new information' are only a part of the long list of information structure terms that are used in the literature. The contrasting pairs that are most widely used are old-new, given-new, known-new, and presupposed-focus. The general observation which these contrasts attempt to convey is the existence of an informational asymmetry between those units which express information already 'present in the context' and others (Prince 1981). Although the different terms overlap a great deal, Prince identifies three senses of givenness which lie behind the different approaches to the contrast. In a nutshell, old information is considered as either (a) that which is predictable or recoverable from the preceding context (Kuno 1978), (b) that which is assumed to be in the consciousness of the addressee at the time of utterance (Chafe 1976), or (c) that which the speaker believes the hearer knows, assumes, or can infer. In general, information structure accounts explain the differences be-

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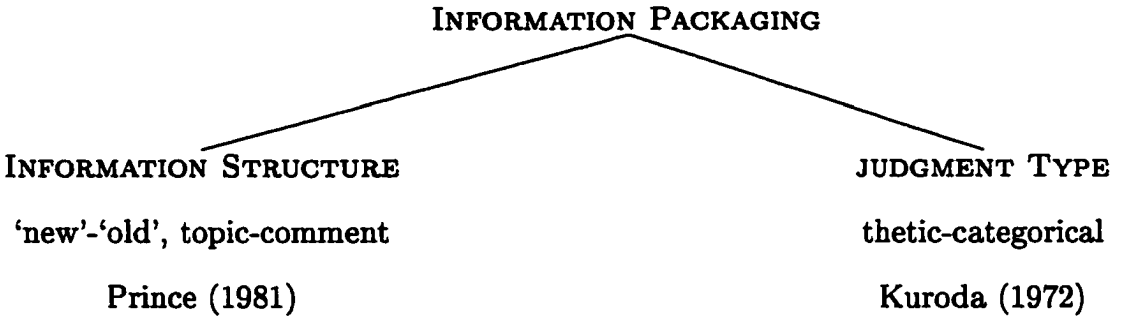
tween allosentences in terms of how old and new information are distinguished within a sentence.[5]

A different research program views a particular type of allosentences as manifestations of different cognitive representations of the same propositional content. Thus, the way that a speaker conceptualizes a situation effects that way in which she packages the information which she wants to convey. This type of analysis characterizes the study of JUDGMENT TYPES, which is the topic of the following sections.

The following diagram provides a graphic presentation of the terminology which is used throughout this work, along with a representative reference.

(15)



It should be emphasized that in the general scheme of things, the different approaches are not necessarily mutually exclusive; different type of explanations can apply to different types of allosentences. For this reason I refer to the entire phenomenon as 'information packaging' and distinguish between different types of accounts when necessary.

5.2.2 Judgment types

The distinction between thetic and categorical judgments was first recognized in the 19th century by the philosopher Brentano (1924) and was later elaborated by his student Marty (1918). Brenatano and Marty (B&M) challenged the Aristotelian

[5]Engdahl & Vallduvi's (1996) work on what they call 'information packaging' in HPSG falls under the heading of 'information structure'.

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view according to which a human judgment is composed of a subject and a predicate. B&M recognized that aside from such judgments, which they referred to as CATEGORICAL JUDGMENTS, there exist an additional type—THETIC JUDGMENTS. In B&M's framework, the two types of judgments are distinguished by their logico-semantic properties. Categorical judgment is logically complex. It consists of two acts: the act of naming an entity and the act of making a statement about it. This type of a judgment conforms to the traditional paradigm of subject-predicate. Thetic judgment, on the other hand, is viewed as a logically simple expression of a state, event or situation. Consequently the two judgment types are also referred to as 'double judgment' and 'simple judgment', respectively.

As an illustration consider the following examples, attributed to Marty. The German sentences in (16) represent categorical judgment and in (17), thetic judgment.

(16) a. Ich bin wohl
I am well
'I am (feeling) well.'

b. Mein Bruder ist abgereist
My brother is left
'My brother left on a trip.'

(17) a. Gott ist
God is
'God exists.'

b. Es gibt gelbe Blumen
it gives yellow flowers
'There are yellow flowers.'

c. Es regnet
it rains
'It is raining.'

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It is important to note that B&M do not claim that the surface structure of the sentence necessarily reflects the type of judgment that it expresses. Thus, although the sentences in (17) have a subject-predicate form, their logical structure is 'simple' in that it involves a single act of recognition.[6]

5.2.3 The grammatical realization of the thetic/categorical distinction

Establishing a link between the philosophical notion of 'judgment' and grammar was the goal of Kuroda (1972). Kuroda demonstrates that Japanese provides evidence for the thetic/categorical distinction in that in this language the distinction is grammatically marked in the sentence. More specifically, Kuroda claims that the distinction is reflected by the choice between two particles that may be attached to the 'subject' of the sentence. Consider for example the following contrast.

(18) a. Inu ga hasitte iru
dog PART running is
'There is a dog running.'

b. Inu wa hasitte iru
dog PART running is
'The/A dog is running.'

The *ga* particle is used to indicate that an event of running is taking place in which the actor is recognized as a dog. This type of an expression is identified with B&M's 'thetic judgment'. The *wa* particle, on the other hand, is used when the speaker is primarily concerned with the entity participating in the event. In expressing (18b)

[6]An example of a thetic impersonal construction in German which does not have a subject-predicate form is given in (i) (Andreas Kathol p.c.):

(i) Gestern wurde gearbeitet
yesterday was worked.PSP
'There were people working yesterday.'

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the speaker is relating the event to the particular entity marked with the particle *wa*, thus making a categorical judgment.[7]

The grammatical expression of the thetic/categorical distinction is not restricted to Japanese, nor is it expressed only with morphological markers. Lambrecht (1987, 1994) and Lambrecht & Polinsky (1997) discuss a number of different strategies that languages use in order to distinguish between categorical and thetic judgments. However, before I present these strategies a terminological note is in order.

Since Brentano & Marty's first discussion of the thetic/categorical distinction it has been taken up by numerous scholars. The type of constructions referred to as 'thetic judgments' by B&M have been assigned various labels in the literature. Among these are: 'news sentences' (Schmerling 1976), 'neutral descriptions' (Kuno 1972), 'all-new utterance', and 'sentence focus construction' (Lambrecht 1987). The labels reflect the different approaches adopted by the respective scholars and thus are not entirely devoid of significance. Considering that none of the scholars denies a partial or full link between the two types of constructions and Brentano & Marty's thetic/categorical distinction, I retain these terms. However, following Sasse (1987), I avoid the philosophical term 'judgment' and speak of 'expressions' or 'statements'. Nevertheless, in order to remain true to the scholars whose work I will be discussing, I will note their original terminology when presenting their analyses.

Returning to the grammatical realization of the thetic/categorical distinction, consider the following English, Italian, French, and Japanese sentences (Lambrecht's (1987) (1&2)).[8] Each of these languages illustrates a different strategy employed to encode thetic and categorical expressions. The terms that Lambrecht uses to refer

[7]Nevertheless, Kuroda's Japanese data do not fully conform with Brentano's philosophical characterization. The point of divergence is universal judgments. While Brentano analyzed universal judgments as negative thetic judgments (e.g. ***All ravens are black*** is equivalent to the negative existential ***There is no raven which is not black***.), Kuroda found that such statements in Japanese are expressed in the form of categorical judgments.

[8]Here and throughout this study the use of small caps in examples indicates the main accent in the sentence.

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to the two categories of expressions which correspond to the categorical and thetic expressions are 'predicate-focus' (PF) and 'sentence-focus' (SF), respectively.

(19) Q: What's the matter?

a. My NECK hurts.

b. Mi fa male il collo.

c. J'ai mon cou qui me fait mal.

d. Kubi ga itai.

(20) Q: How's your neck?

a. My neck HURTS.

b. Il collo mi fa male.

c. Mon cou il me fait mal.

d. Kubi wa itai.

The question-answer pairs above illustrate a technique that is often used to provide the appropriate context. The questions, which differ in their presuppositions, are compatible with different types of answers. The presupposition of (19) does not refer to any particular entity, such as the 'neck' in (20), and thus sets up the context for a thetic judgment answer, while the question in (20) requires information about a particular entity and as such is appropriately answered with a categorical judgment sentence.

The contrasts between the allosentences in (19) and (20) all involve the grammatical marking of the subject NP. English encodes the contrast prosodically (accented vs. non-accented subjects), Italian utilizes word order (postverbal vs. preverbal subjects), French uses syntactic constructions (clefted vs. detached subjects) and Japanese marks the subjects morphologically (*ga* vs *wa*). Lambrecht & Polinsky

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(1997) argue that the manifestation of the SF category is crosslinguistically motivated by a single principle — the need to be minimally distinct from the corresponding PF construction. Lambrecht & Polinsky identify two strategies for achieving this goal. The weak strategy is to eliminate the prosodic and/or morphosyntactic properties conventionally associated with the topic from the subject. This principle is accomplished via the detopicalization of the nominal constituent which is the unmarked topic in a PF construction. The constituent most often associated with the topic is the subject and this is the one on which they concentrate. The strong strategy is to code the subject with the formal features usually associated with the object argument (e.g. prosodic prominence, specific linear position, non-nominative case marking, lack of grammatical agreement).

5.2.4 Entity-central and event-central expressions

Thetic sentences formed with the coding mechanisms illustrated and discussed in (19) above (i.e. accented, postverbal, clefted, and *ga*-marked subjects) serve two different types of discourse functions. One function is to introduce NP referents into the discourse and to make them available for future reference. Examples of such sentences in English, Italian, French, and Japanese are given in (21) (Lambrecht's (1994) (4.18)).

(21) a. JOHN arrived.

b. È arrivato Giovanni.

c. Y'a Jean qui est arrivé.

d. John ga kita.

This type of sentences are generally referred to as *presentational* and prototypically appear with certain verb types expressing appearance, disappearance or the beginning or end of a state involving some referent. This semantic category overlaps

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significantly with the semantic characteristics usually attributed to the unaccusative verb class. Moreover, presentational sentences are highly likely to occur only with 'new' referents, which have not yet been used in the discourse context and which are generally encoded as indefinite NPs. The correlation between definiteness and the presentational discourse function of these thetic expressions, I believe, is the correct account of the tendency towards indefinite subjects in Romance inversion constructions, English *there*-sentences, and some cases of Hebrew inversion. This tendency is what is generally referred to as the Definiteness Effect.

The other type of discourse function is to report the perception of a state or an event. Examples of this type of sentences, in the same four languages as in (21) above, are given in (22) (Lambrecht's (1994) (4.19)). Note that the two types of sentences are formally identical.

(22) a. The PHONE's ringing!

b. Squilla il telefono!

c. Y'a le telephone qui sonne!

d. Denwa ga natte iru yo!

The context in which this type of event-reporting sentences are uttered is one where the hearer is not assumed to expect information about a particular entity. This is what lends these sentences the connotation of surprise or unexpectedness. Unlike categorical expressions, these expressions are not construed as predicating a property of the NP referents, although they are viewed as participants of the event. Moreover, these referents may or may not be mentioned in subsequent discourse. Thus, for example, the sentences in (22) are intended to describe an event of ringing in which the telephone is a necessary participant and not to state something about the telephone or to introduce the telephone into the discourse. Due to this distinct

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function, the grammatical subjects of event-reporting sentences are not as likely to be 'new' as those of presentational sentences.

The fact that one type of an expression (i.e. thetic) is used to express two distinct discourse functions leads Sasse (1987) to propose that *thetic* is a superordinate category which includes ENTITY-CENTRAL (e.g. the presentational sentences in (21)) and EVENT-CENTRAL thetic expressions (e.g. the event-reporting sentences in (22)). Entity-central expressions state the existence of an entity, while event-central expressions state the existence of an event. Lambrecht (1994), who casts the thetic/categorical distinction in information structure terms, accounts for the commonalities of the two subtypes by suggesting that the "all-new" character of thetic sentences is exploited to introduce new elements: entities, in the entity-central case, and events in the event-central case.

5.3 Verb-first constructions and the thetic/categorical distinction in Modern Hebrew

In this section I present my analysis of the licensing conditions for V1 constructions in MH. In a nutshell, I argue against two lexically-based proposals which view frequent correlates of V1, such as unaccusative verbs and indefinite subjects, as definitional properties of the construction. Instead, I propose that V1 constructions in MH are used as an information packaging strategy for particular discourse functions. The properties that have been identified for V1 constructions are compatible with the discourse function of the constructions, yet they are not necessary conditions.

The idea that subject inversion in MH is related to information packaging dates back to, at least, Givón 1976. Givón claims that "...although VS syntax is widely used in presentative constructions, in existentials, and with indefinite subjects, the factors which control this preference remain largely pragmatic" (p. 157).

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In what follows I continue this line of inquiry and examine the relationship between V1 and the thetic/categorical distinction. First, I provide justifications for my proposal. Next, I show how an information packaging approach to the V1 construction, while compatible with the syntactic properties which are assumed to characterize the subjects and predicates of the construction, can account for the empirical gaps of the competing analyses. Finally, I consider whether 'thetic' and 'categorical' are basic grammatical categories that can be incorporated into the grammar.

5.3.1 V1 constructions as thetic expressions

The classic and most intuitive test for thetic expression is whether it can be a felicitious answer to the trigger question 'What happened?'. The crucial characteristic of such a question is that it does not bring with it any presuppositions or expectations regarding the appropriate answer (except the general presupposition that some event must have happened). Indeed, as will be illustrated presently, the V1 constructions pass this classic test.

Nevertheless, it should not be concluded that V1 can only be used to encode thetic expressions. Inverted constructions which include a non-subject pronominal argument, such as the VOS construction (23a) and the VDS (23b), are ambiguous with respect to their discourse function. They can serve as felicitious answers to general 'What happened?' questions as well as those which are asked when the speaker expects a reply *about* a particular referent (e.g. the addressee in (23)).

(23) Q: What happened/What happened to you?

a. aktsa oti dvora
stung ACC.1S bee.3SF
'A bee stung me.'

b. nikre'u li ha-mixnasayim
tore.3P to-me the-pants.3PM
'My pants tore.'

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This ambiguity is analogous to that of English, where expressions such as *My* NECK *hurts*, which were used to illustrate thetic expressions in (19) and (20) above, can serve as an answer to both types of questions.

An additional discourse-functional ambiguity found in these constructions in English is demonstrated in (24).

(24) Q: What happened/What broke?

A: The VASE broke.

Sentences with prosodically marked subjects can serve as felicitious answers to two types of questions. The question 'What happened?' is a thetic-expression trigger while the type of question exemplified by 'What broke?' is referred to as an 'identificational question'.

Identificational questions are asked when a particular event or state is presupposed, yet the identity of one of the participants is questioned. In (24), for example, the speaker is aware of the fact that something broke and is asking about its identity. An additional example of an identificational question is 'Who broke the vase?'. An answer to an identificational question is classified as 'argument focus' since one of the arguments of the predicate constitutes the 'new information' (i.e. the 'focus'), while the predicate and any other arguments are 'old information'. The fact that a part of an argument focus sentence is presupposed (i.e. it appears in the question) is what distinguishes it from entity-central thetic expressions.

V1 in MH does not exhibit the same functional ambiguity that is illustrated for English in (24). V1 is used to encode thetic expressions (25a), while argument-focus is expressed by prosody (25b). Nevertheless, the prosodically marked (25b) maintains the ambiguity associated with its English counterpart (24) by being compatible with both types of questions.

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(25) a. nishbar ha-agartal
broke the-vase

b. HA-AGARTAL nishbar
the-vase broke

An additional argument for the proposal that V1 encodes thetic expression is the obligatory subject inversion of existential expressions. As was discussed earlier (Section 2), existential sentences in MH are formed with the (inflected) copula *haya* in past and future tense and with the particle *yesh* in present tense. Following are corpus examples of each of the constructions.

(26) a. hayta fashla ktana
was.3SF screw-up.3SF little.3SF
'There was a little screw-up.'
(= Blum-Kulka (1997:IS08B))

b. yesh eze makela me-sfarad
is some chorus.3SF from-Spain
'There is some chorus from Spain.'
(= Blum-Kulka (1997:IS08B))

This correlation between existentials and V1 is very suggestive evidence for the proposal that V1 encodes thetic expressions.

Moreover, the thetic/categorical distinction is reflected in the two uses of *haya* and *yesh*. Recall, that these predicates can be used in a construction in which a definite subject obligatorily appears preverbally and triggers agreement with the verb. An example of this construction is given in (27).

(27) ha-sefer ha-ze yeshno ba-sifriya ha-le'umit
the-book.3SM the-this.3SM is in-the-library the-national
'This book is (can be found) in the national library.'
(= Shlonsky's (1987) ex. 36a)

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Shlonsky (1987) assumes that this is an existential construction in which the VP-internal NP theme moves into the subject position, similarly to passive movement or raising. Under such an analysis, it is not clear why it is only definite subjects that undergo such movement. This proposal, on the other hand, distinguishes between the existential and copular uses of *yesh* and *haya*. When these predicates are used as copulas the construction is a prototypical categorical expression, with a syntactic and logical subject-predicate structure and a definite subject. This is the construction of the sentence in (27). In their existential use, on the other hand, the predicates appear in the construction that is associated with thetic expressions—V1.

In general, the use of inversion to encode thetic expressions is a strategy that is common to a variety of languages.[9] This is consistent with Lambrecht & Polinsky's (1997) observation that crosslinguistically, the encoding of thetic expressions is motivated by a single principle —the need to be minimally distinct from the corresponding Predicate Focus construction (i.e. categorical). This is achieved, according to them, by *detopicalization* of what is prototypically the topic and/or *subject-object neutralization*.

Lambrecht & Polinsky's (1997) generalization relies on the assumption that categorical expressions are the unmarked constructions, which languages use as the basis for constructing the marked construction—thetic expressions. The issue of pragmatic markedness is discussed in Lambrecht (1994). Lambrecht associates pragmatic unmarkedness not with pragmatic neutrality but rather with distributional freedom. "... given a pair of allosentences, one member is pragmatically unmarked if it serves two discourse functions while the other member serves only one of them" (p. 17). This distinction is reflected in the examples in (25), where the allosentence with the stressed subject (25b) is pragmatically unmarked, while its V1 counterpart (25a) is marked in that it serves one discourse function, namely thetic expressions.

[9]See Sasse (1987) for a discussion and references.

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The subject coding properties of subjects in pragmatically unmarked sentences in Hebrew are: preverbal position, full agreement with the verb, and nominative case (see section 2.1). In V1, by definition, subjects do not appear in their unmarked position. The two other properties, agreement and case, are sometimes absent. As was discussed in chapter 2, lack of subject-verb agreement is especially prominent with the existential and possessive constructions. Examples of the the VS_{nonagr} and VDS_{nonagr} constructions are are given in (28a) and (28b) respectively. In addition, when subject-verb agreement is neutralized a definite 'subject' appears with the accusative case marker *et*, as is illustrated with the possessive in (29).[10]

(28) a. haya shne xalakim naxon
was.3SM two.PM parts.3PM right
'There were two parts. Right?"
(= Blum-Kulka (1997:IS04))

b. haya la-nu mishpaxa me'araxat
was.3SM to-us family.3SF host.3SF
'We had a host family.'
(= Blum-Kulka (1997:IS05B))

(29) haya la-nu ba-bayit et ha-sipur ha-ze be-meshex shanim
was.3SM to-us in-the-house ACC the-story the-this in-duration years
'We had this issue in our house for years.'
(= Blum-Kulka (1997:IS04))

To summarize, the arguments presented in this section support the proposal that V1 is used in MH as a strategy to encode thetic expressions. This is proposed as an alternative to Shlonsky's (1987) purely syntactic account of V1, which links free inversion with indefinite NPs and unaccusative and/or presentational predicates. In the following sections we revisit the counterexamples to the syntactic account,

[10]Recall that the accusative case marker *et* appears only with definite NPs.

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which include cases of definite inverted subjects with unaccusative verbs and non-presentational verbs in V1 constructions. We show that an information packaging approach is capable of accounting for these counterexamples.

5.3.2 An information packaging analysis of V1

Subjects of V1 as thetic subjects

The proposal that inverted subjects are sensitive to the Definiteness Effect is related to the 'all new' characterization of thetic expressions. Indeed, 'new' referents **tend** to be encoded by indefinite NPs. However, as was discussed in section 5.1, the two generalizations capture tendencies rather than hard constraints. Both of them were shown to be an imperfect characterization of the licensing conditions of V1 in MH. However, as will be presently shown, the information packaging approach can account for those cases in which the purely syntactic account fails.

The key lies in the licensing conditions of definite NPs, which do not coincide with those for 'newness'. Definiteness depends on the identifiability of the referent by the hearer (Ward & Birner 1995). Thus, a speaker utters a definite NP felicitiously only when she assumes that the hearer is able to identify the referent from all others in the discourse model.

One context in which identifiability is achieved is previous mention ('textually evoked' referents in terms of Prince (1992)). Thus the definite NP *the shirt* in the second clause in (30) is identifiable by virtue of it having been introduced (as an indefinite NP) in the previous sentence.

(30) I bought a shirt and a pair of pants. The shirt was on sale.

This type of a definite NP is not 'new' and, in addition, is more likely to be a 'predication base', in Sasse's terms, than a subject of a thetic expression. Thus,

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textually evoked definite NPs are not likely to appear in V1 and indeed no such example was attested or found in the corpus.

Cases of grammatical postverbal definite subjects are given in section 5.1.1 as counterexamples to the Definiteness Effect. Indeed, all these subjects have identifiable referents, yet their identifiability is not a result of previous mention. Rather, the different categories under which they are listed in section 5.1.1 are associated with different manners by which a 'new' referent is rendered uniquely identifiable to the hearer. In what follows we revisit these counterexamples from an information structure perspective, rather than a strictly syntactic one.

Referents of NPs can be made identifiable either linguistically or contextually. Cases which require contextual information and for which no such information is provided are marked with # to distinguish them from those which are unquestionably ungrammatical (*).

The Possessor Dative, as was discussed at length in section 4.3, is a semantic argument of an NP and a syntactic argument of the predicate. As a semantic argument of an NP it provides more information about its referent, which generally relates it to a discourse prominent entity such as one of the interlocutors or a mutually known referent encoded by a proper noun. This type of an elaboration turns a brand-new NP to a brand-new **anchored** NP (Prince's (1981) terminology). The anchoring is what makes the referent of the 'new' NP identifiable and therefore licenses the definite NP.

(31) a. #ne'exal ha-kiwi
was-eaten the-kiwi
'The kiwi was eaten.'

b. ne'exal le-ruti ha-kiwi
was-eaten to-Ruti the-kiwi
'Ruti's kiwi was eaten.'

The same effect is achieved with a restrictive relative clause, which, again, provides

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sufficient information by restricting the class of possible referents.

(32) ne'exal ha-kiwi she-haya ba-mekarer
was-eaten the-kiwi that-was in-the-fridge
'The kiwi that was in the fridge was eaten.'

Singling out one referent from a class of potential ones is also achieved by using a superlative.[11] This mechanism, I believe, is implicitly used by Shlonsky (1987) in his examples cited in section 5.1.1 and repeated here for convenience.

(33) a. noda li she-partsa milxama nora'a
became known to-me that-broke-out war terrible
'I found out that a terrible war broke out.'

b. #noda li she-partsa ha-milxama
became known to-me that-broke-out the-war

c. noda li she-be-1967 partsa ha-milxama ha-nora'it
became known to-me that-in-1967 broke-out the-war the-terrible
be-yoter
the-most
'I found out that in 1967 the most terrible war broke out.'

Sentence (33b) is originally marked by Shlonsky as ungrammatical and is contrasted with the grammatical example (33c) as an argument for his claim that the PP clause-initial trigger, 'in 1967', neutralizes the DE. However, as is evident, the postverbal subject is not exactly identical in the two definite cases (i.e. *ha-milxama* ('the war') in (b) vs. *ha-milxama ha-nora'it be-yoter* ('the most terrible war') in (c)). If we substitute the bare definite NP 'the war' in (33b) with the superlative in (33c) 'the most terrible war', the result is perfectly grammatical, even without a clause-initial trigger, such as *be-1967* ('in 1967'), as is shown in (34).

[11]This type of DE violation is comparable to that in the following English example.

(i) There was the tallest boy in my history class at the party last night.
(= Ward & Birner's (1995) ex. 38a)

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(34) noda li she-partsa ha-milxama ha-nora'it be-yoter
became known to-me that-broke-out the-war the-terrible the-most
'I found out that the most terrible war broke out.'

Consequently, it is not the trigger but rather the identifiability of the NP that drives the acceptability differences between (33b) and (33c). This said, I argue that sentence (33b) is not as unacceptable as Shlonsky claims. Rather, once the referent of the definite NP is identifiable in the context in which it is uttered, the sentence is completely acceptable.[12]

Additional attested examples of such NPs, referred to in Prince 1981 as 'situationally evoked NPs', were given in section 5.1.1 as counterexamples to the DE and are repeated here. Such NPs are identifiable by virtue of their salience in the extratextual context.

(35) a. nigmar ha-seret
finished the-movie
'The movie is over.'
(attested example)

b. nisrefa ha-nura
burned the-lightbulb
'The lightbulb burned out.'
(attested example)

Sentence (35a) was uttered while watching a movie end. The ending of the movie might not have been completely predictable, thus accounting for the inverted con-

[12]A possible context in which sentence (33b) can be uttered is one in which a war is expected. Thus, when a speaker utters 'the war' it is identifiable by the addressee who shares the same expectations. However, thetic judgments were defined previously as those which do not rely on presuppositions or expectations, yet the identity of the NP depends on shared expectations. Interestingly, the same situation occurs in English, where given the same context and propositional content, the English expression *The* WAR *broke out* exhibits the intonational pattern of an English thetic expression (i.e. an accented subject). Thus how do we reconcile the licensing conditions of the thetic expression with those of the definite NP? I propose that the proposition expressed by (33b) is incompatible with a categorical expression since the existence of the referent of the NP 'the war' is not established prior to the utterance. In order to be a subject of a categorical judgment the referent must established.

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struction. The referent of the definite NP 'the movie' is naturally identifiable from the discourse context and therefore can appear in a definite form although it was not mentioned earlier. The second sentence, (35b), is similar in that the referent of 'the lightbulb' was obvious from the context in which the situation occurred and was reported.

Thus, we conclude that the proposal that postverbal subjects in the V1 constructions are sensitive to the DE is too strong. The information packaging approach accounts for such cases where formal indefiniteness and 'newness' do not overlap.

Non-presentational verbs in thetic expressions

The semantic characterization of verbs which are licensed in V1 constructions as 'presentational', made by Shlonsky (1987), covers only a part of the cases that were attested or found in the corpus. Counterexamples to this generalization were given in section 5.1.2 and are repeated here as (36)–(39).

(36) yored geshem
ascending.SM rain.3SM
'It's raining.'
(= (11))

(37) tilfen aba shel izi ve-sha'al im anaxnu rotsim lehipagesh
telephoned.3SM father.3SM of Izzy and-asked if we want to-meet
'Izzy's father called and asked if we want to meet.'
(= (14))

(38) meyalel ba-xuts xatul
meowing.SM in-the-outside cat.3SM
'A cat is meowing outside.'
(= (12))

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(39) aktsa oti dvora
stung.3SF ACC.1S bee.3SF
'A bee stung me.'
(= (13))

The proposal that V1 is used to encode thetic expressions provides a way to account for the data in its entirety. Recall that thetic expressions serve two distinct discourse functions: to introduce new referent into the discourse and to report the perception of a state or an event. These functions correspond with what we referred to, following Sasse (1987), as entity-central and event-central thetic expressions.

Consequently, verbs which are semantically presentational are compatible with entity-central expressions. For example, sentence (40) was found in the corpus followed by a narrative about the referent of NP *xavera* ('the friend'), which it introduced into the discourse.

(40) ve-megia elai xavera she-lamada az latinit
and-arrives.3SF to-me friend.3SF that-studied.3SF then Latin
'and a friend who studied Latin at the time comes over.'
(= Blum-Kulka (1997:IS01B))

Event-central expressions, on the other hand, are precisely those which were presented as counterexamples to the generalization that verbs in V1 are presentational. Examples are given above.

In terms of argument structure, presentational verbs are generally intransitive. Verbs in event-central sentences, on the other hand, may be transitive, yet they tend to have only one argument which is a lexical NP (cf. (39)). The other argument(s) denote contextually anchored referents such as the interlocutors and deictic adverbials (e.g. *ba-xuts* ('outside') in (38)).

Thus, the proposal that the V1 constructions encode thetic expressions enables us to account for non-presentational occurrences of the construction. Event-central

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expressions, which are subtypes of thetic expressions, do not seem to impose semantic restrictions on their predicates. Yet, assuming, as we do, that the distribution of V1 is constrained, we make one more attempt at defining licensing conditions for the verbs that may appear in this construction. More specifically, we examine a proposal that involves the distinction between stage-level and individual-level predicates.

Stage level and individual level predicates in thetic expressions

The terms 'stage level' and 'individual level' predicates were first introduced by Carlson (1977). Stage-level predicates (SLPs) typically correspond to temporary states and transitory activities. Examples of SLPs are *drunk*, *sick*, and *visible*. Individual-level predicates (ILPs), on the other hand, are associated with permanent states. Among these predicates are *tall*, *heavy*, and *a teacher*.

Kratzer (1989) proposes that the difference between the two types of predicates are derived from their argument structure. Under her analysis, SLPs have an abstract Davidsonian spatio-temporal event argument, whereas ILPs do not. One type of evidence is the ability to be modified by spatiotemporal modifiers. Consider for example the following two sentences.

(41) a. The door is open during the night.

b. *The door is red during the night.

The SLP *open* is assumed to have an event argument which can be modified by the temporal PP, *during the night*. The ILP *red* on the other hand, cannot be modified by the same adverbial, thus the anomalous (41b).

The generalization that is assumed implicitly or explicitly by a number of researchers is that categorical expressions are compatible with both SLPs and ILPs while thetic expressions are confined to SLPs (e.g. Byrne 1998 and Ladusaw 1994).[13]

[13]These correlations are, in turn, associated with the strong vs. weak distinction. Strong subjects are compatible with SLPs and ILPs while weak subjects are compatible only with SLPs.

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Thus, applying Kratzer's analysis, thetic expressions require an event variable, while categorical expressions do not.

Indeed the SLP/ILP distinction is reflected in the types of predicates that are compatible with English existentials. Milsark (1974) recognizes that *there*-insertion sentences, the prototypical thetic expressions in English, are limited to SLPs (Diesing 1992). Following are two contrasting sentences.

(42) There are pumpkins visible on the vine.

(43) *There are pumpkins heavy.

Nevertheless, a number of objections can be made to the claim that thetic expressions are in principle incompatible with ILPs. While in the case of event-central thetic expressions it is almost definitional to claim that they are compatible only with SLPs (which presumably contain event variables, as opposed to ILPs), the correlation between entity-central expressions and SLPs is not as easily justifiable.

Existential expressions are considered to be thetic. Sasse (1987) makes the distinction between utterances that assert that something exists and those which assert **about** something that it exists. The former, a thetic expression, is illustrated in (44a), while the latter, a categorical expression, is illustrated (44b). As is expected, the two types of expressions are distinguished grammatically.

(44) a. There is a God.
(= Sasse's (1987) ex. 116)

b. God exists.
(= Sasse's (1987) ex. 117)

It is not clear how the assertion in the thetic expression is more spatio-temporally bound than that of its categorical counterpart. When an existential is uttered without

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a modifier the assertion is understood to reflect a permanent rather than a temporary state, as is required if it were true that thetic expressions are only compatible with SLPs.

An additional argument against the SLP constraint is given by Knud Lambrecht (p.c.). Lambrecht provides an attested example of a *ya-cleft* construction with the predicate 'tall'.

(45) Y a Sacha qui est grand!
there has Sacha that is tall
'Sacha is tall!"

Now, according to Lambrecht (1994), this particular construction is the mechanism used in Spoken French to encode thetic expressions, yet the predicate is an individual level predicate. The context in which this sentence was uttered was one in which the tallness of the person in question was to be construed as surprising. Hence, the thetic expression.

In order to maintain the hypothesis that ILPs are incompatible with thetic expressions, we must assume that the predicate 'tall' is ambiguous between an SLP and ILP (or discard Lambrecht's claim that (45) is thetic). This solution weakens the hypothesis in that every instance of an ILP in a thetic construction has the potential of being ambiguous.

As for MH, ILP and SLPs can appear after the subject in an existential construction, as is illustrated in (46). However, since nominal modifiers, in general, appear postnominally in MH, it is more likely that the adjectives are noun modifiers than predicates. Assuming that they are indeed noun modifiers, the sentences in (46) have no bearing on the issue at hand.

(46) a. hayta yalda xaxama ba-kita sheli
was.3SF girl.3SF smart.3SF in-the-class of-me
'There was a smart girl in my class.'

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b. hayta yalda ayefa ba-kita sheli
was.3SF girl.3SF tired.3SF in-the-class of-me
'There was a tired girl in my class.'

The verbal ILP *xotsim* ('intersect') can appear in a VOS construction, as is illustrated in (47).

(47) (rehov fulton hu me'od arox.) xotsim oto xamishim
street Fulton is very long. intersect.3PM ACC.3SM fifty
rexovot
streets.3PM
'Fulton Street is very long. It is intersected by fifty streets.'

Nevertheless, the VOS clause in this case does not encode a thetic expression. The sentence that precedes the VOS clause establishes 'Fulton Street' as a topic of discussion, and thus the following VOS is 'about' this topic. This type of a VOS expression is comparable to that given in (23), since it can be used to answer a question such as 'what about Fulton Street?'.

To conclude, the evidence given for and against the proposal that thetic constructions are only compatible with SLPs is not conclusive. My inclination is to assume that there may be a strong correlation between SLPs and thetic expressions, yet this correlation should not be considered a hard constraint. Thus, I assume that in the appropriate context, such as, for example, the one described by Lambrecht above, an ILP may be compatible with a thetic expression.

5.3.3 'Thetic' and 'categorical' as grammatical categories

I have argued in this chapter that V1 is used to encode thetic expressions in MH. Assuming that this is in fact the case, the next step is to determine how this correlation can be incorporated into the grammar. A major issue that divides scholars working on this topic is whether 'thetic' and 'categorical' are basic grammatical categories or

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whether they are derivatives of more basic categories of information structure. In order to enhance our analysis of V1 with the insights that have been gained in this section we must first address this issue.

The information structure approach to the thetic/categorical distinction derives the difference between the two construals from the givenness status of the referents of the NP arguments. Kuno (1972), relying mostly on the Japanese *wa-ga* distinction, refers to *ga*-marked thetic expressions as 'neutral descriptions', in which "... there is no old information. The entire event is presented out of the blue, so to speak, by the speaker. These sentences are not about something" (p. 298).

The 'all new' characterization of thetic expressions turns out to be too restrictive. As we saw, thetic expressions may have non-subject topical arguments. Examples are given in (48), with the topical arguments in boldface.

(48) a. **My** NECK hurts.

b. ko'ev **li** ha-tsavar
hurts.3SG **to-me** the-neck

Lambrecht (1994) suggests that in thetic sentences, the argument which would function as the topic in the categorical allosentences is marked as non-topic. Yet, non-topical subjects are not found exclusively in thetic expressions. Subject-argument focus sentences, which serve as answers to identificational questions, have non-topical subjects (see (24) and (25b)). Moreover, the subject is non-topic when another argument is the topic. For example, the topic of the answer in (49) is the object, *it*. In the Hebrew example of TI in (50) the object is relatively more topical than the subject, hence the topicalization of the object.

(49) Q: What about the book?

A: John has [it]$_T$.

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(50) [et ha-mixtavim]$_T$ katav dani etmol
ACC the-letters wrote.3SM Danny yesterday
'Danny wrote the letters yesterday.'

The opposing approach is taken by Sasse (1987), who argues that thetic and categorical are basic grammatical categories and are not derived from notions of information structure. "The thetic/categorical distinction will be shown to reflect two different points of view from which a state of affairs can be regarded. These are universally reflected in sentence structure in a way as basic to the syntax of human languages as, say, the distinction between declarative, interrogative, and imperative sentences." (p. 518). Thetic sentences, Sasse claims, are a manifestation of a special type of communication perspective, related to the perspective the speaker has on an event when the sentence is uttered.

In order to justify his view, Sasse provides examples in which the choice between a thetic and a categorical expression is not determined by the discourse contextual properties of the NP referent. One example which Sasse discusses is the following often cited sentence pair of Schmerling (1976).

(51) a. JOHNSON died.
(= Sasse's (1987) ex. 10)

b. Truman DIED
(= Sasse's (1987) ex. 11)

Both sentences are assumed to be reactions to news broadcasts. However, in (51a) the main prosodic stress in the sentence falls on the subject (i.e. a thetic construal), while in (51b) it falls on the predicate (i.e. a categorical construal). Sasse argues that at the time of utterance both referents are not discourse-active (and equally known to the interlocutors) and therefore the difference between the two cannot be derived from the information-structure properties of the subject NPs. Rather, the use of

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different constructions (i.e. a thetic expression in (51a) and a categorical expression in (51b)) is motivated by the background of expectations. The point is that at the time of utterance, Truman's dying event was expected (he had been seriously ill for some time) and the addressee is assumed to be expecting information about Truman. Johnson's death, on the other hand, was a total surprise and the thetic expression reflects the assumption that the addressee expects information about what happened with no particular referent in mind. "It is not the entity's degree of givenness which makes the difference but the background of expectation which embraces the entire information rather than merely the entity" (p. 523).

An additional example (in German) involves a situation where a man comes home from work expecting to eat roast chicken for dinner. In the first case he is welcomed by an unpleasant smell. He asks his wife about the smell and she answers:

(52) Das BRAThendl ist angebrannt
'The CHICKen burnt.'
(= Sasse's (1987) ex. 34)

The contrasting example is one in which the husband finds hamburger on his plate instead of the expected chicken. His wife's reply to his inquiring look is:

(53) Das BRAThendl ist ANgebrannt
'The CHICKen BURNT.'
(= Sasse's (1987) ex. 35)

The difference which brings about the different construals, according to Sasse, is in the 'communication perspective'. The thetic expression in (52) is appropriate since the expected information was about the smoke. Sentence (53), on the other hand, is a categorical expression, providing the expected information about the chicken. Once more, the referent of the subject is similarly 'given' and it is the expectations that motivate the use of the two different constructions.

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Thus, Sasse concludes, the thetic/categorical distinction can only be partly explained in terms of information structure. This happens when the classical criteria of IS and the communicative perspective overlap. However, when they do not, "the speaker has a free choice and can exploit the grammatical means of his language for more subtle pragmatic and stylistic purposes" (p. 519).

Although I'm sympathetic to Sasse's argument, I do have one caveat. The fact that the choice between the two constructions is not dependent on the IS properties of the NP subject does not entail that the choice is left to the speaker, as Sasse (1987) claims. If the choice between a thetic and categorical expression is subject to the 'background of expectations', then the discourse context **does** dictate to the speaker which of the two modes of expression are more felicitious.

A revealing example is given in Lambrecht's (1987) footnote 11. Lambrecht describes a situation attested by Ellen Prince and communicated to him by Sue Schmerling: "Upon hearing someone who was reading a newspaper utter the sentence *Miro* DIED, the speaker, surprised, replies: *Why, was he sick?*" The fact that speaker asked the question demonstrates that the choice made by the initial speaker (i.e. a categorical expression) was not a felicitious one in that particular context. The same result would probably have occurred had the speaker in Schmerling's example above (51) switched the names in the two examples.

Assuming, as I do, following Sasse, that the thetic/categorical distinction, more than anything else, depends on the communication perspective, we are left with the question with which we began this section—how can the correlation between V1 and thetic expressions be incorporated into the grammar? In other words, how can the seemingly fuzzy notions of 'thetic' and 'categorical' be used to distinguish between different types of constructions.

An instructive characterization of the grammatical correlate of the thetic/categorical distinction is given by Sasse (1987). The difference between the two types of expres-

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sions is characterized by the existence or lack of a *predication base* (PB). Sasse's definition of PB is given in p. 555.

> An entity to which a property is ascribed will henceforth be called the *predication base*. This term is chosen in order to avoid the ambiguous term 'subject', which I think should be reserved for the grammatical subject where it is most widely accepted. Any sentence that expresses a predication must have a predication base: it must refer to an entity. This entity is not necessarily represented by a full noun in the sentence expressing the predication; it may be named in some preceding sentence and taken up in the following by an anaphoric pronoun, or by zero, for that matter. In this case the predicative relation holds between the covert pronominal representative of that entity and the predicate. At any rate it is important for the sentence which makes the predication always to contain a slot, filled or not, for a referential element which is the predication base.

The distinction between thetic and categorical expressions, then, is that categorical expressions are 'about something' while thetic expressions are not. Thus, categorical expressions contain a 'predication base' while thetic expressions do not.

5.3.4 The VOS construction as a categorical expression

One caveat to the generalization that V1 constructions are used to encode thetic expressions is in order. The discourse-functional ambiguity of the VOS and VDS constructions was mentioned in section 5.3.1 and exemplified by two sentences, repeated here for convenience.

(54) Q: What happened/What happened to you?

a. aktsa oti dvora
stung ACC.1S bee.3SF
'A bee stung me.'
(= (23a))

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b. nikre'u li ha-mixnasayim
tore.3P to-me the-pants.3PM
'My pants tore.'
(= (23b))

Recall that the VOS and VDS constructions can be used as felicitious answers to both 'What happened' and 'What happened to you' questions. In the case of the latter question it cannot be argued that the answer is not 'about something'. On the contrary, the answer precisely is about the addressee.

This type of discourse function is comparable to that of the passive construction, which reverses the IS functions of the dependents of the active transitive construction (i.e. the non-topic patient becomes the topic/subject). Indeed, the following passive sentence is information-structure equivalent to sentence (54a) in the context of the 'What happened to you?' question.[14]

(55) ne'ekatsti al yed-ei dvora
stung.1S.PASS on hands.CS bee
'I was stung by a bee.'

Thus, the VOS and VDS constructions are discourse-functionally ambiguous between a thetic expression and a categorical one. In its categorical guise the construction has a predication base—the O argument.

5.3.5 Conclusion

Analyses which can capture a particular constraint by reducing it to a restriction on the values of a parameter are simple to implement in a computational framework. Nevertheless, the syntactic approach which limits V1 to combinations of [UNACC+] verbs with [DEF−] subjects or to [PRESENTATIONAL+] verbs and the information

[14]It is interesting to note that although I translated the sentence in (54a) to a passive sentences in English, an equally valid translation is '*A* BEE *stung me*', where the subject is accented on a par with thetic expressions in English.

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structure approach which defines thetic expressions as having 'new' (as opposed to 'old') subjects are not adequate accounts of the construction. The licensing of V1 does not depend solely on the lexical semantics of the verb, the formal definiteness of the NP subject, or the IS status of the arguments. There is a tendency for subjects to be indefinite, for verbs to be unaccusative and/or presentational (in particular for the entity-central expressions), and for referents to be 'new' in the discourse context. However these correlations are only tendencies which are results of discourse contexts in which thetic expressions are uttered. V1 constructions which encode thetic expression are characterized as such by virtue of their lacking a predication base.

In addition, a subset of V1 construction, the VOS and VDS constructions, may be used to express categorical judgments as well as thetic ones. When VOS and VDS constructions are used as categorical expressions, their predication base is their O argument, which denotes contextually anchored referents.

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Chapter 6

Putting it all together

This chapter realizes the final step in the analysis of V1 constructions in MH. In it I put together the pieces that were developed in the process of this study, to create a full picture of these constructions. Recall that a proposal regarding the lexical entries of verbs in V1 constructions was presented in 4.2.3. Section 4.4.3 was devoted to defining the types of phrases that license the combination of these verbs with their dependents in V1. The licensing conditions of V1 were discussed in section 5.3. The conclusion was that V1 constructions are used to encode thetic expressions. In addition, the VDS and VOS construction may be used to express categorical judgments, where the O/D argument is the predication base.

The structure of this chapter is as follows. First, I introduce the constructional approach, which I later adopt to develop this analysis. Next, I propose a way of representing information packaging in HPSG. Finally, I relate the two aspects of my analysis, syntax and information packaging, via a multi-inheritance type hierarchy, describing the types of phrases that license V1, as well as the constraints which apply to them.

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6.1 Constructional HPSG

The constructional approach is motivated by the observation that not all the properties of a construction, be it a word, phrase, or clause, are predictable or computable from its parts. Thus, under such an approach, the construction itself can contribute meaning or function.

The Construction Grammar framework (Fillmore & Kay 1996) was developed with this type of phenomena in mind. The constructional approach is used by Kay & Fillmore (1999) to account for the non-compositional meaning of *What's X doing Y* sentences such as *What are your feet doing on the table?*. Fillmore (1998) focuses on the Subject-Auxiliary Inversion (SAI) construction in English and the different sub-constructions which inherit from it. One such construction is the BLESSING-WISHES-CURSES CONSTRUCTION (BWC), which licenses sentences such as *May she live forever!*. The non-compositional component of the BWC construction, for example, is the semantic-pragmatic (SEMPRAG) information: "the speaker calls on magical forces to bring about S" (Fillmore 1998:121).

The constructional approach was taken up by Sag (1997) and incorporated into HPSG. This development is best illustrated by the evolution of the HPSG analysis of English relative clauses. Pollard & Sag (1994), in their analysis of relative clauses, resort to a phonologically empty syntactic constituent C^0, which 'projects' the relative clause. The primary function of the empty complementizer is to define the clause as $\left[\text{MOD N'}\right]$ (i.e. a noun modifier). Such a step is required when it is assumed that the properties of the clause are computable from its parts, yet none of the audible parts contribute the required information.

Sag (1997) eliminates the need for such invisible entities by the use of multiple-inheritance hierarchies for phrase types. Thus, relative clauses are cross-classified in terms of their HEADEDNESS and CLAUSALITY.[1] The clausality subtype from which

[1]Sag's (1997) proposed hierarchy is given in section 3.1.

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relative clauses inherit is *relative-clause* (*rel-cl*), which is subject to the following constraint.[2]

(1)
$$\begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{MC} & - \\ \text{INV} & - \\ \text{MOD} & [\text{HEAD } \textit{noun}] \end{bmatrix} \\ \text{CONTENT} & \textit{proposition} \end{bmatrix}$$

Thus, the property of modifying a noun, which was previously associated with a phonologically empty element, is assigned to the clause via type inheritance. The result is the elimination of an empty element, in keeping with the theoretical assumptions of HPSG.

The constructional approach is most appropriate for accounting for V1 constructions in MH. As was argued in chapter 5, these constructions are used in the language as an information packaging mechanism. Moreover, the association between V1 and thetic judgment is not computable from the components. The next sections are devoted to the integration of the syntactic and information-packaging aspects of V1 constructions.

6.2 Information packaging and HPSG

The first step is representing information packaging in the grammar. The incorporation of information structure properties into HPSG was first proposed by Engdahl & Vallduvi (1996). This architecture was later adopted, for instance, by Alexopoulou (1999) to account for a number of Greek constructions and by De Kuthy (2000) to account for the German NP-PP split. To the best of my knowledge, no work as been done in HPSG on judgment types. Under this proposal, the feature structure complex which is responsible for representing information packaging information in *sign*

[2]The feature MAIN CLAUSE (MC) is set to '–' to ensure that the relative clauses are not main clauses. A negative value in the INV feature prevents relative clauses from having an inverted word order. These settings are relevant to English relative clauses.

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is INFORMATION PACKAGING (INFO-PACK), which is divided into JUDGMENT and INFORMATION STRUCTURE (INFO-STRUCT) features. The reasons for distinguishing between judgment types and information structure are given in section 5.3.3. Following Engdahl & Vallduvi (1996), I incorporate INFO-PACK into CONTEXT, which is a LOCAL feature, sister to CATEGORY and CONTENT.[3]

(2)
$$\begin{bmatrix} \text{CONTEXT} & \begin{bmatrix} \text{C-INDICES} & \textit{c-inds} \\ \text{BACKGROUND} & \textit{set(posa)} \\ \text{INFO-PACK} & \begin{bmatrix} \text{INFO-STRUCT} & \begin{bmatrix} \text{FOCUS} & \textit{sign} \\ \text{GROUND} & \begin{bmatrix} \text{LINK} & \textit{sign} \\ \text{TAIL} & \textit{sign} \end{bmatrix} \end{bmatrix} \\ \text{JUDGMENT} & \begin{bmatrix} \text{PRED-BASE} & \textit{index} \\ \text{PRED-CONT} & \textit{content} \end{bmatrix} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

Information structure was discussed in this study only in comparison with judgment types. Therefore, the INFO-STRUCT feature structure included in (2) is taken from Engdahl & Vallduvi 1996 as is, only in order to present a complete picture. Nothing more will be said about the representation of information structure in this study.

The thetic/categorical distinction is defined in the JUDGMENT feature structure. To illustrate how this is represented in the grammar we will consider the following pair of allosentences, in which (3a) is an expression of a categorical judgment, while (3b) is an expression of a thetic judgment.

(3) a. ha-agartal nishbar
the-vase broke

b. nishbar ha-agartal
broke the-vase
'The vase broke.'

[3]The value of C-INDICES is a feature structure which contains features that refer to contextual information such as SPEAKER, ADDRESSEE, and UTTERANCE-LOCATION. BACKGROUND takes as a value a set of relations which describe the appropriateness conditions associated with an utterance (Pollard & Sag 1994:332).

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As allosentences, the propositional content of the two sentences is identical: *broke(vase)*, or, in HPSG notation, $\left\langle \begin{bmatrix} \textit{broke-rel} \\ \text{UND } \boxed{1} \end{bmatrix}, \begin{bmatrix} \textit{vase-rel} \\ \text{INST } \boxed{1} \end{bmatrix} \right\rangle$. Following Sasse (1987), I assume that the information-packaging distinction between the two is characterized by the existence or lack of a predication base. Thus, the predication base of the categorical (3a) is *ha-agartal* ('the vase'), while the thetic expression in (3b) lacks a predication base. The complement of a predication base is the 'predication'. The predication in the case of (3a) is equal to a one-place predicate, which can be obtained from the propositional expression via lambda abstraction, where the variable is the predication base and the expression is the predication (e.g. λx *vase(x)* $\wedge$ *broke(x)*). The complement of the (empty) predication base of a thetic expression is the propositional content.

These distinctions are represented in the JUDGMENT feature structure. The PRED-BASE feature in the description of (3a) is structure-shared with the INDEX value of *ha-agartal* ('the vase'). The PRED-BASE of (3b), on the other hand, is empty. As for the predication, co-indexed elements in the RELS of CONTENT can be interpreted as distinct variables. Thus, once one of the INDEX values is singled out, via PRED-BASE, the combination of this feature with the RELS of the phrase is equivalent to a one-place predicate. This is implemented in this grammar by structure-sharing the CONTENT value of the phrase with its PREDICATION-CONTENT (PRED-CONT) value.

Thus, the descriptions of the *categorical* and *thetic* types under this proposal are given in (4).

(4) a.
$$\begin{bmatrix} \textit{categorical} & \\ \text{SYNSEM} \mid \text{LOCAL} & \begin{bmatrix} \text{CAT} \mid \text{ARG-ST} \langle \ldots, \text{XP}_{\boxed{2}}, \ldots \rangle & \\ \text{CONT } \boxed{1} & \\ \text{CTXT} \mid \text{INFO-PACK} \mid \text{JGMNT} & \begin{bmatrix} \text{PRED-BASE } \boxed{2} \\ \text{PRED-CONT } \boxed{1} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

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b. $\left[\begin{array}{l}\textit{thetic} \\ \text{SYNSEM} \mid \text{LOCAL} \left[\begin{array}{l}\text{CONT } \boxed{1} \\ \text{CTXT} \mid \text{INFO-PACK} \mid \text{JGMNT} \left[\begin{array}{l}\text{PRED-BASE } \emptyset \\ \text{PRED-CONT } \boxed{1}\end{array}\right]\end{array}\right]\end{array}\right]$

In the *categorical* type the predication base is associated with the INDEX value of one of the arguments in ARG-ST. The PRED-CONT is structure-shared with the CONTENT value of the entire phrase. In the *thetic* types, the PRED-BASE is empty.

As an example, consider the partial description of the categorical expression in (3a), given in (5).

(5) $\left[\begin{array}{l}\textit{categorical} \\ \text{SYNSEM} \mid \text{LOCAL} \left[\begin{array}{l}\text{CAT} \mid \text{ARG-ST} \left\langle \text{NP}_{\boxed{2}} \right\rangle \\ \text{CONT } \boxed{1}\left[\text{RELS} \left\langle \left[\begin{array}{l}\textit{broke-rel} \\ \text{UND } \boxed{2}\end{array}\right], \left[\begin{array}{l}\textit{vase-rel} \\ \text{INST } \boxed{2}\end{array}\right] \right\rangle\right] \\ \text{CTXT} \mid \text{INFO-PACK} \mid \text{JGMNT} \left[\begin{array}{l}\text{PRED-BASE } \boxed{2} \\ \text{PRED-CONT } \boxed{1}\end{array}\right]\end{array}\right]\end{array}\right]$

With information-packaging incorporated into the grammar, we now proceed to present the integrated analysis of V1 constructions.

6.3 The phrase type hierarchy

The integration of the syntactic and information-packaging properties of V1 is achieved via a multi-inheritance hierarchy in which phrase types inherit from a HEADEDNESS type and an INFO-PACK type. Thus, V1 constructions are licensed by phrase types which amalgamate syntactic and information-packaging information. A partial phrasal hierarchy, restricted only to phrases relevant to this study, is given in (6).

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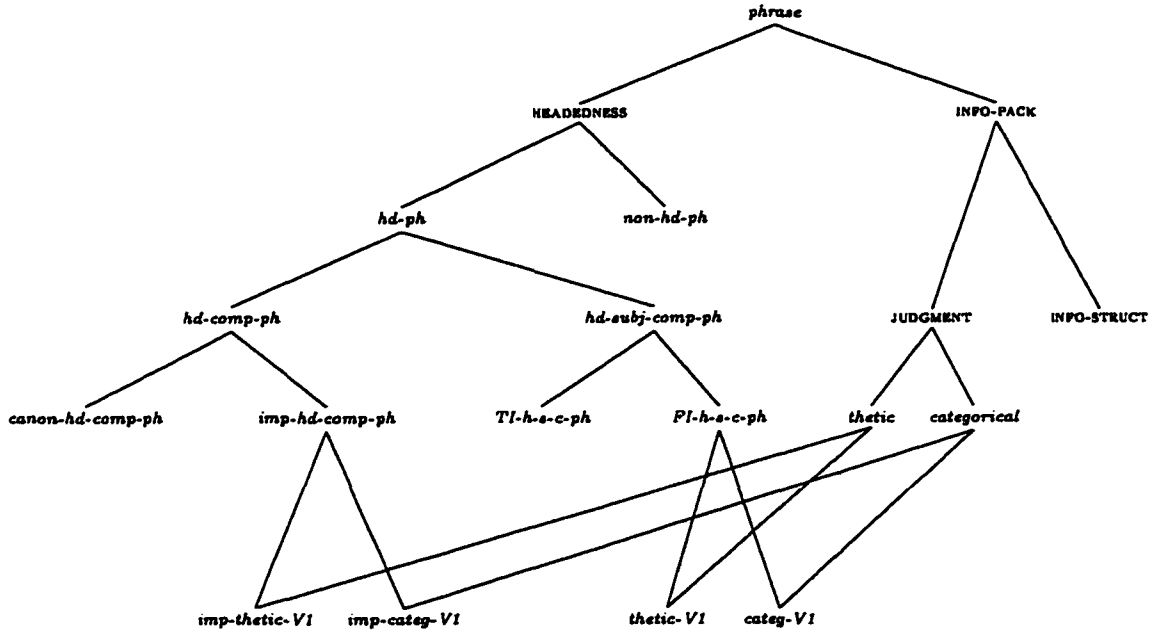
(6)



The topmost three levels of the HEADEDNESS sub-tree of the hierarchy are adopted from Sag 1997. The lower levels of HEADEDNESS, as well as the sub-tree dominated by INFO-PACK, are developed here to account for the constructions under discussion.

Under this proposal V1 constructions fall into two main categories: subjectless (impersonal) constructions and subject-taking constructions. The subjectless constructions VS_{nonagr} VDS_{nonagr} are headed by unaccusative verbs whose VALENCE and ARG-ST features are described as follows:

(7) $\begin{bmatrix} \textit{comps-unacc-vb} \\ \text{SUBJ } \langle\rangle \\ \text{COMPS } \boxed{0} \\ \text{ARG-ST } \boxed{0}\langle \boxed{1}\text{ NP, } (\boxed{2}\text{ NP[dat]}),\ldots\rangle \end{bmatrix}$

The optional dative argument (in parentheses) is associated with the possessor dative argument in the VDS_{nonagr} construction.

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The *hd-comp-ph* phrase type has two subtypes. The canonical *hd-comp-ph* (*canon-hd-comp-ph*) phrase type is characterized as having a non-empty SUBJ list. The impersonal *hd-comp-ph* (*imp-hd-comp-ph*) phrase type, on the other hand, is a fully saturated phrase. This phrase type licenses the combination of an impersonal *comps-unacc-vb* verb and its dependents. With regards to judgment types, both constructions encode thetic expressions, and VDS_{nonagr} may also express categorical judgments. Consequently, *imp-hd-comp-ph* has two subtypes: impersonal thetic V1 (*imp-thetic-V1*) and impersonal categorical V1 (*imp-categ-V1*). Each of the subtypes inherits its syntactic information from *imp-hd-comp-ph* and its information packaging information from its respective judgment type. A thetic impersonal V1 has an empty predication base, while the predication base of a categorical impersonal V1 construction is identified with the second argument in COMPS. Thus, the categorical VDS_{nonagr} construction is licensed by the phrase type in (8).

(8) $\begin{bmatrix} \textit{imp-categ-V1} \\ \text{HD-DTR} \mid \text{COMPS} \left\langle \text{NP}, \text{XP}_{\boxed{1}} \right\rangle \\ \text{INFO-PACK} \mid \text{PRED-BASE} \ \boxed{1} \end{bmatrix}$

Subject-taking constructions, VS_{agr}, VDS_{agr}, and VOS, are headed by verbs which require an NP subject, and, in the case of VDS_{agr} and VOS, at least one complement. As was proposed in section 4.4.3, the combination of verbs with their dependents in these constructions is licensed by *FI-hd-subj-comp-ph*, which is a subtype of a *hd-subj-comp-ph*. *Hd-subj-comp-ph* dominates two subtypes, *TI-hd-subj-comp-ph* and *FI-hd-subj-comp-ph*, which are associated with Triggered Inversion (TI) and Free Inversion (FI) respectively.[4] The TI phrase type is characterized as having a non-empty SLASH set. The SLASH element is the clause-initial trigger which combines with the *TI-hd-subj-comp-ph* via the *hd-filler-ph* phrase type to form a clause. The FI phrase type leaves the nonlocal information unspecified, since it is not required to

[4] ***TI-hd-subj-comp-ph*** **and** ***FI-hd-subj-comp-ph*** **appear in an abbreviated form in the hierarchy above as** ***TI-h-s-c-ph*** **and** ***FI-h-s-c-ph*****, respectively, due to space considerations.**

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be 'slashed', yet it is compatible with one.[5] In addition, as was discussed in 4.4.3, the *FI-hd-subj-comp-ph* phrase type is subject to the following LP constraint.

(9) VOS Linear Precedence Constraints (VOS-LPC)

$$\textit{FI-hd-subj-comp-ph} \rightarrow \left[\begin{array}{l}\textit{verb} \\ \text{ARG-ST}\left\langle \boxed{1}\ \text{NP}, \boxed{2}\text{XP}\right\rangle \oplus \boxed{3}\end{array}\right] \prec \boxed{2} \prec \boxed{1} \prec \boxed{3}$$

The LP constraint defines the VOS word order, which is applicable to the VDS_{agr} and VOS constructions. The constraint applies only to those phrases whose ARG-ST list contains more than one dependent, thus appropriately excluding the VS_{agr} construction.

Categ-V1 and *thetic-V1* are subtypes of *FI-hd-subj-comp-ph* and are associated with categorical and thetic expressions, respectively. Similarly to *imp-thetic-V1*, *thetic-V1* is characterized by having an empty predication base. *Categ-V1*, on the other hand, is licensed by the following phrase type, in which the predication base is identified as the first element in the COMPS list of the head daughter.

(10) $$\left[\begin{array}{l}\textit{categ-V1} \\ \text{HD-DTR} \mid \text{COMPS}\left\langle \text{XP}_{\boxed{1}}\ldots\right\rangle \\ \text{INFO-PACK} \mid \text{PRED-BASE}\ \boxed{1}\end{array}\right]$$

In conclusion, the table in (11) summarizes the types of V1 constructions discussed here along with the phrase type(s) which license them.

(11)

CONSTRUCTION	PHRASE TYPE(S)
VS_{nonagr}	*imp-thetic-V1*
VDS_{nonagr}	*imp-thetic-V1, imp-categ-V1*
VS_{agr}	*thetic-V1*
VDS_{agr}	*thetic-V1, categ-V1*
VOS	*thetic-V1, categ-V1*

[5]Examples of relativization and wh-questions with VOS and VDS_{agr} are given in sentences (96) and (97) in section 4.4.1.

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A summary of the phrase types that appear in the hierarchy in (6) is given in the following table. Phrase types are listed together with the constraints which are directly associated with them and with their immediate supertype listed in their ISA ('is a') field. Phrases inherit constraints from all their supertypes. The Head Feature Principle (HFP), the Valence Principle (VALP), the Empty COMPS Constraint (ECC), the RELS principle (REL-P), and the KEY principle (KEY-P) are described in section 3.2. The PDC LP constraint (PDC-LPC) is described in section 4.4.3. The VOS LP constraint (VOS-LPC) is given in (9) above.

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(12)

TYPE	CONSTRAINTS	ISA
thetic	[CONT [1] CTXT | ... | JGMNT [PRED-BASE ∅ PRED-CONT [1]]]	
categ	[CONT [1] HD-DTR [ARG-ST ⟨..., XP[2],...⟩] CTXT | ... | JGMNT [PRED-BASE [2] PRED-CONT [1]]]	
phrase		*sign*
hd-ph	HFP, VALP, ECC, REL-P, KEY-P, PDC-LPC	*phrase*
hd-comp-ph	[COMPS ⟨⟩ HD-DTR [COMPS ⟨[1],..., [n]⟩] NON-HD-DTR ⟨[SS [1]],..., [SS [n]]⟩]	*hd-ph*
canon-hd-comp-ph	[HD-DTR [SUBJ ⟨XP⟩]]	*hd-comp-ph*
imp-hd-comp-ph	[HD-DTR [SUBJ ⟨⟩]]	*hd-comp-ph*
imp-thetic-V1		*imp-hd-comp-ph & thetic*
imp-categ-V1	[HD-DTR [COMPS ⟨NP, XP[1]⟩] CTXT | ... | JGMNT | PRED-BASE [1]]	*imp-hd-comp-ph & categ.*
hd-subj-comp-ph	[SUBJ ⟨⟩ COMPS ⟨⟩ HD-DTR [SUBJ ⟨[0]⟩ COMPS ⟨[1],..., [n]⟩] NON-HD-DTR ⟨[SS [0]],..., [SS [n]]⟩]	*hd-ph*
TI-h-s-c-ph	[COMPS ⟨⟩ SUBJ ⟨⟩ SLASH *non-empty-set*]	*hd-subj-comp-ph*
FI-h-s-c-ph	VOS-LPC	*hd-subj-comp-ph*
thetic-V1		*FI-h-s-c-ph & thetic*
categ-V1	[HD-DTR [COMPS ⟨XP[1],...⟩] CTXT | ... | JGMNT | PRED-BASE [1]]	*FI-h-s-c-ph & categ.*

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Chapter 7

Conclusion

The syntactic analysis of V1 in MH was the topic of chapter 4. The central issue under discussion was subjecthood, since those arguments of V1 which can be identified as subjects (i.e. the 'subjects') do not exhibit the prototypical properties of subjects in the language. Moreover, some of the predicates that head V1 constructions appear in other, less 'marked', constructions as well. Shlonsky's (1987) analysis of V1 was presented as one option of accounting for the various types of 'subjects' found in the data. This analysis was shown to be largely motivated by theory-internal considerations. Thus, an alternative approach was considered, one which emerged from a typological examination of the subject coding and subject behavior properties (Keenan 1976) of these 'subjects'. This, in turn, led to a proposal according to which only agreement-triggering arguments are treated as syntactic subjects in the language. An appropriate HPSG-based analysis of the argument structure of the verbs, as well as the phrase types that license their combination with their dependents, followed.

The second part of the dissertation (chapter 5) was devoted to the definition of the conditions that license V1 constructions in MH. Again, two different types of approaches were contrasted. The lexically-based approach focuses on the components which make up the construction (i.e. verbs and dependents). An empirical evalua-

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tion of lexically-based constraints that have been proposed in the literature showed that statements regarding the type of verb or the definiteness of the subject capture frequent correlations but not hard constraints. The alternative approach viewed the constructions in their entirety and considered them from a discourse-functional aspect. It was proposed that V1 constructions are used as information packaging devices which encode thetic expressions in such a way as to make them minimally distinct from 'unmarked' categorical expressions. Those properties which were identified by the lexically-based approach as definitional for V1 fall out naturally from the association of V1 with thetic expressions. Counterexamples to the lexically-based constraints, too, are accounted for by the information packaging approach.

One issue that remains to be investigated is whether there is a discourse-functional distinction between subjectless and subject-taking V1 constructions. In this study I identified two pairs of constructions, VS_{agr} and VS_{nonagr}, as well as VDS_{agr} and VDS_{nonagr}. Syntactically, I gave them two distinct analyses: the S argument in the *agr* constructions was identified as the syntactic subject, while the *nonagr* constructions were analyzed as subjectless. This distinction, however, was not retained in the information packaging analysis, where $VDS_{agr/nonagr}$ was associated with either thetic or categorical expressions and $VS_{agr/nonagr}$ solely with thetic expression.

A possible direction to pursue is that subjectless constructions are 'more thetic' than subject-taking ones, since subjectlessness is a more extreme form of 'subject-object neutralization' (Lambrecht & Polinsky 1997). Moreover, it can be hypothesized that subjectless V1 are more likely to encode event-central thetic expressions, while subject-taking ones are associated with entity-central ones. Indeed, Sasse (1987) mentions a number of languages in which the event-central/entity-central distinction has linguistic correlates. As far as I can tell, this is not borne out by the data. A more extensive corpus study in which tokens of the constructions are coded with information regarding their discourse context is required in order to determine the

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nature of this distinction. The Corpus of Spoken Israeli Hebrew (CoSIH), once made available, may provide a good data resource for such an endeavor.

Finally, a number of more global conclusions. First, it has been shown that analysis of syntactic phenomena, such as word order and subject-verb agreement, can not rely on purely syntactic descriptive means. Rather, by integrating information packaging concepts and notions, one can achieve a deeper understanding, and a more predictive analysis of such phenomena. An analysis along these lines is Moore's (2002) analysis of Spanish causatives. Moore proposes that events that are conceptualized as thetic judgments are realized as VP-complements of causative verbs. Conversely, those events which are conceptualized as categorical judgments are realized as IP-complements. Thus, the cognitive act determines the syntactic category.

Second, information packaging analyses often employ sentence-answer pairs to define the conditions under which a particular allosentence (or information packaging) is felicitious. Questions are used to set up a context by introducing the presuppositions which are assumed when the answer sentence is given.[1] A comprehensive grammar should ultimately include such discourse-related information. At this stage, however, we are only in the beginning of a formalized theory of inter-sentential constraints in HPSG.[2]

Third, a constructional approach, such as the one adopted here, enables us to integrate both a bottom-up and a top-down approach to grammar. By attributing properties to *constructions*, as well as to lexical items, we are freed of the necessity to stipulate phonologically empty items whose sole function is to project the required properties. Sag's (1997) analysis of English relative clauses, described in 6.1, is an example of such a theoretical move.

Lastly, this study has shown the benefits of incorporating typological methodol-

[1]Examples of such methodology are given in section 5.3.1, where argument focus and thetic expressions are distinguished.

[2]See Ginzburg & Sag's (2000) study of English interrogative constructions for a proposal regarding question and answer pairs.

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ogy in formal grammar research. An initial pre-theoretical examination of the phenomenon has shown that not all constructions have a distinguished argument which exhibits properties associated with subjects. Insisting on associating an argument with 'subject' or assuming a phonologically empty one is justified only insofar as it provides a better account of the data and/or furthers our understanding of the phenomenon. This has not proven to be true in the case of V1 in MH.

Moreover, the phenomenon presented here provides additional evidence for the appropriateness of employing a multifaceted approach to subjecthood. The term 'subject' conflates a multitude of properties which are not necessarily associated with the same constituent in all constructions in all languages. The analysis proposed here distinguishes between a structural subject (the NON-HD-DTR in a *hd-subj-ph*), a valence subject (i.e. the value of SUBJ), a semantic subject (the least oblique element in ARG-ST), a pragmatic subject (the PRED-BASE), and a topic (LINK, according to Engdahl & Vallduvi 1996). Not all of those potential notions of subjecthood are relevant to all languages.

In basic sentences such as *John eats vegetables* the same constituent (i.e. the NP *John*) assumes all these roles. Nevertheless, languages are not restricted to basic sentences. Different constructions are motivated by different requirement. The non-basic construction of V1, for example, is motivated by the need to distinguish between thetic and categorical judgments. In such cases, it is generally not the case that one argument assumes all the different roles described above, or, conversely, not all roles are associated with an argument. A good theory is one which can account for different types of non-basic sentences.

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