VP-Structure and the Syntax-Lexicon Interface

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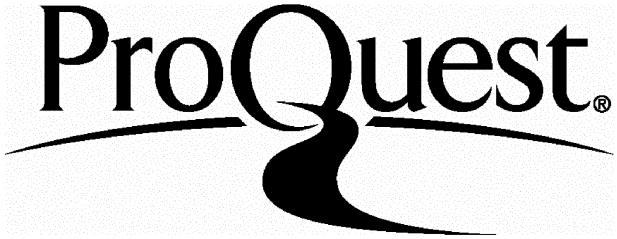

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Thesis title: VP-structure and the syntax-lexicon interface

Thesis abstract:
The thesis is concerned with the correlation between aspects of verbs' meaning and aspects of verbs' syntax. This research domain is known as "The syntax-lexicon interface". Previous work has established a strong correlation between the two. In this thesis, I focus on some cases where the correlation between meaning and syntax is not as simple as with standard verbs.

Chapter one introduces the basic approaches to the syntax-lexicon interface, and establishes the approach of the thesis, as a predicate-based, aspectual approach.

Chapter two gives an overview of the structure of the VP, the domain in the syntax which interfaces with the lexicon. I give an account of the interaction of the structure of the VP with specific verbs' meanings, with special reference to verb alternations.

The next three chapters are case studies of special problematic cases:

Chapter three deals with the problem of agents (i.e. wilful actors) vs. causers, which, although structurally indistinct, behave differently with respect to some syntactic phenomena.

Chapter four examines the structure of complex, causative verbs; special attention is given to Hebrew causative verbs, where causativization applies more freely than in English.

Chapter five discusses psychological verbs (i.e. verbs describing psychological states, such as *frighten*, *amuse*), which are known to exhibit different syntactic properties from those of standard verbs. Based on the behaviour of such verbs across six languages, I suggest a structure for psychological verbs based on the analogy with ditransitive verbs (cf. *insult x* and *give x an insult*). Also, I show that these verbs have special properties only on their *stative* reading, and that on their non-stative reading they behave like standard verbs. This establishes the role of stativity vs. non-stativity, as well as aspectual properties in general, in determining a verb's behaviour.

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Introduction

It is a common assumption that linguistic knowledge is organized according to domains, or distinct components: a syntactic domain, a semantic domain, a phonological domain, etc. One of the core questions in linguistic theory is how do such domains interact, and what is the nature of their interaction?

This work is concerned with the interaction of two such components, the lexicon and the syntax, that is, the syntax-lexicon interface. I will be concerned here with verbs, for the simple reason that verbs (and other argument taking categories) pose some requirements about the syntactic structures they may appear in. Looking at verbs, two interrelated problems arise: the first is the correlation between verbs' meaning and verbs' syntax (that is, the interface between lexical properties and syntactic structure). The second concerns the syntactic realization of verbs, that is, the structure of the VP.

These problems can be further articulated as the five following questions (the first two questions emerge from the problem of the correlation and questions three, four and five emerging from the problem of realization):

1. What is the nature of the correlation between verbs' semantics and verbs' syntax? In particular, is the syntax of verbs determined by their semantics?

2. Which lexical properties of verbs are relevant for the interface with the syntax?

3. What is the structure of the VP? What do terms such as "internal" and "external" argument mean? What types of VPs exist in the language?

4. How are semantic properties of verbs realized syntactically?

5. How does the syntax of a predicate change following a change in the meaning of the predicate? And vice versa: how is the meaning of the predicate affected following a syntactic change?

The first chapter is concerned with the first two questions. I review different approaches to the interface between the lexicon and the syntax, according to two

parameters: the lexical information which is taken as crucial for the interface with the syntax, and the nature of the correlation between the two domains. I adopt an aspectual (or event-structure) approach, that is, following work by Tenny (1987) and others, I take only aspectual properties to be syntactically relevant. Arguing on the basis of several verb alternations (in particular, intransitive verbs which alternate between an unaccusative and unergative structure), I argue that the syntax of verbs cannot be fully determined by their semantics. Following this I motivate an approach to the interface in which the syntax itself has some part in determining the meaning of the verb (cf. Hoekstra and Mulder 1990, Borer 1994).

Chapter two is concerned with the third question: the structure of the lexical projection of the verb, the VP. I adopt the VP-shell notation, suggested originally by Larson (1988), with some modifications by Hale and Keyser (1993, 1997a) and Chomsky (1995). Examining the notions of internal and external arguments, I suggest that these terms are best captured with respect to the temporal organization of the event that the verb describes: the internal argument is determining, and criterial of the temporal path denoted by the event, while the external argument is excluded from this temporal path (although it may be interpreted as initiating it). The VP-shell is thus divided into two domains: the lower VP, which is the domain of affectedness, change of state and the temporal path which is denoted by the event, and the upper VP, which is external to that domain. In accordance with my conclusions in chapter one, I assume that arguments are interpreted as internal or external by virtue of being generated at a specific VP domain. Two additional issues related to VP structure are discussed in this chapter: the structure of ditransitive verbs (datives and double objects) and the status of case in grammar.

The three remaining chapters are dedicated to three specific problems within the VP domain.

Chapter three deals with question four, the syntactic realization of semantic properties, through the problem of agents (i.e. wilful, animate actors) vs. causers. This case is significant, because the VP structure adopted in chapter two does not distinguish

between the position of the two. Furthermore, there seems no distributional evidence that could tease apart their syntactic positions. The only difference between agents and causers is in their animacy or wilfulness: so is this semantic difference realized syntactically? To answer this question I look at four syntactic phenomena which are sensitive to the distinction between agents and causers (transitivity alternations, object case marking in psych predicates, reanalysis phenomena and adverb scope). My conclusion is that agents and causers occupy the same structural position, the spec of the upper VP. However, there is a semantic difference between them, in the way in which they are related to the change of state in the object: an agent *intends* to bring about a change of state, while a causer *happens* to bring it about. This difference, I argue, is syntactically realized, in the way in which the two are related to the lower VP (the domain of the object): an agent is a convenient label for an argument which is generated in a V head which is selected by the lower VP; a causer is an argument which is generated at a V head which is not selected, but is an automatic transitivization of a change of state predicate (Hale and Keyser 1997a). I suggest we should distinguish not between agents and causers *per se* (e.g. as different roles in the thematic grid), but between predicates which require an agent and predicates which allow a causer. This structural distinction between agents and causers also enables us to account for the fact that many verbs which allow a causer can also be used agentively.

Chapter four is concerned with the question of the relationship between syntactic and semantic changes in predicates. The case considered is the formation of causative verbs, causativization: syntactic/semantic change which involves an addition of an event participant, a causer (so that, syntactically, this participant is realized as an external argument). Two main questions arise:

1. What is the structure of the causative VP?
2. What is the relation between the meaning of the causative form and that of the non-causative form?

In my discussion I concentrate on Hebrew lexical causatives, because the formation of lexical causatives applies in Hebrew more freely than in English or Romance languages.

In particular, Hebrew allows causativization of unergative verbs which already have an agent. At first blush, this seems like a violation of our assumptions about the syntax-lexicon interface (no more than a single agent/causer per predicate) and about VP structure (no more than one *v* per clause) made in the first two chapters. Looking at the syntax and the semantics of causativized unergatives, I argue the following: syntactically, the original agent of the unergative verb is internalized, (i.e. generated as a direct object) when the verb is causativized. Semantically, the original agent loses its agentive properties: it is interpreted as being put into action rather than initiating it volitionally. This has two consequences:

1. For the particular case discussed in this chapter, I conclude that Hebrew differs from other languages in allowing internalization of an external argument, but it never violates universal well-formedness rules (e.g., as it would by allowing two agents for one predicate).

2. As for the general question concerning the relationship between semantic and syntactic changes, I conclude that any change in the syntax of the predicate has immediate consequences in the semantics and vice versa: if an external argument is added, the predicate is interpreted as having a causer. If an argument is internalized, then it loses its agentivity.

Finally, chapter five is concerned with all the questions mentioned above. This chapter discusses the structure of psychological (psych) verbs (i.e. verbs describing psychological states, such as *frighten*, *amuse*). My starting point is Belletti and Rizzi's (1988) seminal work, which establishes the following:

1. Psych verbs are lexically unique, in that they specify a participant called "Experiencer" in their thematic grid. They are thus lexically specified for being "psych" verbs.

2. Psych verbs (or, more precisely, a certain group of psych verbs, namely Object-Experiencer verbs) are syntactically unique: with respect to a number of syntactic phenomena they behave unlike standard, transitive verbs. They therefore project a VP structure which is unique to them.

This gives psych verbs a special position as a crucial test case to any approach to the syntax-lexicon interface.

Starting with the syntactic behaviour of Object-Experiencer verbs, I suggest a finer-grained analysis of these verbs in terms of their aspectual properties: unlike standard transitive verbs, these verbs may alternate between three aspectual readings: a *stative* reading, an *eventive* reading and an *agentive* reading. I show that only the stative reading is associated with the unique properties pointed out by Belletti and Rizzi; on their agentive reading these verbs behave like standard transitive verbs. This establishes the role of stativity vs. non-stativity, as well as aspectual properties in general, in determining a verb's syntactic behaviour.

I further argue, following Ruwet 1972 and Bouchard 1995 (and contra Belletti and Rizzi), qualifying the claim that psych verbs are a case apart, syntactically, or that there is a specific "psych construction": first, many "psych constructions" are formed out of standard predicates such as *give* (cf. *give grief*, *bring joy*); and second, many verbs are ambiguous between a psych interpretation and a non-psych, physical interpretation (for English cf. *disturb*, *strike*, *stimulate* etc.). Based on the behaviour of these verbs across a number of languages I suggest a structure based on the analogy with locatives and ditransitive verbs (cf. *insult x* and *give x an insult*). The syntactic structure of the predicate will thus depend on the type of event it denotes (locative, dative, transitive). The unique syntactic behaviour of the stative reading will stem from a combination of properties which have to do with their stativity (e.g., the fact that their object is marked with accusative case and the fact that they lack an external argument) rather than from the fact that they are assigned a unique, ad-hoc "psych" structure.

Psych verbs turn out, however, to have important consequences for VP structure in general: I suggest that the subject of the stative reading is generated at a position which is external to the domain of affectedness and change of state (the lower VP of the VP-shell), but is still within the lexical VP. This argument is an "external internal" argument, and is interpreted as a stative causer. I assume that only this type of arguments - stative causers - can occupy that position. The VP structure assumed in

chapter two is thus further developed, accommodating complex stative verbs such as Object Experiencer verbs, as well as several other verb types.

By participating in two types of alternations (aspectually based and the psych-non-psych alternation), psych verbs shed more light on the interface between the lexicon and the syntax and, in particular, the lexical properties which are relevant for the syntax. Chapter five concludes with the following answers to the five questions I started with, which have emerged from the discussion throughout the thesis:

1. Verbs' syntax is related to, but not totally determined by the verbs' semantics (in the case of psych verbs: a verb like *frighten* - which is presumably a single lexical entry - can take three different syntactic structures, based on its aspectual properties).

2. Aspectual properties are the lexical properties which are syntactically relevant (in the case of psych verbs, the syntax is sensitive to aspectual terms such as measurer/undergoer and originator/agent, but not to labels such as "Experiencer").

3. The structure of the VP includes, apart from the two familiar domains for "originators" and "measurers", a position which is external to the domain of measuring out but is internal to the VP (in the case of psych verbs, this is the position where stative causers are generated).

4. The lexical properties which are "visible" to the syntax (e.g. aspectual properties) are reflected in the type of VP projected by the verb (in the case of psych verbs, non-stative causation has a functional v head heading its VP-shell while stative causation has a lexical V head).

5. Finally, there is a robust correlation between a semantic and syntactic changes in verbs (in the case of psych verbs, a change in aspectual properties (from stative into non stative) yields a change in the syntactic structure, and vice versa).

Chapter 1: Verb alternations and the syntax-lexicon interface

1.1 Introduction: Is structure / meaning association arbitrary?

Different verbs take different structures. This becomes clear even if we look at a limited set of data. It is not the case that any verb is compatible with any syntactic structure:

(1) a. Nina slept
b. *Nina slept Paul
c. *Nina slept that Paul left
d. *Nina was slept

(2) a. Nina ate an apple
b. Nina ate

(3) a. *Nina dined her dinner
b. Nina dined

(4) a. Nina devoured her sandwich
b. *Nina devoured

Verbs whose meanings are relatively close differ with respect to the syntactic structures with which they are compatible: *dine* is compatible with the intransitive form only, *devour* requires a transitive form and *eat* allows both. There arises the question whether there is something about verbs which "tells" speakers what structures they may be associated with, or whether the association of verbs and syntactic structures is arbitrary, that is, every verb is listed separately in the lexicon, with a list of its lexical properties and of the syntactic structures it allows.

The working hypothesis in any theory of the interface is that there exists a systematic correlation between the meaning of a verb and the syntactic structures it appears in. In the absence of such a correlation, language learners would have to learn verbs' syntax on an item-by-item basis, thus making the acquisition of verbs by children a long, difficult process. On the other hand, if such a systematic correlation exists, children could use it to make generalizations for a large number of verbs, in a relatively short time - as seems to be the case (Bowerman 1982, Pinker 1989, Gleitman 1990).

The relationship between the meaning and the structure of verbs is what constitutes the *interface* between the domain of the lexicon and that of the syntax. In my discussion of this question I will refer to two principal issues:

1. What is the semantic information that the verb specifies in its lexical entry, which is relevant for the interface with the syntax?
2. What is the mechanism which links this information with syntactic structures?

The first question has to do with the *lexical specifications* of a verb, which are listed in the lexicon. Not all the semantic information about verbs is actually relevant for their syntax. The challenge of a theory of the interface is to abstract away those lexical properties which are "visible" to the syntax. (to take an example: in most GB theories it has been assumed that the specifications of role-types in the thematic grid of the verb, s.a. agent, patient etc., are syntactically relevant). The second question relates to the mechanism of *mapping* (lexical information into syntactic structures) or *linking* (between the lexicon and the syntax): what are the principles according to which the arguments of the verb assume their syntactic position?

Mapping mechanisms may take the form of rules stating correlations between semantic roles and syntactic positions. Mapping is based on some regularities between semantic and syntactic information, that is, the observation that arguments bearing certain (thematic or other) semantic roles are realized in certain syntactic positions. For example, agents, with no exceptions, are realized as subjects of predicates, never as objects:

(5) a. Nina ate spaghetti.

b. *Spaghetti ate Nina. [with Nina as Agent]

Mapping, or linking, is responsible for mediating between verbs' arguments and the syntactic positions in which they appear. For example, the generalization that agents occupy the subject position can be stated as "link the argument bearing the agent role with the subject position" (or "map the argument bearing the agent role into the subject position"). Mapping serves as a function, which takes as its argument some semantic information about an argument (agent), and whose output is some syntactic position into which this argument is mapped (subject). Ideally, lexical specifications of arguments and (presumably universal) linking mechanisms should be enough to constrain the association of verbs and syntactic structures: verbs specify some information about the nature of their arguments, and the linking rules map these into syntactic positions.

All theories of the syntax-lexicon interface assume that there is a correlation between the meaning of a verb and the syntactic structures in which it appears. What is not agreed upon is the nature of this correlation: the type of lexical information which is listed in the lexicon, and the mapping (or linking) system. In what follows I will survey a number of current approaches to the interface, according to these two parameters: what are the lexical specifications assumed (section 1.2), and how the mapping system works (section 1.3). Throughout this work I will be adopting an approach to the interface which is aspectually based with respect to the lexical specifications it is assuming, and a mapping system which is predicate-based. In sections 1.4 and 1.5 I will bring some motivation, based on several cases of verb alternations, in favour of a predicate-based approach to the interface, following Hoekstra and Mulder (1990), van Hout (1996) and in particular Borer (1994). [1]

[1] Motivations in favour of an aspectual approach will be given in chapter two.

1.2 Lexical specifications

I will start with the assumption that only a subset of the lexical information about verbs is relevant for the syntax. The challenge for theories of the interface is how to individuate this syntactically relevant information, and how to formulate it in the form of lexical specifications. There are two main types of lexical specifications: syntactic, specifying the syntactic nature of the arguments of the verb (1.2.1), and semantic, specifying their semantic characteristics (1.2.2).

1.2.1 Syntactic specifications

In this section I will review three types of lexical specifications which are syntactic in nature: subcategorization frames, C-selection and argument structures.

1.2.1.1 Subcategorization frames

Subcategorization frames are, perhaps, the most "straightforward" way to associate verbs with structures. On this view, each verb is listed in the lexicon with the syntactic frames for which it subcategorizes. These frames state the number of complements a verb takes and their syntactic type. The following examples are from Chomsky (1965), where this notation is introduced:

(6) a. *eat*, [+V, +_NP]
b. *elapse*, [+V, +_#]
c. *believe*, [+V, +_NP, +_that S`] (Chomsky 1965:94)

This notation contains strictly syntactic information. It tells us that *eat*, but not *elapse*, may take an NP complement, thus allowing for "Nina ate an apple" but not for "A week elapsed Nina". In addition to this, there are selection restrictions, which state

the (purely) semantic properties of the complements, so that we avoid sentences such as "Nina ate a book".

Subjects are not mentioned in the subcategorization frame of a verb, as it is assumed that the subject position is always projected. [2]

1.2.1.2 C-selection and S-selection

In later generative grammar there has been an attempt to derive such syntactic specifications from semantic specifications. In particular, to derive C(ategorial) selection, selection for syntactic categories (DP, CP etc.), from S(emantic selection), selection for semantic notions (object, proposition, etc.). To take a familiar example, the fact that we utter propositions but not eat them, entails that *say* S-selects a proposition, but *eat* does not:

(7) a. Sue said that the world is round.

b. *Sue ate that the world is round. (Pesetsky 1995:2)

There were several attempts to reduce c-selection to s-selection (Grimshaw 1979, 1981, Pesetsky 1982, Chomsky 1986). Thus, the lexicon need not specify c-selection properties of predicates, as these are predictable from their s-selection properties. [3] However, it is still an open question whether c-selection is completely reducible to s-selection (cf. Emonds 1991).

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[2] Work by Emonds (1991) further develops the notation of subcategorization frames, adding brackets to indicate optional complements, and selection restrictions on each complement:

(i) a. drink V, [_(NP "liquid")]

b. put V, [_NP "object" PP "location"] (van Hout 1996, based on Emonds 1991)

[3] For example, Chomsky (1986) suggests that the connection between the two is done through Canonical Structural Realization (CSR): if a verb s-selects a semantic category C (e.g. a thing), then it c-selects a syntactic category that is the canonical structural realization of C (e.g. an NP).

1.2.1.3 Argument structures

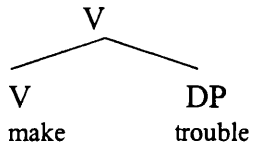
The term "argument structure" is standardly taken to include a set of arguments selected by a predicate, as well as their status with relation to that predicate. The arguments themselves are represented either by theta role labels (Theme, Goal, Location etc., cf. Williams 1981, Marantz 1984, di Sciullo and Williams 1987, Belletti and Rizzi 1988) or by variables over arguments (Levin and Rappaport 1986, Zubizarreta 1987). The status of the arguments is relevant for their syntactic realization. In particular, theories of argument structure distinguish between the external argument and the other, internal arguments (this distinction was first introduced in Williams 1981). Some theories make further distinctions between the two internal arguments of a verb: the direct internal argument, which is θ-marked directly by the verb, and the indirect argument, which is θ-marked by a preposition (Marantz 1984).

In some theories (Levin and Rappaport 1986, Zubizarreta 1982, Grimshaw 1990) argument structure (or predicate-argument structure, henceforth PAS) is regarded as a level of representation which specifies strictly syntactic information. Semantic specifications, such as theta role labels, are not present at PAS, and operations on PAS are blind to them. These theories regard argument structure as an intermediate level of representation, standing between some initial level of lexical representation, such as Lexical Conceptual Structure, and the syntactic level of D-structure (see discussion of linking systems in section 1.3.1.3).

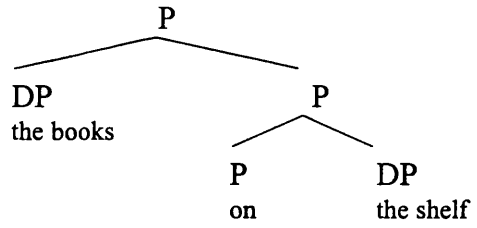
Hale and Keyser (1993, 1997a,1997b, henceforth HK) develop a different notion of argument structure. Argument structure is taken to be (nothing more than) syntactic configurations projected from lexical heads. They are "the system of structural relations holding between heads (nuclei) and arguments linked to them in the roster of syntactic properties listed for individual items in the lexicon" (HK 1997a:1).

Argument structure types are based on a limited number of relations between heads and specifiers, describing basic event types such as creation, change of state, location etc.:

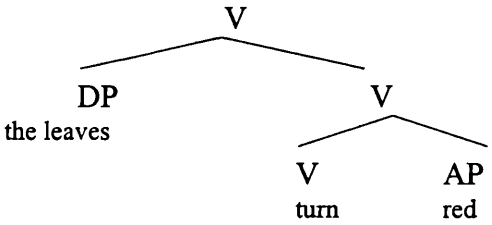
(8) creation event



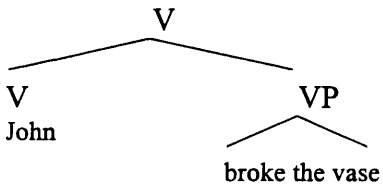
(9) change of location



(10) change of state



(11) causation



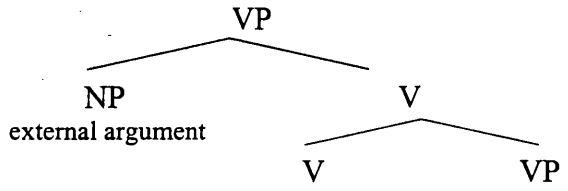
Although the association of verbs with argument structures (i.e., what structures lexical heads project) is based on semantic properties of verbs (in particular, on the type of event which the verb denotes), argument structure itself is operated solely by syntactic rules. [4]

The number of possible configurations is limited to the number of lexical heads and of the well-formed relations that can hold between them. The structures above are associated with basic event types, from which more complex events can be formed (correlating with more complex argument structures). Lexical specifications of verbs, on this view, contain pieces of syntactic representation (or instructions concerning the projection of syntactic representation). The syntax of the predicate is already there - there is no need of linking.

[4] In their earlier work HK are agnostic as for whether argument structure rules operate in the lexicon or in the syntax. In HK 1997 it is argued explicitly that all lexical operations take place in the syntax.

Thematic roles, under this view, are convenient labels for configurations which hold between heads and their arguments, rather than specifcations assigned in the lexicon. The argument at the specifier of the upper VP is interpreted as an agent (or an external argument) by virtue of being in that specific configuration:

(12)



1.2.2 Semantic specifications

In this section I look at lexical specifications which are semantic in type: thematic roles, information contained in lexical conceptual structures (LCS) and aspectual properties.

1.2.2.1 Thematic roles

The term *thematic relations* is introduced by Gruber (1965), to refer to the interpretation of NP arguments. These relations include, primarily, a *theme*, that is, the NP which is understood as going through some motion (hence the term thematic relations), as well as *agent*, *location*, *goal*, *source* (among others). Further developments of these relations are in Fillmore (1968) and Jackendoff (1972). I will review here three principal formulations of thematic roles: Chomsky's (1981) version of thematic roles, Dowty's (1991) view of thematic roles as clusters of properties and Parson's (1990) event-based view of thematic roles.

Thematic roles as labels (Chomsky 1981)

Lexical entries of predicates, according to Chomsky (1981), contain a thematic grid which lists the θ-roles that the verb assigns (agent, patient, goal etc.), alongside subcategorization frames. [5]

Syntactic principles, such as the *Projection Principle* and the *6-Criterion* relate θ-roles to actual arguments of the predicate . The projection principle ensures that only subcategorized elements are assigned a θ-role, while the θ-criterion makes sure that every θ-role is assigned to one argument and every argument is assigned a θ-role.

The system of θ-roles adopted in Chomsky (1981) serves two functions: its first goal is to define the precise number of arguments, participants or argument slots, specified by the predicate. Its second goal is to identify these arguments as bearing specific role types, such as agent, patient, goal etc., according to their relation to the event described by the verb.

Thematic roles as prototypes: Dowty (1991):

Dowty (1989, 1991) takes thematic role *types* such as agent, patient, etc. to be semantic entailments, shared by a large group of predicates, with respect to one of their arguments. However, the precise definition of an agent, or the set of entailments shared by all the predicates which have an agent participant, are far from clear. Even the more agreed-upon role types, such as agent, is hard to characterize and any test of definition is subject to counter-examples and similar problems (cf. Dowty 1991).

To avoid this problem, some theories gave up *Thematic Role Types* altogether, using, instead, *Individual Thematic Roles* (terms taken from Dowty 1989), assigned by individual verbs: the thematic role of the subject of the verb *kill* is the 'killer role', the subject of *build* has the 'builder role', and so on (cf. Marantz 1984). Noting the problems with Role Types, but unwilling to give up some higher order generalizations about properties shared by a large number of predicates, Dowty (1991) suggests that (at

[5] In later work subcategorization frames were supposed to be derived from thematic specifications through principles such as Canonical Structural Realization - cf. Chomsky 1986.

least for the purpose of argument selection), the number of roles can be reduced into two macro-roles: *Proto-Agent* and *Proto-Patient.* [6] Proto-Roles (henceforth P-Roles) are not primitives, but rather prototypes, containing clusters of properties entailed by predicates with respect to one of their arguments (more precisely, one of their argument positions). Dowty brings up five properties which contribute for each role-type.

Contributing properties for the Agent Proto-Role include:

1. volitional involvement in the event or state.
2. sentience (and/or perception).
3. causing an event or change of state in another participant.
4. movement (relative to the position of another participant).
5. existing independently of the event named by the verb.

Contributing properties for the Patient Proto-Role are:

1. undergoing change of state.
2. being an incremental theme. [7]
3. being causally affected by another participant.
4. being stationary relative to movement of another participant.
5. failing to exist independently of the event.

Predicates may entail all or some of these properties with respect to one of their arguments. The more P-agent properties a predicate entails, the more its argument is a prototypical agent, and the more chances there are that it will be lexicalized as the subject of the predicate. The relationship between P-Role entailments and syntactic positions is governed by the "Argument Selection Principle", which states that "the

[6] For a suggestion in a similar vein see Van Valin's (1990) *Actor* and *Undergoer.*

[7] Incremental Themes are a particular kind of "Patients". The property they share is, that they undergo change of state incrementally, a little at a time. They thus entail a *strict parallelism* between the progress of the event and the state of the measurer: in *wash the car*, *mow the lawn* or *paint the wall*, when exactly half the car is washed or half the lawn is mowed then the event is exactly halfway through. This parallelism between the state of the measurer and the temporal organization of the event is termed *homomorphism* (see Dowty 1991:567 and references therein).

argument for which the predicate entails the greatest number of Proto-Agent properties will be lexicalized as the subject of the predicate; the argument having the greatest number of Proto-Patient entailments will be lexicalized as the direct object." (ibid:576).[8]

Dowty shows that two proto-roles are indeed sufficient for determining argument selection (if the verb has three arguments then the argument which does not "win" the proto-patient role nor the proto-agent role is lexicalized as the indirect object, by default). This theory also accounts for the lexicalization pattern of some cases which involve less canonical agents and patients (unaccusative / unergative mismatches across languages, psych predicates, the locative alternation), which are hard to explain under standard thematic assumptions.

On the other hand, this theory has been criticized for being probabilistic, thus leaving too much of the syntactic-semantic correlations to be determined by chance (Grimshaw 1990, Tenny 1992, LRH 1995).

Event-based thematic roles (Parsons 1990):

Another view of thematic roles is presented in Parsons (1990, See also Kratzer 1996, Ramchand 1997). Working within an event-semantics framework (based on work in Davidson 1967), he includes an additional argument, *e* (event argument), for each predicate. Thematic roles, on this view, denote relationships between an event and the participants of that event. They serve to relate nominal argument positions to the event variable. The "titles" assigned to those roles are similar to those used in most traditional GB approaches (agent, theme, etc.). Thematic roles thus take two arguments, a nominal participant and an event:

(13) Agent (e, Nina)

[8] Dowty himself, as well as some of his critics (Grimshaw 1990, LRH 1995) is aware of the fact that some properties may rank higher than others and thus cannot be overriden. He does not offer such ranking in his work, but leaves the matter open for further research.

The interpretation of the relation in (13) is that Nina is the Agent of the event. To take an example, the semantics of "Brutus stabs Caesar" is:

(14) (∃e) [Stabbing(e) & Agent (e, Brutus) & Theme (e, Caesar)]

(adapted from Parsons 1990)

The interpretation of (14) is: there is an event, it is a stabbing event, and Brutus is the Agent of that event, and Caesar is the Theme of that event.

1.2.2.2 Lexical Conceptual Structure (LCS)

Another type of lexical specifications, proposed by Jackendoff (1983, 1990 and subsequent work) and adopted by numerous linguists (Hale and Keyser 1986, Rappaport and Levin 1988, Pinker 1989, Carrier and Randall 1992), is decomposing verbs' meaning into lexical primitives, from which the syntactic structure of the verb can be derived. These lexical primitives include meta-predicates, such as CAUSE, GO, BE, STAY, AT, TO, from which the meaning of individual verbs is built. Lexical entries contain structured representations, composed through lexical-conceptual formation rules, which roughly "describe" the meaning of the predicate. For example, *drink*, according to Jackendoff (1990) has the following LCS:

(15) [V

[_<NP_j>

[[Event CAUSE ([Thing]$_i$, [Event GO ([Thing LIQUID]$_j$,

[Path TO ([Place IN ([Thing MOUTH OF ([Thing]$_i$)])])])]

(Jackendoff 1990:80)

Other linguists decompose only some aspects of verbs' meaning, leaving templates denoting the type of action specific to the verb in the lexical representation of

verbs (e.g. LAUGH, such templates are termed *thematic cores* in Pinker 1989, or *lexical semantic templates* in LRH 1995). On this view, lexical representations are common to classes of verbs, which share some semantic and syntactic characterisitcs:

(16) verbs of putting: [*x* CAUSE [*y* BECOME P_{loc} *z*]]

More specific verbs of putting have additional specifications in their lexical semantic representation. Only the part of meaning shared by all the verbs belonging to this class is decomposed:

(17) a. *butter*: [*x* CAUSE [*BUTTER* BECOME P_{loc} *z*]]

b. *pocket*: [*x* CAUSE [*y* BECOME P_{loc} *POCKET*]] (LRH 1995)

1.2.2.3 Aspectually constrained interface

It is an emerging consensus in the last decade that lexical aspect (Aktionsart) or event structure has a role in mediating between a verbs' meaning and its syntax. Many theories make use of aspectual properties as part of the lexical specifications of predicates, including, among others, Tenny (1987, 1992, 1994), van Valin (1990), Grimshaw (1990), Pustejovsky (1991), Dowty (1991), Hoekstra (1992), Hale and Keyser (1993, 1997), McClure (1993), Borer (1994, 1996), Davis and Demirdache (1995), LRH (1995), van Hout (1996).

The strongest claim about the role of aspect is made by Tenny (1987 and subsequent work) who argues that aspectual properties are the *only* lexical properties which are relevant for the interface with the syntax:

(18) **Aspectual Interface Hypothesis** (Tenny 1992:2)

The mapping between thematic structure and syntactic argument structure is governed by aspectual properties. A universal aspectual structure, associated with internal (direct), external and oblique arguments in syntactic structure constrains the kind of event participants that can occupy these positions. Only the aspectual part of thematic structure is visible to the syntax.

While lexical entries may contain much more, the syntax "sees" only aspectual properties or event structure. In particular, Tenny (1994) argues for the existence of three aspectual roles: MEASURE, PATH and TERMINUS. All three roles are related to the way in which the event that the predicate denote is construed. A measurer is an argument which undergoes some change of state or motion; this change of state serves as a scale upon which the event may be seen as proceeding. Consider (19):

(19) Roz ate an apple

The change that the apple undergoes serves as a scale for the progress of the event: when it is untouched the event has not yet started, when it is half consumed, the event has proceeded halfway through, etc. This function of indicating the progress of the event is reserved to the measure, and cannot be done by any other argument (for example, in (19), we cannot learn about the progress of the event by looking at Roz). To put this schematically:

(20) a. eat an apple

b.

apple not eaten	.....apple half eaten.....	apple 80% eaten	apple eaten
event not begun	event halfway through	"80%" event	completed

Apart from providing a scale for measuring the progress of the event, the measurer also marks its inherent endpoint. In (19), this endpoint depends on the status of the

apple: once it is consumed, the event of eating the apple is terminated and cannot go on any longer. It is an inherent property of the predicate *eat an apple*, that it has a (linguistically given) endpoint. This endpoint may not be actually achieved (the event might have been interrupted, so the apple was never fully consumed). However, the event is *completed* only once the apple is consumed (and this is given by the semantics of *eat the apple*). Predicates with such inherent endpoints are standardly referred to as *telic* predicates (Verkuyl 1993, Dowty 1979, Smith 1991). [9]

Aspectual structure is mapped into the syntax in a specific way: arguments bearing particular aspectual roles occupy specific syntactic positions. In particular, a MEASURE is only realized as a direct object. The strict connection between a measured event and the object position has been made explicit by many linguists; I will discuss this in more detail in the second part of this chapter.

The other two roles, PATH and TERMINUS, share between them the two roles of a MEASURE. A PATH is a "defective" MEASURE, which gives only a scale of the progress of the event, without an inherent endpoint. The direct argument of all motion verbs (*push a cart*, *move the chair*) is a PATH: it gives a scale, either implicit or explicit, for the progress of the event, but does not provide an endpoint. This endpoint may be optionally provided by the TERMINUS: normally lexicalized as a PP, the TERMINUS adds an endpoint to the scale provided by the PATH: *push a cart to NY*, *move the chair to the corner*, etc.

To sum up: the notion of aspect is used implicitly in thematic theory: traditional notions of thematic roles include information which can be characterized as aspectual (an agent brings about an event, a theme undergoes some change of state, or is affected somehow by the action). The import of the Aspectual Interface Hypothesis is that it assumes explicitly that aspectual properties are sufficient to mediate between the lexicon and the syntax.

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[9] Tenny uses the term *delimitedness* to refer to the notion of telicity. See also STP (set terminal point), used by Krifka (1992) for the same notion.

In what follows I will adopt the stronger thesis, and assume that aspectual properties are the only ones which are relevant for the interface. I will thus refer to canonical agents and patients as originators (of events) and measurers of event, respectively. Empirical motivations for an aspectual view will be discussed in chapter two.

1.3 Mapping systems

I reviewed above different types of lexical specifications which serve as the semantic "input" for the mapping function. I will now present a number of mapping systems used in current theories, dividing them according to the assumptions they make concerning the mapping process. The basic division I make is between *lexical-entry driven approaches* to mapping and *predicate-based approaches* (cf. Borer 1994), or *Projectionist* vs. *Constructional* approaches (LRH 1996). These two approaches differ in the way in which they see the interface: lexical-entry driven approaches assume that the syntax of verbs is projected from their lexical entries, and is determined by them. Predicate-based approaches assume that at least part of the interpretation of individual arguments in the clause depends on the syntax of the entire predicate.

1.3.1 Lexical-entry driven mapping

All lexical-entry driven approaches assume that lexical entries should contain all the information (thematic or aspectual) needed for projecting verbs' syntax correctly. The syntax of a predicate is determined by and can be predicted from the lexical specifications in its lexical entry. A particular formulation of this idea, formulated within the GB framework, is that the syntactic level of D-structure is projected from the

lexicon. [10] Therefore, there should be an unambiguous way to relate lexical specifications (thematic roles. argument variables, or aspectual roles) to syntactic positions. I will review the three types of mapping systems employed by lexical entry-driven approaches: UTAH, thematic hierarchies and linking rules.

1.3.1.1 Uniformity of Theta Assignment Hypothesis (UTAH)

Perhaps the strongest claim about the relationship between the lexicon and the syntax, the *Uniformity of Theta Assignment Hypothesis* (UTAH) was suggested by Baker (1988):

(21) **Uniformity of Theta Assignment Hypothesis (UTAH)**

Identical thematic relationships between items are represented by identical structural relationships between those items at the level of D-Structure (Baker, 1988:46). [11]

If UTAH is correct, an argument bearing a particular thematic role (e.g. agent) will always be mapped into the same syntactic position (e.g. subject). This is very attractive from the acquisition standpoint, making verb learning almost trivial: once the child has the meaning of a verb, which includes the thematic roles it assigns, she also has the syntax of that predicate "for free". It is also relatively easy to refute: whenever two arguments bearing the same thematic role are mapped into two different positions, the UTAH is violated.

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[10] This view is termed by Chomsky 1986 "D-structure as GF-θ". GF-θ is the mapping between θ-roles and grammatical functions. D-structure, in GB theories, serves precisely this purpose: a syntactic level of representation where items occupy the positions in which they are θ-marked.

[11] UTAH is very similar, both in name and in contents, to a hypothesis made within the framework of Relational Grammar, the Universal Alignment Hypothesis (UAH). UAH is slightly weaker than UTAH, and does not require an "absolute" mapping, but only predictable linking patterns: "There exist principles of UG which predict the initial relation born by each [argument] in a given clause from the meaning of the clause" (Perlmutter and Postal 1984:97)

In cases where two thematic roles are mapped into different syntactic positions two possible solutions suggest themselves. One is a finer-grained syntactic analysis: what seems like two different positions is in fact the same D-structure position. An example of such a case is verbs such as *break*, in which the theme argument, the window, is mapped into the subject position in the first alternant, and into the object position in the second:

(22) a. The window broke.

b. John broke the window.

The violation of UTAH is only apparent. (22) is an instance of unaccusativity: the Theme argument in (1a) appears at the object position at D-structure, and later moves to the subject position. UTAH can be maintained, because the two themes still occupy similar positions at D-structure.

Another solution, which was employed by Pesetsky in accounting for the linking pattern of psych verbs, is to assume a finer-grained semantic analysis: what looks like two similar thematic roles (*Theme*) is in fact two distinct roles (*Cause* vs. *Target* and *Subject Matter*, cf. Pesetsky 1995).

In recent work (Baker 1997) Baker suggests a revision of his former formulation of UTAH. The principle of UTAH is thus not sensitive to the identity of thematic roles *per se*, but rather to a "medium-coarse grained version of theta theory" (ibid: 120). In particular, Baker assumes that there are three main role prototypes which have to be distinguished: agent, theme and goal / path / location, all of which are mapped into fixed syntactic positions (spec, upper VP in the Larsonian shell, spec, lower VP and the complement of the lower VP, respectively). These three proto-roles are reminiscent of Dowty's proto-agent and proto-patient, and in particular of Tenny's MEASURE and PATH. I regard the 1997 Baker as an aspectually constrained UTAH, which is a view advocated by many linguists working on aspect (see above).

1.3.1.2 Thematic hierarchies

Mapping based on thematic hierarchy is less "absolute" than UTAH: it does not require identical positions for identical arguments, but only that the relative order within the hierarchy is respected: the arguments which appear higher in the thematic hierarchy are realized in syntactically higher positions. All hierarchies rank the agent as the highest argument and the theme as the lowest one, but differ with respect to the internal order of the other arguments: location, source, goal, experiencer etc. A sample of hierarchies employed includes:

(23) a. Agent > Location / Source / Goal > Theme

(Jackendoff 1972:148)

b. (Agent (Experiencer (Goal / Source / Location (Theme))))

(Grimshaw 1990:8)

c. Agent > Beneficiary > Recipient/Experiencer >

Instrument > Theme/Patient > Location

(Bresnan and Kanerva 1989: 23)

d. Cause > Experiencer > Goal / Location / Target > Theme

(Pesetsky 1995)

If an agent is present it will be mapped to the highest position in the clause. In the absence of an agent the experiencer may be mapped to that position. Thematic hierarchies were called for in cases where the absolute UTAH was too rigid, such as the mapping problem associated with psych verbs:

(24)	a.	Bill fears/is afraid of dogs.	(subject Experiencer)
	b.	Dogs frighten Bill.	(object Experiencer)

The argument bearing the experiencer role is mapped either to the subject position (24a) or to the object position (24b), thus violating the requirements of UTAH. Under a "relative" mapping system the problem would not arise. The two verbs specify the following thematic roles:

(25) a. *fear* (Experiencer, Theme)

b. *frighten* (Causer, Experiencer)

The thematic hierarchy is respected as long as the causer is mapped higher than the experiencer, and the latter is mapped higher than the theme.

1.3.1.3 Linking rules

Another way to relate arguments to syntactic positions is through explicit rules, referred to in the literature as "linking rules". Although this term is sometimes used to include all forms of regular mapping, including systems such as UTAH (Pinker 1989), I will use it here to refer specifically to "statements" such as the following:

(26) a. Link the Agent to the external argument (GB).

b. Link the first argument of "cause" to the SUBJ function (LFG).

(27) a. Link the Patient to the direct internal argument (GB).

b. Link the second argument of "cause" to the OBJ function (LFG).

(Pinker 1989:74)

The precise locus where linking rules operate is a matter of debate. Some linguists argue that they relate variables at the level of LCS directly with syntactic positions (Pinker 1989). Others (Rappaport and Levin 1988, LRH 1995, Carrier and Randall 1993, Kornfilt and Correa 1993) assume that linking rules relate LCS variables (or other

lexical semantic representation - cf. LRH 1995) with argument slots at the level of argument structure (or lexical syntactic representation - LRH 1995). In this case, therefore, variables are to be linked with argument structure specifications (external or internal arguments) rather than directly with syntactic positions. In other words, mapping from the lexicon into the syntax proceeds through an additional level of representation:

(28)

LCS	*linking rules* --->	argument structure	*projection rules* --->	D-structure
lexical semantic representation		lexical syntactic representation		syntactic representation

On this view linking rules are responsible only for deriving argument structures from some more basic level of representation. Projection rules further relate argument structure with syntactic positions. A recent example of linking rules mediating between lexical semantic representation and argument structure is given in LRH (1995:135ff). The linking rules suggested by them make use of two semantic notions, *immediate cause* and *directed change*:

(29) *Immediate Cause Linking Rule*

The argument of the verb that denotes the immediate cause of the eventuality described by the verb is its external argument.

(30) *Directed Change Linking Rule*

The argument of a verb that corresponds to the entity undergoing the directed change described by that verb is its direct internal argument.

All linking rules must include some ordering of rules or default linking rules, to account for cases which do not fall under any of the rules above. Pinker (1989) suggests

the following rule, to account for the status of themes, which appear as both subjects and objects:

(31) Link the first argument of "be" or "go" to the SUBJ function if it is not already linked to the OBJ function otherwise (LFG) / direct internal argument (GB).

LRH (1995) suggest a default linking rule, for what I would call, in GB terms, non-canonical Themes (i.e. non-affected participants):

(32) *Default Linking Rule*

An argument of a verb that does not fall under the scope of any of the other linking rules is its direct internal argument.

The linking rules reviewed here are lexical-entry based, because the "input" they take is some semantic specifications found in the lexical entry of the verb: a semantic role (agent, patient) or a predicate of an abstract predicate (CAUSE, GO). Linking rules work only in one direction, from semantics to syntax. [12]

1.3.1.4 Summary of Lexical-entry Driven Mapping

All mapping systems based on lexical entries make use of some lexical specifications, which serve as the input for the mapping mechanism. They include (at least) three different entities which participate in the mapping:

1. A level of lexical representation, where all the information relevant to the syntax is stated (LCS, PAS etc.).
2. A syntactic level into which lexical information is mapped (D-structure).

[12] Pinker (1994) argues that linking rules should always work from the semantics into the syntax, not the other way around. The reason for this is that linking is a "many-to-one" relation: all agents are lexicalized as subjects, but not all subjects are agents.

3. A mapping system: a function whose input is some sort of lexical information and whose output is some syntactic information, to map the two.

Are all three necessary? This does not seem to me to be the case. A syntactic level representation is needed for independent reasons. Also, some kind of mapping system is necessary, to capture the fact that structural positions are associated with some kind of lexical information (e.g., that an argument at a specific position is associated with a specific interpretation of an agent /originator or a theme /undergoer). But I believe that a rich level of lexical representation in which lexical roles are assigned is not a conceptual necessity. Let us see how lexical-entry driven mapping works: first, specific arguments are labelled as "agent", or "patient"; then, thematic hierarchies or linking rules are postulated, to ensure that the argument which is designated to be an agent ends up at the subject position and the argument designated to be a theme (or patient) lands at the object position.

Suppose the order is the other way around: *because* a certain argument is generated at the subject position it is interpreted as an agent, and *because* a certain argument occupies the object position it is interpreted as a theme. [13]

I assume, therefore, that on a purely conceptual level we could do without labelling arguments as agents or patients pre-syntactically, or assigning semantic roles in the lexicon. Instead, we can state the systematic correlation between structural positions and the interpretation of the arguments they host: the argument at the subject position is associated with the interpretation of an agent, the argument at the object position is associated with the interpretation of a patient. These issues will the focus of my discussion in the remainder of this chapter.

[13] Recall that this is the insight behind HK's configurational thematic theory (cf. section 1.2.1.3).

1.3.2 Predicate-based mapping

All the approaches mentioned above place the burden of mapping exclusively in the lexicon: the syntactic positions in which the arguments of a predicate appear are determined by some lexical information listed in its lexical entries. In recent years, a number of linguists argued that the order is the other way around: it is not the case that an argument is mapped into the subject position because it is lexically designated as an agent; rather, the subject position itself is associated with the interpretation of an agent, and the argument that *happens* to be generated there is interpreted as the agent of the predicate. As argued by Hoekstra and Mulder (1990:75): " if it is stipulated that the subject of predicate P bears the theta role of agent, P has a certain meaning which determines a certain role for its arguments. Put differently: P is not an agentive predicate because its external argument bears the agent role, but rather, vice versa, its external argument may be characterized as an agent because P is agentive". In other words, "thematic" information is associated with structural positions in the tree, rather than with particular arguments. This position is also taken (somewhat implicitly) by Gleitman (1990) and made explicit in Borer (1994, 1996) and van Hout (1996) (see also HK 1997, and Goldberg (1995) - for an account within Construction Grammar).

Consider the following example:

(33) The apple ate Nina

The only interpretation that can be assigned to (33) is that there exists an apple which ate Nina. This interpretation is dictated by the linguistic form of the sentence, and does not depend on the context in which it is uttered, or other such factors. Although in our world agents strongly tend to be human or animate whereas themes tend to be inanimate, the apple is interpreted as an agent by virtue of appearing at the subject position. A further example is provided by child data:

(34) "I disappeared a bear in the back of the car" (Pinker 1989:25, from Bowerman 1982)

Adults have no difficulty at all in understanding such utterances: it is clear that the child meant "I made the bear disappear". But why is the intended meaning so clear? I claim it is so, by virtue of the child's using the transitive construction: this construction is inherently associated with agentive interpretation of its subject, and this inherent interpretation overrides the lexical fact that *disappear* only takes the intransitive form in English. [14]

What should a predicate-based approach to mapping look like? As a bare minimum, it will have to state the semantic information associated with each syntactic position: the (deep) subject position is associated with the interpretation of an agent, the object position is associated with the interpretation of a patient, and so on. Predicates which project specific syntactic positions will have specific interpretations of the arguments generated in these positions. This takes up precisely the role of linking rules. Any additional information is superfluous. There is no need to assign thematic labels to arguments in the VP. Instead, arguments are interpreted where they happen to be generated.

Such an approach is suggested in Borer (1994). According to Borer, arguments within the VP bear no meaningful labels. They correspond to (non hierarchically ordered) variables.

A lexical entry of a predicate only specifies the number of NP (or DP) arguments that the predicate takes:

(35) a. V^{max} b. V^{max}

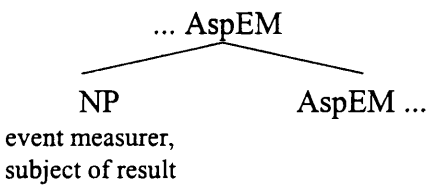
derive, NP, NP	*wilt*, NP

(Borer 1994:28)

[14] At least, this is the case whenever an intransitive verb is transitivized: *break*, *sink*, *open*, etc. There are, of course, transitive verbs which do not have an Agent, such as *see*, *love*, etc.

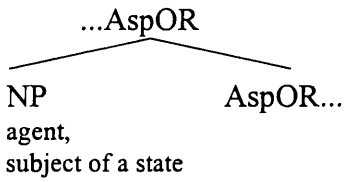
The hierarchical organization of arguments is achieved through movement of arguments into specifiers of functional projections, whose content is aspectual interpretation. The lower aspectual head is associated with a telic interpretation of the predicate. The (unlabelled) argument that moves into its specifier is interpreted as the measurer of the event the verb denotes:

(36)



The upper aspectual head, AspOR (Originator), is associated with a process interpretation. The argument that moves into its specifier is interpreted as an Agent, or a subject of a state predicate:

(37)



Aspectual projections are a syntactic implementation of Tenny's observations concerning canonical aspectual interpretations of arguments. Note, though, that Tenny's AIH is perfectly compatible with a lexical-entry driven approach to the interface (as is assumed by Tenny herself). It is the combination of the fact that there is no pre-syntactic labelling of arguments, and that some aspects of the predicate's meaning are given by the syntax, that make Borer's approach predicate-based.

Borer's model shares some common properties with HK's theory: in both arguments are interpreted by virtue of occupying a particular position in the tree. The main difference between the two is that Borer assumes that arguments are interpreted in explicit aspectual heads while HK take a more traditional Larsonian VP shell as their locus of argument interpretation. Another difference is that Borer (1994) assumes no

lexical specifications which constrain the projection of a verb while HK take the structure projected from a verb to be part of (or predicted from) its lexical entry. [15]

In the next chapter I will adopt the Larsonian VP shell notation, as modified in HK (1993, 1997) and Chomsky (1995). However, I will assume, with Borer (1994) and Tenny (1994), that the correct interpretation of arguments is best captured in aspectual terms. The lower shell in the VP is thus the domain of measuring out and change of state, while the upper VP is where causers, agents or originators are generated.

1.3.3 predicate-based vs. lexical entry driven approaches: a summary

All approaches, whether predicate based or lexical entry driven, acknowledge the tight correlation between some aspects of a verb's meaning and certain syntactic structures. [16] The main debate between the two types of approaches is whether information concerning the linking of arguments is listed in both the syntax or the lexicon, or only in the latter. I made a conceptual point in favour of the latter approach, arguing that since structure-meaning correlations in the form of linking rules are needed anyway, any more specifications in the lexicon should be redundant. In the rest of this chapter I will bring some empirical motivation in favour of a predicate-based approach, based on cases of verb alternations. I will start, in section 1.4, with some better-known alternations and will discuss the challenge they pose for the theory of the syntax-lexicon interface, as well as some of the solutions suggested for them in the framework of lexical-entry driven approaches. Then in section 1.5 I present data from

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[15] See Manzini and Roussou (1997) and Manzini and Savoia (1998) for a different formulation of Borer's idea: thematic roles are formulaed in terms of aspectual features, originator, measurer and delimiter. Clitic arguments are directly merged in their surface positions in a clitic shell above the VP, while the head attract the appropriate feature from the VP, thus checking it, and getting the interpretation of the argument.

[16] Pinker (1994) distinguishes between *root meaning* and *frame meaning*, the first being what we intuitively think of as the contents of the verb (e.g., that *boil* is about a hot liquid releasing bubbles), while that latter includes those aspects of meaning shared by all the roots appearing in a given syntactic frame (e.g., by *I boiled the water*, *I opened the door*, and *I melted the ice*). Other linguists distinguish between *idiosyncratic* and *structural* meaning or between *semantic content* and *semantic structure* (LRH 1996).

intransitive verbs which are unstable in their syntactic characterisation: unaccusative verbs which can appear as unergatives in certain syntactic contexts, and unergative verbs which can be unaccusativized in certain syntactic contexts. Such cases, I argue, are very hard to account for in a lexical-entry based approach, whereas a predicate-based approach can accommodate them with no difficulty.

1.4 Verb alternations and their importance for the interface

Verb alternations are cases in which a single verb appears in more than one syntactic structure. Such cases include the dative alternation, the transitive-inchoative alternation, the locative alternation, etc. I will briefly illustrate such alternations here and discuss their specific properties.

The transitive/inchoative alternation:

Many verbs in many languages undergo this alternation (in some languages, like Italian and Hebrew, the two alternants are associated with different verb morphology). The transitive alternant is the causative, including both an originator, which is lexicalized as the subject, and a measurer, which is lexicalized as the object, while the intransitive one includes only a measurer, which is lexicalized as a subject (for some recent references see Pinker 1989, LRH 1995, Reinhart 1996, van Hout 1996, HK 1997a):

(38)	a.	The army sank the ship	(originator and measurer)
	b.	The ship sank	(measurer)

(39)	a.	John broke the vase	(originator and measurer)
	b.	The vase broke	(only measurer)

This alternation is an instance of causativization. It can be noted that the change in the number of syntactic arguments correlates with a change in the interpretation of the

event: the transitive verb denotes a causative event, while the intransitive one denotes an event of change of state (see discussion of causativization in chapter four).

The locative alternation:

The locative alternation is the alternation exhibited by verbs such as *load*, *spray*, *smear*, *clear* etc. It is found in English, Dutch, Hungarian, Japanese and Hebrew (see Rappaport and Levin 1988, Tenny 1992, Dowty 1991, Pinker 1989). Consider the following example:

(40) a. The farmer loaded the hay on the truck.

b. The farmer loaded the truck with hay.

(41) a. They cleared the table of soiled dishes.

b. They cleared the soiled dishes off the table.

This alternation poses a problem to lexical-entry driven systems, because the same argument , *theme* or *location*, may be mapped into different positions in the two alternants. It thus violates any UTAH-based mapping system: both arguments can serve as direct objects, or alternatively be licensed by a preposition. Note that when the argument appears as a direct object is interpreted as a measurer of the event by virtue of this property: in (40a) it is the quantity of hay which has been loaded which serves as a scale for the proceeding of the event. The event terminates when all the hay has been loaded. In (40b), on the other hand, it is the truck which measures out the event: the event proceeds simultaneously with the truck getting loaded and terminates when it is completely full.

The dative alternation:

This is one of the best studied alternations in English. For some basic references see Oherle (1976), Larson (1988), Pinker (1989), Goldberg (1995), Pesetsky (1995):

(42) a. Paul gave Nina a book

b. Paul gave a book to Nina.

The linking pattern of the two arguments, goal and theme, seems to be unstable, mapping them in one case into the direct object position and the other into the indirect object position. Many verbs undergo this alternation, including verbs of transference (*send*), verbs of motion (*throw*) and verbs which take a beneficiary role: [17]

(43) a. She sent a book to Mary.

b. She sent Mary a book.

(44) a. She threw / passed / kicked the ball to Paul.

b. She threw / passed / kicked Paul the ball.

(45) a. She bought / baked / got a cake for Nina.

b. She bought / baked / got Nina a cake.

The same argument, the goal, may either appear as an object of a preposition, or be an object of the verb.

These three alternations are a representative sample of the set of syntactic alternations in which verbs participate. Such alternations form a challenge to a lexical-

[17] On the other hand, there are many verbs which are semantically almost identical to *give*-type verbs, but which do not allow this alternation:

(i) a. Mary donated a book to Oxfam.

b. *Mary donated Oxfam a book.

entry driven system: if syntactic structures are trivially projected from the lexicon, then how to account for cases in which the same verb appears in two different structures?

Two main solutions have been employed to account for such alternations. One is a syntactic, derivational account: one alternant is basic, and the second alternant is derived from it. This solution was suggested for the dative alternation (Baker 1988, Larson 1988), as well as for the transitive-inchoative alternation. In both cases the alternants are identical at the level of D-structure. Syntactic considerations such as Case marking will motivate further movement at the level of S-structure. [18] Another solution is to assume that the difference between the alternants is captured in the lexicon. The two alternants have slightly different lexical representation which project different syntactic structures. This solution is proposed by Rappaport and Levin (1988) to account for the locative alternation: the same verb, *load*, is associated with two representations at the level of LCS, which further project two argument structure representations. The two LCS structures may be linked through lexical redundancy rules (cf. Bresnan 1980), thus avoiding listing *load*-type verbs twice in the lexicon.

1.5 Unstable intransitives

So far we have been discussing verb alternations which include a change in the number of the arguments or in the syntactic configuration in which they appear. In such cases we could appeal to lexical rules relating the two alternants of the single lexical entry or syntactic rules which derive one alternant from the other. In this section I will discuss a different case, in which such solutions will be of little help. This is the case of intransitive verbs which may belong either to the group of unaccusatives or to that of unergatives.

Since the introduction of the unaccusative hypothesis (Perlmuttter 1978) it is an implicit assumption in most theories of the interface that intransitive verbs can be

[18] See discussion in the chapter two about the semantic differences between the two alternants of the dative alternation, and another view, which does not relate the two alternants derivationally.

characterized as "unaccusative" or "unergative" (some notable exceptions are Hoekstra and Mulder 1990, Zaenen 1993 and Borer 1994). The unaccusative hypothesis was, in fact, one of the major motivations for many lexical-entry driven approaches: if intransitive verbs are syntactically heterogeneous, then there must be some semantic characteristics which would determine the sub-group to which each intransitive verb belongs, so that children could learn them correctly.

However, it seems that this stable characterization of intransitives cannot be maintained: work by Hoekstra and Mulder (1990), Borer (1994) and Arad (1998) has shown that there are verbs which are standardly taken to be unaccusatives which can appear as unergatives in certain structures. Also, there and verbs which are standardly taken to be unergatives, and which can be "unaccusativized" (Arad 1998). I will review the data here and show that this phenomenon holds across a number of languages, and is not an idiosyncrasy of a specific language. I will then argue that these cases will motivate a predicate-based account of the interface: the characterization of these verbs as unaccusatives or unergatives depends on the structures in which they appear, rather than their structure being determined by their lexical characterization as "unaccusatives" or "unergatives".

1.5.1 Unergativized unaccusatives

Hoekstra and Mulder (1990) note a particular property of motion verbs in Dutch and in Italian: when used on their own they are unergatives, as is indicated by their selection for the *have* auxiliary, typical of unergatives. However, when a directional PP is added to them, they behave as unaccusatives, selecting for a *be* auxiliary:

(46) a. Jan heeft gesprongen
Jan has jumped (unergative, *have* auxiliary)

b. Jan is in de sloot gesprongen
Jan is in the ditch jumped (unaccusative, *be* auxiliary)

(47) a. Gianni ha corso
Gianni has run (unergative, *have* auxiliary)

b. Gianni è corso a casa
Gianni is run home (unaccusative, *be* auxiliary)

The same verb appears as both unaccusative and unergative, depending on the syntactic structure in which it appears. A locative PP turns an unergative predicate into an unaccusative one (see discussion of motion verbs in chapter four).

This phenomenon, of a single verbs exhibiting both unaccusative and unergative properties, has been termed *variable behaviour* (LRH 1995). It could be argued that the case of variable behaviour above is an idiosyncrasy of motion verbs in these two languages. However, work by Borer (1994) has noted that a large group of Hebrew verbs exhibits such variable behaviour.

The syntactic diagnostics of unaccusativity or unergativity in Hebrew is the ability of the predicate to be associated with two dative operators, the Possessive Dative and the Reflexive Dative, which have the following properties:

The *Possessive Dative* (PD) has to bind some VP-internal material (argument or adjunct), which is the possessed NP. The only argument which is excluded from this binding relation is the external argument. Therefore, it is used as indicator of unaccusativity (Borer and Grodzinsky 1986)

(48) a. ha iparon niSbar li
the pencil broke to me (PD)
`my pencil broke`

b. *ha poalim avdu li
the workers worked to me (PD)
`my workers worked`

The *Reflexive Dative* (RD) is obligatorily co-indexed with an external argument, giving the predicate an atelic, possibly volitional interpretation . It is used as an indicator of unergativity (ibid.).

(49) a. *ha iparon niSbar lo
the pencil broke to him (RD)
`the pencil was breaking`

b. ha poalim$_i$ avdu lahem$_i$ ba gina
the workers worked to them (RD) in the garden
`the workers were working in the garden`

Borer (1994) shows that many Hebrew verbs are compatible with both PD and RD, thus behaving like unaccusatives and unergatives simultaneously. This group includes, among many others: *darken, shrink, cook, sink, open, close, drown, choke, crumble, peel, cool, shorten, dry,* and *bald.* [19] Two typical examples of this phenomenon are in (50) and (51) - where (a) is unaccusative, with a possessive reading, and (b) - unergative, with an imperfective reading given by the RD:

(50) a. ha bgadim hityabSu le Ruti ba xuc(PD)
the clothes dried to Ruti outside (unaccusative)
`Ruti's clothes dried`

b. ha bgadim$_i$ (masc. pl.) hityabSu lahem$_i$ (RD - 3rd. masc. pl.)
the clothes$_i$ were drying to them$_i$
ad Se hitxil laredet geSem
until it started to rain (unergative)

[19] In fact, the only unaccusative verbs which are excluded from this alternation are those which specify an immediate change of state (e.g. *explode*), which cannot be interpreted as processes.

(51) a. ha madbeka hitkalfa le Dani me ha tik (PD)
the sticker peeled off to Dani from the bag (PD, unaccusative)
'The sticker peeled off Dani's bag'

b. ha madbeka$_i$ (fem.sg.) hitkalfa la$_i$ (RD - 3rd. fem.sg.)
the sticker$_i$ had been peeling to her$_i$
ad Se sidarti ota
until I fixed it (RD, unergative)

(50a) implies that the clothes are dried. (50b), on the other hand, implies that there was a process of drying, but not that the clothes are dried. (51a) implies that the sticker is completely unattached to where it was, whereas (51b) implies that there had been a process of peeling, but not that the event of peeling is completed.

The same phenomenon of variable behaviour appears also in Italian. Some Italian verbs are compatible with both the *be* auxiliary (typically associated with unaccusatives), and the *have* auxiliary (which is associated with unergatives): [20]

(52) a. il pane si *è* cotto (in 10 minuti) [21]
the bread refl. is cooked (in 10 minutes) (unac., *be* aux)

b. il pane *ha* cotto (per 10 minuti)
the bread has cooked (for 10 minutes) (unerg., *have* aux)

(53) a. questo vino *è* invecchiato bene
this wine is grown old well (unacc., *be* aux.)

[20] The discussion of Italian data is based on previous work, published as Arad (1998). The data are based mainly on speakers from northern Italy.

[21] See appendix for a brief discussion of *in X / for X* tests. I use these tests here as a rough indication of (a)telicity, based on the observation that unaccusatives tend to be telic whereas unergatives tend to be atelic (Dowty 1991, Borer 1994). For some discussion of the aspectual properties of unaccusatives see Arad (1998).

b.	questo	vino	*ha*	invecchiato		bene	
	this	wine	has	grown older	well	(unerg., *have* aux.)	

(54) a.	il	tempo	*è*	migliorato			
	the	weather	is	improved		(unacc., *be* aux.)	
b.	il	tempo	*ha*	migliorato	molto		
	the	weather	has	improved	a lot	(unerg., *have* aux.)	

(52a) entails that the bread is fully cooked. (52b) entails only that the bread cooked for a while, without necessarily being cooked. (53a) entails a fully-achieved change of state, that is, that the wine has reached its full maturity. (53b) entails only that the wine is more mature than before, not that the process of maturing is completed. Similarly, (54a) implies that the weather is now good, whereas (54b) entails only that there was a process during which the weather got better, not that it is good now. It turns out that the same verb can be interpreted as unaccusative or unergative, telic or atelic, specifying a change of state or a process, according to the syntactic position where it was generated.

1.5.2 Unaccusativized unergatives

I showed above that unaccusative verbs can be "unergativized" in specific structures. In this section I discuss the opposite phenomenon, unergative verbs which can be "unaccusativized". The ideas and some of the data are based on previous work I have done on unaccusatives and unergatives (Arad 1998).

Let us start with some English data. The formation of reduced relatives in English is argued to be an indicator of base-generation in the object position. Thus, it is possible to form reduced relatives from unaccusatives and passives ((55) and (56) respectively), but not from unergatives (in (57)):

(55) a. a fallen leaf (a leaf that fell)

b. a broken window (a window which broke)

c. a newly arrived letter (a letter which arrived recently)

(56) a. a newly elected senator

b. a well known writer

c. a much loved sister

(57) a. *a worked carpenter (a carpenter who worked)

b. *a slept child (a child who slept)

c. *a barked dog (a dog that barked)

Note, now, that some verbs which are seemingly stable unergatives allow the formation of such reduced relatives:

(58) a. a well read person (a person who has read a lot).

b. a well travelled / world travelled person (a person who has travelled a lot / around the world).

c. a well rested person (a person who rested enough).

d. An overworked student (a student who has worked a lot / exceedingly).

The verbal forms in (58) are interpreted as adjectives, rather than true verbal participles. A well-read person (58a) is possibly a person who has done a lot of reading, or underwent some process after which he turned "well read", but it may also be applied as an adjective, meaning, simply, *erudite* (compare with *learned*, which behaves similarly). The same holds for *well travelled* and *overworked* (58b): although they may be interpreted as adjectival passives, there is a clear sense that the reader, or traveller, or worker, which are otherwise agents, are taken here to be some kind of objects, which, by

undergoing a specified amount of change of state, become well-travelled, well read or overworked. [22] Reading, travelling and working, normally activities which have no given endpoint, become measured in this construction: one travels until s/he is well travelled, etc.

Consider, next, the use of present perfect with *be* auxiliary. This use was characteristic of unaccusative verbs in earlier stages of English, as in *time is come* (cf. Gueron and Haegeman 1998). Some unergatives are used in a similar manner in present day English:

(59) a. I'm done.
b. Are you finished?
c. We are all packed.

Finally, consider the following construction, which I will call "exhausting resources" construction:

(60) a. she's all cried out
b. I'm shouted out
c. "I spent the night coughing...When the train pulled into New-York... I was coughed out". (J.D. Salinger, *Raise High the Roof Beam, Carpenters*: 14)

The single participant of these verbs, normally an agent which "does" something (cry, cough, etc.) is interpreted in this construction as an undergoer: it coughs so much that it exhausts its coughing resources and is "coughed out".

This phenomenon, of agents of unergative verbs interpreted as undergoers (and measurers) of events when appearing in particular constructions is found in a number of languages. In Italian, for example one can take an unergative or transitive verb like *eat*

[22] I believe that the "specified amount" of change of state is crucial here, because such adjectives are only formed with adverbs denoting an extent, such as *well-* and *over* (Although the specific amount itself is not specified). There is no adjective such as *travelled* or *read* on their own.

or *drink*, and "unaccusativize" it, just like one can passivize it in English. In other words, take the single argument of *eat* as in *John has already eaten*, and generate it at the object position:

(61) a. abbiamo già mangiato e bevuto
(we) have already eaten and drunk (unergative, have aux., no participle agr.)

b. venite già mangiat*i* e bevut*i*
come (pl.) already eaten and drunk
Come over after having eaten and drunk (unacusative, be auxiliary, pl.-participle agr)

(62) a. *ha* bevuto molto
(he) has drunk a lot (unergative, have aux.)

b. *è* completamente bevuto
(he) is completely drunk (unaccusative, be aux)

(63) a. *ha* fumato molto
(he) has smoked a lot (unergative, have auxiliary)
Ha has smoked a lot (tobacco or grass)

b. *era* fumato
he was smoked (unaccusative, be auxiliary)
`He smoked himself sick`

The (a) sentences are the standard, agentive form. The (b) sentences are the non-standard forms, in which the argument is generated at the object position (this is indicated by the presence of the *be* auxiliary and of participle agreement, exhibited by

passives and unaccusatives in Italian). (61a) is the standard form of *eat* and *drink*: we've already eaten. (61b) is a polite way to invite people and make sure that the invitation does not include dinner. Literally you say "come eaten and drunk", meaning "after you've eaten and drunk". The form is morphologically identical to the passive form, but it is interpreted by speakers not as a passive, eaten and drunk by someone, but as an unaccusative. Similarly, (62a) is the standard agentive form of *drink*: "I drank a lot" (either water or alcohol). In (62b), you say "he is drunk", meaning "he has drank until he got drunk" (and in this case it can only be only alcohol - but note that *bevuto* in (61b) does not mean drunk, but simply "having drunk"). [23] Finally, (63a), "he smoked a lot", could be either about smoking tobacco or about grass, while (63b) can only refer to smoking grass, which is an event which can have a definite endpoint, getting high.

The single argument of these verbs serves as a measurer of the event by virtue of being generated at the object position. The event has an inherent endpoint (i.e. it is telic) which depends on the status of that argument (having eaten/drunk/smoked "enough"). We have roughly the following structure, as in (64), in which the single argument of such verbs can be generated at the subject position (64a) and is then interpreted as an originator, or at the object position (64b) and is then interpreted as a measurer, or undergoer:

(64) a. Maria ha fumato

[TP Maria$_i$ [VP t_i [V fumare]]]

b. Maria era fumata

[TP Maria$_i$ [V fumare [NP t_i]]]

[23] Note that *bevuto* is a genuine verbal participle, not an adjective (the standard Italian word for *drunk* is *ubriaco*). Similarly, *fumato* is the object participle of *fumare*, smoke, whereas the adjective "smoked" (e.g. smoked salmon) is *affumicato*.

The same phenomenon exists in Latin. Consider the verb *obedere* (eat away, devour), whose passive past participle *obesus* denotes a passive form (eaten, wasted away) or an adjective derived from this form (meagre, lean):

(65) terra obesa
land eaten away
`lean / wasted land`

However, this participle also has the meaning of someone who "has eaten itself fat" (to quote the *Lewis and Short Latin Dictionary*). It is not eaten by someone, but having eaten so much it is now fat, or obese:

(66) a. obesus pinguis quasi ob edendum factus
'An obese, fat person, as if he was created for the sake of eating' (Paul. ex Fest. p.188 Muller)

b. corpus neque gracile neque obesum
`A body which is neither thin nor fat` (Cels. 2,1)

Meal-taking verbs, *prandere* (have breakfast / lunch) *cenare* (have dinner), and *potere* (drink), from which verbal forms such as *pransus* (lunched), *cenatus* (dined) and *potus* (drunk - either with some liquid or with alcohol) are derived, can have their participant as either initiating an eating event, or measuring it, depending on their structure:

(67) a. prandi perbene, potavi
I lunched-pf very well I drank-pf (Plaut. Men. 5, 9, 81)

b. et pransus et potus sum...

I am both well lunched and well-drunk... (Varr., ap. Gell., 2, 25, 7)

Finally, consider Modern Greek. In the perfect verb form, the participle is uninflected, and the verb is *have*, roughly corresponding to "I did some eating". Alternatively, these verbs can appear with *be* and perfect participle (inflected for agreement), meaning, literally, "I am eaten / drunk / travelled":

(68) a. exo / exis fai

I / you have eaten-pf. (participle - uninflected)

b. ime faghomenos

I am eaten-NOM-masc.

`I have eaten` (literally: `I am eaten`)

As in the Italian example (61b), (68b) is equal in form to the passive, *I am eaten (by someone)*. The form is thus ambiguous, but speakers never take it as a passive, because this interpretation is highly implausible in this case (The same type of pragmatic disambiguation applies in the case of the Italian examples above). Other examples are as follows:

(69) a. exo klapsi

I have cried

b. ime klamenos/i/o...

I am cried-NOM-pf.

In (69b) we only see the result of "crying" (e.g., red eyes), not actual tears; it puts more emphasis on the actual state of having cried than on the act of crying.

(70) a. exo(exi) dhiavasi (poli / kala)
I (you) have read - pf
'I did some reading'

b. ime (kala) dhiavasmenos
I am well read-NOM-pf-m
'I am well read'.

(71) a. exo taksidhepsi
I have traveled-pf.
'I travelled around'.

b. ime (poli-)taksidemenos
I am (well) traveled-pf-nom-masc
'I am well travelled'.

(72) a. exo spudhasi
I have studied-pf

b. ime spudhasmenos
I am studies-pf-masc-NOM

(72a) means that the speaker did some studying (possibly got a degree, etc.). (72b) implies that the speaker is now well studied, learned or experienced in life. This alternation holds in Greek for a relatively large number of verbs. However, it cannot be construed with transitives. In this case, only the passive interpretation is available (e.g. "the paper is written"). [24]

To sum up so far: there seems to be a stable pattern across languages, of formation of unaccusatives from unergative verbs, through generating their single participant in the object position. This form is associated with all the characteristics of unaccusatives:

[24] Similar phenomena exist in other languages, including Hebrew and Brazilian Portuguese.

telicity, *be* auxiliary and participle agreement. The same argument which is interpreted as an agent or initiator of an event when it is generated at the subject position (eater, drinker, smoker) is interpreted as an undergoer of a change of state, or as the measurer of the event when generated at the object position.

1.5.3 Summary: unstable intransitives give support to a predicate-based account

The data presented in the last section show that the hypothesis that verbs can be lexically characterized as "unaccusatives" or "unergatives" is problematic. A considerable number of verbs, across a number of languages, can appear as both unaccusatives and unergatives, showing all the syntactic (auxiliary selection, verb morphology) and semantic (a/telicity) characteristics of each group. The fact that such phenomena exist across a number of languages would undermine a projectionist account, which attempts to project syntactic structures trivially, on the basis of information stored in lexical entries. If we wanted to keep the trivial projection from lexical entries we would have to specify for each of these verbs that they can have a multiple representation. But even if we allow two lexical entries for these verbs, one unaccusative and the other unergative (cf. LRH 1995), I believe this would be missing the point: as we come across more and more cases of *systematic* ambiguity, which is related to different syntactic structures, the less convincing is a view which attempts to project those ambiguities from lexical entries.

The numerous cases of syntactically-related ambiguities which I have pointed out so far lead me to the following conclusion: the interpretation of these verbs as unaccusative or unergative, denoting a process or an end-state, is not the cause for, but rather the outcome of the syntactic structure in which they appear. In other words, it is the different syntax in which these verbs appear which determines whether they are unaccusative or unergatives: when they are generated as complements of the verbs they are interpreted as unaccusatives, and when they are generated externally they are unergatives.

In what follows I will assume that syntactic positions are associated with thematic/ aspectual interpretations, which are assigned to arguments by virtue of occupying these positions.

1.6 Lexical entries

Finally, there remains the problem of lexical specifications. If the lexical entries of verbs do not contain rich, layered representation of arguments, what do they contain? Borer (1994) assumes that all that lexical entries need to contain is the specification of their number of arguments: one argument, two arguments, etc. An intransitive verb will thus specify a single NP argument, which would be interpreted as unaccusative or unergative according to the structure in which it is projected. This approach has two problems: first, it runs into problems in cases where verbs *are* stable unaccusatives or unergatives, for example *telephone*, which is impossible to get as an unaccusative, or (intransitive) *break*, which is strictly unaccusative.

We could perhaps argue that it is a lexical idiosyncrasy of these verbs which prevents them from appearing as both unaccusatives and unergatives. That is, the problem is pragmatic rather than lexical-syntactic. But there is a further problem with such an approach: because it assumes that the verb specifies the number of arguments it takes, it would fail to explain alternations which include a systematic change in the number of arguments alongside some change in its semantic interpretation, such as the transitive-inchoative alternation. Another problem for such an approach, which I have not mentioned yet, is the fact that almost any verb may alternate across several syntactic structures. For example, we have *bake*, *bake a cake*, *bake a cake for Nina*, *bake a cake out of eggs and flour*, etc. The number of arguments which are specified by the verb is thus not fixed. [25]

[25] Borer (1994) presents an outline of a program for treating problems within the syntax-lexicon interface. The problem of lexical entries is only a secondary focus of the discussion and is thus given minimal attention. In further work (Borer 1996) this problem is not addressed.

Recently it has been suggested (LRH 1996, and, independently, Marantz 1997) that verbs fall into a small number of basic classes. Each class allows its members to appear in a number of constructions. We thus get *Paul worked*, *Paul worked his way to the top*, *Paul worked himself dead*, etc. Once we know that a verb belongs to a specific class, we know it will allow all the structures associated with this class. Further rules of event composition (or rather, free association of verbs with syntactic structures in a way which does not violate some well formedness conditions) may take place, thus getting *an overworked student*. The challenge is to single out the relevant verb classes in a way which will allow us to account both for the rule governed and for the creative aspect in verbs' behaviour.

I believe that the idea of verb classes is a promising one, although it still requires a lot of work, individuating the different classes, accounting for verbs' syntactic flexibility, teasing apart universal and language particular pattern, etc. The scope of this enterprise is beyond this work, and I will leave the problem of lexical entries for future research.

1.7 Conclusion

To conclude the discussion in this chapter, I argue for the following:

1. Aspect, or event structure, is that part of a verbs' meaning which is relevant for its interface with the syntax. Thematic roles are best characterized in aspectual terms. Building on Dowty's two proto-roles, I will take the proto agent roles to be an *Originator* of an event, and the proto-patient to be a *Measurer* of an event.

2. Some part of the meaning of a verb, in particular, the part which is related to its event structure, is given by the syntax in which the verb is projected. Syntactic positions themselves are associated with some aspectual interpretation which is assigned to arguments by virtue of occupying that position.

In the next chapter I will discuss the syntactic domain where verbs project, the VP.

Chapter 2: VP structure

abstract: In this chapter I introduce the syntactic domain which interfaces with the lexicon, the VP. I will start with the model of the transitive VP adopted in most GB theories, and will examine the status of its two arguments. I will motivate the distinction between external and internal arguments, based on the different roles they take in the event which the verb denotes: the internal argument forms part of the temporal path which is criterial of the event, while the external argument is external to this temporal path. Following the discussion in chapter one, the notions "external" and "internal" will be related to structural positions in the tree rather than to semantic specifications of arguments.

I will further argue, developing the discussion in chapter one, that the best characterization of arguments is in aspectual, or event-structure terms. The canonical internal argument is a measurer of the event, while the canonical external argument is the originator of the event. Syntactically, internal and external arguments appear at different positions in the VP.

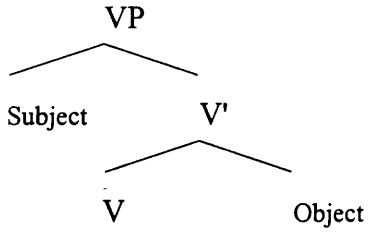
Adopting the Larsonian VP-shell, I will assume that the internal argument appears at the specifier of the lower VP while the external argument is at spec, *v*P. The rest of the chapter is concerned with two additional issues: section 2.4 discusses the structure of multi-argumental verbs, dative and double object constructions. Based on the difference in interpretation between datives and double objects I will suggest that both structures are base-generated and are not derivationally related. I will also argue in favour of two separate positions for indirect objects: one is shared with the positions of locatives, the other is higher than the direct object and is interpreted as the position of the "affected" argument. Section 2.5 is dedicated for outlining a theory of morphological case, which I take to be a spell-out of structural relations within the VP. I will argue in favour of a separation of abstract case and morphological case, and will show the way in which morphological case is indicative of argument hierarchies. Finally, I will argue that the distinction between structural and inherent case is redundant, and that the

phenomena related to structural case are best captures through the notion of "default case".

2.1 The domain of investigation: introducing the VP

Consider the following structure:

(1)



This is a fairly standard VP structure in terms of the GB (and early minimalist) framework. The object is generated as the complement of the verb. The subject is generated VP internally (cf. Koopman and Sportiche 1988, McCloskey 1997), as the specifier of V. This structure expresses the hypothesis that the thematic domain (i.e., the domain where thematic roles are assigned) or the L(exical)-syntax (HK 1997a, McGinnis 1997) is restricted to the lexical VP. Further processes involving licensing of overt arguments or overt structural positions (Case, feature checking), clause typing (indicative, WH, etc.) and temporal anchoring (tense) take place higher in the clause, at the inflectional, or checking domain (Chomsky 1995). This domain contains functional categories which include, depending on theory and time, inflectional projections (AgrS, AgrO), Tense (T), and Clause-typing (C). It was assumed in most theories of the last ten years that the thematic, or lexical domain is nested within the functional domain. [1]

My object of investigation in this work is the structure of the lexical domain, that is, the VP. The structure in (1) is the structure of a simple transitive verb, containing

[1] Some exceptions are Koizumi 1993 and Harley 1995, who assume that the features of the object are checked in a projection which is lower than the base position of the subject. Such theories are sometimes referred to as *The split VP hypothesis*. See McClosky 1997 for some arguments against such an approach.

a subject and an object. Linguists normally distinguish, following work by Williams (1981), between external and internal arguments (I will discuss these notions presently). Structurally, the direct object is referred to as an internal argument, while the (non-derived) subject is taken to be an external argument. [2] In what follows, I will try to examine the notions of internal and external arguments: what do they mean, and what are their implications for the structure of the VP.

2.2 The object as an internal argument

What does it mean for an argument to be "internal"? Intuitively, the object seems to be "closer to the verb" than the subject. But what is the formal content of this claim? I will put forward two arguments in favour of the special status of objects: one concerns the grammatical status of the verb + object complex, the other about the "truth-conditional" status of objects as opposed to subjects.

2.2.1 Subject/object asymmetries

Marantz (1984) notes an asymmetry between subjects and objects with respect to determining the meaning of the whole verb: while the theta role assigned to the object is determined by the verb, the theta role assigned to the subject is determined by the verb *and* its internal argument(s). [3] Support for this claim comes from the fact that many English verbs differ radically in their interpretation, depending on their choice of object. Some examples of this are:

(2) a. kill a cockroach.

b. kill a conversation.

---

[2] In some theories, the terms internal and external refer to variable at the level of PAS. Under the assumptions made here, I will assume that an argument is external or internal if it appears at a specific syntactic position.

[3] Marantz thus argues that the object is theta-marked by the verb, while the subject receives a compositional theta role and is marked by the whole V'.

c. kill a bottle (i.e., empty it).

d. kill an audience (i.e., wow it)

(3) a. throw a baseball.

b. throw support behind the candidate.

c. throw a party.

d. throw a fit.

(4) a. raise a hand.

b. raise money.

c. raise children.

d. raise corn.

e. raise a toast.

Raise changes its interpretation according to the object it takes: *raise a hand* means *lift one's hand up. Raise money* means *achieve donations. Raise children* means *bring up*, *raise corn* means *cultivate* and *raise a toast* means *drink in honour of someone.*

No such variation occurs if we substitute the subject. The verb will always denote the same type of event. The role of determining the type of semantic event together with the verb seems thus to be reserved to the direct object: [4]

[4] With ditransitive verbs, sometimes the two internal arguments determine the type of reading together. compare, for example, the following:

(i) a. Carla gave Nina a book.
b. Carla gave Nina a headache / the flu.
c. Cardamon pods gave the rice pudding a sharp, distinctive taste.

However, if we keep the direct object as a constant and only change the indirect object, no such change arises:

(ii) a. Carla gave Nina / the postman / every student a book.
b. The rough road gave the car / every truck / the postman's bike a flat tyre.

(5) a. Nina raised a hand.

b. The king raised a hand.

c. Every student raised a hand.

So far it was shown that the choice of an object may affect the semantics of the whole VP: *raise a hand* differs from *raise money*, and both differ from *raise children.* In all these cases the external argument is interpreted as an agent, or at least an active participant. However, in some cases the choice of an object may affect not only the specific role borne by the subject (fund-raiser, hand-raiser etc.) but also the *type* of role it bears (agent /patient / goal). Consider the following:

(6) a. She caught a thief. (she = agent)

b. She caught the flu. (she = patient /goal)

(7) a. She took a cookie from the tray. (she = agent)

b. She took fright. (she = experiencer)

c. She took the matter into consideration.(she = experiencer)

(8) a. She got a letter from New York. (she = goal)

b. She got Janet to do the job. (she =agent)

This pattern is not an idiosyncrasy of English. Across languages, verbs tend to exhibit similar properties when being combined with certain object types:

(9) a. Elle a attrapé un voleur.

`She caught a thief`.

b. Elle a attrapé un rhume / un coup de soleil.

`She caught a cold` / `She got sun-burned`. (French)

(10) a. Hi xatfa et ha mixtav / et ha yeled.

`She snatched the letter`. / `She kidnapped the child`.

b. Hi xatfa makat shemesh.

`She got a sunstroke`. (Hebrew)

To conclude this discussion we can say that objects have an effect on the meaning of the whole VP, which other arguments do not have. [5] The verb may be assigned a special meaning according to its choice of an object, but not according to its choice of a subject. Given this, it is not surprising (as noted, again, by Marantz), that internal and external arguments differ with respect to participation in idiom formation. There are many idioms with a fixed object, (or other internal arguments):

(11) a. eat humble pie.

b. kick the bucket.

c. give the cold shoulder.

d. get cold feet.

e. bury the hatchet.

On the other hand, idioms with a fixed subject are hard to find. [6]

---

[5] This seems to hold at least in all cases of standard, non stative verbs. With psych verbs, which will be discussed in chapter five, the choice of a subject does seem to affect the meaning of the predicate. In particular, whenever the subject *cannot* be interpreted as agentive, then the verb will have to be interpreted as a stative psych verb if it is interpretable at all:

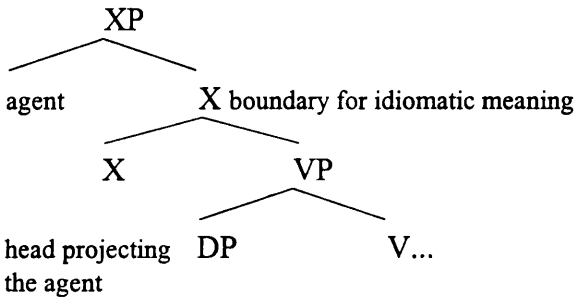
(i) a. Oedipus killed his father.
b. This show really killed the audience (i.e., wowed them).

However, we are dealing here, for the time being, with standard active verbs.

[6] Both Bresnan (1982) and Ruwet (1991) argue against Marantz and bring up a number of idioms with a fixed subject. Marantz (1984, 1997), in response, argues that these are either (i) sentential idioms (*Noblesse oblige*), or (ii) idioms which depend on the interrogative mood (*What's eating X?*), or, in any case, the free NP in such cases is not an object, and is optional anyway (*Time's up (for NP), The roof caved in (on NP)*). At any rate, the range of such potential counterexamples is relatively small.

The head projecting the agent (or the external argument) seems to act as a boundary for idiomatic meanings. Anything generated above this head cannot form part of an idiom:

(12)



Idiom formation data thus indicate that the domain for special meaning is syntactic rather than lexical. [7] I will use this observation as a tool in identifying the VP structure of some verbs (in particular, causatives - see chapter four): if a certain argument can form part of an idiom then it is probably not generated as an agent.

2.2.2 "Stricter truth conditions" on objects

Consider the following examples:

(13) a. Brits consume 100,000 tons of beef yearly.

b. The twenty guests at my party drank twenty bottles of wine.

c. The asylum inmates painted the wall.

Suppose we find out that twenty five per cent of British people do not eat any beef. (13a) could still be true. However, if it turns out that over the last year only 99,000 tons of beef were consumed in Britain, then (13a) is necessarily false. Similarly, (13b) could be true in a situation in which some of the guests had no alcohol at all. But if not all the twenty bottles are completely consumed, then it is false. (13c) could be

[7] This contrasts with a prevailing view in many theories, *lexicalism*, which takes the *word* level to be the domain where special, idiomatic meaning operates (cf. Marantz 1997).

considered true if one inmate did not take part in the painting, but not if part of the wall remained unpainted.

What the sentences in (13) seem to indicate is that the change effected in the object forms an inherent part of the meaning of the verb, while the subject is related to the verb somewhat more "loosely". Pragmatic (or semantic) considerations allow us to take a sentence as true if only a part of the denotation of the subject took part in the action. If, however, only part of the denotation of the object is affected, we cannot invoke pragmatics to rescue the sentence: it is strictly false.

The object, I assume, forms part of what is *asserted* by the verb. Any negation of this would end up in a contradiction, hence the falseness. Subjects, on the other hand, do not force such a requirement. If I say that the guests drank up a certain amount of wine, it is *implied*, but not asserted that all (or most) of them drank the wine. (13b) would be perhaps odd in a situation in which only two out of the twenty guests had any wine, but it does not *assert* that all the guests had wine in the same way it asserts that all the amount of wine was consumed.

Note that the same holds also for less canonical objects, i.e., objects which are not affected, consumed or created:

(14) a. 150 schoolchildren raised over a thousand pounds for charity.

b. Three thousand girl scouts visited five hundred home-bound patients.

c. The audience in the festival liked especially five Georgian films.

In (14a) it may be the case that some children did not do any fund raising, but it is necessary that over a thousand pounds were collected.

Putting together these data with those from the former sub-section, I conclude that the verb and its object form a complex which serves as a closed domain for two purposes:

1. The combination of the verb and its object can affect the meaning of the VP in a way other arguments cannot.

2. The object forms an inherent part of the denotation of the event the VP refers to. The change affected in it is what is *asserted* by the verb. This seems to hold for most non-stative verbs. [8]

In the next section I will note a further characteristic which is unique to objects: their aspectual role in the event structure of the verb.

2.2.3 The canonical object as an event measurer

2.2.3.1 Measuring out and the temporal structure of the event

Recall Tenny's (1987 and subsequent work) observation which was briefly discussed in chapter one: the direct internal argument of the verb is unique with respect to the following property, namely, that it is the argument which "either undergoes no change or motion, or it undergoes change or motion which "measures out the event" over time" (Tenny 1992:3). In other words, if anything happens, it happens to the direct internal argument. The kind of change that the verb specifies is a change effected in the object: *paint a wall*, *break a glass*, *mow the lawn* - all specify a change of state in the object. This change of state is part of what is asserted by the verb, as I argued above. It may be the case that the agent, too, undergoes some change (for example, the painter of the wall gets his hands dirty, or gets tired, etc.). However, this is not part of the meaning of the predicate. Only the change of state which the object undergoes is an inherent part of the verb's meaning.

Let us consider for a moment the property of *measuring out*: Tenny argues that the change of state that the object undergoes provides a temporal scale along which the event can be seen as proceeding. Recall the schema presented in chapter one:

---

[8] Statives, which do not have any temporal structure (and, according to Verkuyl 1993, do not have the property [+ADD TO]), seem to force equally strict requirements on their subjects and object: *Three girls know this secret / algebra.* I ignore here other verbs which favour a distributed reading, as well as verbs involving inalienable body parts (*Three girls raised a hand*) and quantifiers such as *each* (*The girls had a bottle of wine each*).

(15) a. mow the lawn

b.

lawn not mowed	.....lawn half mowed	.....lawn 80% mowed	lawn mowed
event not begun	event halfway through	"80%" event	completed

The progress of the event over time can be seen as measured by the change of state that the object undergoes: when the lawn is not yet mown, the event has not started. When it is half-mown, the event has proceeded halfway through, etc. Most importantly, when the lawn is completely mowed, we know that the event is completed: the point at which the change of state in the object is completed is the endpoint of the event. It cannot go on any longer. [9] The temporal progress of the event thus depends on the status of the object. We can say that the change effected in the object defines the temporal structure of the event, and is *criterial* of it (cf. Ramchand 1997).

The schema in (15) is very much an idealization. Events do not always proceed so smoothly and gradually. First of all, not all measuring objects are incremental, that is, undergoing gradual change. Some happen instantaneously, like *break a glass* or *explode a bomb*. Nonetheless, they measure out the event in that they specify a certain change, the end of which is the end of the event. In fact, even changes which are (linguistically) incremental do not always occur gradually (in the "real world"): a sandwich can be gulped down in one "take", for instance. [10] However, I will refer to the schema in (15) as a helpful tool in explaining the role of objects in language, rather than a "true" representation of events in the world.

It is well known that not all verbs denote measured events, and not all objects are measurers. Two examples of this are stative verbs (*know French*, *love cats*) and

---

[9] I am dealing here only with quantized, well-defined objects. It is well known that the quantificational properties of the object change the delimitedness, or telicity of the whole predicate. If we draw a parallelism between "bits of objects" and "bits of time", then when the object is unbounded in space (*drink wine*, *build houses*), the event is unbounded in time. See Dowty (1979), Krifka (1992) and Verkuyl (1993) for a formal treatment of this issue.

[10] Tenny's (1992) test for incrementality is adverbs such as *halfway through* and *a little at a time*, which may only be associated with incremental changes:

(i) a. Nina read the book halfway through

b. Nina ate the sandwich a little at a time.

(ii) *Nina broke the vase halfway through / a little at a time

activity verbs (*play the guitar, drive a car*). The interpretation of the object as a measurer depends, therefore, on the type of verb: not any verb, when combined with a quantized object, yields a measured event. [11]

However, we can still maintain the claim made by Tenny that *only* object position host measuring arguments. Either there is no measurer, or it is in the object position. Let us put this as follows:

(16) Only direct objects may measure out the event (even though not all direct objects are measurers). [12]

2.2.3.2 The syntactic realization of measuring out

In former work (Arad 1996), following ideas presented originally in Borer (1994), I argued that objects should be generated externally to the lexical VP, in a functional projection called AspM. This was intended to capture our intuition that, first, arguments are interpreted canonically as events participants (originators and measurers), and, second, that arguments are assigned an interpretation according to the structural position they appear in, not according to lexical specifications they bear (e.g. "theme"). In this work I will implement these assumptions within a more standard view of the VP structure, as presented in Chomsky (1995) and HK (1997) (with some modifications). In accordance with HK (1997) I will assume that the object is generated as a specifier of a (lower) VP (the full VP structure that I am assuming will be presented in section 2.3, which discusses the external argument). This captures our intuition that the verb and its object form a closed domain, as noted above:

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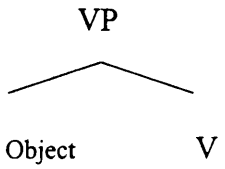
[11] Verkuyl (1993) suggests that verbs may have the property [+ADD TO]. Having this property makes it possible, although not necessary, for a verb to denote a measured event. Thus active verbs s.a. *run, push* or *buy* have this property, while statives such as *see* or *love* do not (see appendix). The presence or absence of this property is inherent to the verb, and interacts with other factors (e.g. the properties of the object) when the interpretation of the event as measured or not is assigned. It is interesting to note that the choice of an object has an effect also on the [+ADD TO] property of the predicate. Thus *see a cat* lacks this property while *see a movie* has it.

[12] I ignore for the time being the question of whether objects of stative verbs share the same structural position with canonical objects. See discussion in section 2.2.4.1

(17)



When working within an aspectual framework, I assumed that the projection where the object is generated may be specified with +/-EM (event measurer) feature. The event may thus be measured or not, depending on the type of verb, the type of object and the quantificational properties of the object. I suggest here that the relevant property is that suggested by Verkuyl (1993), [+/- ADD TO], informally, the ability of a verb to denote a measured event. All non-stative verbs have this property, even if they do not describe measured events (e.g. *push* and *run* both have the property [+ADD TO], and, with the addition of a locative PP they can describe a measured event, *push the cart to the store*, *run home*). Having this property does not ensure a measured event (see object quantificational properties), but if the verb lacks it, then the properties of the objects will make no difference, and the event it denotes will never be measured (see discussion in the appendix). According to the presence or absence of this property the verb and its object will be interpreted as a measured or non-measured events. [13]

2.2.3.3 Is measuring out a syntactically relevant notion?

In recent work Jackendoff (1997) argues that the notion of measuring out is irrelevant for argument selection. His argument is twofold:

1. There are measuring arguments which are not objects. These are all motion verbs such as *drag the chair to the corner*, *drive the car to New York*, *push the cart across the road.*

[13] It would seem plausible to assume that the property of [+/- ADD TO] is part of the basic denotation of the verb and is thus specified in its lexical entry. However, there are cases in which the "measurability" of the event is determined by the complex of the verb and its arguments, as in *see a cat* vs. *see a movie.*

2. There are objects which are not measurers, but which fall nicely under a standard thematic characterization of patients / themes, such as *stroke a cat* or *kick the rock.*

Let us address the first claim. Jackendoff's counter-examples include cases in which the measurer is not the object itself (*the chair*), but rather, the path indicated by the trajectory it made. This path is delimited by the PP (*to the corner*). Tenny (1994) discusses such cases, which she treats as "deficient" measurers. The path denoted by their object serves only as a scale and the directional PP provides the final point for it. It is clear, though, that the object does participate in the measuring of the event: according to its location on the path, the progress of the event can be evaluated. These verbs present a less standard case of measuring out (see chapter four for discussion of the special properties of motion verbs), but they do not collapse our assumptions about argument realization in the same way in which a hypothetical measurer - external argument would.

Consider now the other part of Jackendoff's claim. His example consist of atelic activity verbs (*kick*, *stroke*) whose objects are not measurers, yet they are very much canonical patients: they are affected, they undergo something (rather than "do"), they are stationary relative to other participants. Apart form the purely aspectual properties (incremental theme and change of state), these patients have all the properties which Dowty (1991) associates with Proto-Patients.

Let us keep in mind Jackendoff's claim concerning *kick* and *stroke* until section 2.2.4.3, where I consider comparative data from object case marking, I will show that while objects of verbs of the type of *kick* or *stroke* may differ in their lexicalization pattern, objects which are measurers are lexicalized as direct object across languages. I will take this to indicate that aspectual properties of both proto-agents and proto-patients are the most "important" ones, those which are ranked most highly in the realisation of arguments, and can never be overridden: if a predicate entails change of state or being an incremental theme, then it *must* be entailed with respect to the object position. Other P-patient properties (e.g., being stationary relative to another participant) may be

entailed also with respect to other argument positions. [14] Aspectual properties are precisely those properties which *force* (and not only allow) the realisation of an argument as a measurer or an originator.

2.2.4 Objects and case marking

In this section I further establish a connection between measurers and the direct object position. The generalisation I will draw is as follows:

(18) All measurers are (universally) marked with accusative case.

The entailment in (18) works in one direction only. It does not assert that all arguments which are marked with accusative case are measurers (an entailment which holds or fails to hold according to the morphology of each particular language. In section 2.2.4.1 I will discuss partitive / accusative case alternations in Finnish. Section 2.2.4.2 discusses alternations between direct objects and prepositional objects. Finally, section 2.2.4.3 discusses the object case marking of specific verbs across four languages.

In all these cases, measuring objects are associated with accusative case, while non-measurers are not.

2.2.4.1 Partitive Case

Accusative/partitive case alternation in Finnish is sensitive to telicity or change of state. Thus, objects are measurers are marked with accusative case, while objects which are not measurers (e.g., objects of stative verbs) are marked with partitive case:

[14] The properties suggested by Dowty are a unification of thematic and aspectual properties, and thus cover, descriptively, a wide range of objects. Under such a theory, the internal argument of *kick* and *stroke* may be lexicalized as a direct object by virtue of the "thematic" P-Patient properties noted above.

(19)	a.	Matti	rakensi	talon.		
		Matti-NOM	built	house-ACC		
	b.	Minä	rakastan	sinua	/	*sinut.
		I	love-1-sg	you-PAR		you-ACC

(Pylkkänen, p.c.)

It may be the case that Finnish has two object positions, one in which accusative case is assigned, the other associated with partitive. Or it could be that accusative/partitive are assigned at the same position, and are simply the reflection of the relationship between the verb and its object. We know that some languages have objects marked with cases other than accusative (genitive objects in Icelandic, nominative objects in Georgian - cf. Marantz 1991), which behave like objects in all other respects (e.g., they passivize). Other theories, in particular HK (1997), assume that there exist numerous object positions in the language, depending on the type of the verb (change of state, creation, location/giving etc.).

Note that the same verb may mark its object with either accusative or partitive case: accusative/partitive alternations seem also to be sensitive to *boundedness* (that is, the actual delimitedness in time, cf. Depraetere 1995, see also appendix), not only to telicity (the potentiality of having a linguistically determined endpoint). [15] Other instances of partitive/accusative alternations include rendering an event from a single occurrence (accusative) into an habitual event (partitive), or between a quantized object (accusative) and non-quantized one (partitive). Case marking on the object in Finnish

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[15] Grammatical aspect in Finnish is expressed through the case suffixes on the object. Accusative case entails perfectivity / completeness, while imperfectivity entails imperfectivity/incompleteness (Krifka 1992,
Pylkkänen 1997):

(i) a. Anne rakensi taloa.
Anne built part-house
Anne was building a/the house

b. Anne rakensi talon.
Anne built acc-house
Anne built a/the house (Pylkkänen 1997)

may thus be triggered either by the basic relation between the verb type and its object (stative vs. non-stative) or by processes involving a higher projection (tense/aspect) or DP-internal properties (NP-properties of the object). Tense/Aspect/D-properties may only turn accusative case into partitive (partitive is taken by some linguists to be the default case in Finnish), never the other way around. If a verb is lexically marked with partitive case (e.g., it is stative), then its case pattern is determined by the basic relation between the verb and its object.

What I find crucial here is that non-measuring verbs (e.g. statives) inherently mark their object with partitive case. Following Manzini and Savoia's (1998) discussion of accusative/partitive clitic alternations in Italian dialects I will assume here that accusative and partitive objects are generated at the same position. Morphological case will be a reflex of +/- measuring property of the object. [16]

2.2.4.2 Direct objects vs. partitive prepositional objects

Some languages allow partitive prepositions instead of direct objects. In all these cases accusative case is associated with the measuring object while the partitive preposition is associated with the non-measuring object:

(20) a. John ate the cake.

b. John ate at the cake.

(21) a. axalti et ha uga.
I ate OM the cake
'I ate the cake' (all of it)

b. axalti me ha uga
I ate from the cake
'I had some of the cake' (Hebrew)

[16] Some languages which are not discussed here seem to distinguish measuring and non-measuring objects structurally (see Ramchand 1997 for Scottish Gaelic). It may be that in such cases two object positions are motivated.

With accusative case the object (cake) serves as a measurer of the event: it terminates when the cake is completely eaten. No such measuring relation exists with the partitive objects: eating at a cake has no inherent endpoint. Consider, next, (22):

(22) a. Janet shot the bird.

b. Janet shot at the bird.

The measuring properties of (22a) are somewhat less clear than in (20). The speakers' intuitions seem to be that *shoot* NP implies that the shooter "reached" her aim, while *shoot at* NP implies that she was aiming at her target, but not necessarily reaching it. Yet (22a) is a measured event: it terminates when the bird is shot. (22b) is not a measured event: shooting at a bird can go on for some time, with no (linguistically determined) endpoint.

There are other instances of this direct object/prepositional object alternation in English, which involve non-measuring verbs, like *hit*. This is known as *The conative alternation*:

(23) a. Janet hit the wall.

b. Janet hit at the wall.

Here the difference between the direct and partitive object seems to be associated with a thematic rather than aspectual property of the object. *Hit the wall* implies that the wall was directly affected by the hitting, perhaps moved, broke etc., while *hit at the wall* implies that the hitter was hitting, but the object was not necessarily affected in any way. [17]

[17] Note that prepositional objects in English may count as object for grammatical processes (e.g., they passivize: *The bird was shot at*). This alternation may, therefore, reflect once more the difference "thematic" /aspectual relation between the verb and its object.

I will take the direct/prepositional object alternation to be another instance of the relationship between measuring objects and case marking. An object cannot be a measurer if it is not marked with accusative case.

2.2.4.3 Cross-linguistic variation in Case marking

The most convincing evidence about the correlation between measured events and accusative case comes from a cross-linguistic examination of object case marking. Recall Jackendoff's objection to the syntactic relevance of measuring out, namely that many objects are not measurers, yet they fall under the thematic characterization of themes, being affected arguments. Such examples are verbs like *kick*, *touch*, *drive* - all of them having an object which is affected by another arguments, while failing to measure out the event. English has the objects of these verbs marked with accusative case, but this is just a peculiarity of English. In Hebrew, these three verbs mark their objects with a locative preposition, *be* (at): kick at the ball, use at the knife, drive at a car, etc. This kind of variation does not exist with measuring verbs. *Kill*, for example, takes accusative case in both languages. Consider now the following groups of verbs: those having non-measuring objects (states and activities) in (24), vs. those with measuring objects in (25):

(24)

English	**Latin**	**Classical Greek**	**Hebrew**
help +acc	auxilior+dat	boetheo +dat	azar +le (to)
use +acc	utor +abl	xraomai +dat	hiStameS +be (at)
trust +acc	fido +dat	pisteuo +dat	batax +be (at)
fight +acc	pugno+dat	polemeo +dat	nilxam +be (at)
rule +acc	dominor +abl	arxo +gen	maSal +al (upon)
obey +acc	pareo +dat	peithomai +dat	ziyet +le (to)

(25)

English	**Latin**	**Classical Greek**	**Hebrew**
build +acc	construo +acc	oikodomeo +acc	bana +acc
write +acc	scribo +acc	grapho +acc	katav +acc
murder +acc	occido +acc	apokteino +acc	racax +acc
eat +acc	edo +acc	esthio +acc	axal +acc
wash +acc	lavo +acc	luo +acc	raxac +acc

Two-place predicates with measuring objects universally mark their object with accusative Case. Two-place predicates with non-measuring objects may mark their object with either accusative, dative, ablative or genitive Case, or by a preposition, depending on the particular morphological properties of that language. Some of the predicates in (24) have affected objects which are not measurers: *help*, *fight*, *rule*. The case marking of these objects may vary across languages. With measuring objects (25) no variation occurs: these objects are universally marked with accusative case. I will take this to indicate that the core properties of prototypical object/patients are aspectual properties: undergoing change, or being an incremental theme. These are the properties which seem to remain stable with respect to case marking patterns across languages.

2.3 The external argument: severing the external argument from its verb?

I now turn to the external argument of the verb. In what way is this argument external?

In section 2.2 we established the claim that it is external to the domain formed by the verb and its internal argument(s): it is thus external to the domain of "special meaning", to the domain of change of state and measuring out (Tenny 1994) and to the temporal path which is criterial of the event (Ramchand 1997). The external argument is thus never a measurer, and never participates in idiom-formation. Its role in the event structure of the verb is to cause, originate or bring about the event (LRH 1995, HK

1997). It is interpreted as initiating the change of state which determines the event, but never forming part of it.

A number of linguists have assumed that the external argument is external to the VP at some level of representation (e.g., argument structure). In particular, Williams (1981) assumed that the external argument is located externally to the maximal projection of the verb, and Marantz (1984) took this idea further, and argued that the external argument is not an argument of the verb (but rather, of the VP).

I assume here that there are no intermediate levels of representation, and that externality is given by the syntactic position in which an argument is generated. Where, then, is the external argument generated: within the VP or not?

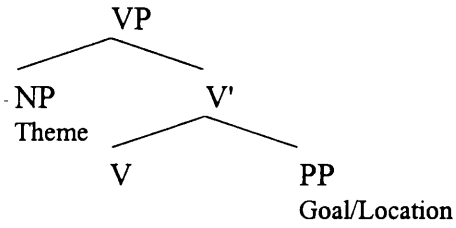
Theories differ on this point. Some theories, like Borer (1994), Harley (1995), Kratzer (1996) and Ramchand (1997) assume that the external argument is added by a functional head whose denotation has to do with aspectual properties, causation etc. A different line, originating with Koopman and Sportiche (1988), is known as *The VP-internal subject hypothesis* (VISH). Based on evidence from floating quantifiers, they argue that the subject has to be base-generated in a projection within the VP. The overt position where we find it at S-structure may be the result of movement. [18]

What, then, is correct? Is there a way to reconcile the syntactic evidence concerning the VP-internal status of the subject with our semantic intuition, that this argument is excluded from a certain internal domain, which is defined by the verb and its internal argument? I believe that the theory of VP-shells, suggested originally in Larson (1988), could do this. VP-shells were originally designed to accommodate ditransitive and locative verbs (such as *give X to Y* or *put X on Y*): such verbs are problematic for standard phrase-structure theory; first, in that they seem to be at odds with the binary-branching requirement (Kayne 1984) and second, in that there seems to be no way to represent the internal hierarchy between the two internal arguments (cf. Brass and Lasnik 1986; see discussion in section 2.4.1). The solution, as suggested by

[18] McClosky (1997) puts forward some arguments in favour of this hypothesis.

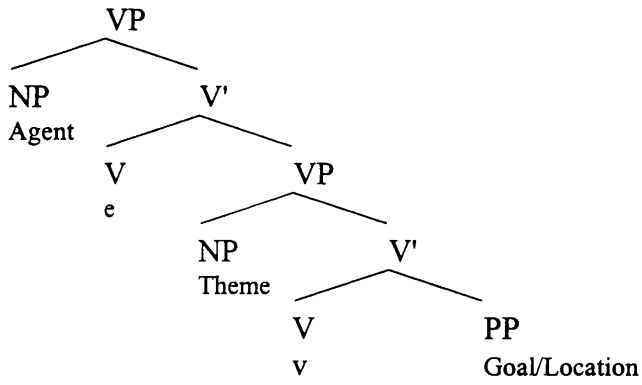
Larson, was to split up the VP into a multi-layered shell. The lower argument, goal or location, is generated as the complement of the verb, while the theme is generated as its specifier:

(26)



This structure enables the verb to accommodate both internal arguments, as well as distinguish between them hierarchically. According to Larson the agent is now generated at the specifier of an upper VP, which is located on top of the lower VP which contains the internal arguments:

(27)



The VP-shell thus consists of two verb positions: the lower one, where the lexical VP is generated, and the upper, empty one, into which it moves. The most important consequence of the VP-shell for our purpose is that it offers a way to capture our intuitions about the organization of the VP: on the one hand, the subject *is* part of the maximal projection of the VP, as required by the VISH. On the other hand, it is also external to the lower VP, where the internal arguments are generated. The VP now consists of two domains: the lower VP, which is the domain of the internal arguments, of special meaning, etc., and the upper VP, which is external to that domain, and is the domain of the external argument.

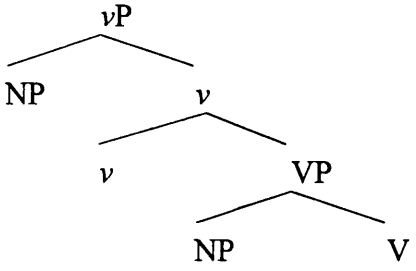
Further modification of the VP-shell is introduced by Hale and Keyser (1993, 1997a). They assume that the specifier of the upper VP is the thematic position of the external argument (agent/causer). The fact that the NP is in this particular configuration, [$_{VP}$ NP [$_{V}$ VP] (an NP at the specifier of a verb which takes as a complement another VP) makes it interpreted as an external argument.

Adopting Larson's proposal, Chomsky (1995, 1997) takes the upper V head to be a functional head: it is, simultaneously, the head projecting the agent and the head which is responsible for checking accusative case features. This upper head is put in small italics, *v*, to distinguish it diacritically from the lower V head. Following HK (1993), Chomsky assumes that *v* exists in all verbs which have an external argument (including unergatives, which are taken to be hidden transitives), that is, all verbs except unaccusatives, which have neither an object nor an external argument. [19]

The gist of Burzio's (1986) generalization is thus retained under the assumption of *v*: the same head theta-marks the external argument and checks accusative case (see discussion of the status of BG in chapter 6, section 5.7). *v* is thus both a functional head, i.e., it checks object case features after AgrO is dispensed with (Chomsky 1995), and a lexical head, since it specifier is a thematic position, and it is within a maximal projection which is labelled VP.

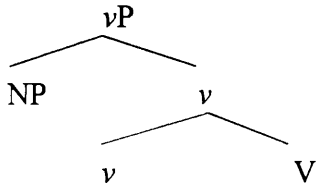
To sum up, here is the VP structure I will be assuming (ditransitives are to be discussed in the next section):

(28) a. transitive:

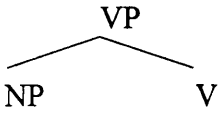


[19] Collins (1997) suggests that unaccusatives, too, have a small *v*. His argument is based on sentences such as (i), in which the verb must have raised to an upper verbal position, that is, *v*:
(i) There arrived a man to the party.

b. unergative:



c. unaccusative:



The transitive VP thus has two domains: internal and external. Unergatives have only an external argument, and unaccusatives - only an internal argument.

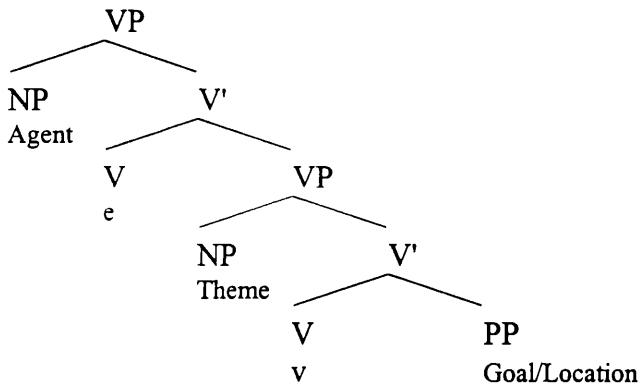
2.4 Ditransitives and double objects

2.4.1 The internal hierarchy between the direct and indirect object in DAC and DOC

In this section I discuss the structures of datives and double objects. I will start from Larson's (1988) proposal, and will point out some of its problems. In particular, I will show that there exists a real difference in meaning between the dative construction and the double object construction, which makes a transformational account unlikely. I will suggest, therefore, that both datives and double objects are base-generated. There are two positions where indirect objects can be generated: one is lower than the direct object and is similar to that of locatives, the other is above the direct object and is interpreted as the "affected argument" position.

In the original VP shell suggested by Larson (1988) the two internal arguments occupy the spec and the complement of the lower VP:

(29)



This is the basic structure of the dative construction (DAC). The double object construction (DOC) is derived from it, according to Larson, in a process which is similar to passivization: the theme is demoted and is generated as an adjunct, just like the agent in passive sentences. The verb loses its capacity to assign Case to its object through the preposition, thus forcing it to move to the specifier of the lower VP, the thematic position of the theme in the DAC. The demoted theme gets (structural) Case from the V' which is now reanalyzed as V.

The specific way in which Larson formulates his derivation is problematic from the point of view of thematic marking and Case assignment (cf. Jackendoff 1990, Landau 1994). There is also some debate as to whether the direct object is base-generated above the indirect object, or the other way around. [20]

However, I will be concerned here with the transformational account from another point of view: starting with introducing the structural asymmetry between the two internal arguments in the remainder of this section, I will turn, in section 2.4.2, to discuss the semantic differences between DAC and DOC. These differences, I argue, are hard to explain under a transformational account.

Let us start with the basic order of the two internal arguments. The main motivation for postulating a structural hierarchy between the two internal arguments is given by Barss and Lasnik (1986), who note some asymmetries between the two

[20] Larson (1988) and Baker (1988, 1997) argue that the direct object is generated in a position which is higher than the indirect object. Grimshaw (1990), HK (1993, 1997), Belletti and Shlonsky (1995), Manzini and Savoia (1998) and many others argue that the order is the other way around.

internal arguments of ditransitive verbs. Consider, for instance, anaphor binding with DAC and DOC:

(30) a. I showed Mary herself. (DOC)

b. *I showed herself Mary.

c. I showed Mary to herself in the mirror. (DAC)

d. *I showed herself to Mary in the mirror.

These data indicate that, in the dative construction, the direct object is higher than the indirect object, while in the double object construction the situation is the other way around. Similar conclusions arise from superiority tests:

(31) a. Who did you give which paycheque? DOC: IO > DO

b. *Which paycheque did you give who? DAC: DO > IO

c. Which paycheque did you give to who?

The order of the direct and indirect object, in the dative construction and the double object construction, seems to be opposite. Any structure assigned to these constructions has to reflect this hierarchy between the internal arguments. But does this necessarily force a derivational account? The inverse order between two otherwise identical arguments tempts one to suggest an account which relates the two alternants derivationally. However, if the two alternants differ semantically, then we should expect that both alternants are base-generated: movement is driven by formal requirements, such as morphological requirements or overt licensing; It does not affect the meaning of the sentence. With this in mind I turn to discuss the differences between DAC and DOC.

2.4.2 Difference in meaning between DAC and DOC

Consider the following pair:

(32) a. Nina gave Paul a book.

b. Nina gave a book to Paul.

Doublets such as (32) are often taken to be identical in meaning. However, once we depart from the simple case above it turns out that there are subtle, yet real differences between DAC and DOC. Work on these constructions (in particular Oherle 1976) has established a number of differences between them, which have to do with all three arguments: the goal, the theme and the agent.

2.4.2.1 The status of the indirect object in DOC

It is a common observation that the indirect object has to be *animate* in the DOC, but not in the DAC (Green 1974, Oherle 1976):

(33) a. Mary sent a letter to Sue.

b. Mary sent Sue a letter.

c. Mary sent a letter to London.

d. *Mary sent London a letter.

e. The collision sent the car to the other side of the gas station.

f. *The collision sent the other side of the gas station the car.

(Oherle 1976)

Other linguists formulate this requirement in terms of "awareness": with DOC the goal has to be aware of the action, or be able to accept it:

(34) a. Bill told a story to Mary, but she wasn't listening.

b. *Bill told Mary a story, but she wasn't listening.

(35) *Bill threw the coma victim a blanket. (Goldberg 1995)

(36) a. She is going to sing a song for her late lover.

b. *She is going to sing her late lover a song. (Tenny 1994)

It has also been observed that the DOC implies a successful transference of something to the goal, or that the action was "done", while DAC does not:

(37) a. Mary showed the picture to her mother (but her short-sighted mother didn't see it).

b. Mary showed her mother the picture (*but her short-sighted mother didn't see it).

(38) a. Mary taught French to Paul (but the idiot still doesn't speak it properly).

b. Mary taught Paul French (*but the idiot still doesn't speak it properly).

In the DAC the action can be directed "towards" the goal, while with the DOC it must have actually been performed upon it. This reminds one of the conative alternation discussed above (*shoot* vs. *shoot at*). To sum up: the DOC seems to impose further requirements on the goal, as well as on the transferring event. The transference has to be achieved and the goal has to be capable of accepting it.

Note, though, that there are some exceptions to the animacy / awareness requirement:

(39) a. We gave the matter some thought (and decided to go for it).

b. The rough road may give the car a flat tyre.

(39a) is clearly a metaphor, but in (39b) the giving, or transference, is much more literal.

2.4.2.2 The status of the external argument and the direct object in DOC

So far the difference between DAC and DOC was attributed only to the status of the indirect object. Now, there is an important difference between the two constructions which has to do with the status of the external argument in each of them. Consider the following pair, noted originally by Oherle (1976):

(40) a. Nixon gave a book to Mailer.

b. Nixon gave Mailer a book.

As noted by Oherle, (40b) is ambiguous between two readings. On the first reading Nixon literally gave a book to Mailer (with or without a change of possession). On this reading Nixon is a volitional agent, and the book he gives is a physical object. The second reading is paraphrased by Oherle as "Mailer wrote a book which he wouldn't have been able to write if it hadn't been for Nixon". On this reading Nixon is not an agent which performs an act of giving, and the book is not a physical object that he hands to Mailer.

The important observation is that the second reading arises only with the double object construction, never with the dative construction:

(41) a. The war years gave Mailer his first big success.

b. *The war years gave his first big success to Mailer.

c. Interviewing Nixon gave Mailer a book.

d. *Interviewing Nixon gave a book to Mailer.

(Oherle 1976, Pesetsky 1995: 193)

When the subject is inanimate (i.e., it cannot be interpreted as a volitional agent), only the DOC is allowed:

(42) a. The flowers gave the room a festive atmosphere.

b. *The flowers gave a festive atmosphere to the room.

(43) a. Katya taught me Russian.

b. Katya taught Russian to me.

c. Lipson's textbook taught me Russian.

d. *Lipson's textbook taught Russian to me. (Oherle 1976)

Ditransitives are often used as psychological verbs in English (see chapter five for discussion). As expected, only the DOC, in which the subject need not be an agent, is a well-formed psych verb:

(44) a. The trial gave her a lot of grief.

b. *The trial gave a lot of grief to her.

c. Paul / The noise gave Mary a headache.

d. *Paul / The noise gave a headache to Mary.

DOC include many forms which can be paraphrased as simple transitive verbs: *give a kiss* (i.e. *kiss*), *give a kick* (i.e. *kick*) etc. In all such cases, the thing given is not a real object, but a figurative one:

(45) a. Paul gave the baby a bath.

b. *Paul gave a bath to the baby.

(45b) cannot mean *Paul bathed the baby*. The only way to interpret it is, that Paul gave a bath (an object) to the baby. Some linguists have argued that *give* acquires a causative

sense on the DOC. Its meaning is something like *"cause x to have y"* (Pinker 1989, Goldberg 1995, Pesetsky 1995):

(46) a. John gave Paul a kiss / a kick / an insult.

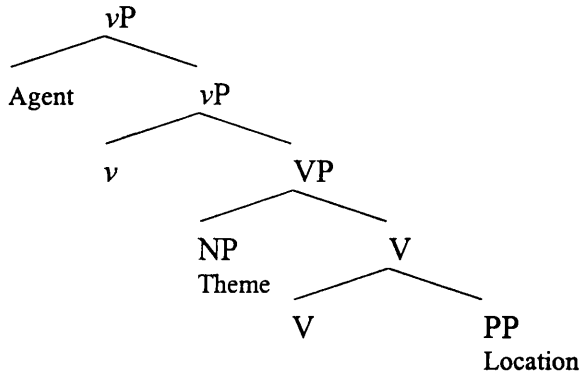
b. *John gave a kiss / a kick / an insult to Paul.

c. Cardamon pods gave the pudding a sharp, distinctive taste.

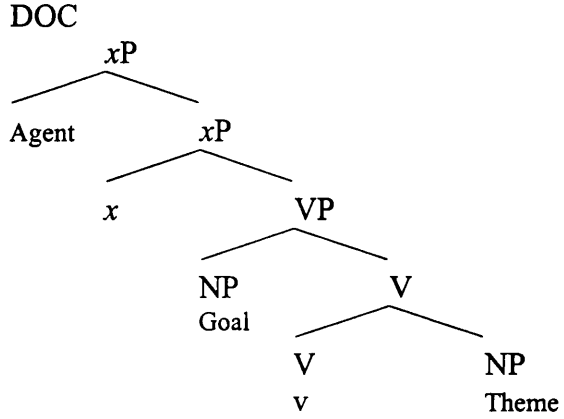
d. *Cardamon pods gave a sharp, distinctive taste to the pudding.

I will assume here that the indirect object may be merged at two possible positions: one is above the direct object, as in DOC. At this position it is interpreted as "affected" by the action. The second position is below it, as in DAC. This position is also the one occupied by locatives (e.g. *put a book on the shelf*). The indirect object is interpreted there as a goal, towards which the action is directed (but not necessarily affecting him directly). The structures I suggest for both constructions are as follows:

(47) a. DAC



b. DOC



x is the head of the upper projection in the case of DOC. It may be *v*, if the verb is agentive, or another head, if it is not (see chapter five). With DAC, the VP necessarily includes *v* which projects the agent. I termed the two positions of the indirect object as "Goal" (the higher one) and "Location", for convenience. The higher position of the indirect object is the position which is associated with some "affectedness" of this object, as noted above. The direct object may be interpreted as "being acted towards" or "being affected by the action", depending upon where it is generated.

The hypothesis about two positions for indirect objects is supported by the fact that even in Hebrew, which does not have double objects but allows the indirect object either to precede or to succeed the direct object, similar interpretational effects arise:

(48)	a.	Hi	sipra	et	ha	sipur	le	Tom	(aval hu lo hikshiv)
		she	told	OM	the	story	to	Tom	(but he didn't listen)
	b.	Hi	sipra	le	Tom	et	ha	sipur	(*/??aval hu lo hikshiv)
		she	told	to	Tom	OM	the	story	(*/?? but he didn't listen)

When the indirect object occupies the higher position (48b) it is interpreted as affected, while at the lower position it may be interpreted as not fully affected.

To conclude the discussion of DAC and DOC I will sum up the main points I made:

1. There exists a real difference in interpretation between DAC and DOC. This makes a transformational account less plausible.

2. There seem to be two positions for indirect objects: one lower than the direct object, shared with locatives; the other is above it.

2. With DOC the indirect object is necessarily interpreted as affected and the event is interpreted as fully "transmitted". With DAC no such requirement exists.

3. With DOC the subject may be interpreted as non-agentive and the direct object may be interpreted not as a physical object, and the act of giving may be interpreted as "contact" rather than volitional transference. With DAC, the subject is always agentive, the object is always physical and the act of giving is volitional transference.

2.5 The status of case in grammar

In this section I consider the case marking of arguments and its relevance for VP structure. My assumption here is that while morphological case gives us an idea about hierarchies of arguments in the VP, abstract Case is irrelevant and has no theoretical status. This section is organized as follows: first I discuss (morphological) case and (abstract) Case and motivate a separation between the two, following the line originating with Marantz (1991). I then show that morphological case is indicative of argument hierarchies in the VP. I will concentrate specifically on two cases which are generally taken to be "structural" rather than thematically related: nominative and accusative. After establishing the "thematic" content of nominative and accusative in terms of canonical event participants I will address their structural nature: based on data from Latin and Greek infinitival clauses as well as Romance causatives I will argue that the correct way to capture the facts is not by taking nominative and accusative to be structural cases, as opposed to inherent case, but through the notion of one default case which depends on T.

2.5.1 Case and case

Case, or *abstract Case*, is that component of grammar which is responsible for the overt licensing of NPs. The Case filter, and later on uninterpretable Case features are meant to rule out cases such as the following:

(49) a. *Nina to be the winner is unlikely.

b. *Seems Nina to be late.

c. *Were arrested three squatters.

d. *Nina is proud Paul.

Every overt NP must be licensed by some Case assigner: finite T licenses the subject, V licenses the object (or the subject of an ECM clause), P licenses its complement and C (*for*) may license the subject of an infinitival clause. Failure to be Case marked results in an ungrammatical sentence. [21]

Morphological case, on the other hand, has to do with the rather traditional notion of affixes and markings such as nominative, accusative, dative etc. Some languages have a richer inventory of morphological case (Russian, Sanskrit, Latin), while others have very few overt morphological markers.

In many versions of GB and minimalism it has been tacitly (or explicitly) assumed that abstract Case (licensing NPs) and morphological case are closely related: morphological case is a spell-out of abstract case; the identity of the head which licenses a position also determines the morphological case assigned to that position: accusative case is the reflection of the licensing of the object position by V while nominative reflects the licensing of the subject position by T/Infl. Languages may differ with respect to their morphological "richness", but all of them are subject to the Case filter, that is, all arguments, universally, have to be assigned abstract Case.

Case theory further distinguishes two types of abstract Case: inherent and structural (Chomsky 1986). Structural Case is assigned at S-structure. It depends only on the configuration in which the NP appears and changes according to it. For example, I(nflection) assigns structural nominative Case to whatever argument which occupies

[21] In the minimalist program (Chomsky 1993) these data are treated much in the same way, except that their ungrammaticality has to do with uninterpretable Case features on the functional heads (AgrO, AgrS, later T and *v*). Failure of such features to be checked (and deleted) overtly entails that these features reach LF. The presence of uninterpretable features at LF results in the crashing of the derivation. In later minimalist theory, it is the uninterpretable features on the head (e.g. T) which *attract* the NP (rather than the NP moving in order to be assigned Case). The licensing mechanism, though, is essentially the same.

the structural position spec, IP at S-structure; a passivized NP is thus assigned nominative after moving to the subject position. Inherent Case, on the other hand, is assigned at D-structure. It remains steady throughout all grammatical processes. Thus, some German verbs assign inherent dative case to their objects. When the verb is passivized the argument retains its dative case and does not bear nominative case as a result of its movement. [22] Most importantly: inherent Case is assigned under theta-marking. A head may assign inherent Case to an NP iff it theta marks it. This amounts to assuming that inherent case will always be found on objects, which are theta-marked by the verb or by a preposition. Chomsky (1986) further stipulates that nominative and accusative in English are structural Cases, while dative and genitive are inherent. [23]

In recent years, following a line originating with Marantz (1991), a number of linguists argue the following:

1. Morphological case and abstract Case fall under different components of grammar and should be treated separately.
2. Abstract Case can be completely dispensed with. The licensing of overt NPs can be done through other principles which are needed independently, such as the subject requirement (EPP). (See Marantz 1991, Harley 1995, Schütze 1997, among others)

Marantz (1991) points out that arguments can be licensed (e.g. receive abstract Case) even though they do not carry the morphological case associated with the position in which they appear (nominative objects in Georgian, genitive objects in Icelandic). Similarly, arguments may bear morphological case by virtue of being objects of certain verbs, but without being licensed in their base position (quirky subjects in Icelandic). This seems to indicate that morphological case does not and cannot license positions.

---

[22] Consider the following example from German (Haegeman 1991):

(i)	Sie	hilft	ihm.
	she	helped	him-DAT
(ii)	Ihm	wird	geholfen.
	him-DAT	was	helped (pass.)

[23] This is meant to capture the fact that the assignment of both nominative and accusative depends on structural configurations. Thus, raising of an argument to the subject of an ECM complement results in an accusative marking on it:

(i) John believes her$_i$ to be elected t_i.

Dative and genitive, on the other hand, depend only on the thematic configuration with the head which assigns them.

Like morphology in general it only *interprets* structures (or rather, it the spell-out of syntactic structures). Licensing is done by other mechanisms.

If morphological case is not a spell-out of abstract case, what is it, then? I argue that it is a reflection of structural hierarchies and thematic/aspectual relations between verbs and their arguments. In the spirit of the work on case and Case mentioned above, I suggest the following approach to case, which I will be assuming throughout this work:

1. Morphological case is a spell-out of syntactic hierarchies of arguments in the VP.
2. There is no need to distinguish structural and inherent case. There is one "default" case whose specific morphological properties depend both on the particular language and on the finiteness of T. Apart from this case all case is "inherent", in that it reflects some structural-relation.

In section 2.5.2 I will present some of the thematic content of nominative and accusative. Then in section 2.5.3 I will present the notion of default case and show how it explains the facts which were taken to be derived from the "structural" nature of nominative and accusative.

2.5.2 Morphological case as reflecting argument hierarchies

Even within the theory of abstract Case, some correlations between C/case and thematic roles have been noted. For example, it is stipulated that (in English) dative and genitive are only inherent, and are associated with specific roles in the thematic grids of the verb. In this section I will concentrate on the thematic content of two cases which are standardly taken to be structural, or non-thematic: nominative and accusative.

Let us start with nominative. One well known observation is that agents are never assigned quirky Case (that is, inherent Case which appears at the subject position, where nominative marked arguments are normally found - cf. Schütze 1997). In Icelandic, Hindi or Hebrew quirky Case is found with statives, psych verbs or unaccusatives. Agents, however, never bear quirky case (Schütze 1997). In Hebrew and

Icelandic agents are associated only with nominative case. Consider the following examples from Hebrew:

(50) a. la yeladim kar.
to the children cold (impers.)
`The children are cold

b. la yeladim yadu'a she en shi'ur.
to the children known that there is no class
'The children know that there is no class'.

(51) a. *la yeladim bana bayit.
to the children built a house
'The children built a house'.

b. *la yeladim saxa
to the children swam
`The children swam`

Suppose that nominative case is indeed associated with an inflected T (as is standardly assumed - see discussion in section 2.5.3). Suppose also that all other cases are reflections of structural relations between verbs and their objects (accusative) or prepositions and their objects (genitive, dative). The position of the external argument is outside the domain of lexical / thematic case assignment (accusative, dative etc.,). It is therefore always associated with the T-dependent case, nominative. [24]

Consider, next, accusative case. I argued in section 2.2.4 that this case is associated with canonical event measurers. Object case marking data from a number of languages have confirmed this hypothesis: while the case marking pattern of non-

[24] A caveat for ergative languages is called for; in Hindi, for example, ergative case seems to be a reflection of agency/external argumenthood, as it is assigned to both subject of transitives and, optionally, unergatives (Marantz 1991, Manzini and Savoia 1998).

measuring objects may be unpredictable and language particular, measuring objects are universally marked with accusative case. Similar data form Finnish indicated that accusative case is associated with all measuring objects, while partitive case is associated with all the rest:

(52)	a.	Matti	rakensi	talon	
		M.	built	house-ACC	
	b.	Minä	rakastan	sinua	(*sinut)
		I	love	you-PART	(*ACC)

Additional evidence comes form Hebrew and Icelandic. In these languages the objects of some passives and unaccusatives may be marked with accusative:

(53)	a.	kara	li	et	ha	davar	ha	ze
		happened	to me	OM	the	thing	the	this
	b.	katuv (m) / *ktuva (f)		et	ha	hoda'a (f)	ba	yoman.
		written		OM	the	note	in the	diary
		(Hebrew)						

(54)	Strompinn	blés	af	husinu
	the chimney-ACC	blew	off	the house
	(Icelandic; Maling&Zaenen 1990)			

In cases such as (53) and (54), default case (nominative) has not been realized, and the verb appears with another morphological case. I assume that accusative case is a reflection of being generated at the object position. The possibility of being marked with

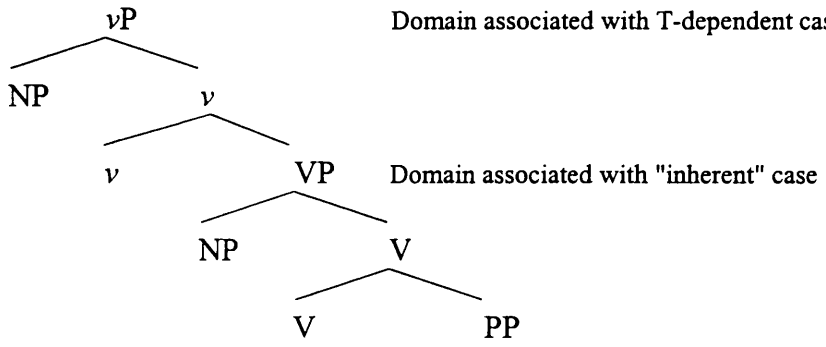
accusative case is reserved to direct objects. External arguments are excluded from this construction: [25]

(55)

*caxak	et	ha	yeled	
laughed	OM	the	child	(Hebrew)

The upper VP (*v*P) is always associated with the T-dependent case, in this example - nominative. Nominative is a default case which is assigned if no other case is assigned, but it also has some thematic content: there are types of arguments (external arguments) which necessarily bear it. The lower VP may be associated with accusative, dative or genitive, according to the position where the NP is generated:

(57)



2.5.3 Default case

Let us examine the structural nature of nominative and accusative case. Consider first nominative. Its structural nature is straightforward: in English finite sentences, nominative is assigned to whatever argument which occupies spec, IP (this is the observation behind all instances of A-movement: raising, passives and unaccusatives).

[25] A mirror-image of this phenomenon is the fact that ergative case is never assigned to "derived" subjects of unaccusatives and passives, as noted in Marantz (1991).

What about the structural properties of accusative? The main reason which has led linguists to assume that accusative case is structural as well is the phenomenon of Exceptional Case Marking cases (ECM), as in (58):

(58) I believe / expect her to be innocent.

The ability to assign accusative case to the embedded subject was taken to be a property of the matrix verb (*believe, expect*). This case is assigned structurally, to whatever NP which occupies the spec, IP of the complement clause:

(59) a. I want her$_i$ to be treated t_i with great care.

In (59) an NP which has raised from the object position into the spec, IP is assigned ("structural") accusative by the matrix verb. Such structural case is assumed to be assigned under government (Chomsky 1986). Therefore there is a requirement for adjacency between the verb and its IP complement:

(60) I believe (*for / *absolutely) her to be innocent.

Finally, passivization takes away from the matrix verb its capacity to assign accusative to the embedded subject:

(61) She$_i$ was believed t_i to be innocent.

Latin has the same phenomenon of licensing accusative subjects in infinitival clauses (ACI). Interestingly, if we look at Latin ACI clauses, both assumptions concerning adjacency and passivization turn out to be incorrect. First, accusative case does not depend on adjacency or government:

(62)	Thales aquam	dixit	esse	initium	rerum
	Thales water-ACC	said	be-INF	beginning-ACC	things-GEN
	Thales said that water is the beginning of all things.				

The subject of the infinitival clause, *water*, is assigned accusative case even though it is not governed by the verb. Furthermore, unlike the English case, accusative is still assigned if the verb appears in a passive form:

(63)	traditur	Homerum	caecum	fuisse
	is said-pass	homer-ACC	blind-ACC	be-INF-pf
	It is said that Homer was blind.			

To account for the Latin data I suggest the following: suppose that each clause has one default case (which bears some similarity but is not necessarily identical to the notion of default case advocated in Marantz 1991). This case is normally morphologically unspecified, and is assigned if no other, morphologically more specified case is assigned. For example, nominative in English or Hebrew is not associated with any specific morphological realization. It is recognized according to structural position, agreement with the verb etc. [26] It is normally assigned in any clause, except when the argument already bears some other overt morphological case, such as accusative (as in the Hebrew and Icelandic examples in 53-54).

I suggest that the morphological realization of the default case depends on two factors: 1. The type of the language (nominative or ergative).

2. The properties of T (finite / inflected or not).

[26] Recently it has been suggested that structural case and agreement are in fact two instances of the same phenomena: standing in a local relation with a feature-bearing functional head, T or *v* (Chomsky 1997, Schütze 1997). The same could be assumed concerning default case here: it is realized through a local relation with T.

Let us start with the type of the language: in nominative languages default case is nominative, while in ergative languages it is absolutive (cf., a.o., Bobaljik 1993). [27] Consider next the properties of T. I argue that within nominative languages, the default case in the environment of a finite T is nominative, while the default case in the environment of a non-finite T is accusative. Accusative case in infinitival clauses in Latin and in ECM clauses in English are the same phenomenon. The accusative case marking on the embedded subject is simply the realization of default case in the environment of a non-finite T. It has nothing to do with the identity of the matrix verb, as can be seen from (63): it is the non-finite T in the infinitival clause, rather than the matrix (passive) verb *traditur* which licenses the subject *Homer*. The morphological realization of such a configuration is accusative, rather than nominative.

The difference between English and Latin is that in English only a limited group of verbs license infinitival subjects while in Latin this process applies freely with all verb which take a sentential complement.

Classical Greek also has accusative as default case in the environment of a non-finite T. The subject of an infinitival clause which serves as a subject is marked with accusative even though there is no matrix V which could possibly assign it "structurally":

(64)	a.	ton	anthropon	einai	monon	ou	kalon
		Det-ACC	man-ACC	be-INF	alone-ACC	NEG	good
		esti					
		is					

`It is not good for a man to be alone`.

[27] Ergative and accusative are taken to be *dependent* cases (cf. Marantz 1991), which are assigned "upward" (ergative) or "downward" (accusative) by the V+I complex if it already governs a distinct position in the clause which is not marked with "lexically governed" case. I leave aside the nature of dependent case here.

Whereas in English a sentence like (64) would require an overt licenser (e.g. *for*), in Greek the non-finite T in the subject clause is capable of licensing the subject *a man*. The morphological realization of the two subjects is the same: accusative.

I believe that the most crucial argument in favour of accusative being the realization of default case with a non-finite T is the following: it is always the T-dependent default case which changes "structurally". For example, in Classical Greek, nominative turns into accusative in non-finite contexts (65):

(65)	a.	Sokrates	legei	tauta	
		Socrates-NOM	says 3sg	these things-ACC	
	b.	nomizei	Sokraten	legein	tauta
		he thinks	Socrates-ACC	say-INF	these things-ACC

Nominative, default case with finite T, turns into accusative, default case with non-finite T, when the verb is embedded as infinitival clause. However, if the verb in its finite form had its argument marked with a case other than nominative (e.g. dative), then this case remains constant and does not change according to T:

(66)	a.	melei	moi	toutou	
		care (impers.)	I-DAT	this-GEN	
		'I care about this'.			
	b.	nomizei	melein	moi	toutou
		he thinks	care-INF	I-DAT	this-GEN
		'He thinks that I care about this'.			

It seems that the data from infinitival clauses are best captured through the notion of default case, whose nature changes along with the properties of T.

An interesting example of the interaction between the nature of T and the language "type" is Romance causatives. While non-causative verbs, which have a finite

T, show a nominative / accusative pattern, the causativized form, whose T is non-finite, exhibits an ergative patter. Consider the following example from Italian (similar data exist in French and Spanish):

(67) a. Lui ha lavorato.
he has worked (unergative)

b. lo ho fatto lavorare.
him I have made work-INF

(68) a. Lui si è arrabiato
he refl. is angry
He got angry. (unaccusative)

b. lo ho fatto arrabiare.
him I have made get angry-INF

The default case in the environment of a non-finite T is accusative. The single argument of the verb, which is marked with nominative with a finite T, is marked with accusative in the causativized form.

When the causativized verb has two arguments, the object remains in its original case, accusative, while the subject appears with a dative:

(69) a. gli ho fatto ripparare la macchina.
to him I have made fix the car
`I made him fix the car`.

b. gli ho fatto apprezzare Lucia.
to him I have made appreciate Lucy
`I made him appreciate Lucy`.

The change in case pattern under causativization in Italian, French and Spanish is as follows:

(70) nominative --> accusative (intransitive verbs)
nominative --> dative (transitive verbs)

The case pattern exhibited in such constructions is, as noted by Bok-Bennema (1991), typically ergative: the subject of an intransitive verb, whether unergative or unaccusative, is marked in the same way as the object of a transitive verb. The subject of a transitive verb is marked with a different case, dative, which is similar here to ergative case.

While with finite T Romance languages exhibit a nominative/accusative pattern, their pattern of case marking in causatives is clearly ergative. Such ergativity splits which depend on T are well known in the literature (cf. Georgian, Nash 1995). To complete the picture, consider English causatives:

(71) a. I made him dance.
b. I made him fall.
c. I made him fix them.

Like Romance, English has accusative case as its default in the environment of a non-finite T. Unlike it, the case pattern is not ergative. To sum up the three cases of default case discussed so far:

(72) a. English, Latin, Greek, Romance, finite T:
default: nominative. case pattern: nominative / accusative.
b. English, Latin, Greek, non-finite T
default: accusative. case pattern: nominative / accusative.
c. Romance, non-finite T:
default: accusative. case pattern: ergative.

I argued here in favour of the notion of default case, whose specific morphological spell out depends both on the language and on the properties of T (and, in some cases, the interaction between the two). Data from Latin, Classical Greek and Romance languages seem to support this hypothesis. In particular, there is no need to assume two structural cases, nominative and accusative. The two are different manifestations of default case in different environments.

I will now sum up my main claims so far:

1. Abstract Case can be dispensed with. Licensing is taken care of by general grammatical principles (e.g. the EPP).

2. Morphological case interprets syntactic structures. It gives us information about the overt organization of the VP (e.g. we know that the surface subject tends to be marked with nominative) and about *thematic* organization, that is, the semantic type of the arguments.

3. Structural case is better explained in morphological terms, rather than syntactic terms. It is the case which is reflected through agreement, rather than through overt morphology on the noun phrase. It is also the case which tends to serve as a default case, if there is no other case (such as nominative in English or absolutive in ergative languages) - hence its being environment sensitive.

Chapter 3: Agents and Causers

Abstract:

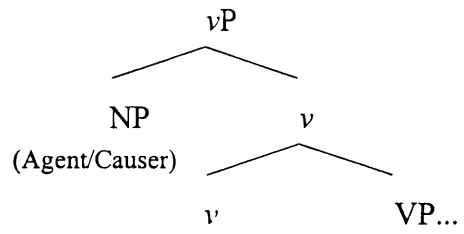
Current syntactic theory does not distinguish between agents and causers: both occupy the same position (spec *v*P). The difference between the two is taken to be semantic, or thematic, if it exists at all. The aim of this chapter is to show that the difference between agents and causers is realized syntactically. I will concentrate here on four syntactic phenomena which are sensitive to the differences between agents and causers: transitivity alternations, object case marking in psych verbs, reanalysis phenomena and scope of adverbs. Based on the behaviour of agents and causers with respect to these phenomena, I will argue the following: agents and causers occupy the same syntactic position, spec, *v*P. Semantically, agents and causers differ in the way in which they are related to the change of state which the object undergoes: agents intend to bring about this change of state, while causers only happen to trigger it. This is also reflected syntactically, in the way in which they are related to the lower VP: agents are generated as specifiers of *v* which is selected by the lexical verb, while the *v* head hosting causers is an automatic transitivization of predicates of change of state (in the sense of HK 1997a).

3.1 Agents vs. causers - introduction

From early on in generative grammar agents and causers were not distinguished structurally: both were assumed to occupy the same position. To the extent that they existed as two different thematic roles, the difference between them was defined in somewhat intuitive terms, that is, an agent being "animate", "volitional", etc., while a causer only brings about some change. However, in thematic hierarchies relating theta assignment with structural positions the two are never found separately: either only the agent appears, and is then ranked higher than all other roles (Jackendoff 1972, Larson 1988, Pesetsky 1995), or they are both ranked similarly (Grimshaw 1990).

In current syntactic theory (Hale and Keyser 1993, 1997a, Chomsky 1995), there is no distinction between agents and causers: both are at the specifier of the upper *v*P shell:

(1)



An external argument (agent or causer) is defined structurally, as the argument occupying the specifier of the upper VP (HK 1993) or *v*, which has the status of a functional head (Chomsky 1995)

There are two main reasons to assume that this hypothesis is correct. The first is syntactic and the second is semantic/thematic. Syntactically, there is no distributional evidence that could distinguish the two positions: no single predicate takes both an agent and a causer, so there is no way to determine whether the two occupy different positions. Furthermore, with respect to their role in the event structure of the predicate, agents and causers have the same role, that is, the actors, or the entities that bring about the event. It thus makes sense that they compete for the same slot both syntactically and thematically: an event with two external arguments will violate interpretability principles (such as Full Interpretation - cf. Chomsky 1995) and cannot be licensed. Taking this into consideration, it seems plausible to assume that agents and causers occupy the same position.

Now, what about the differences between agents and causers? In the literature, agents are associated with a number of properties which distinguish them from causers: agents are animate, they have volition (Dowty 1991) or act intentionally (Talmy 1976), they have control over the event (Zaenen 1993) or a "mental state" (Reinhart 1996). Causers, on the other hand, merely cause or bring about the event. They do not have to be animate, and they are not associated with volition/intention/control as above. In other

words, causers may *happen* to cause an event, while agents *intend* to bring it about. In what follows, I will adopt these terms for agents and causers and will use them in a somewhat informal manner, until a later stage in my discussion.

The question I am interested in is whether these differences are also realized syntactically, or whether they are only finer-grained semantic characteristics of a single position. In this chapter I will argue in favour of the former view. In the next section I will review some data regarding agents and causers which will demonstrate the difference between the two: transitivity alternations, case marking, reanalysis phenomena, and adverb scope.

3.2 Some syntactic phenomena which distinguish agents and causers

3.2.1 Transitivity alternations

One of the best studied phenomena where agents and causers play different roles is the transitivity alternation, or the causative-inchoative alternation. It has been observed (LRH 1995, Reinhart 1996) that there is a close correlation between verbs which participate in this alternation and verbs which allow for a causer:

(2) a. Nina /the sun melted the ice.
b. The ice melted.

(3) a. Nina /the storm capsized the boat.
b. The boat capsized.

(4) a. Nina / the wind opened the window.
b. The window opened.

Melt, *capsize* and *open* may all appear in both the transitive and the intransitive form. They also allow for a causer, rather than an agent (e.g. a nature force). Note that they may also take an agent: for example, (2a) with *Nina* as an external argument is ambiguous between an agentive reading, in which she intended to melt the ice, and a non-agentive one, in which she, for instance, left the ice outside. With *the sun* as an external argument, only the causative reading exists.

Now consider the following verbs:

(5) a. Nina / *the pen wrote a letter.

b. *A letter wrote.

(6) a. Nina / *the screwdriver fixed the car.

b. *The car fixed.

(7) a. Nina /*the cold dressed the children.

b. The children dressed (only reflexive, not inchoative).

The verbs in (5)-(7) require an animate/intentional agent. They cannot be conceived as performed by a causer. They also do not appear in an inchoative form. Reinhart (1996) takes the transitive alternant to be the basic one, and assumes that the inchoative (or unaccusative) is formed through a lexical operation of de-transitivization, or reduction of the external argument. She adopts a feature-based theta theory, and argues that the difference between an agent and a causer lies in the feature [+mental state] (which is similar to volition/intention) that the former, but not the latter, bears. Reinhart assumes that an external argument bearing the feature [+mental state] cannot be reduced, which explains why agents and causers pattern differently with respect to this alternation.

LRH (1995), on the other hand, derive the difference between agents and causers through the notions of *internal causation* vs. *external causation*: predicates which

require an agent (*write, fix*) have an internal causer, which is inherently involved in the action. Thus, the entity which writes a letter is part of the writing event. On the other hand, predicates which require a causer describe a process of external causation: the causer is not involved in the action. It is external to it, and merely serves to bring it about. For example, in (2a) the sun is not part of the melting event. Its role is just to cause the melting event, perhaps, paraphrasing LRH, "trigger" it. However, it does not form part of the melting event, which is why its presence is optional.

It should be noted that the pattern drawn above works only partially: some verbs, such as *destroy*, allow for a causer, but cannot appear as inchoative:

(8) a. The rain / Nina destroyed the picnic.

b. *The picnic destroyed.

(8) indicates that not all causers may be reduced. However, the entailment does seem to hold in the opposite direction: agents may not be reduced. To sum up this section, we can say that only (though not all) causers may be reduced, and only predicates which allow a causers may be de-transitivized. [1]

3.2.2 Object case marking in psych verbs

The domain of psych verbs, in particular Object Experiencer (ObjExp) verbs, is a good place to look for syntactic differences between agents and causers. This is because many ObjExp verbs are systematically ambiguous between an agentive reading, in which the external argument actually *aims* at triggering a mental state in the

[1] Agents and causers also pattern differently with respect to sluicing, as noted in Levin (1982):

(i) a. Mary was eating, but nobody knows what.

b. *Mary was moving, but nobody knows what.

The intransitive alternant of a a verbs which allows a causer (*move*) is invariably interpreted as an unaccusative verb, hence disallowing sluicing of the object. This is also the case with Italian *si* marking on the two verb types, to be discussed later on.

experiencer, and a causative reading, in which this argument happened to trigger a mental state, without intending to:

(9) Nina frightened her neighbours (ambiguous)

a. in order to make them move out (agentive).

b. unintentionally, when they bumped into her in the dark (causative).

(9) is ambiguous between an agentive and a causative reading. Further specifications can disambiguate it, for example, rationale clauses force an agentive reading (9a), while adverbs such as *unintentionally* force the causative reading (9b). This ambiguity only exists with animate entities (i.e., those which may qualify as agents). With inanimate arguments, only the causative reading exists:

(10) Nina's behaviour frightened her neighbours.

In some languages the agentive and causative readings of ObjExp verbs are morphologically and syntactically distinct. Interestingly, the difference is not marked on the external argument itself but on the object of the verb, that is, the experiencer. In what follows I will bring evidence from Spanish, Greek and Hebrew that the objects of ObjExp verbs are canonical objects on the agentive reading, while they are lexicalized as indirect objects, or objects of a preposition, on the causative reading. [2]

3.2.2.1 Spanish: object case marking

The objects of ObjExp verbs in European Spanish are marked with the dative case, realized as the preposition *a* (*a* is an object marker which marks all animate

[2] A more detailed and fine-grained analysis of ObjExp verbs will be presented in chapter 5. For our purposes here, it is sufficient to distinguish between an agentive and a causative reading of these verbs.

objects in Spanish, both dative and accusative). The presence of the dative is evident if pronouns are used (cf. 11a), or, alternatively, if there is clitic doubling (11b): [3]

(11)	a.	el niño / la musica	le		molestó.	
		the boy / the music	her-DAT		bothered	
	b.	el niño / la musica	le	molestó	a	Maria.
		the boy / the music	her-DAT	bothered	OM	Mary

With a dative pronoun (11a) or dative clitic doubling of the object (11b) the sentence is interpreted as if the bothering is unintentional, or, in any case, related to the experiencer (she finds the music/the boy annoying). The object of an ObjExp verb may also be marked with accusative case. In this case, the interpretation is unambiguously agentive - the boy *intended* to bother:

(12)	a.	el niño	la	molestó.		
		the boy	her-ACC	bothered		
	b.	el niño	Ø	molestó	a	Maria.
		the boy		bothered	OM	Mary

Accusative case is manifested on the pronoun in (12a), and by lack of doubling in (12b). The interpretation of the subject as acting intentionally is crucial here. Accusative object marking would be inappropriate to describe a case in which the boy acts or does something (e.g., banging on the back of her chair) which happens to be

[3] In Spanish, only Dative (not Accusative) clitics double. When the object is left-dislocated, there is always doubling. In psych verbs, there is a strong preference to put the experiencer first (ii), thus making it homophonous with LD, so there is no way to see if doubling is needed per se. Examples with doubling AND experiencer in situ (i) are somewhat archaic:
(i) La musica le molesta a Maria (Music bothers Mary)
(ii) A Maria le molesta la musica

bothering, but with no intention to bother. In other words, accusative case is inappropriate if the external argument is a causer. [4]

As expected with this pattern, accusative case is only possible when the subject is human:

(13) le / *la molesta el ruido
her (dat.) / her-ACC) bothered the noise
'The noise bothered her-DAT/*-ACC'.

However, in contexts which imply intentionality or agentivity, such as purpose clauses and imperatives, accusative case is obligatory:

(14) a. lo hice para molestar*la/lo* /*le).
it I did in order to bother her/him-ACC/*-DAT
'I did it in order to bother him/her (-ACC/*-DAT)'.

b. No la/lo/ /*le molestes.
Don't her/him-ACC her-DAT bother
'Don't bother him/her (-ACC/*DAT)'.

(12)-(14) indicate that the case marking (and presumably the structural position) of the object in Spanish depends on the agentivity, or intentionality of the external argument.

3.2.2.2 Modern Greek: clitic doubling

Direct objects in Modern Greek are optionally clitic-doubled, while indirect objects are obligatorily doubled. It has been noted that with ObjExp verbs the doubling

[4] Speakers said that *bother*, when used with accusative case, means bothering directly, on purpose (e.g., stick a finger in the eye), while the dative is used if the boy made a noise which happened to bother, if something he said bothered, if his whole existence is bothering.

of the direct object becomes obligatory, indicating that this object is, in spite of its surface accusative case, a prepositional object (examples from Anagnostopoulou 1997):

(15)	ta	epipla	*/?(ton)	enoxlum	ton	Petro.
	the	furniture	cl-ACC	bother	the-ACC	Peter

With a human subject, doubling is once again optional. However, without doubling the sentence is unambiguously agentive. Thus, (16) means that Mary bothers Peter intentionally: [5]

(16)	i	Maria	enoxli	ton	Petro.
	the	Maria	bothers	the-ACC	Peter

As in Spanish, (16) would be inappropriate in a situation in which Mary does something which happens to bother Peter, but without meaning to.

To sum up: object experiencers behave like direct objects when the external argument is an agent, and like indirect objects when it is a causer (i.e. like indirect object, they require doubling).

3.2.2.3 Modern Hebrew: object resumptive pronouns

Finally, consider the following data from Hebrew. Hebrew relative clauses have a resumptive pronoun where English has a gap:

(17)	a.	ha	yalda	she	Nina	natna	*(la)	sefer.
		the	girl	that	Nina	gave	to her	a book

[5] As noted in Anagnostopoulou (1997), on the agentive reading doubling can still exist, with the agentive meaning retained. However, as with Spanish, the interpretation without doubling has to be strictly agentive/intentional. It cannot be used appropriately in a situation in which Mary makes noises which happen to bother Peter.

b.	ha	yeled	she	Nina	dibra	*(ito).	
	the	boy	that	Nina	talked	to him	

When the head of the relative clause is a direct object, the pronoun may be optionally deleted (Borer 1984):

(18)	a.	ha	yalda	she	Nina	ohevet	(ota).
		the	girl	that	Nina	loves	(her)
	b.	ha	sefer	she	Nina	kar'a	(oto).
		the	book	that	Nina	read	(it).

However, with ObjExp verbs, deletion of the object resumptive pronoun is not allowed if the external argument is a causer:

(19)	a.	ha	yalda	she	ha	musica	me'acbenet	*(ota).
		the	girl	that	the	music	annoys	her
	b.	ha	yalda	she	ha	ra'ash	hifxid	*/??(ota)
		the	girl	that	the	noise	frightened	her

When the subject is animate, deletion is allowed:

(20)	a.	ha	yalda	she	Nina	icbena	Ø	
		the	girl	that	Nina	annoyed		(only agentive)
	b.	ha	yalda	she	Nina	hifxida	Ø	
		the	girl	that	Nina	frightened		(only agentive)

As with the Greek examples, the sentences in (20) are unambiguous: they only have the agentive reading, on which Nina is acting on purpose. Again, on the causative

reading the object of the ObjExp behaves like an indirect object or an object of a preposition, while on the agentive reading it behaves like a canonical object.

3.2.3 Reanalysis phenomena (Johnson 1985)

Consider a group of English and French verbs to which I will refer, following Johnson (1985), as "the *threaten* class" (see also Zubizarreta 1982, Ruwet 1991). Members of this group include, among others *threaten*, *promise*, *require*, as well as their French counterparts *menacer*, *promettre*, *exiger* (similar verbs exist also in other languages, including Italian and Hebrew). The primary interpretation of these verbs is agentive. If *threaten* takes a sentential complement, the relation between the two verbs is that of control:

(21) a. Nina threatens Paul.

b. Nina threatens to kiss Paul.

These verbs also allow a third interpretation, which Johnson defines as "events are in motion, such that X is imminent" (ibid:25-6):

(22) a. The rock threatens to fall.

b. Paul's bag threatens to break open.

c. This young boy promises to become a good musician. (Ruwet 1991)

(22a-b) are unambiguous. They only have the interpretation of "The rock is about to fall" or "The bag is about to break open". (22c) is ambiguous: it may either mean that the boy made a promise to become a good musician (i.e., the control reading), or that there are good chances for the boy to become a good musician (the reanalysis reading). It is the reanalysis reading that I am interested in here.

Johnson (1985) observes some similarities between the reanalysis reading and raising verbs:

1. In both, the subject theta role is defined by the lower predicate.

2. Both can host in their subject position an idiom which is associated with object positions. [6]

3. Both allow *en*-cliticization in French (which indicates a connection with a lower position in the tree). [7]

However, reanalysis also differs from raising in a number of ways:

1. Reanalysis does not allow expletive *it* as a subject (cf. **It threatens that the book will fall off the shelf*), or French *il*.

2. Reanalysis does not allow narrow scope to the subject with respect to the matrix verb (*threaten*), while raising verbs do. [8]

3. Most importantly, reanalysis does not allow any object to intervene between the matrix verb and its complement (as in "It seems to me").

Johnson suggests that in cases such as (22), the matrix verb and its complement form a complex predicate. This process is called by Johnson "reanalysis":

(23) a. [... [$_{VP}$ threaten [$_{S'}$ [$_{S}$ [$_{INFL}$ to [$_{VP}$ V (NP)]]]]]] -->

b. [... [$_{VP}$ threaten-to-V] (NP)]

(ibid:31)

---

[6] Cf. the following (Zubizarreta 1982, in Johnson 1985):

(i)	Parti	menace / exige	d'être	tiré	de	cette	situation.
	advantage	threatens / demands	to be	taken	of	this	situation.

[7] Cf. the following (ibid.):

(i)	Le	chef	menace	d'en	être	impitoyable.
	the	boss	threatens	about this	to be	unforgiving

[8] Consider the narrow scope of *somebody* with respect to *seem*:

(i) Nobody seems to have left but somebody seems to have left.

No such narrow scope is allowed by *threaten* verbs:

(ii) Personne ne menace de venir, mais quelqu'un menace de venir. (contradiction)
Nobody threatens to come but somebody deserves to come (Zubizarreta 1982, in Johnson 1985).

The reanalysis of the two predicates into one complex is further supported by the fact that temporal adverbs, which may refer to either predicate separately with raising verbs, may only refer to the complex event as a whole with reanalysis verbs:

(24) a. John seemed likely to marry Sarah on Tuesday. (ambiguous)

b. A riot threatened to break out on Tuesday. (unambiguous)

What is of interest for us here is that the reanalysis phenomenon is sensitive to the agent/causer distinction: the verbs which may serve as complements of *threaten* on the reanalysis reading are either verbs with no external argument at all or verbs which allow causers:

(25) a. The ice-cream threatens to melt. (unaccusative)

b. The sun threatens to melt the ice-cream. (causer)

c. The rain threatens to destroy our garden party. (causer)

d. Paul's jokes threaten to annoy everyone. (causer)

Verbs which obligatorily select for an agent are excluded from the reanalysis reading (although they may have the control reading):

(26) a. *Paul threatens to dance.

b. *Nina threatens to eat an apple.

c. *The boss threatens to fire Paul. [9]

Furthermore, when a verb is ambiguous between an agentive and a causative reading, reanalysis disambiguates the sentence, by picking the causative reading only:

---

[9] Some stative verbs, including *love*, *deserve* etc., also resist reanalysis:
(i) *Nina threatens to like Paul.
(ii) *Nina threatens to deserve a prize.
I will leave these examples aside here.

(27) a. Nina spilled the milk. (ambiguous: agent or causer)

b. Nina threatens to spill the milk. (unambiguous as reanalysis: causer only)

Johnson's generalization is that reanalysis is allowed only with verbs which do not theta-mark their subject position. In order to allow for cases such as (25b-d) he assumes that causers are not theta-marked. On his terms, the subject of an eventive verb is interpreted as an ACTOR. This interpretation is given configurationally, by virtue of being the subject of an eventive verb. In addition to this, the verb can theta-mark its subject with some role (which Johnson labels X for convenience) which, when combined with the ACTOR role yields the role AGENT. Much of Johnson's intuition has entered current theory, in that the specifier of the upper *v*P is interpreted as an agent/external argument by virtue of appearing in this configuration. I also share Johnson's formulation of an agent as a causer "plus something more". Let us keep this in mind until later in the discussion.

If indeed nothing may intervene between *threaten* and its complement (cf. the data in Johnson 1985 about to subject scope, adverbs etc.), then my conclusion is that the position of the lower causer, that is, the external argument of the complement of threaten, has been "cancelled". *Threaten* and its complement form a complex predicate, the specifier of which now hosts the external argument of the complex predicate

(28) a. [TP e [VP threaten [TP Mary to crush the eggs].

b. [TP Mary [VP threaten to crush the eggs]. [10]

Recall section 3.2.1, where it was shown that causers appear to be optional in many (if not most) cases of verbs which allow them, while agents must always be present, and cannot be reduced. Reanalysis further shows the optionality of causers vs.

[10] I leave aside the question whether reanalysis is formed by movement or whether the two predicates are merged as a single complex from the start.

the obligatory presence of agents: causers can be reduced when the predicate reanalyses with *threaten*, agents cannot. [11]

3.2.4 Adverb scope

Consider the behaviour of agents and causers with respect to the scope of the adverb *why*:

(29) Why did Nina paint the wall / write a letter?
-Because she wanted to / had to. (only answer)

(30) Why did Nina break the glass?
a. Because she wanted to.
b. Because she is so clumsy.
c. Because it was so fragile.

---

[11] Note that reanalysis is not limited to a small group of verbs. It is an old observation that English modals are ambiguous between a root (or deontic) interpretation, and an epistemic (or modal) one. This, I argue, is syntactically realized as control vs. reanalysis:

(i) a. Nina may spill the milk. (ambiguous)
b. This joke may offend Paul. (unambiguous)

(ia) is ambiguous between a root and an epistemic interpretation. Either Nina may, on purpose, spill the milk, or there may come about an event of Nina spilling the milk. The first interpretation has a control structure, while the second is reanalysis:

(ii) a. $[_{vP}$ Nina$_i$ $[_{CP}$ $[_{TP}$ may $[_{vP}$ Pro$_i$ $[_{VP}$ spill the milk]]]]]
b. $[_{TP}$ Nina $[_{TP}$ may $[_{VP}$ spill the milk]]]]]

Will behaves in a similar way. Other modals behave differently according to their tense: present tense forces a control reading, while past perfect forces reanalysis:

(iii) a. Nina can do this. (control; root)
b. Nina could have done this. (reanalysis; epistemic)

(iv) a. They must finish dinner by eight. (control; root).
b. They must have finished dinner by now. (reanalysis; epistemic)

(31) Why did Nina offend Jill?

a. Because she wanted to.

b. Because the politician she attacked publicly turned out to be her son.

c. Because Jill is so sensitive.

With agents, the adverb can only refer to the action of the agent, supplying the reason for it. With causers, the adverb is ambiguous, as expected, between an agentive interpretation (30a) and a causative one (30b). But with causers there exists a third option: the adverb does not refer to the external argument at all, but rather to the internal argument and the change of state it undergoes. In (30c), for example, the adverb "picks" the lower VP: the question it answers is "Why did the glass break?". With causers, the adverb can skip the external argument and refer only to the lower, lexical VP. With agents, on the other hand, this is impossible. The adverb must pick the whole VP-shell and refer to the action of the external argument, which is interpreted as acting on volition. I take these data to further strengthen our initial intuition that the connection between the causer and the change it creates is somewhat "loose", or accidental, while the connection between the agent and the change it brings about is inseparable.

3.2.5 Agentivity as intention to bring about a change of state

Recall my brief discussion of the informal ways in which agents and causers are characterized: mental state, volition, etc. In this section I would like to argue that the crucial property defining agentivity is *intention* with respect to bringing about the change of state effected in the object. Before getting to do this, let us look more closely at the semantic properties which were assumed to distinguish the two. Consider, first, the type of change that agents and causers are involved in:

(32)	**agents:**	**causers:**
	mow the lawn	break a glass
	paint a wall	spill the milk
	eat an apple	offend Jill

The changes agents are involved in tend to be gradual, or incremental: the lawn is mowed gradually, a little at a time, more of the wall is painted every minute, etc. With causers, on the other hand, the change of state tends to be instantaneous: a glass is broken, milk is spilled, etc. Recent work by Davis and Demirdache (1995) has aimed to define agentivity vs. causation in terms of the nature of this change of state. Adopting an aspectual approach (Pustejovsky 1991, Vendler 1967), they suggest that an event with an agent is an event involving both a change of state and a process (i.e., it is an accomplishment), whereas an event involving a causer is instantaneous, and only involves a change of state (i.e., it is an achievement).

However, I believe that this view cannot be maintained: there is, indeed, a tendency for agentive predicates to describe durative events, and for causative predicates to describe instantaneous events, but this is only a tendency. There are agentive predicates which describe a change of state which may be instantaneous. *Fix the car* is such an example: it can be done instantaneously, but still there is intention required on the fixer's side. There are also causative events which describe a gradual change: *melt the ice*, or *cool the soup* can last for hours. It is therefore not possible to define agents and causers on the basis of this.

What about the property most often associated with agents, volition? Dowty (1991) argues that one of the core properties of the Proto-agent role is that it acts on its own volition. This seems to be true. However, a causer, too, may act volitionally. Imagine someone who moves his hand volitionally to get the salt, and ends up spilling the wine. The action itself was volitional, the change of state it brought about was not. I therefore take the distinguishing property between agents and causers to be *intention* with respect to the change of state they bring about: causers are only responsible (if at

all) to their own action (stretching their hand forward, playing loud music), but not to the change of state they bring about (spilling wine, annoying their neighbours). Agents, on the other hand, are responsible *both* for their own action and for the change of state they bring about. Part of the meaning of a predicate which requires an agent is that the external argument be responsible for whatever change it effects in the object. For example, *paint the wall* cannot appropriately be used to describe a situation in which someone accidentally smears paint all over the wall. Recall also the data from object case marking in ObjExp verbs: the agentive and causative readings differ in the way in which the *object* is marked. This further corroborates our hypothesis concerning the relationship between agents and causers and the change of state they cause. In the next section I will argue that the relationship between the external argument and the change in the lower VP can be captured formally, as part of the relationship between V and *v*. [12]

Finally, consider another difference between agents and causers: only verbs which take an agent may contain a manner component in them. There are many agentive verbs which are very similar in meaning and the main difference between them is the manner in which the action is done:

(33) a. verbs of manner of motion: *run, walk, crawl, gallop, dash, limp...*

b. verbs of manner of eating: *gulp, nibble, devour, munch...*

c. verbs of manner of saying: *shout, whisper, holler, cry...*

[12] I have put aside another definition of agentivity, *control* over the event (Zaenen 1993). This seems closely related to volition. However, Mithun (1991) has checked several Native American languages with respect to their case marking pattern (active/agentive vs. patient-like). She shows that the factors determining active/agentive case marking may vary from one language to the other: action/performance, event vs. state, volition/intention, control over the event or personal affectedness. It may be that the properties crucial for the syntactic realization of agentivity are parametrized across languages. In the languages discussed here, intention seems to be the most crucial one. Part of the difficulty in testing intention vs. agentivity is, that it is not easy to find a verb which clearly involves intention but not control over the event. Mithun's example for such a verb is winning in gambling. She does not mention ObjExp verbs, but it would be interesting to see how these verbs pattern in the language which ranks control as the determining property for case marking, because it is a property of these verbs, that their subject may have volition, but it does not have control over the event (e.g. one may want to amuse the audience, but amuse is not a verb one can control).

Almost any agentive verb incorporates some manner component in it. For example, *paint* involves gradual application of paint onto a surface, using some instrument. Splashing paint out of a bucket would not qualify as an event of painting. On the other hand, verbs selecting for a causer specify nothing about the *means* employed by the causer in order to bring about the change of state: breaking a glass or offending a person can be done in endless ways. This difference becomes evident when the manner adverb *how* is used with the two types of predicates:

(34) a. How did Bill eat the cake?
-With his fingers / Greedily / *with his mouth.

b. How did Jane fix the car?
-With a hammer / quickly.

(35) a. How did Bill amuse the old lady?
-By taking her to the zoo / By stumbling on the floor / *quickly

b. How did Nina capsize the boat?
-By piercing a hole in it/ *With great difficulty.

In (34), the scope of *how* is the manner in which the Agent does its action. In (35), *how* concerns the nature of the action with which the change of state was brought about.

It has long been observed that the external and the internal argument are associated with the components of *manner* and *result*, respectively (LRH 1995, a.o.): all modifiers of manner of action are associated with the external argument (e.g. they are sensitive to selection restrictions of the external argument), while all modifiers of result (e.g. resultative secondary predicate) are associated with the object. We can now modify this slightly, and argue that the manner component is associated with *agents*.

3.3 Agents and causers analyzed

3.3.1 Selection by V and the agent/causer distinction

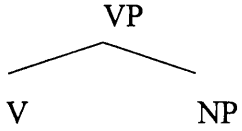
The data we reviewed so far indicate two main differences between agents and causers:

1. Agents are obligatorily present, and cannot be reduced, while causers can (this is manifested by the transitivity alternation and reanalysis).
2. A different relationship holds between an agent and the object (i.e. the lower VP) and between the causer and the object: agents and causers may differ with respect to the way their objects are marked, as indicated by the data from ObjExp verbs. Also, adverbs s.a. *why* may only have scope over the whole VP-shell when the verb requires an agent, while with causers the same adverb may either pick the full VP or the lower VP.

On the other hand, we did not come across any evidence which indicates that agents and causers are in different structural positions.

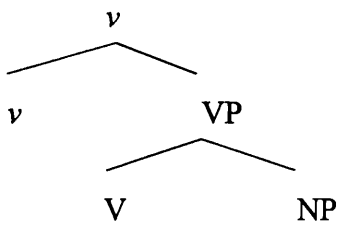
I suggest that we should distinguish not between agents and causers as such, but between predicates selecting for an agents and predicates which allow a causer. Suppose that a verb of the *break* type must select only for its sister, the object NP, while a verb of the *paint* type must select both for a sister and for its immediately superordinate head, in this case - *v*:

(36) a.



break

b.



paint

My assumption here is that once *v* is present it must also have a specifier, and that the argument of that specifier is interpreted as an external argument. The identity of

the external argument - an agent or a causer - will be determined according to whether *v* is selected by V or not. [13] In accordance with our findings, agents and causers are generated in the same syntactic position, spec *v* P. Selection of *v* by V is the "something more" which distinguishes agents from causers. Following HK (1997a) I assume that structures of the form (36a) can transitivize automatically, that is, have a *v* added to them, along with the argument in its spec. [14] A verb of the form of (36b), on the other hand, must select for a *v*. This retains our intuitions that causers and agents are not structurally distinct, but are differently related to the event they participate in. Johnson's intuition that the causer subject position is not theta-marked is expressed through the non-obligatoriness of *v* with verbs which select for a causer.[15]

We also retain Johnson's hypothesis that the role of an ACTOR is assigned configurationally, by virtue of being the subject of an eventive verb (I take here *v* to be the eventive head, or the head mediating between the subject and the object), while an AGENT is the combination of the configurational role with some additional role assigned by the verb (in our case, simply selection of V for a *v*). Most importantly, the difference between agentive and causative predicates is defined structurally. We can thus account for the fact that causative verbs may be used agentively (e.g. *Nina broke the glass on purpose*): they *allow* for a causer (i.e. selecting only for their complement) but they may also select for their *v* head.

---

[13] Selection is normally taken to work in the other direction, e.g. C selects for the (non)-finiteness of I. However, it is also clear that lexical heads can determine the functional heads above them (as in an "extended projection"). In this case it is the type of the lexical verb which determines whether *v* is obligatorily present or not, not the other way around.

[14] There are some unaccusative predicates which cannot appear as transitives, including *come*, *appear*, *arise*. They are termed by HK (1997b) "There-insertion unaccusatives", because they also allow expletive *there*:

(i) There appeared three men.

HK assume that these verbs have a different structure from standard change of state predicates, which can transitivize.

[15] The difference between the status of *v* in (36a,b) is reminiscent of that between a goal and a benefactive: on the one hand, both seem to occupy the same position. On the other hand, a goal is obligatory with some verbs (in particular *give*-type verbs) while a benefactive can be added with almost any verb, but is not obligatory.

The terms "agents" and "causers" are used here as convenient labels for relating the same position to the rest of the event described by the verb. However, grammatical processes do not make reference to the identity of "agents" vs. "causers", but rather to the type of relationship between V and its external argument.

There remains the problem of verbs such as *destroy*, which, on the one hand, clearly allow for a causer, but on the other hand cannot appear as intransitives:

(37) a. The rain destroyed /spoiled / ruined our party.

b. *Our party destroyed / spoiled / ruined.

There are two options here: one is to abandon any attempt to characterize semantically predicates which select for an agent, and cluster *destroy* with *paint* type verbs. The second option is to argue for the notion of an "obligatory, non selected *v*": a *v* head whose presence is obligatory (for morphological well-formedness of the predicate), but is not selected by V. I will take the second option here, based on data from languages other than English. It is well known that transitivity alternations are morphologically marked in many languages. While transitive and intransitive *break* are morphologically identical in English, they take distinct forms in Romance languages and in Hebrew:

(38)	a.	Nina	ha	rotto		la	bambola.	
		Nina	has	broken		the	doll	
	b.	La	bambola		si	è	rotta.	
		the	doll		refl.	is	broken.	(Italian).

(39)	a.	Nina	a	cassé		la	vase.	
		Nina	has	broken		the	vase	
	b.	La	vase		s'	est	cassée.	
		the	vase		refl.	is	broken.	(French).

(40)	a.	Nina		shavra	et	ha	kos.
		Nina		broke (trans.)	OM	the	glass
	b.	Ha	kos	nishbera.			
		the	glass	broke (intrans.)			(Hebrew).

The intransitive alternant is characterized by a reflexive marking or a different verbal form. Interestingly, *spoil* and *destroy* may appear in Hebrew in an intransitive form, provided that they appears in a specific (middle/reflexive) verbal form:

(41)	a.	Ha	geshem	haras	et	ha	mesiba.
		the	rain	destroyed	OM	the	party
	b.	Ha	mesiba	nehersa	/	*harsa.	
		the	party	destroyed (middle)	/	destroyed (trans.)	

(41) would mean something like "The party got destroyed" in English. No such option exists for *paint*-type verbs. With these verbs the middle/reflexive can be interpreted only as a passive, not unaccusative:

(42)	a.	Nina	cav'a	et	ha	kir.
		Nina	painted	OM	the	wall
	b.	Ha	kir	nicba.		
		the	wall	painted (middle/refl)		
		'The wall was painted".				

These data indicate that the inability of *destroy* to appear as an intransitive in English is more likely to be the result of some morphological problem than a syntactic one. Suppose that the intransitive alternant of *break* type verbs has to be morphologically licensed in order for it to stand "on its own". Such licensing could be, for example, overt marking on the verb, as is the case in Romance and in Hebrew.

Suppose further that the transitive alternant does not have to be licensed. In cases where the intransitive alternant is not morphologically licensed, only the transitive one exists: an external argument is introduced by *v* even though *v* is not selected by V.

I can only offer here some speculations for the way in which *break* morphologically differs from *destroy*. Note that many of the verbs which allow the intransitive alternant correspond to a noun in English: a break, a move, etc. Suppose that these items are sufficiently morphologically licensed to appear as verbs or as nouns in English, or rather, that their overt verbal and nominal forms equal their representation as a root in the lexicon, √break. Now, suppose that *destroy* exists in the lexicon only as a root, √destr. This root has to be verbalized or nominalized (cf. *destroy*, *destruction*) in the syntax (cf. HK 1997, Marantz 1997), but cannot qualify to appear in the language on its own. One of the ways to nominalize it is to add to it the suffix -tion, forming *destruction*. It can also be adjectivalized, with -ed, as in *destroyed*. In order to verbalize √destr., V itself is not sufficient. It takes a functional head, *v*, to make √destr. into a verb. Since *v* also required a filled specifier, the verb *destroy* will only exist in English as a transitive verb. However, the presence of *v* in this case is due to a formal requirement on the vocabulary item rather than a semantic requirement of the verb.

To sum up: it seems that morphological considerations play a role in determining the ability of a verb to appear as an intransitive. Thus, the inability of *destroy* to take the intransitive form in English has to do with the lack of verbal morphology, such as reflexive or medio-passive forms, which exists in other languages. We still have the entailment working in the other direction, that is, no verb selecting for an agent may appear as an inchoative.

3.3.2 Agents' vs. causers' behaviour explained

Let us now see how this helps us to account for the different behaviour of the two predicate types with respect to the phenomena mentioned above.

Take transitivization first. On the assumption that *v* must have a spec, and that *paint*-type predicates obligatorily select for *v*, it becomes necessary that they always have an external argument. *Break*-type verbs, which do not select for *v* but optionally allow it, may remain intransitive. I take here the basic alternant of *break* verbs to be the intransitive one (contra Reinhart 1996). This intransitive alternant may then transitivize. This process of transitivization happens in the syntax, during the derivation (Reinhart assumes that the causer argument is reduced in the course of a lexical operation on the (transitive) lexical entry, which takes place in the lexicon).

Consider, next, object case marking with psych verbs. The objects of ObjExp verbs in Spanish, Greek and Hebrew are marked with dative case or with a (zero) preposition on the causative reading, and with accusative case on the agentive reading. Suppose, following the discussion in chapter two, that accusative case indicates the canonical object position. Let us assume that *v* is the head which is responsible for licensing the direct object position, and that certain verbs are assigned accusative by virtue of occupying the object position of the verb. Suppose, now, that in these languages the conditions on licensing the direct object by *v* are as follows: *v* can or license a direct object position (spelled out by accusative case) only if it is selected by V. Thus, on the causative reading *v* cannot license a direct object while on the agentive reading it does. However, this hypothesis cannot be maintained: in all these languages non-psych causative verbs, that is simple change of state verbs of the *break* type, do mark their object with accusative case, even on the causative reading. I would like to suggest that the failure of ObjExp verbs to license a direct object on their causative reading is related to another property of these verbs, their inability to detransitivize:

(43) a. Nina frightened / amused / disgusted the children.

b. *The children frightened / amused / disgusted.

ObjExp verbs share with change of state verbs the property of allowing for a causer. Unlike them, they cannot appear as intransitives. HK assume that only change of

state predicates may stand on their own as (unaccusative) intransitives. ObjExp verbs do not exist in English as inchoative verbs of change of state. Again, the problem seems to be related to morphology rather than to syntax or semantics: in languages with richer morphology, the intransitive alternant is acceptable, with the correct marking on the verb:

(44) a. Nina ha spaventato i bambini.
Nina has frightened the children.
b. I bambini si sono spaventati.
the children refl. are frightened. (Italian).

(45) a. Nina hivhila et ha yeladim.
Nina frightened (trans.) OM the children.
b. ha yeladim nivhalu.
the children frightened (middle). (Hebrew).

It seems that psych verbs, like *destroy*, are not morphologically licensed to appear as intransitives in English. The English equivalent of (45b) would be paraphrased through a light verb with an adjective, *got frightened.* I assume that psych verbs also start off as a lexical root, such as √fright or √annoy, which is then made into a noun, an adjective or a verb. It may also be that the verb *frighten* is derived from the noun *fright* or from an adjective (see Pesetsky 1995, a.o.). Suppose that by virtue of being derived from an adjective, the verb may retain the case marking pattern of adjectives:

(46) a. This is frightening to me.

b. This fact is annoying for everyone who cares about human rights.

ObjExp verbs in Spanish, Greek and Hebrew retain this case marking as long as their *v* head is not selected by V. When it is selected, it forces a direct object and accusative case. I will now look at reanalysis asymmetries with agents and causers. Recall the data from section 3.2.3: reanalysis is allowed either with verbs which have no external argument at all, or with verbs which allow a causer:

(47) a. The ice-cream threatens to melt. (unaccusative)
b. The sun threatens to melt the ice-cream. (causative)
c. *Nina threatens to dance. (unergative)
d. *Nina threatens to kiss Paul. (transitive-agentive)

The group which rules out reanalysis includes unergatives (which are always agentive - cf. Davis and Demirdache 1995) and agentive transitives, i.e., verbs which obligatorily select for *v*. This leads one to assume that the problem of the reanalysis reading has to do with the status of the external argument: when it is selected by the lower verb, reanalysis of *threaten* and its complement is impossible. We saw that *threaten* can select for two different complement types:

(48) a. threaten [*v*, CP] (control)
b. threaten [TP] (reanalysis)

On the control reading, *threaten* selects both for an external argument, which is interpreted as an agent, and for a CP complement. On the reanalysis reading, it selects for a TP complement and does not have a thematic subject position. In this case, the matrix T attracts the closest argument (presumably to satisfy the subject requirement, the EPP): the internal argument in (47a), the external argument in (47b)).

On the reanalysis reading *threaten* and its complement form a single complex predicate. Recall the temporal adverbs data from section 3.2.3: these adverbs are unambiguous with reanalysis, while they are ambiguous with raising and control:

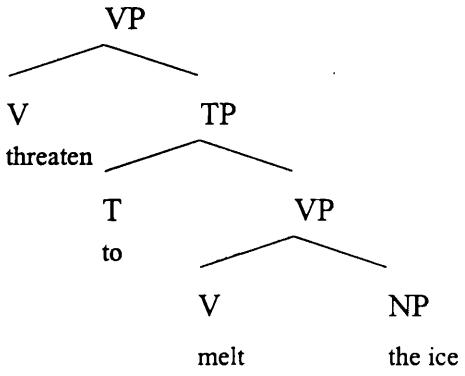
(49) a. The sun threatened to melt the ice on Tuesday. (unambiguous)

b. Nina seemed likely to melt the ice on Tuesday. (ambiguous)

c. Nina promised to buy fruit on Tuesday. (ambiguous)

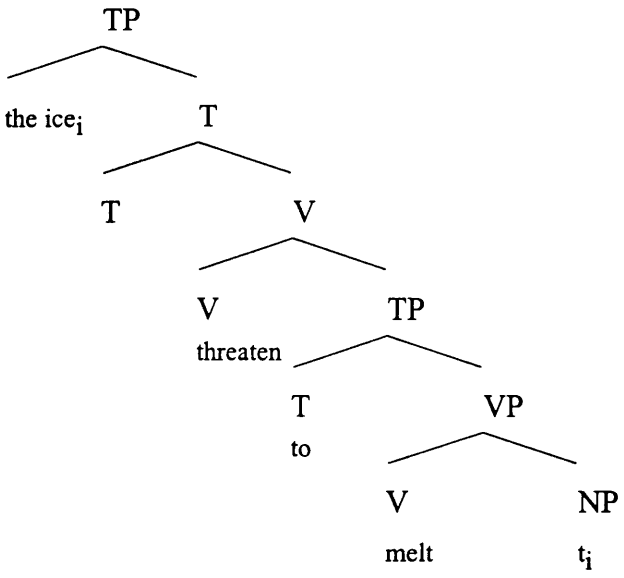
This indicates that the embedded T is "ignored" during the formation of the complex predicate. Perhaps it is bound by the matrix T. Alternatively, it may be that since no argument may intervene between *threaten* and its complement, there is no NP which could be interpreted as realizing or performing the event denoted by the lower T. Reanalysis ends up with a structure such as the following:

(50)



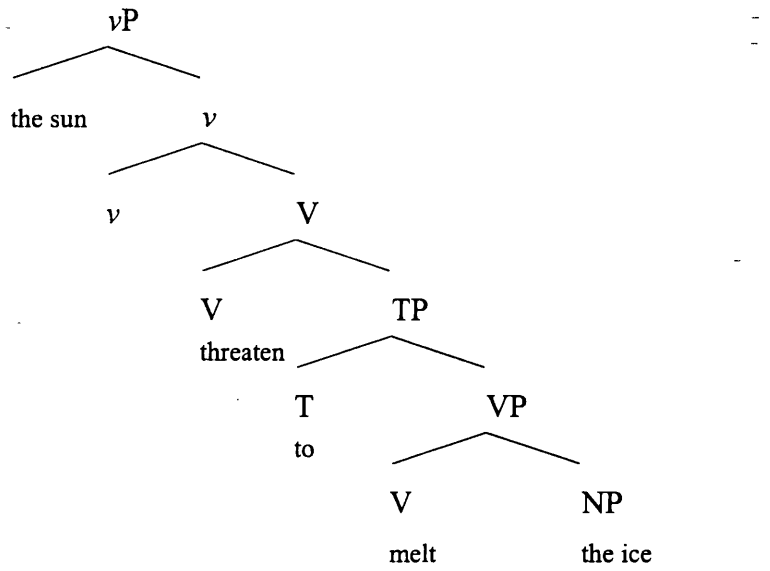
If the numeration does not have any additional NPs, the object NP is attracted by the matrix T, yielding "The ice threatens to melt":

(51)



No *v* is allowed in the lower predicate, as this would interfere with the reanalysis. When the lower predicate is transitive, I assume the complex *threaten to melt* may project a *v* head, by virtue of *melt* being a change of state verb. The argument at the spec of *v* will be interpreted as a causer:

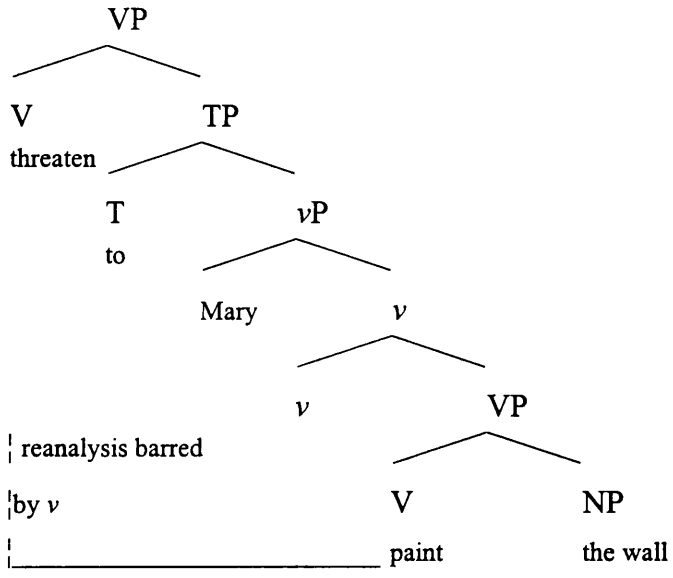
(52)



'The sun threatened to melt the ice'.

However, if the verb with which *threaten* reanalyses selects for an agent, then its presence intervenes between the two verbs and does not enable them to form a complex predicate. Since this position is selected, it cannot be ignored, or suppressed:

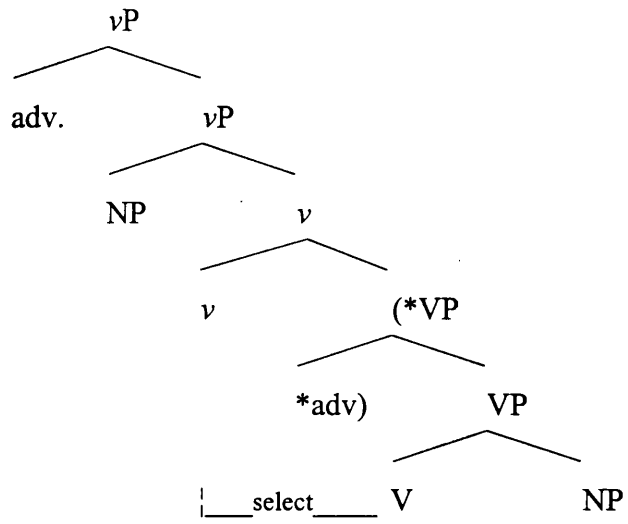
(53)



The only option which remains in such cases is for the matrix verb to select for an agent, too, and establish a control relation between the two verbs.

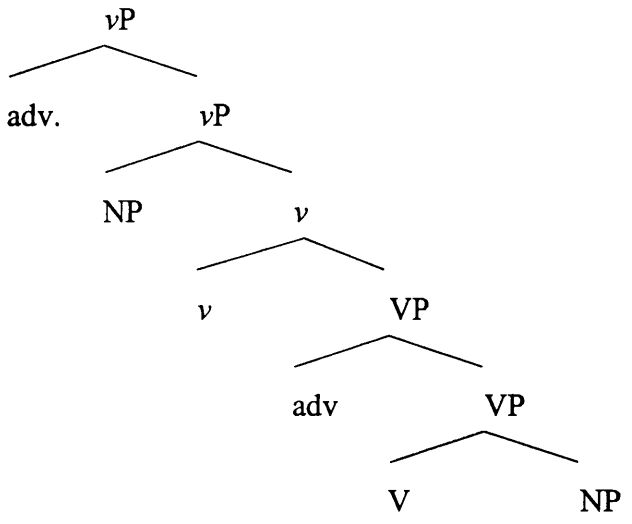
Finally, let us discuss the asymmetries between agents and causers with respect to adverb scope. The data from section 3.2.4 easily fall into place if we assume that adverbs may not intervene between a head and its selected spec or complement. Thus, when *v* is selected by V, *why* cannot be merged between them, and therefore must take as its scope the whole VP:

(54)



On the other hand, when v is not selected by V but is only an automatic transitivization of it, there is no problem for an adverb to be inserted between *v* and V and have scope only over the lower VP:

(55)



If *v* only serves to transitivize V it can be projected from any maximal projection of VP.

3.4 Alternative views

Consider now some of the alternative view of agents and causers which have been suggested recently. I will start with Reinhart (1996). Reinhart's starting point is the different behaviour of agents and causers with respect to reflexive markings in Italian and Hebrew. Italian *si*, as well as Hebrew *hitpa'el* form, marks both reflexives and unaccusatives. Reinhart further notes that a verb which selects for an agent yields a reflexive reading when marked with *si*, while a verb which selects for a causer will yield an unaccusative reading:

(56) a. Maria si lava.
Maria washes herself.

b. Maria si guarda.
Maria watches herself.

c. Maria si pettina.
Maria combs herself /her hair.

(57) a. Il vitro si è rotto.
The glass broke.

b. Maria si è arrabiata.
Maria got angry.

c. Maria si alza alle nove.
Maria gets up at nine.

The same pattern exists in Hebrew. The interpretation of the verb as reflexive or unaccusative when appearing in the *hitpa'el* form depends on whether it selects for an agent or a causer:

(58) a. Nina hitlabsha.

Nina got dressed.

b. Nina histarka.

Nina combed herself / her hair.

c. Nina hitraxca.

Nina washed (herself).

(59) a. Nina hitragza.

Nina got angry.

b. Ha zxuxit hitnapca.

the glass shattered.

c. ha balon hitnape'ax.

the balloon got swollen.

Reinhart assumes that the operations which form reflexives and unaccusatives take place in the lexicon. Both operations are of a similar nature: reduction of an argument. The difference between the two is that the formation of unaccusatives involves reduction of an external argument, while that of reflexives involves reducing of an internal argument. The morphological marking of this reduction may be similar, and this explains why reflexives and unaccusatives have similar morphology in many languages. To account for the different pattern exhibited by agents and causers with respect to transitivity alternations Reinhart draws the following constraint with regard to reduction of arguments:

(60) A thematic role specified as +mental state cannot be reduced.

Because agents cannot be reduced, the only reading achieved with verbs selecting for an agent is the reflexive one.

Under the assumptions I made here, verbs do not select for a theta grid specifying the identity of roles. Rather, the identity of agents and causers is derived from the way in which they are related to the lexical verb. Reinhart's account is problematic not only because it assumes primitives such as "mental state" which are associated with specific arguments, but also because it does not allow for a possibility in which *break* type verbs are used agentively. Furthermore, the observation in (60) seems to have a number of counter-examples in Hebrew. For example, even through *organize* seems to require an intentional agent (61a) it does exist as unaccusative (61b):

(61) a. ha ovdim / *tna'ey ha avoda ha gru'im irgenu shvita.
the employees / *the bad working conditions organized a strike.

b. hit'argena shvita.
organized a strike.
`A strike was organized` (unaccusative, not reflexive).

There are several other such verbs, which, although they require an intentional agent on their transitive form, may still appear as unaccusatives: *hitgayer*, *hitaslem* (convert into Judaism/Islam, which is clearly unaccusative, because one cannot convert oneself), *hitmared* (rebel), etc. [16]

LRH (1995) offer an analysis of agents and causers along similar lines. Agentive and causative verbs are analyzed as verbs involving internal causation (agentive, *paint* type) vs. external causation (causative, *break* type). The internal causer is thus inherently involved in the action, while the external causer merely brings it about, but does not form part of the action itself. I agree here with the intuition behind LRH's account. However, I do not adopt their analysis, which captures the difference between

[16] Reinhart's observation could be explained if we assume that *si* always picks and marks the highest argument selected by the predicate. With agentive predicates, this is the external argument. Therefore, these predicates only yield a reflexive reading. With causative verbs, this is the internal argument, and therefore they yield an inchoative reading. However, there would still be the counter-examples from Hebrew mentioned here.

agents and causers through a lexical decomposition of predicates into lexical representations which contain abstract operators of the form CAUSE (for causers) and DO (for agents). Apart from the enrichment of the lexical component with primitives such as CAUSE and DO, it also has to be stipulated on this approach that verbs whose lexical representation contains a CAUSE can detransitivize, but not those with DO. This account also has the same problem noted before, i.e. it is incapable to explain the agentive use of causative verbs (cf. the discussion of Reinhart above). If the difference between agents and causers is attributed to the fixed lexical representation associated with each verb type, which is then translated into a specific structure, then we cannot account for the fact that the *break* type verb can also have an agentive interpretation. On the other hand, by assuming that agents and causers are defined configurationally, the multiple functions of *break* verbs (intransitive, causative, agentive) can be easily captured.

Consider, next, Davis and Demirdache (1995). I argued before against Davis and Demirdache's definition of agents and causers in terms of the change of state in the object. I agree, however, with their intuition that while an agent has an existence in its own right, by being selected by the verb, a causer is an extension of the predicate below it. An agent which aims at causing a change of state but fails to bring it about is still an agent. On the other hand, a causer which fails to cause a change of state is not a causer at all. This is exemplified by the conative alternation. Davis and Demirdache (1995) note that the verbs which allow the conative alternation are always agentive, or, if they are ambiguous between an agentive and a non-agentive reading (*hit*), then only the agentive one exists on this construction:

(62) a. Nina ate at the cake.

b. Nina was writing at her dissertation.

c. Nina hit at the wall.

d. *Nina broke at the glass.

The conative alternation takes away the direct object, as well as the change of state described by the verb. Agents are defined by their action (or rather, by their action which aims to bring about a change of state). Causers, on the other hand, must have some change of state as part of their definition. Davis and Demirdache argue that verbs selecting for an agent denote events which have a definite starting point: the point at which the agent started acting. On the other hand, events which take a causer do not have a starting point: they happen the moment the change of state comes about. This would correctly capture our intuitions that an event of writing a letter which is interrupted halfway through is still an event of writing a letter. However, an event of breaking a glass which was interrupted before the glass was broken cannot be considered an event of breaking a glass.

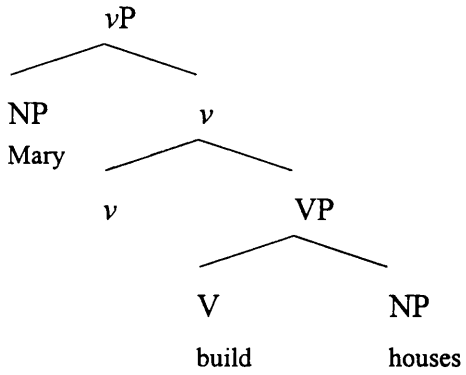
Another consequence of the discussion here is that unergatives should always be agentive, because they have no change of state on which a causer can be put. This prediction seems to be born out. All unergatives such as *laugh*, *sing*, *dance* etc. seem to require some intention on the actor's side.

Davis and Demirdache (1995) offer a formalization of the notions of agent and causer in aspectual terms: an external argument is interpreted as an agent iff there is a specific temporal point at which the event started. It is interpreted as a causer iff there is a change of state. Under their analysis an agent always involves some process, while a causer does not. The problem with this account is that it presupposes that agentive events are associated with a gradual or incremental change while causative events are instantaneous. However, as noted before, this correlation is no more than a tendency: there are verbs selecting for an agent which describe an instantaneous change (*fix the car*, which may be achieved instantly), as well as verbs which take a causer an describe gradual event (*melt the ice*, *dry the clothes*). An event of melting an amount of ice does have a starting point, i.e. the point at which the change of state starts to be realised. In other words, Davis and Demirdache's account confuses the nature of the change of state and the nature of the external argument. This account acknowledges the fact that verbs selecting for a causer may take an agent optionally (e.g. *John broke the window on*

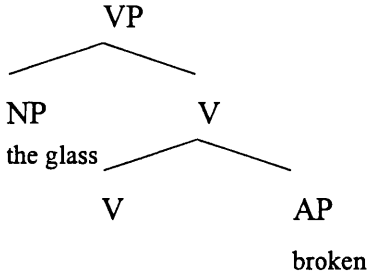
purpose). However, the event itself, the breaking, is the same. Davis and Demirdache would have to assume that an the event consists of a process leading to a change of state on the agentive reading, and of a change of state on the causative reading. This seems to me empirically unmotivated. Accounting for the difference between agents and causers in terms of selection by V enables us to assume that the change of state is similar with both agents and causers, and it is only the relation between the external argument and the verb which is different.

Finally, consider HK (1993, 1997a). Their VP structure singles out one external argument, which may be projected by several different types of lower VPs. My account is similar to that of HK in that it derives the difference between agents and causers from the way in which they are related to the lower VP. However, HK assume that the lexical VPs of the two verb types are thoroughly different. According to them, verb classes project structures specific to them. *Break* type verbs, that is, the change of state class, have a VP which is a predicate of change of state, and contains a verb and an AP incorporated into it. *Build* type verbs, i.e. the creation class, have a verb and an NP incorporated into it:

(63) a.



b.



The predicate of change of state in (63b) is complete as it is (Case-motivated movement of the argument at spec, VP may take place during the derivation, but the structure is lexically/thematically well formed). This structure may also automatically take a *v* on top of it, and thus have an external argument at its spec. This is the transitivized version of change of state verbs. The lexical VP of (63a), on the other hand, cannot stand as it is, and must take a *v* and an external argument. The explanation is thus ontological: this (63a-b) is what the structures that these classes project look like, and therefore there are no other options available for them. Note that while (63b) seems to capture correctly all the verbs which alternate between a transitive and intransitive form, (63a) is just one class out of many which obligatorily select for an external argument. Other groups include consumption verbs (*drink*), affected object class (*clean*) etc. The fact that the objects of creation verbs and change of state verbs are generated in different positions already weakens the theory, because we thus lose some higher order generalizations about the properties shared by all objects, such as case marking, or extractability. If we assume further divisions that will distinguish other classes (which is necessary in the HK system, where classes are distinguished according to the type of structures they project), our generalisations about the positions and properties of arguments are further weakened. However, if it turns out that a small, independently motivated number of lower VPs is sufficient to account for all existing verb classes, then the distinction between agents and causers may be derived from the difference between the types of those VPs.

3.5 summary

In this chapter I reconciled two facts that seem to be contradicting: on the one hand, agents and causers seem to occupy the same position, yet there seems to be a syntactic difference between them, which is manifested by several phenomena as shown above. In examining the behaviour of two predicate types, those allowing a causer and those which obligatorily take an agent, it is made clear that the difference between

agents and causers is in how they relate to the lower VP, or to the object of the predicate. I suggested that this relationship is best captured through selection by V: when the lexical V selects its immediate superordinate head (v) then the argument at the specifier of that head is interpreted as an agent. When it does not, the existence of v is still allowed, but it is then interpreted as a causer. The labels "agent" and "causer" themselves are not primitives in the theory, but rather convenient labels for arguments generated at a specifier of V-selected vs. non V-selected v. A selected v cannot be reduced, which explains the behaviour of agentive vs. causative verbs with respect to transitivity alternations, adverb scope and reanalysis. Most importantly, the analysis suggested here can capture the systematic ambiguity in causative verbs: even though they allow for a causer, they may also be used agentively. By assuming that these verbs may also select for a v, on their agentive reading (as opposed to agentive verbs, which must select for it), we can accommodate the two readings of these verbs.

Finally, there remains the following question: from what I argued here it seems that all the verbs which allow a causer also allow an agent, but not vice versa. In other words, verbs which require an agent are a subset of verbs which allow a causer. Is this really the case, or are there verbs which strictly require causers, and do not allow an agentive reading? I claim that such verbs exist, only they are not "normal" activity verbs, but belong to the group of psych verbs. I will discuss such cases in chapter five.

Chapter 4: Hebrew Causatives and VP structure

Abstract:

Causativization is a process which involves adding a specific participant to a predicate, a causer. It has both semantic and syntactic effects: syntactically, an argument is added; semantically, the verb has an argument which is interpreted as a causer. It is thus especially interesting for the syntax/lexicon interface.

I concentrate here on two questions:

(i) When is causativization allowed?

(ii) What is the meaning associated with the causative form?

I also concentrate on Hebrew data: Hebrew is significant for causativization, both because it allows, contrary to current predictions (cf. HK 1997a), formation of lexical causatives from unergatives, and because it has a morphological form for causativization (and thus allows a systematic comparison between analytic and lexical causatives). The first property bears on question (i), while the second property bears on question (ii).

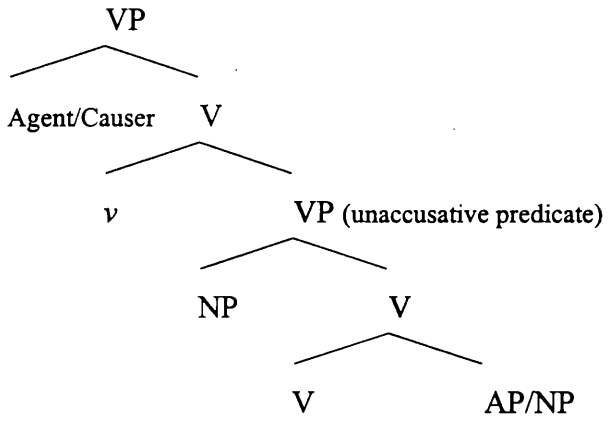
The chapter is organized as follows. Section 4.1 introduces the background required for dealing with causatives in general. Section 4.2 introduces the main relevant facts about Hebrew. Section 4.3 shows the specific properties of lexical causatives formed from unergatives in Hebrew. Section 4.4 proceeds to discuss the two main questions above, on the basis of the Hebrew data. In spite of the seeming peculiarity of Hebrew, the discussion motivates a strong claim of universality, which I go on to support by data from child language, in section 4.5.

4.1 Causatives: an introduction

In this section I introduce two types of causative forms assumed in current theory: lexical causatives and analytical causatives (cf. H&K 1997, Miyagawa 1997) . [1]

Lexical causatives (LC) are transitive verbs or transitivized unaccusatives: $sink_{tr}$, $open_{tr}$, $break_{tr}$ etc. [2] These causatives consist of a single predicate (and, accordingly, I assume, denote a single event[3]). Their syntactic structure consists of an unaccusative predicate of change of state and an external argument at spec, *v*P (cf. discussion in chapter three):

(1)



[1] More traditional approaches distinguish three types of causatives (cf. Comrie 1985):

Analytic causatives (also called syntactic causatives) involve a formation of a complex event out of two predicates, one of which expresses the idea of causation (usually *cause* or *make*). This mechanism is productive, and analytical causatives can normally be formed from any verb: transitive, intransitive, active, stative, etc.

A *lexical causative* is a distinct lexical item, whose meaning equals, more or less, the causative form of some other predicate. As with all lexical items, the formation of lexical causatives is not productive.

Morphological causatives are formed through a derivational process that the predicate undergoes in order to express causativity. Unlike analytical causatives, there is no separate predicate expressing causation: the verb and the causative affix form a single predicate.

[2] The notion of a lexical causative employed by HK must not be confused with the assumption that certain lexical items are causative forms of other, more basic items (e.g. *kill* is the causative of *cause to die*). This view has been argued against by Fodor (1970) on the grounds of the difference in event structure between *kill* and *cause to die*.

[3] I leave open the question whether lexical causatives have a single event position from the start or whether they start off with two event positions, and during the process of the semantic computation one position is "blocked" (cf. Higginbotham 1997).

Analytical causatives (AC) are complex predicates: they include a causative predicate which is either separate (*cause*, *make*, *have*) or is expressed by verbal morphology (as in Japanese - cf. Miyagawa 1997), and a lexical verb:

(2) a. I made John shovel the snow.

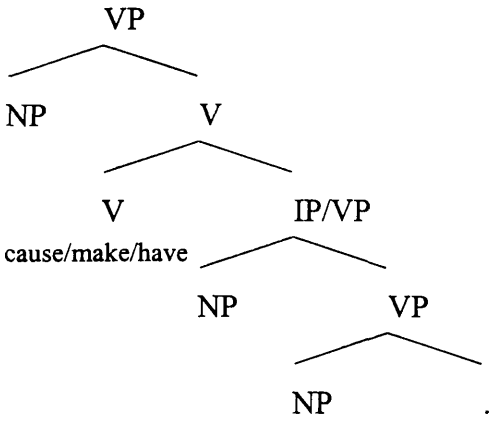
b. I caused John to shovel the snow.

c. I had John shovel the snow.

The degree of involvement in the causation may be different in each case: *make* implies direct involvement, perhaps forcing someone into doing something, while *have* implies an indirect causation.

Analytical causatives have two events in them, as would be expected from their complex nature. Their syntactic structure consists of an upper VP, where the external argument of the causative predicate is generated, and a full VP (or IP):

(3)



(Miyagawa 1997)

The two types of causatives differ also with respect to their interpretation: lexical causatives are often interpreted as *manipulative*, that is, the causer exerts direct (physical) force or is directly and purposely involved in the action that brings about the caused event or state. Analytical causatives are interpreted as *directive*, that is, one event leads to another event, in some way, while the causer may fail to be involved in the action in an unmediated way. Compare the following:

(4) a. I opened the door (LC, manipulative).

b. I made the door open (AC, directive).

The manipulative, lexical causative (4a) is appropriate for describing the most prototypical way of opening the door. With the analytical, directive causative (4b), there must be something unprototypical about the way in which the door opened (for example, if it was locked or stuck and needed a lot of effort and activity to be opened). Using (4b) in a situation in which the speaker simply opened the door would be judged as pragmatically odd.

A further difference between the lexical and analytical causatives is that in the latter the causee may retain its agentivity. Consider the following (from Higginbotham 1997):

(5) a. John sat his guests on the floor on purpose. (unambiguous)

b. John caused her guests to sit on the floor on purpose. (ambiguous)

In (5a) the adverb can only refer to the external causer (John), not to the causee (the guests). In (5b) it can either refer to the causer or to the causee. *On purpose* is an adverb which "seeks" an event - it can be seen from (5) that the lexical causative has only one event, hence only one agent (the causer), while the analytical causative has two events, and, possibly, two agents. [4]

[4] Note that *on purpose* does not necessary indicate the presence of an agent: it may also modify predicates which have no agent, as in *The TV set is there on purpose* (Higginbotham 1997).

4.2 Hebrew causatives

4.2.1 Some basics of Hebrew morphology

Before starting the discussion of Hebrew causatives, some introduction to Hebrew verbal morphology is called for. A well-noted property of Hebrew (and, generally, Semitic) morphology is that verbs cannot appear in their "bare" form. While nouns may be adopted from other languages in their original form, verbs must fit into one of seven available verb forms (*binyanim* cf. Glinert 1989, Aronoff 1994). Verbs consist of (normally triconsonantal) roots, put into a *binyan* form. Throughout the paper, I will adopt the root notation, √abc, to indicate the abstract verbal root, which is *not* a Hebrew word and does not occur independently (this notation is introduced in Pesetsky 1995 for some causative predicates, and extended , in Marantz 1997, for all lexical items in the language). Binyanim themselves, in their abstract form, will be represented by the following (standard) notation, where C stands for consonant:

(6)	a.	CaCaC	(pa'al, qal)
	b.	niCCaC	(nif'al)
	c.	CiCCeC	(pi'el)
	d.	CuCCaC	(pu'al)
	e.	hiCCiC	(hif'il)
	f.	huCCaC	(huf'al)
	g.	hitCCaCeC	(hitpa'el)

To form an actual lexical item, the consonants of the root are substituted for the three abstract slots of the binyan:

(7) a. √lmd, CaCaC ---> lamad (learn)

b. √kns, niCCaC ---> nixnas (enter)

c. √dbr, CiCCeC ---> diber (speak)

Traditional Hebrew grammars often associate specific roles or functions with binyanim. In particular, hiCCiC is often called the causative, hitCaCeC - the reflexive, and CiCCeC - the intensive. In reality, things are more complicated. Except for two truly passive binyanim, CuCCaC and huCCaC (derived, respectively, from CiCCeC and hiCCiC), there is no 1:1 correlation between the binyan and the meaning associated with the verb. The form hitCaCeC is, indeed, reflexive when combined with some roots (e.g. *hitraxec*, wash oneself), but with others it might be unaccusative (e.g. *hit'alef*, faint), or unergative (e.g. *hištameš*, use). The situation is even more complicated with hiCCiC, the form called "causative", whose properties will be discussed in the next section.

4.2.2 hiCCiC as a lexical causative

The first thing to note about hiCCiC forms is that many roots which appear in hiCCiC have no causative meaning of any kind. Among them there are unaccusatives, unergatives, or just basic transitives:

(8) a. unaccusatives:

√xvr ---> hexvir (become pale)

√šmn ---> hišmin (grow fat)

√smk ---> hismik (blush)

b. unergatives:

√mtn	--->	himtin	(wait)
√štn	--->	hištin	(pee)
√txl	--->	hitxil	(begin)

c. transitives:

√šxl	--->	hišxil	(thread)
√šlx	--->	hišlix	(throw away)
√gdr	--->	higdir	(define)

d. verbs with sentential complements:

√btx	--->	hivtiax	(promise)
√?mn	--->	he?emin	(believe)
√skm	--->	hiskim	(agree)

It turns out that the form hiCCiC itself does not automatically imply causation.

There are three *binyanim* which "feed" lexical causativization in Hebrew. The most common form of derivation is from a verb in the CaCaC form:

(9)

a.	√npl	nafal (fall)	hipil (fell)
b.	√škb	šaxav (lie down)	hiškiv (lay down)
c.	√pxd	paxad (be afraid)	hifxid (frighten)

A second group comes from verbs in the niCCaC form:

(10)	a.	√rdm	nirdam (fall asleep)	hirdim (make fall asleep)
	b.	√kšl	nixšal (fail)	hixšil (fail, transitive)
	c.	√rtb	nirtav (become wet)	hirtiv (wet)

Finally, few verbs from the "reflexive" binyan, hitCaCeC, can undergo causativization as well:

(11)	a.	√str	histater (hide oneself)	histir (hide, obstruct)
	b.	√yšb	hityašev (sit down)	hošiv (seat)
	c.	√'šr	hit'ašer (become rich)	he'ešir (enrich)

4.2.3 Constraints on causativization

We have noticed three morphological forms which can form morphological causatives. But are there any constraints on the type of verbs, or events, which may undergo causativization? Three main groups of verbs suggest themselves. The first group consists of predicates which denote being in a state, or having a property. The systematic transition into the hiCCiC pattern specifies putting someone into a state, or acquiring a property:

(12)	**be in a state**	--->	**put someone into a stat**
	(have the property P)		(make someone acquire the property P)
	'acuv (be sad)		he'eciv (sadden)
	gadol (big)		higdil (enlarge)
	katan (small)		hiktin (make small, diminish)
	?adom (red)		he'edim (redden)
	xašux (dark)		hexšix (darken)

The argument added in the causative form is interpreted as the participant which puts the original argument into that state (the one which enlarges, troubles, saddens, etc.), or caused it to acquire its property:

(13) a. Nina 'acuva
Nina sad
'Nina is sad'

b. Edna he'eciva et Nina
Edna saddened OM Nina

The second group includes verbs of change of state:

(14)

undergo a change of state		--->	**bring about a change of state**	
nafal	(fall)		hipil	(fell)
naxat	(land)		hinxit	(land, trans.)
yarad	(go down)		horid	(make go down)
nirdam	(fall asleep)		hirdim	(make fall asleep)
nixnas	(enter)		hixnis	(enter, trans.)

As noted by LRH (1995), the verbs belonging to this group are unaccusatives: their single participant is an internal argument which undergoes some change of state. The causativized form is a transitive predicate (cf. HK 1997a above). The argument added at the process of causativization is the one responsible for that change of state:

(15) a. ha matos naxat
the plane landed

b. ha tayas hinxit et ha matos
the pilot landed OM the plane

The third group consists of verbs denoting actions or activities. These verbs have no causative correlates in English, so I will use the form "make-V" for the causative alternant, as a rough description of its meaning:

(16)

perform an action	--->	**cause to perform an action**
caxak (laugh)		hicxik (make-laugh)
lavaš (dress, put on)		hilbiš (dress, put on, ditransitive)
našam (breathe)		hinšim (make-breathe)
rac (run)		heric (make-run)
kafac (jump)		hikpic (make-jump)
‘avar (pass. intrans.)		he‘evir (pass, trans.)

As with the other two groups, the added argument is interpreted as the causer of the event:

(17)

a.	ha	yeladim	caxaku			
	the	children	laughed			
b.	ha	leycan / seret	hicxik	et	ha	yeladim
	the	clown / movie	make-laugh	OM	the	children

(18)

a.	Nina	kafca					
	Nina	jumped					
b.	ha	xadašot	ha	raot	hikpicu	et	Nina
	the	news	the	bad	make-jump	OM	Nina

`The bad news made Nina jump up`

4.3 The status of causativized unergatives

In this section I will show that the single argument of unergatives is generated internally when a lexical causative is formed. I will first point out some difference in interpretation between lexical and analytical causatives formed from unergatives (4.3.1). I will then show that this is part of a larger phenomenon, of loss of agentivity in the process of lexical causatives formation (4.3.2). Finally I will bring evidence from case marking, dative possessors and idiom-formation which indicate the internal status of that argument in lexical causatives (4.3.3).

4.3.1 Difference in interpretation between lexical and analytic causatives

Note, first, that the causativization process is not automatic. Although there are many activity verbs which causativize, there are many more which do not:

(19)	harag (kill)	*heherig (cause to kill)
	marax (smear)	*himriax (cause to smear)
	patax (open)	*hiftiax (cause (someone) to open)
	šalax (send)	*hišliax (cause (someone) to send)
	haras (destroy)	*heheris (cause to destroy)

Other roots, which are action verbs in CaCaC, have hiCCiC forms whose meaning cannot be predicted from the CaCaC form:

(20)	zarak (throw)	hizrik (inject)
	maca (find)	himci (invent)
	sagar (close)	hisgir (extradite)
	kara (read)	hikri (read aloud)
	zaxar (remember)	hizkir (remind)
	'axal (eat)	he'exil (feed)
	ta'a (be mistaken)	hit'a (mislead)

To mislead is not precisely to cause someone to be mistaken and *remind* does not mean *cause to remember*. The differences between analytical and morphological causatives of these verbs are subtle, and the two may appear identical at first sight. In the following examples, however, the difference between the two becomes clear:

(21) a. ha xadašot ha raot hericu et Nina.
the news the bad make-run OM Nina
le bet-xolim / liknot iton
to hospital / to buy newspaper
'The bad news made Nina run to the hospital / to buy a newspaper'

b. *ha racon lihyot be kosher heric oti
the desire to be in shape made-run me
kol boker
every morning
'The desire to be in good shape made me do some jogging every morning'.

c. ha racon lihyot be kosher garam li
the desire to be in shape caused to me
laruc kol boker
to run every morning
'The desire to be in good shape made me do some jogging every morning'.

The morphological causative of *run* in (21b) is best translated as *put into running* rather than *cause to run*: the runner cannot be interpreted as running out of his own volition. This is not the case with the analytical causative in (21c), in which the runner can be interpreted as initiating the running of his own will. Consider now the lexical causatives of *eat* and *laugh*, where the similar pattern exists:

(22) higišu oxel nora. rak ha racon lihyot
they served food horrible. only the desire to be
menumeset la me'arxim
polite to the hosts
a. *he'exil et Nina
make-eat OM Nina
b. garam le Nina le'exol
caused to Nina eat
`They served horrible food. Only the desire to be polite to her hosts made Nina eat / *made-eat Nina.`

(23) ha mofa haya bixlal lo macxik. rak ha paxad
the show was at all not funny. only the fear
leha'aliv et ha mištatfim
to offend OM the participants
a. *hicxik et Nina
made-laugh OM Nina
b. garam le Nina licxok
caused to Nina to laugh
`The show wasn't funny at all. Only her fear not to offend the participants made Nina laugh / *made-laugh Nina`.

Lexical causatives, unlike analytic causatives, cannot appear in contexts in which the causer is inanimate, and in which the causee is interpreted as acting on his or her own free will. The lexical causatives of *laugh* and *eat* in Hebrew are associated with a manipulative interpretation, which entails direct action on the causer's side. The original agent is interpreted as a tool in the hands of the causer, someone acted upon rather than acting. This is not the case with analytical causatives, where the original

agent of the action verb retains its agentive properties, and can be interpreted as acting on purpose, having volition, etc.

4.3.2 Loss of agentivity in lexical causatives [5]

In this section I show that the formation of lexical causatives in general is associated with loss of agentivity in the causativized predicate. I will discuss forms which are ambiguous between an agentive and non agentive meaning, and show that only the non-agentive meaning is retained under causativization. Next I will discuss idiom formation with causative verbs, which further indicates that the original agent is not an agent under the causativized form. Finally, agent-oriented adverbs indicate that while there may be two agents with analytical causatives, there can be only one with lexical causatives.

4.3.2.1 Agentive meaning lost under causativization

Some motion verbs in Hebrew are ambiguous between an agentive and a non-agentive reading. When a lexical causative is formed from these verbs only the non-agentive reading is retained:

(24) a. ha xom yarad
the temperature went down

b. Nina yarda la martef
Nina went down to the cellar

c. ha ruax horida et ha xom ba xeder
the wind lowered OM the temperature in the room

[5] In accordance with the discussion in chapter three I will take the defining semantic property of agentivity to be intention on the agent's side to perform an action (with unergatives) or bring about a change of state (with transitives).

d. ha maxsor be bira *horid et Nina /
the shortage of beer make-go downOM Nina /
garam le Nina laredet la martef
made to Nina to go down to the cellar

`The shortage of beer *made-go down / made Nina go down to the cellar`.

The lexical causative of *go down* can only be the equivalent of *lower*, not *cause to go down*. In (24d), the shortage of beer is interpreted as something that made Nina decide to go down to the cellar. However, the original agent, in this case Nina, loses its agency, and the result is incoherence if a lexical causative is used. No such incoherence exists with the analytical causatives, in which, I assume there are two predicates, hence two events and two (possible) agents.

4.3.2.2 Idioms: teasing apart lexical and analytical causatives

Recall Marantz's (1984, 1997) observation that the head projecting the agent acts as a boundary for idiomatic meaning. Following this, we would expect that lexical causatives, whose causee loses its agentivity, would be able to participate in idiom formation, while analytical causatives, where the causee is still an agent, would not. This is in fact the case in Hebrew. There are many Hebrew idioms in hiCCiC whose idiomatic meaning disappears once they are replaced with an analytic causative (cf. Harley 1995 for a similar pattern in Japanese causatives). Consider, first, the causativization of *fly*:

(25) a. ha cipor afa / ha afifon af
the bird is flying / the kite is flying
b. Nina heifa afifon / *cipor
Nina flew a kite / a bird

c. heifu et ha oved ha xadaš
they made-fly OM the employee the new
`They fired the new employee.`

d. garmu la oved ha xadaš lauf
they made to the employee the new to fly
`They made the new employee fly.` (no idiomatic meaning)

He'if, the morphological causative, can have the idiomatic meaning of *fire*. The analytic causative, *garam lauf*, cannot have such a meaning. (25d) can only mean that they caused the new employee to fly, literally. The same pattern is maintained with other verbs as well:

(26) a. he'emid oto be mekomo
make-stand him in place-his
`Put him in his place.`

b. garam lo la'amod be mekomo
made to him to stand in place-his
(no idiomatic meaning).

(27) a. he'emid oto al ha raglayim
make-stand him on the feet
`helped him to recover`

b. garam lo la'amod al ha raglayim
made to him to stand on the feet
(no idiomatic meaning)

(28) a. her'a lo
showed to him
`gave him a lesson`

b. garam lo lir'ot
made to him to see
(no idiomatic meaning)

(29) a. her'a lo et ha delet
showed to him OM the door
`sent him away`

b. garam lo lir'ot et ha delet
made to him to see OM the door
(no idiomatic meaning)

4.3.2.3 Adverbs

Recall how lexical and analytical causatives pattern with respect to agent-oriented (or event-oriented) adverbs:

(30) a. Nina sat her guests on the floor on purpose. (unambiguous)
b. Nina caused her guests to sit on the floor on purpose. (ambiguous)

Lexical causatives have only one event (therefore only one agent), while analytical causatives have two events, which gives rise to an ambiguity. The same differences exist in Hebrew with respect to both temporal and manner adverbs:

(31) a. Nina hicxika et Gal leitim krovot / be kavana.
Nina made-laugh OM Gal often / on purpose
(Lexical causative, unambiguous: adverb refers to Nina)

b. Nina garma le Gal licxok leitim krovot / be kavana.
Nina caused to Gal to laugh often / on purpose
(Analytical causative, ambiguous: adverb refers to Nina or to Gal).

4.3.3 Internalization of the external argument

Recall HK (1997a)'s claim that lexical causatives are only formed from unaccusatives, which lack an external argument. Causativization of unergatives in Hebrew thus violates this universal pattern. In this section I show that the external argument of unergatives is generated "internally" when the verbs is causativized. Hebrew differs from English in allowing more verbs to undergo causativization. However, it does not violate the general well-formedness condition, which requires no more than one agent per event.

I will review here three sources of evidence for the internal status of the former agent: case marking, dative possessors and idiom formation.

4.3.3.1 Case marking

The (former) external argument, which was marked with nominative case, is marked with accusative case after causativization, like other objects:

(32) a. Ha yeled axal.
the boy eat-PAST
b. Ha ima he'exila et ha yeled.
the mother made-eat OM the boy

Lexical causatives have only one verb, and therefore only one T. The causee is an argument of the causative verb, and is marked with objective case. Note that with analytical causatives the causee is marked with a dative case:

(33)	ha	ima	garma	la	yeled	le'exol.
	the	mother	caused	to the	boy	to eat

4.3.3.2 Possessive-datives

Possessive datives in Hebrew can only be associated with any VP-internal material, an argument or an adjunct (Borer and Grodzinsky 1986, cf. discussion in chapter one). A possession relation holds between the dative clitic and its c-commanding NP:

(34)	ha	mitriya$_i$	nafla	le	Nina$_i$.
	the	umbrella	fell	to	Nina

`Nina's umbrella fell down`.

With unergatives, a possession relation cannot hold:

(35)	*ha	kelev	axal	le	Nina.
	the	dog	ate	to	Nina

`Nina's dog ate`.

The single argument of *eat*, which is external (=the dog), cannot be co-indexed with a dative possessor (=Nina). Note that when *eat* is causativized, the same argument is able to be bound by the possessor:

(36)	Gal	he'exila	le	Nina$_i$	et	ha	kelev$_i$
	Gal	make-eat	to	Nina	OM	the	dog

`Gal fed/gave food to Nina's dog`.

Note, further, that no such possession relation between *Nina* and *the dog* exists with the analytical causative:

(37)	Gal	garma	la	kelev	le'exol	(*le	Nina).
	Gal	caused	to the	dog	to eat		

To sum up: dative possessors cannot be associated with the argument of an unergative verb (35). When a lexical causative is formed out of an unergative verb, the original agent can be associated with a dative possessor, which indicates that it is not generated externally (36). No possession relation is achieved with the analytical causative.

4.3.3.3 Idioms formed with causativized unergatives

Finally, note that lexical causatives can form idioms (as shown in 4.3.2.2) regardless of whether they formed from unergatives or from other predicates. This shows that the former agent (in the case of unergatives) cannot be generated as an agent on the causative form. Note further that no idiomatic meaning exists with the analytical causative:

(38)	a.	hicxakta		oti.
		you made-laugh		me
		`you're kidding`.		
	b.	garamta	li	licxok.
		you made	to me	laugh
		(no idiomatic meaning)		

(39)	a.	ze	hikpic	oti.
		it	made-jump	me
		`It upset me`.		

b.	ze	garam	li	likpoc.
	it	caused	to me	to jump
	(no idiomatic meaning)			

Let us sum up so far: there seems to be a difference between lexical and analytical causatives formed from unergatives in Hebrew, which has to do with the properties of the participant which is the agent of the basic, non-causative form. This participant may retain its agent properties in the analytic, but not in the lexical causative. Finally, I brought evidence supporting the hypothesis that the argument of causativized unergatives is generated internally (as a direct object) in the lexical causative, but not in the analytical one. This will be used in 4.4.2 below.

4.4 Causativization and event structure

Recall the two main questions raised at the beginning of this chapter:

(i) When is causativization allowed?

(ii) What is the meaning associated with the causative form?

I shall now proceed to discuss these two questions following the evidence accumulated so far. In section 4.4.1 I bring in some basic assumptions about event structure and causativization. I then argue in section 4.4.2 that, once event-structure is considered, the causativization from unergatives in Hebrew is seen to be compatible with standard predictions on allowed causativization. This is extended in 4.4.3 to account for the rare cases of causativization from unergatives in some other languages.

In section 4.4.4 I apply the same event-structure analysis to the question of the meaning of causative. In line with a widespread intuition (Cf. Fodor (1970)) I argue that 'make-X' is not 'Cause to X', with the further claim that, following an event-structure analysis, the two can be seen to be *necessarily* different. [6]

[6] I share this assumption with Higginbotham (1997). My account differs from Higginbotham's in that it takes causativization to be a primarily syntactic process which then affects the semantics of the predicate (while Higginbotham's analysis is purely semantic). I do not think that there is a contradiction between

4.4.1 Basic assumptions

The process of causativization involves a change in both the syntax and the semantics of a predicate: syntactically, an argument is added to the predicate, and serves as the subject of the causative verb. Semantically, the predicate denotes an event which has a causer. It is assumed in all theories of the syntax-lexicon interface that such semantic and syntactic changes are closely related: a change in the number of arguments entails a change in the interpretation of the predicate. The argument which is added during the causativization process is invariably an *originator* (either causer or agent). One of the best established generalizations about the syntax-lexicon interface is that originators are always realized as external arguments. I shall therefore assume that the syntactic change in the causativized verb includes an addition of an argument at spec, *v*P.

Let us now make the (rather traditional) assumption that every predicate denotes (not more than) one event and that every event can have (at most) one originator and one measurer. Such an assumption can be derived from some formulation of the principle of Full Interpretation (cf. Chomsky 1995): an event with two originators or two measurers is uninterpretable. [7]

Let us assume further that events or, more precisely, the building bricks of events, can be combined to form more complex events, through a process such as *event composition* (Pustejovsky 1991, van Hout 1996, LRH 1996 - cf. appendix). The composition process applies freely, subject to some well-formedness conditions. In the framework adopted here this means that arguments can be further introduced by lexical (VP) or functional (*v*P) projections, if this does not violate FI.

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the two - semantic computation has to take place at some stage (probably at LF). Thus any description should have a purely semantic analogue.

[7] This is strongly reminiscent of the theta-criterion, put into an aspectual framework; I take the theta-criterion or any argument-identification criterion to be an interpretative requirement, which falls under FI.

4.4.2 Causativization of Hebrew unergatives explained

Recall the three main types of predicates which undergo causativization in Hebrew:

(40)		**non-causative**	**causative**
	a.	be in a state	put someone into a state
		(have the property P)	(make someone acquire the property P)
	b.	undergo change of state	bring about change of state
	c.	perform an action	make someone perform an action

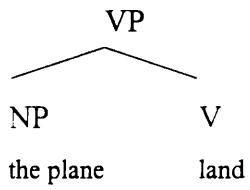
I will start my discussion with the group in (40b), which includes unaccusative predicates, as this is the simplest case. The type of events they describe is change of state, and their single participant is interpreted as the participant which undergoes this change of state. Examples of these are *land*, *sink*, *fall* etc. In English the two forms are morphologically identical. In Hebrew, the causative (transitive) form is in the hiCCiC form, while the intransitive is in CaCaC or niCCaC. [8] Consider (15), which is repeated in (41):

(41)							
	a.	ha	matos	naxat			
		the	plane	landed			
	b.	ha	tayas	hinxit	et	ha	matos
		the	pilot	landed	OM	the	plane

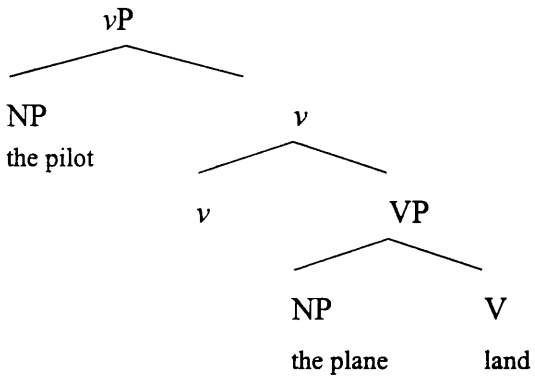
The argument of unaccusative *land* is generated at Spec, VP. Adding an additional specifier, introduced by *v*, results in a well-formed event which has both an originator and a measurer:

[8] Hebrew has another pattern of transitive/intransitive alternations, which is not discussed here: the transitive alternant is CaCaC, and the intransitive - in niCCaC (*break*, *open* and *close* belong to this pattern).

(42) a.

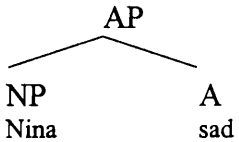


b.



Consider now the verbs in (40a). Adjectives, or states, have no internal temporal structure. They are made of one "chunk": a state, by its definition, does not specify its temporal boundaries (e.g., falling into the state or acquiring a property), but only the property of being in a state (or having a property). I therefore assume that their argument is generated at the specifier of an AP, so that they do not carry any aspectual interpretation, or have a complex event structure: [9]

(43)



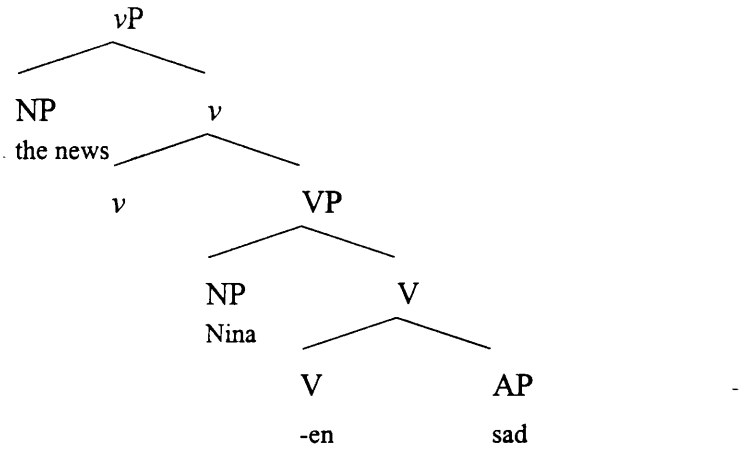
`Nina is sad`.

Causativization involves turning the adjective into a verb: from *sad* into *sadden*. This verb is eventive: the internal argument is now generated at spec, VP, and interpreted not as being in a state, but as undergoing change of state (I will assume that the AP incorporates into the VP as in the HK system). The external argument at spec, *v*P

[9] I assume that the sentence *Nina is sad* is formed through adding a T head to the adjective. See discussion of stative predicates in chapter five, section 5.6.

is interpreted as the originator, which brought about this change of state. Again, the result is a well-formed event:

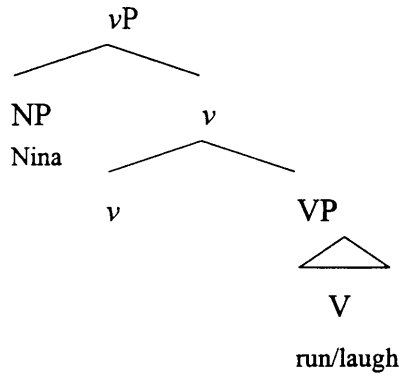
(44)



'The news saddened Nina'.

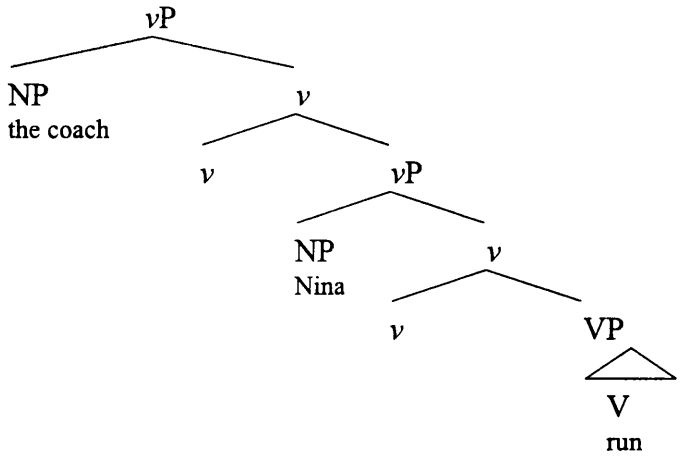
Consider now the last group in (40c). This is the group of causatives derived from unergative verbs. When they have one participant, it is generated at spec,*v*P and interpreted as the originator of the event:

(45)



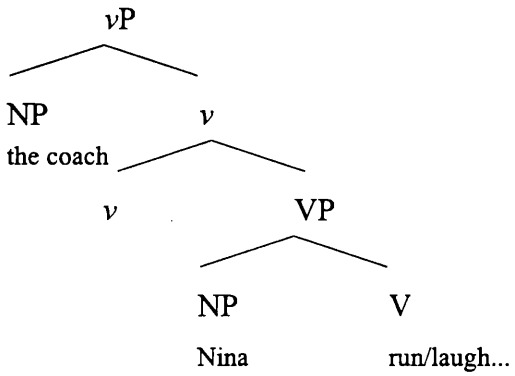
When such verbs are causativized, another originator is added, the causer of the action. According to the rules of event composition, the structure of the causative would be as follows:

(46)



(46) is ill-formed, or uninterpretable: a single predicate cannot have two originators, because this would violate FI (and, syntactically, T can only license one subject position). The only way to causativize an unergative verb is to "push" the original argument further down, and generate it at the other available position, spec VP: [10]

(47)



Put this way, it is not surprising that the argument of unergatives loses its agentivity when causativized. It is interpreted as undergoing change, or put into action. In (47) *Nina* is no longer interpreted as someone who starts running or laughing on her free will, but is put into running by some outside force. We can now see that what makes Hebrew different is the property shown in section 4.3: it allows internalization of an external argument in cases where other languages do not (cf. Borer and Wexler 1987). The formation of lexical causatives in Hebrew applies more freely

[10] This process is referred to by Borer and Wexler (1987) as "internalization" of an argument, following Williams (1981).

than in English. However, the causativization process never violates universal well-formedness rules: in particular, there can be no structure such as (46), which is uninterpretable.

4.4.3 Causativization of unergatives in other languages

We are now in a position to explain why English, Italian and Dutch allow a class of unergative verbs (albeit a very limited one) to form lexical causatives. These verbs include verbs of manner of motion: *run*, *march*, *jump* etc. In all these cases the argument which was formerly external is now generated internally, and interpreted as undergoing change of state. In Dutch and Italian, these verbs alternate between an unergative and an unaccusative interpretation (cf. discussion in chapter one, section 1.5). They are unergative when they appear on their own, but unaccusative when combined with a directional PP (examples from Hoekstra and Mulder 1990):

(48) a. Jan heeft gesprongen
Jan has jumped (unergative, *have* auxiliary)

b. Jan is in de sloot gesprongen
Jan is in the ditch jumped (unaccusative, *be* auxiliary)

(49) a. Gianni ha corso
Gianni has run (unergative, *have* auxiliary)

b. Gianni e corso a casa
Gianni is run home (unaccusative, *be* auxiliary)

A running event can be conceptualized in two ways: it can be construed as an agentive event, in which the participant "does" something, i.e., some running. The event participant is interpreted as an originator in this case, and the running event has no inherent endpoint. But a running event can also be viewed as an event in which the participant is more like a pawn on a chess board, moving on, forming some abstract trajectory. A directional PP (e.g. *to the store*) serves as the endpoint of this trajectory. In

this case the event participant is interpreted as a measurer of the event - running is measured over time, according to the location of the runner on the trajectory and her distance from the final point. It seems that the existence of a directional PP in Dutch and in Italian forces an interpretation of a measured event. In English verbs of motion are accepted as causatives only when combined with such a directional PP, as noted by Levin and Rappaport Hovav (1995):

(50) a. The soldiers marched (to the tents).
b. The general marched the soldiers to the tents.
c. ??The general marched the soldiers.

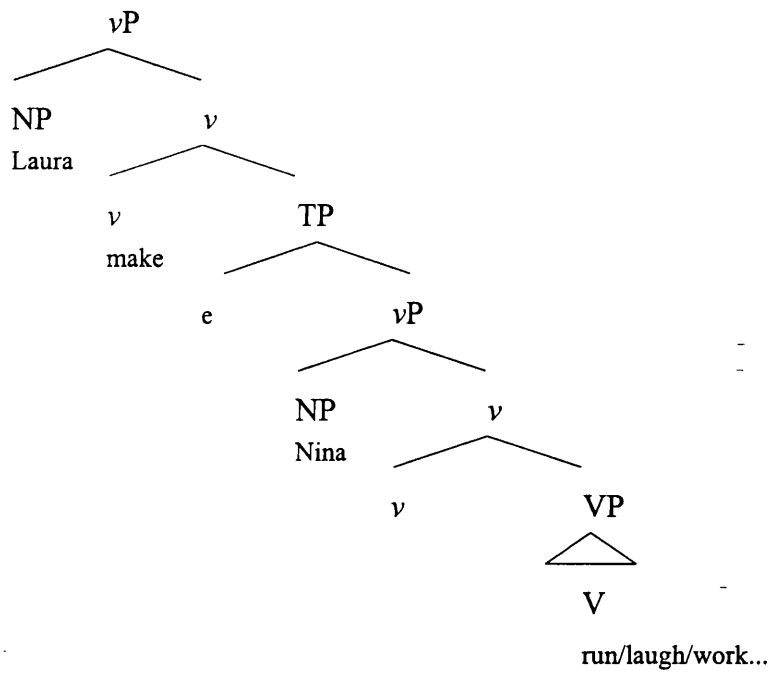
(51) a. The mouse ran (through the maze).
b. We ran the mouse through the maze.
c. *We ran the mouse.

Adding a PP makes it possible to interpret the participant of run as a measurer, and therefore there is no problem to causativize it. Hebrew unergatives are also made more acceptable with a directional PP (cf. 21a), although this varies from one verb to the other.

4.4.4 The interpretation of lexical and analytical causatives

It turns out that lexical causatives of action verbs can never be equivalent in meaning to the analytical causative. Analytical causatives have two predicates, each retaining its event structure. Thus, there can be two agents, one of the causative predicate, and one of the original predicate:

(52)



'Laura made Nina work'.

I argued before that an analytical causative takes a whole I/TP, rather than just a predicate of change of state. The upper *v* may either surface as a distinct lexical item (make, have) or as a causative morpheme (as in Japanese). Because there are two events (and two Ts, which license two agents), there may also be two agents. The originator of the basic verb is not internalized, but is generated as an external argument. It may therefore retain all the properties which are normally associated with agents, such as volition, control over the event, etc. Thus, there are no restrictions on the originator of the causative predicate - it can be either a person, or a force, or some desire or intention of the originator of the main predicate. The incompatibility of lexical causatives with a desire or intention as the originator (cf. 21-22) is explained: the participant which used to be the originator is now generated internally. However, it is asserted that it does act on purpose, or has volition (i.e., originates an event). This incoherence results in a deviant, or uninterpretable sentence. [11]

[11] The restriction on causative forms of unergatives seems to be stronger in English. According to Cruse (1972) and Reinhart (1991), the causer has to be a "real" agent, i.e., animate, acting on purpose, etc., and not some natural force:

(i) *The tear gas / *the downpour marched the soldiers to the tents

Given the difference in their event structure, we should expect that the meanings of lexical and analytical causatives formed from unergatives should differ in a systematic way: the analytic causative consists of two predicates, each retaining its event-structure properties. The lexical causative is a "fusion" of two independent events into one predicate - so one participant has to give up its former role. It is specifically the interpretation this role, the original agent, which distinguishes the two types of causatives. I pointed out in section 4.3 that lexical causatives of action verbs often have idiomatic, or "special" meanings, while the meaning of analytic causatives is completely predictable, that is, *cause to V*. This, too, is expected: morphological causatives of action verbs *cannot* mean *cause to V*; therefore, they either mean "put someone into action", as with make-laugh and make-run, or have some other meaning, related to the basic form, but not automatically derived. Some of these cases are:

(53)

CaCaC		hiCCiC	
kana	(buy, acquire)	hikna	(provide with - only abstract objects)
'avad	(work)	he'evid	(employ, have one work for you)
katav	(write)	hixtiv	(dictate)
šatal	(plant)	hištil	(transplant)
saxar	(rent from...)	hiskir	(rent to...)
ganav	(steal)	higniv	(smuggle in, insert stealthily)
zarak	(throw)	hizrik	(inject)

Let us now compare the causativization of action verbs to that of unaccusatives or states. With unaccusatives and states there is no problem to add an originator to the event. No argument loses its original role and therefore their meanings are, indeed, roughly equivalent to "cause to V" or "cause to be in a state" as in (12) and (14). The difference between the lexical and the analytical form amounts to the degree of involvement of the causer in the action (cf. Comrie 1985, Miyagawa 1997). As noted above, the lexical causative implies a manipulative action on the causer's side and an

immediate connection between the action of the causer and the caused event. The analytical causative implies a "directive" interpretation, or a mere involvement of the causer: "*John broke the stick* implies an immediate connection between John's action and the breaking of the stick, for example he broke it by standing on it...whereas *John caused the stick to break* suggests a rather mediated chain of events, for example, John pushed against the lever that released the weight that fell on the stick..." (Comrie 1985:333). The difference between lexical and analytical causatives, in their degrees of involvement on the causer's part, exists in Hebrew as well:

(54)	a.	Roz	hipila		et	Nina
		the	make-fall		OM	Nina
	b.	Roz	garma	le	Nina	lipol
		Roz	caused	to	Nina	to fall

(54a), but not (54b), implies that the causation is direct, and that Roz was personally and physically involved in Nina's falling. Only (54b) can be felicitously uttered in a situation in which Roz had left a heavy stone on the road the day before, which Nina failed to see as she was running. Similarly, (54b) would sound weird, if not unacceptable, in a situation in which Roz seized Nina and put her down to the floor. [12]

Finally, note that idioms with causativized unaccusatives (as opposed to those formed from unergatives) may appear either in the direct, lexical causative, or in the analytic form. The difference between the two is, again, in the "directness" of the causation:

(55)	a.	ze	hoci	oti	me	ha	kelim
		it	make-exit	me	from	the	vessels
		`It drove me mad`		(direct causation)			

[12] Goldberg (1995) discusses similar data from Chichewa, where causatives can be formed either by a causative predicate and a main verb appearing independently, or by incorporation of the main verb into the causative predicate. In the latter case, causation has to be direct.

b.	ze	garam	li	lacet	me	ha	kelim
	it	made	to me	exit	from	the	vessels
	'It drove me mad'		(indirect causation)				

4.5 Causativization by children

Return now to the main claim of 4.4.2: Hebrew differs from some other languages not in its well-formedness rules (which are given by UG) but in the range of lexical items which allow causativization. This is reflected by children's mastery of causativization. I concentrate on Hebrew and English speaking children. My assumptions then are as follows:

(56) a. UG constraints (including FI) are available to children.
b. Particular lexical items, or lexicalization patterns which are particular to their language, may not be available to children.

Children should expect, therefore, that there should be no verbs with two originators or two measurers. For example, there should be no Hebrew verb of the form **heherig* (cause to kill) or **himriax* (cause to smear), or no English verbs such as *smear, as in (57):

(57) I am going to smear him butter on the bread
(meaning "I am going to make him smear butter on the bread").

Forms such as (57) are not reported for English or Hebrew. When Hebrew speaking children come across a verbal form which has both event participants, originator and measurer, they can expect one of the following:

(58) a. A causative form in hiCCiC does not exist (e.g. **heherig*, cause to kill).

b. The event can be causativized, if the former external argument can be made into a measurer (as with *feed*, *pass*, etc.).

c. A hiCCiC form exists, but it denotes a different event (*zarak*, throw vs. *hizrik*, inject).

If children know the meaning of *zarak* (throw), they can expect that *hizrik*, if it exists, does not denote a throwing event.

On the other hand, when there is no originator there should be no problem to causativize the verb. This is the case of unaccusatives, which have only one participant, a measurer. Unaccusatives are indeed easily causativized by children in both English and Hebrew (Berman and Sagi 1981, Bowerman 1982, Borer and Wexler 1987, Pinker 1989).

However, it is predicted that children might make mistakes whenever non-UG factors are involved: particular lexical items in their language, particular lexicalization patterns or language-particular morphology. I will go through each of these cases.

Children do not know particular lexical items:

The pattern of adding an originator to an unaccusative predicate is allowed by UG, but this does not mean that any unaccusative verb can be causativized. There is a group of unaccusative verbs which do not causativize in English or Hebrew, including, among others, *come*, *arrive* and *faint* (cf. HK 1997b). Other verbs, such as *disappear* or *die*, allow causativization in Hebrew, but not in English. Children may not know whether in their language *disappear* may be causativized. We thus find utterances such as (59) (from Bowerman 1982, in Pinker 1989):

(59) a. C, 7;8: Did they vanish "knock-knock" cups? (Noticing Dixie cups in new pack no longer have knock-knock jokes on them)

b. Scot, 5:0: I disappeared a bear in the back of the car; that's why you can't see him.

c. C, 5;0: ...Eva's gonna die it. She's gonna make it die.

Similarly, children might not know that the causativized form in their language is, in fact, a different lexical item (i.e. pairs such as *rise-raise*, *eat-feed*). This may result in utterances as in (60) (ibid.):

(60) a. C, 3;3: But I can't eat her! (=feed)

b. Rachel, 2;0: Don't eat it me (=feed)

Children do not know language-particular patterns:

Languages might differ in allowing action verbs to have their arguments turned into measurers. I noted in section 4.4.3 that verbs of manner of motion (*run*, *jump*, etc.) are used as transitives in both Hebrew and English. In Hebrew, this pattern is extended to a larger set of verbs: *laugh*, *eat*, *see*, *breathe*, etc. [13]

Children know that in such cases adding an originator is, in principle, allowed, but they do not know if their language allows such "internalization" of an external argument. We thus get an over-generalization of causativization in English (Bowerman 1982):

(61) a. E, 3;0: Don't giggle me. (As D tickles E)

b. E, 5:3: You cried her! (After M drops E's doll and it squeals)

c. E, 5;3: This is aching my legs (As she climbs a long flight of stairs)

[13] Borer and Wexler (1987) argue that internalization of an external argument is marked in English while it is unmarked in Hebrew. In any case, internalization is a *possible* (i.e. allowed by UG) process, which is not used equally by all languages.

d. E, 2;1: I wanta swim that (Holding an object in the air and wiggling it as if it were swimming)

e. C, 3;1: I'm singing him (Pulling string on cow-shaped music box).

f. E, 2;2: I'm talking my birdie (Pulling string on bird-shaped music box).

Note that all the causative forms in (61) involve putting someone into action, rather than making someone or initiate an action (as in analytic causatives). In other words, children know that the lexical causative is associated with a manipulative interpretation (which is, presumably, a universal pattern, derived from the syntactic properties of this form). In (61d) *swim* behaves like *run* in (51b): an activity that can be initiated by an outside cause. When wanting to "swim" the object, the child presumably means an activity in which the object undergoes something, rather than initiates the swimming. As expected, children do not know language-specific patterns, but they do know the universal constraints on causativization and other syntactic operations. Overgeneralization of the causative is exhibited in Hebrew as well: *saxa* (swim) and *calal* (dive) do not have a causative hiCCiC form, but children use them in such a way nonetheless (Borer 1995):

(62) a. ba yam aba masxe oti
in the sea daddy make-swim me

b. at kimat hiclalt oti
you almost make-dive me

Children know verb argument-structure but not verb morphology:

In Hebrew the transition from a non-causative into a causative form involves a change in verb morphology (CaCaC/niCCaC vs. hiCCiC). Children exhibit knowledge of the argument structure associated with causative and non-causative forms, but their mastery of verb morphology is not complete. Borer (1995) presents two types of morphological deficiency. In the first, children use the CaCaC form instead of hiCCiC.

Note, however, that they know the argument structure associated with causatives, and thus include two event participants:

(63) a. ra'iti et ha ciyurim le aba
I saw OM the paintings to daddy
(*ra'iti*, I saw, used for *her'eti*, I showed)

b. zuzi li et ha kise
move-intrans. for me OM the chair
(*zuzi*, move-intrans., for *tazizi*, move-trans.)

The second type of morphological mistakes is overgeneralization of hiCCiC forms for all transitive verbs, including those in CaCaC:

(64) a. lama at madxifa oti kaxa
why you push me this way
(*madxifa* for *doxefet*, push)

b. ze mamaš masrif oti, ha šemeš
it really burns me, the sun
(*masrif* for *soref*, burn)

These forms are hyper-corrections: *hidxif* is used for *daxaf*, as is evident from the argument structure the child uses (one participant who pushes, another who is pushed). It does not mean "cause someone to push".

To sum up: children's use of verbs makes it evident that they are aware of the change in the event structure associated with causativization. Although they are not always familiar with the morphological marking of such changes in their language, with language-specific patterns (internalization) or with particular lexical items, they never violate universal principles such as FI.

Chapter 5: Psych notes - the syntax of psychological predicates

Abstract:

In this chapter I suggest an analysis of psych verbs. Taking Object Experiencer verbs (ObjExp verbs) as my starting point, I will show that they participate in two types of alternations. The first alternation is event-structure based: these verbs can have a stative, eventive or agentive interpretation. Examining data from six languages, I will show that Object Experiencer verbs exhibit specific syntactic properties only on their stative reading. On their agentive reading they behave like standard transitive predicates. This establishes aspectual properties such as stativity and agentivity as crucial to the interface with the syntax.

The second alternation that Object Experiencer verbs participate in is between a psych interpretation and a standard, "physical" interpretation. I will use these data to argue that there is no such thing as an "experiencer" or "a psych construction": (just about) any argument can be interpreted as an experiencer, and just about any verb can have a psych interpretation.

Based on the structural properties of psych verbs in English, French, Hebrew and Irish I will motivate an analysis of psych verbs which is essentially similar to locatives or datives. I will argue that this analysis is more adequate than the unaccusative analysis suggested by Belletti and Rizzi (1988).

My conclusion will be that the syntax is sensitive to aspectual properties, and that it may narrow down the set of event types associated with a certain structure (causation, location change of state etc.). However, it is not sensitive to thematic labels such "experiencer": the interpretation of an argument as an experiencer, a locative or a goal will be determined by the specific properties of the verb and its arguments.

The chapter is organized as follows:

Section 5.1 introduces the three readings of ObjExp verbs.

In section 5.2 I show that all the psych properties disappear once an agentive reading is forced.

Section 5.3 discusses the properties of the eventive reading.

Section 5.4 suggests a syntactic analysis of ObjExp verbs.

Section 5.5 argues against the unaccusative analysis of ObjExp verbs.

Section 5.6 discusses the structure of Subject Experiencer verbs.

In section 5.7 I discuss Italian ObjExp verbs specifically, suggesting a way to account for their syntactic irregularities. This section also discusses the properties of a particular group of Italian ObjExp verbs, the *piacere* group.

Finally, in section 5.8 I point out the consequences of this chapter for the theory of psych verbs and for the syntax-lexicon interface in general.

5.1 The three readings of ObjExp verbs

"Psych verbs" is a name assigned to verbs denoting mental states, such as *frighten, love,* or *surprise*. Such verbs have a participant which experiences a mental state, and which is commonly referred to as an *Experiencer*. As was observed by all linguists who worked on the topic, psych verbs fall into two main syntactic groups. In one group the Experiencer is lexicalized as the subject, and in the other it is lexicalized as the object (see, a.o., Lakoff 1970, Postal 1971, Ruwet 1972, Belletti and Rizzi 1988, Grimshaw 1990, Pesetsky 1995). Following the convenient terminology suggested in Pesetsky (1995) I will refer to these groups as Subj(ect)Exp(eriencer) verbs and Obj(ect)Exp(periencer) verbs:

(1) a. Nina fears / likes / adores this dog. (Subject Experiencer)

b. This dog frightens / disgusts / amuses Nina. (Object Experiencer)

My main concern here is the second group, ObjExp verbs. The starting point of my discussion is twofold: first, the problem of verb alternations, that I have been concerned with throughout this work. My second starting point is Belletti and Rizzi 's 1988 (henceforth B&R) seminal work on psych verbs. B&R note that ObjExp verbs, in

spite of their being seemingly identical to standard transitive verbs, differ from them substantially in their syntactic behaviour. B&R identified several syntactic properties which distinguish ObjExp from standard verbs. To mention just a few: they cannot bind a reflexive clitic, *si*, in Italian; they cannot appear in the causative construction in Italian; they allow "backward binding" of an anaphor contained in their subject; they do not allow extraction from the object in Italian. No such syntactic irregularities exist with SubjExp verbs, which behave like standard transitive verbs.

In what follows I will argue that ObjExp verbs may alternate between three possible semantic readings, which correlate with different syntactic properties. One reading has all "psych effects" associated with it. One reading has none of these properties associated with it. The last reading may pattern with either of the above, depending on the language.

The three potential readings of ObjExp verbs are as follows: a *stative* reading, an *eventive* reading and an *agentive* reading. [1] These three readings are distinguished according to two properties:

1. Whether there is an agent, which deliberately does something in order to bring about a mental state in the experiencer.
2. Whether there exists a change of state (i.e., a change of mental state) in the experiencer.

The agentive reading of ObjExp verbs has both an agent, which acts intentionally, and a change of state in the experiencer. To get an unambiguously agentive reading, I will use adverbs such as "deliberately" or purpose clauses ("in order to..."):

(2) Nina frightened Laura deliberately / to make her go away.

---

[1] See appendix 1 to this chapter for a review on the treatment of the different readings of ObjExp verbs in the literature.

On this reading we have an agent as well as a change of state in the experiencer, who gets frightened.

The eventive reading is achieved when someone or something are causing some change of mental state in the experiencer, but without intending to. On this reading there is a change of state in the experiencer, but no intentional agent. To get an unambiguously eventive reading I will use non-human subjects (e.g. natural forces), or adverbs such as "unintentionally" if the subject is human:

(3) a. Nina frightened Laura unintentionally / accidentally.

b. The explosion / the noise / the thunderstorm frightened Laura.

The stative reading is the typical "psych" reading. It has neither an agent nor any change of mental state in the object. Rather, it involves perception of some stimulus (the subject) by the experiencer (the object). This perception triggers some mental state in the experiencer: [2]

(4) a. John / John's haircut annoys Nina.

b. John / John's behaviour / nuclear war frightened Nina.

c. This problem concerned Nina.

d. Blood sausage disgusts Nina.

There are several characteristics which distinguish this reading from the other two:

1. There is no agent on the stative reading: neither the triggering of the mental state by the stimulus nor the perception of the stimulus by the experiencer is volitional, or under their control. It is something both "can't help" (cf. 4d): it is something inherent to the stimulus, outside its control, that it triggers a particular mental state in the experiencer.

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[2] The stative reading of ObjExp verbs may be paraphrased with an adjective:
(i) Nina finds blood sausage disgusting.

This means that even when the subject is human, it cannot be interpreted as doing something in order to trigger the mental state. It is something *about* it which triggers the mental state. Similarly, the experiencer cannot control the mental state which the stimulus triggers in it. I suggest to compare the situation of the experiencer on the stative reading to someone who is allergic to cats and starts sneezing the moment there is a cat around. Similarly, if blood sausage disgusts Nina, she is at a state of disgust as soon as there is a blood sausage "around" (that is, when it is on her mind: what matters is if she perceives it or thinks of it; it is not necessary that this item physically exists around). [3] [4]

2. On the stative reading there is *no* change of state in the experiencer. [5] Take, for example, *concern*, which is inherently stative: it encodes no single point of change of state, in which the experiencer turns from "unconcerned" into "concerned" (compare this to *surprise*, in which there is a single moment in which surprise seizes the experiencer).

The stative reading thus only asserts that the experiencer is at a specific mental state as long as she perceives the stimulus (or has it on her mind): while Nina thinks of this problem (4c), she is concerned: [6]

(5) perception of stimulus (problem, blood sausage, etc.):_____

mental state (concern, disgust, etc.): .....

---

[3] Presumably, the mental state ceases to exist when the stimulus does not exist anymore. In (4d) Nina stops feeling disgust when she does not think of blood sausage, just like the person who is allergic to cats stops sneezing when the cat leaves the room. However, this is not part of what is asserted on this reading. What is linguistically encoded is that there exists a mental state in the experiencer as long as perception of the stimulus holds.

[4] According to Pylkkänen (1997), this is what distinguishes SubjExp verbs, such as *love* from ObjExp verbs: SubjExp verbs are like I-level predicates; The mental state always holds, independent of perception of the stimulus.

[5] This is evident in Finnish, where the objects are marked with partitive case on the stative reading, but with accusative case on the other two readings. Accusative case in Finnish is sensitive to telicity, or change of state (L. Pylkkänen, p.c.).

[6] This representation of the stative reading is taken from Pylkkänen (1997). I have simplified it somewhat, ignoring the habitual use of the stative reading. The diagram in (5) is just a convenient means to present this reading in a more intuitive way. It is not meant to give a semantic representation of this reading or the temporal intervals involved, etc.

A suggestion for the semantic representation of this reading, in terms of event semantics (cf. Parsons 1990), and based on the one suggested in Pylkkänen (1997), is as follows:

(6) a. Blood sausage disgusts Nina.

b. (Et) [t=now & Ee & [perception (e) & perceiver (e, Nina) and perceived (e, blood sausage) & hold (e, t) & (Ee') & [feel disgusted (e') & experiencer (e', Nina) & stimulus (e', blood sausage) & hold (e', t) & Cause (e, e')]]].

This is the episodic reading of *disgust* (I ignore here the habitual reading): a perception event (of blood sausage by Nina) brings about a mental state of disgust in Nina. Both hold at a time t and are co-extensive.

3. On the non-stative readings the agent/causer have "done their job" as soon as the change of state is achieved. The new state now holds independently of them. On the stative reading, the stimulus has to accompany the mental state constantly in order for it to hold. [7] This entails that on the agentive and eventive reading the stimulus is not part of the event of mental state: it merely brings it about. On the stative reading the stimulus is an inherent part of the event of mental state: the existence of the state depends on it. We can schematise the differences between the stative and non-stative readings as follows: [8]

[7] Compare this to the difference between *throw*-type verbs and *drag*-type verbs: *throw* is like the non-stative reading: an external force starts the motion, but is not involved in it from that moment on, and the object moves independently. With *drag*, on the other hand, it is required that the external force will be constantly present in order for the object to move: if it stops, the object will stop moving.

[8] The term "Stimulus" is used here as a convenient label, which includes the participant which triggers the mental state on all three readings. Its use does not imply that I regard the events denoted by psych verbs in terms of stimulus-response. I am only concerned here with the syntactic effects of these readings.

(7) stative:

a. perception of stimulus: _____stop

mental state: .....stop

non-stative:

b. stimulus mental state

----------> .....(indefinite)

I take here the existence of a state which holds independently to be part of the definition of "change of state". On the stative reading the stimulus induces a state in the experiencer, but this state disappears along with the stimulus. There is thus triggering of a state, but no change of state. Note also that both the stative reading and the non-stative reading are causatives (as is evident by the causative morphology on ObjExp verbs is Finnish, Hebrew and Japanese). The type of causation is different in each case: one is an active causation, causing a change of state, the other is stative causation, or triggering a concomitant state. [9]

4. Although this reading is achieved most easily with bare plurals and imperfective aspect, such as present tense (e.g. *Dogs frighten Nina*), it cannot be reduced to these factors. [10] Note that some verbs allow only the stative, psych reading, regardless of their aspect and the quantificational properties of their subjects: *concern* and *worry* are

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[9] Consider the following example from Finnish (Pylkkänen 1997):
(Context: Yesterday I went to the fish market, but I didn't buy anything. They handled fish with bare hands, and)

se	inho-	tti	minu-a
that-NOM	find disgusting	CAUS	PAST-I-PART

The sentence is stative (see partitive case on the object) and causative (see verb morphology) at the same time. There is no change of state: it means that while I was at the fish market, I was at a state of disgust.

[10] In fact, the order seems to be the other way around: because this reading has no single event (change of state), it is compatible with bare plurals and habitual tense.

such examples. They are always stative, and do not allow the progressive, or an agentive reading forced by a purpose clause:

(8) a. *Nina is concerning me.

b. Nina concerned Laura (*in order to draw her attention).

Furthermore, *concern* remains stative in all tenses and aspects. With perfective aspect, such as *This problem concerned me*, the perfect tense implies that the problem concerns me no more, but not that there was a single point in the past at which I became concerned.

On the other hand, there are ObjExp verbs such as *surprise*, which are hard to construe as stative. They inherently encode a change of state in the experiencer. Finally, some verbs, such as *frighten*, allow all three readings.

To sum up, here are the three readings of ObjExp verbs, and their properties:

(9)	**intentional agent**	**change of state in the object**
agentive reading	+	+
eventive reading	-	+
stative reading (psych reading)	-	-

In what follows I will argue that these readings also differ syntactically. In particular, all the properties attributed to ObjExp verbs exist with the stative reading, the typical "psych" reading, nut none of them exists with the agentive one, in which the predicate behaves like a normal transitive agentive predicate:

(10)	stative reading:	agentive reading:
	all psych properties	no psych properties

In the following section I will go through the syntactic phenomena which B&R (1988) bring up, and show that they only hold for the stative reading, not for the agentive one.[11]

5.2 Teasing apart the agentive vs. the stative reading

5.2.1 Reflexivization through cliticization

As argued by B&R (1988), ObjExp verbs, unlike standard transitives, cannot bind an anaphoric clitic in Italian:

(11)	a.	Gianni	si	lava.
		Gianni	self	washes
	b.	*Gianni	si	preoccupa. [12]
		Gianni	self	worries

B&R note that inability to bind a reflexive clitic is shared by all verbs with no external argument, including passives, unaccusatives and raising verbs:

(12)	a.	*Gianni	si	è stato	affidato.	
		Gianni	refl.	was	entrusted	
	b.	*Gianni	si	sembra	simpatico.	
		Gianni	refl	seem	nice	(B&R1988:295)
	c.	*Gianni	si	è	arrabiato.	
		Gianni	refl	was	angered	

[11] I will concentrate on reflexivization, causativization and extraction from the object, while leaving aside arbitrary *pro* and passives (see Pesetsky 1995 for some evidence against the relevance of these tests).

[12] Italian *si* has several functions: reflexive, passive, impersonal and unaccusative, or inchoative. It is important to note that (11b) is OK as an inchoative, that is, *Gianni gets worried*, or as an activity, *Gianni worries*. What it cannot mean is, *Gianni worries himself*, that is, Gianni is the cause of his own worries.

The conclusion B&R draw is that ObjExp verbs are unaccusatives (their subject is derived, generated at the object position; See section 5.5 for discussion of this claim).

Suppose that reflexivity is associated with the existence of an agent, or an external argument (Reinhart 1996, cf. chapter three). The reflexive marker thus marks it that the agent performs the action on herself. It is not surprising, thus, that the reflexive reading is blocked only in cases in which the verb is stative. If we can force an agentive reading on the verb, in which the subject actually aims at frightening, or does something in order to frighten, a reflexive reading is allowed:

(13) a. ??Gianni si spaventa. (on the reflexive reading)
Gianni self frightens

b. Gli studenti si spaventano prima degli esami per indursi a studiare di piu.
`The students frighten themselves before exams in order to urge themselves to study harder`.

(13a), which is the stative reading of *frighten*, is strongly marginal or ungrammatical. (13b), which is unambiguously agentive, is grammatical. The same holds for other verbs which may take an agentive reading, such as *divertirsi*:

(14) a. ??Gianni si diverte.
Gianni si amuses

b. Gianni si diverte facendosi le bocacci allo specchio. [13]
G. amuses himself by making funny faces in the mirror.

If reflexivity is indeed agent-oriented, then this pattern is expected: on the stative reading there is no external argument, and therefore the reflexive reading is not

[13] Some speakers find it hard to accept *si spaventano* and *si diverte*, and prefer to use *cercano di spaventarsi / divertirsi* (try to frighten / amuse themselves) instead. In this case, the agentive reading is totally unambiguous.

available. On the agentive reading, the subject is base-generated at the canonical agent position (spec of the upper *v*), and the reflexive reading is allowed.

5.2.2 The Causative construction

It is an established observation in Italian that derived subjects cannot be embedded in a causative construction (Burzio 1986). B&R (1988) point out that ObjExp predicates cannot be embedded in this construction, thus providing further indication for the hypothesis that they lack an external argument:

(15) *Questo lo ha fatto preoccupare /commuovere/attrarre ancora di più a Mario
`This made Mario worry / move / attract him even more`.

Note, now, that if an agentive reading is forced ObjExp verbs can be appear in this construction with no difficulty:

(16) Gli ho fatto spaventare il candidato per farlo lavorare di piú.
`I made him frighten the candidate$_i$ to make him$_i$ work harder.`

The rationale clause in (16) forces an unambiguously agentive reading: the frightener intended to frighten. In accordance with the pattern exhibited so far, psych verbs are OK with this construction on their agentive reading.

The data presented so far indicate that the subjects of ObjExp verbs are generated in different positions on the stative and agentive readings. On the agentive reading the subject is generated externally and therefore patterns with standard agentive subjects. On the stative reading it is generated at a non-external position, and therefore patterns with passives, unaccusatives and other verbs which lack an external argument. I will now turn to examine the status of the object of ObjExp verbs.

5.2.3 Extraction from the object

B&R (1988) argue that the objects of ObjExp verbs are not canonical objects. They show that these objects, unlike standard objects, do not allow extraction out of them. This contrasts with the group of SubjExp verbs, where extraction from the object is allowed:

(17)	a.	La ragazza	di cui	Gianni	teme	il	padre		
		the girl	of which	Gianni	fears	the	father		(SubjExp)
	b.	*La ragazza	di cui	Gianni	preoccupa	il	padre		
		the girl	of which	Gianni	worries	the	father		(ObjExp)

If an agentive reading is forced extraction from the object is allowed:

(18) La ragazza di cui Gianni ha divertito / impressionato / spaventato i genitori perchè gliela facessero sposare.

`The girl whose parents G. amused / impressed / frightened so that they will allow him to marry her.`

Introducing an agent does not affect only the properties of the subject, but also those of the object: from a non-canonical object it becomes transparent to extraction, like standard objects.

5.2.4 An intermediate summary

The data so far indicate that the agentive and the stative readings have both their subjects and their objects generated at different positions. To put this schematically:

(19)	**stative reading**	**agentive reading**
1.	no external argument	external argument
2.	non-canonical object	canonical object
3.	psych-effects	no psych effects

The pattern in (19) is strongly reminiscent of Burzio's (1986) generalization: when there is an external argument (or rather, an agent), there is also a canonical object. When there is no agent, there is a "fake" object. Recall now (9), repeated here:

(20)	**intentional agent**	**change of state in the object**
agentive reading	+	+
eventive reading	-	+
stative reading (psych reading)	-	-

There is a correlation between semantic/aspectual properties of the predicate and its syntactic realization: when its arguments are canonical event participant (i.e., it has both an agent and change of state) it also has canonical subject and object positions. When it has neither an agent nor change of state, it also does not have canonical subject and object.

What happens on the eventive reading, which is "halfway" between these two extremes?

5.3 The eventive reading

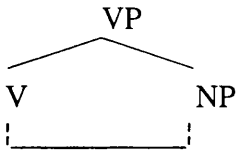
Like the agentive reading, the eventive reading has an object which undergoes a change of state. However, like the stative reading it lacks an intentional agent: the change of state that the object undergoes is caused by some force which happened to, but did not intend to bring it about. Following the discussion in chapter three I will call

this participant a causer, to distinguish it from an agent, which has intention (cf. Grimshaw 1990, Davis and Demirdache 1995, LRH 1995, Reinhart 1996). My conclusions concerning the subject and object positions of the eventive reading will be the following: the subject is an external argument. The object may pattern with that of the agentive reading or with that of the stative reading. I will review here six languages, three of which have a canonical object on the eventive reading, and three - a non-canonical one. [14]

5.3.1 The subject position of the eventive reading

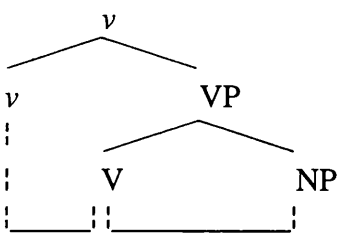
Following the discussion in chapter three I will assume here that both agents and causers occupy the spec, *v*P position. Recall that the difference between agents and causers is encoded in the way in which they are related to the event at the lower VP: a verb which requires an agent selects for a complement and for the immediate superordinate head, while a verb which allows for a causer only selects for a complement:

(21) a.



break a glass

b.



paint the wall

An agent is a convenient name for an argument generated at the specifier of a *v* which is selected by the verb. By this we capture the fact that the presence of the agent is obligatory (no intransitive alternant for agent predicates), and that it is interpreted as responsible both for its own action and for the change of state it brings about. Verbs which take a causer are essentially intransitives, which may be further transitivized (HK 1997a). The causer is the argument generated at the spec of a *v* which is not selected by

[14] Some of the data in this section were already mentioned in chapter three.

the verb, but is added during the process of transitivization. This explains why causers are optional, and why they seem to be more "loosely" connected to the lower VP (cf. chapter three, and the behaviour of agents vs. causers with respect to adverbs, reanalysis etc.).

If causers and agents differ with respect to their relation with the lower VP, we should expect to find the differences between them marked on the objects. This prediction is, in fact, born out.

5.3.2 The objects of the eventive reading

I will now look at the objects of ObjExp verbs in six languages: in three of them (English, Italian and Finnish) the objects of the eventive reading are indistinct from those of the agentive reading,. In the other three (Spanish, Greek and Hebrew), on the other hand, there exists a difference between the objects of the agentive and eventive reading.

5.3.2.1 canonical objects: English, Italian, Finnish

English secondary predicates [15]

English object secondary predicates (OSP) are indicators of direct object positions: it is possible to assign secondary predicates to direct objects in English, but not to indirect objects or objects of prepositions:

(22) a. I ate the meat$_i$ raw$_i$.

b. I met Mary$_i$ drunk$_i$.

c. *I gave money to John$_i$ drunk$_i$.

d. *I put the book on the table$_i$ clean$_i$.

[15] The data and the observations in this section are given by B. Bruening (p.c.).

ObjExp verbs in English may take an OSP on their agentive reading (23a); on their stative reading OSP is impossible, which suggests that the object in this case behaves like an object of a preposition (23b):

(23) a. John frightens tourists$_i$ naked$_i$ in their hotel room just for kicks. (agentive)

b.*John/voyeurism frightens Mary$_i$ naked$_i$. (stative)

On the eventive reading OSP is allowed:

(24) John unintentionally frightened Mary$_i$ naked$_i$ in her room, when he got in, thinking there was no one there.

(24) indicates that the object of the eventive reading patterns with that of the agentive reading, i.e., it is a "real" object.

Extraction from the object in Italian

Recall the data from section 5.2.3 and the contrast between extraction from the object of the stative reading in Italian (ungrammatical) and the agentive one (grammatical):

(25)	a.	*La ragazza	di cui	Gianni	preoccupa	il padre
		the girl	of which	Gianni	worries	the father

b. La ragazza di cui Gianni ha divertito / impressionato / spaventato i genitori perchè gliela facessero sposare.

`The girl of which G. amused / impressed / frightened the parents, so that they will allow him to marry her.`

On the eventive reading extraction is allowed:

(26) La ragazza di cui Gianni ha spaventato il padre senza farlo apposta
`The girl of which John frightened the father unintentionally`.

The eventive reading in Italian thus patterns with the agentive one, in having a canonical object.

Object case marking in Finnish

Objects in Finnish may be marked either with accusative or with partitive case. The case marking of objects is sensitive to change of state (or telicity): objects undergoing change of state are marked with accusative case, while all other objects are marked with partitive. It is not surprising, then, that both the objects of the eventive and the agentive reading are marked with accusative case, while those of the stative reading are marked with partitive case: [16]

(27) a. Uutiset raivostu-tta-vat Matti-a.
news-NOM furious-CAUS1-3pl Matti-PAR
`The news make Matti (become) furious`.

b. Uutiset raivostu-tti-vat Matti-n.
news-NOM furious-CAUS1-past-3pl Matti-ACC
`The news made Matti (become) furious`. (Pylkkänen p.c.)

Note that *anger* is marked with the causative morpheme -tta in Finnish on both its stative and eventive readings. Causation is taken to be stative (mental state dependent

[16] Unlike English and Italian, where a number of verbs may alternate between the three readings, Finnish ObjExp verbs are associated with a specific, grammaticalized case: *disgust* only takes partitive case (it is impossible to get an agentive reading of this verb, as in *I disgusted her on purpose, to make her go away*), while *surprise* only takes accusative case. Few verbs, like *anger* above, allow both a stative and an eventive reading, which differ in their object case marking.
I ignore here more complex instances of objective case marking in Finnish, such as effects of habituality, etc.

on perception) in (27a), while in (27b) there is a real change of state in the experiencer, expressed through accusative case marking on it.

The data from English, Italian and Finnish are summarized in (28):

(28)	**external subject**	**canonical object**
agentive reading	+	+
eventive reading	+	+
stative reading	-	-

In English, Italian and Finnish the agentive and eventive readings are structurally indistinct. If we looked only at these three languages, we would assume that the syntax is only sensitive to the stative vs. non-stative reading. In the next sub-section I will show that in some languages the agentive and eventive readings differ syntactically with respect to their object position.

5.3.2.2 Non-canonical objects: Spanish, Greek, Hebrew

Recall the data from ObjExp case marking which were discussed in chapter three (section 3.2). I used them then to distinguish grammatically agents and causers. Now that I presented a finer-grained analysis of ObjExp verbs, we can use these data to distinguish the eventive reading from the agentive one.

Object case marking in Spanish.

Recall that animate objects in Spanish (both accusative and dative) are marked with the dative case, realized as the preposition *a*. Accusative and dative are morphologically distinct only in their pronoun forms, or, alternatively, in contexts where clitic doubling is required. The objects of ObjExp verbs in Spanish are marked with dative on both the stative and the eventive reading:

(29) a. el niño / la musica le molestó.
the boy / the music her-DAT bothered (dative pronoun)

b. el niño / la musica le molestó a Maria.
the boy / the music her-DAT bothered OM Mary
(clitic doubling)

Only on the *agentive* reading the object is marked with accusative case:

(30) a. el niño la molestó.
the boy her (acc) bothered (accusative pronoun)

b. el niño Ø molestó a Maria.
the boy bothered OM Mary (no clitic doubling)

Recall that (30) is interpreted as unambiguously agentive: the boy *intended* to bother. The interpretation of the agent as intentional is crucial here. Accusative case on the object is appropriate only to describe intentional bothering. If the mental state was caused incidentally, or by a non-animate force, the object would be marked with a dative case. In other words, the object of the eventive reading in Spanish patterns with that of the stative reading.

Recall also that in contexts which imply agentivity, such as purpose clauses and imperatives, accusative case becomes obligatory:

(31) a. Lo hice para molestar*la/lo* (*le).
it I did in order to bother her/him (acc.) (dat)
`I did it in order to bother him/her (acc/*dat)`.

b. No la/lo/ /*le molestes.
Don't her/him (acc.) her (dat) bother
`Don't bother him/her (acc/*dat)`.

Finally, consider the case of *interest*: this verb only allows dative case on its standard, two-argumental reading. The interpretation of this is stative. This verb may also be used as a causative: *get someone interested in something*. On this reading only accusative case is allowed:

(32) a. Juan le (dat.) / *la(acc.) interesa a Maria.
John interests Maria (M. is interested in J., M. finds J. interesting).

b. Juan la (acc.) / *le (dat.) interesó en la musica. [17]
John got her interested in music.

(32a) and (32b) differ both with respect to the agentivity of the external argument and to the change of state in the object. However, the case marking of the object is related to the former: (32b) is only appropriate if John tried to get her interested intentionally. It cannot mean that John, or John's presence, inspired her, and as a result of this she started to be interested in music.

To sum up: the object case marking (and presumably the structural position) in Spanish ObjExp verbs depends not on the change of state in the experiencer, but on the agentivity of the subject. [18]

Clitic doubling in Modern Greek.

Recall the data from Greek: the objects of ObjExp verbs are obligatorily doubled when the subject is inanimate:

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[17] Interestingly, this violates Pesetsky's (1995) Target / Subject Matter (T/SM) restriction, which forbids both roles to appear with the same verb, as in (i):
(i) *The article at *The Times* angered Bill at the government.

[18] There exists some contrast between verbs which are strongly eventive, such as *surprise*, and those which favour a stative reading:
(i) La explosion le(dat) /??la(acc) sorpresdió.
the explosion her(dat) her (acc) surprised
(ii) La explosion le /*la molestó.
the explosion her (dat)/her (acc.) bothered
When the external argument is clearly non-agentive, accusative case marking is marginal with *surprise*, and ungrammatical with *bother*. Both favour dative case.

(33)	ta	epipla	*/?(ton)	enoxlum	ton	Petro.
	the	furniture	cl-acc.	bother	the(acc.)	Peter

Doubling is required by datives and prepositional objects, which indicates that the objects of ObjExp verbs are in the same position as indirect objects, in spite of their accusative case.

Recall now that when doubling is optional, with human subjects, the sentence is unambiguously agentive:

(34)	i	Maria	enoxli	ton	Petro.
	the	Maria	bothers	the (acc.)	Peter

(34) is interpreted as *agentive*: Mary bothered Peter on purpose. Doubling would be required if an adverb such as *accidentally* would be used. Doubling is also needed (or much favoured) in other instances of the eventive reading (i.e., *the thunderstorm frightened/surprised Mary*). To sum up: clitic doubling in Greek teases apart the agentive reading from the two non-agentive ones.

Object resumptive pronouns in Hebrew relative clauses

Recall that deletion of the resumptive pronoun in Hebrew relatives is allowed with all objects. With relatives formed from ObjExp verbs on their stative and eventive reading deletion is impossible:

(35)	a.	ha	yalda	she	ha	musica	me'acbenet	*(ota).
		the	girl	that	the	music	annoys	her
		(stative)						

b.	ha	yalda	she	ha	ra'ash	hifxid	*/??(ota)
	the	girl	that	the	noise	frightened	her
	(eventive)						

Deletion is allowed only on the agentive reading:

(36)	a.	ha	yalda	she	Nina	icbena	Ø
		the	girl	that	Nina	annoyed	(only agentive)
	b.	ha	yalda	she	Nina	hifxida	Ø
		the	girl	that	Nina	frightened	(only agentive)

As with the Greek examples, the sentences in (36) are unambiguous: they only have the agentive reading, on which Nina is acting on purpose. On the eventive and stative readings the object of the ObjExp behaves like an indirect object or an object of a preposition, while on the agentive reading it behaves like a canonical object.

The pattern in Spanish, Greek and Hebrew is summarized in (37):

(37)	**external argument**	**canonical object**
agentive	+	+
eventive	+	-
stative	-	-

In these languages the eventive reading shares the subject position with the agentive reading, and the object position with the stative reading.

The data from all six languages indicate this: languages differ as for the property which determines the object position on the eventive reading. In some languages (the English type) the crucial property is change of state (stative vs. non-stative), while in others (the Spanish type) the determining property is agent intention (or agent vs. causer).

Recall that on the agentive reading there is also a change of state in the object. [19] The Spanish-type languages are a subset of the English-type languages. They force stronger requirements for an ObjExp verb to have a canonical object: not only have a change of state, but also an agent. The correlation between semantic properties and object positions across languages are summarized in (38):

(38) a. English, Italian, Finnish:

	intentional agent		change of state in the object
agentive reading	+		+
eventive reading	-	canonical object	+
stative reading	-	non-canonical object	-

b. Spanish, Greek, Hebrew:

	intentional agent		change of state in the object
agentive reading	+	canonical object	+
eventive reading	-	non-canonical object	+
stative reading (psych reading)	-		-

Finally, consider the overall pattern of syntactic behaviour of ObjExp verbs that emerges from the data reviewed so far:

[19] One could ask if there is a fourth reading, in which an agent aims at triggering a mental state, but no such change of state (or state at all) exists in the experiencer. I believe such verbs exists, but they are not psych verbs, that is, not verbs of mental state. One such verb is *flatter*, as in (i):
(i) He flattered me a lot (but I didn't feel flattered).
flatter has no experiencer on this reading. The type of event it denotes is an activity. I think that having an argument which is at a certain mental state is necessary for a verb to be considered a psych verb.

(39)	**stative reading:**	**eventive reading**	**agentive reading:**
a.	all psych properties exist (universally)	some psych properties (depending on the language)	no psych properties exist (universally)
b.	subject: internal	subject: external	subject: external
c.	object: non-canonical	object: canonical or non canonical (depending on the language)	object: canonical

Note that the two extreme cases, in which both properties are present (agentive) or absent (stative), behave in a similar way in all languages. The only place where variation occurs is in the eventive reading.

5.4 The syntax of ObjExp verbs

In this section I will suggest a syntactic analysis of ObjExp verbs based on the structure of locatives and datives. I will start by discussing *non-incorporated* ObjExp forms. These forms will shed some light on the structure of ObjExp verbs in general. I will then argue that ObjExp verbs are generated within a VP-shell whose upper V projection may either be functional, *v*, in the non-stative readings, or a non-functional, V, on the stative reading. I will show that the non-functional VP-shell is required for several more verbs except stative ObjExp verbs.

5.4.1 Incorporated and non-incorporated ObjExp verbs

In many languages ObjExp predicates are not single verbs. Rather, they are formed out of a (light) verb with a noun or an adjective as its complement. Both types of ObjExp predicates exist in French:

(40) a. enrager (anger)

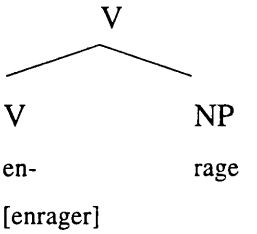
b. mettre en colère (lit.: put at anger)

(41) a. attrister (sadden)

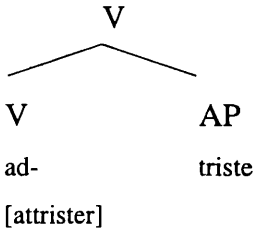
b. rendre triste (lit.: turn/make sad)

Following Bouchard (1995), I will refer to forms such as (40a) and (41a) as *incorporated* forms: a noun (*anger*) or an adjective (*sad*) has incorporated into a verb (lexically null, possibly containing some prepositional element), to form a lexical item which is pronounced like "anger":

(42) a.



b.



The forms in (40b) and (41b) are non-incorporated: the distinction between the verb (*mettre*, *rendre*) and its nominal or adjectival complement are clear.
Consider now some incorporated and non-incorporated forms in English:

(43) a. incorporated: *frighten*, *sadden*, *rejoice*, *gladden*

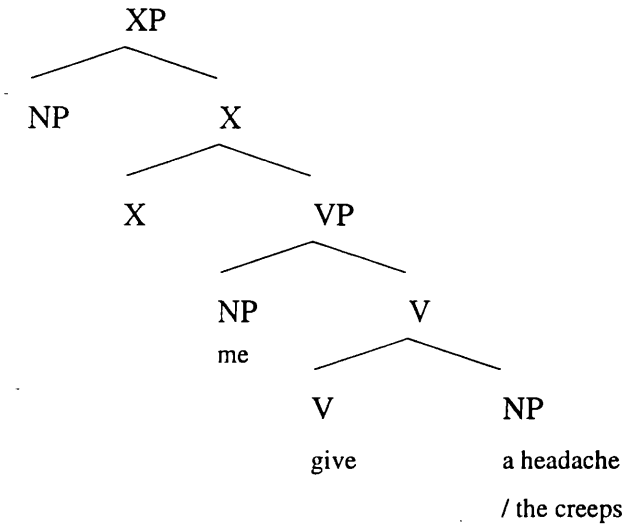
b. non-incorporated: *take fright / offence*, *give a headache / concern*, *turn sad.*

I assume that incorporated and non-incorporated forms share the same event structure and syntactic structure. They differ only with respect to the morphological spell-out of their lexical items. Therefore, non incorporated forms can give us an idea about the structure of ObjExp verbs in general. Non-incorporated forms of ObjExp verbs belong to three general types:

1. locative-like (*mettre en colère*)
2. dative-like (*give a headache*).
3. causatives (*faire peur*, *make angry/sad/happy*).

All these forms have three arguments: a giver/locator/causer, a givee/locatum/causee and a located/given object. Let us start with non-incorporated *give*-type forms. I suggest that their structure is as follows:

(44)



`This gives me a headache/gives me the creeps`.

The structure is identical to that of standard *give*, as in *John gave Mary a book.* The argument at spec, X is the giver. The NP at the spec of the upper VP is the indirect object, and that at the spec of the lower NP is the direct argument.

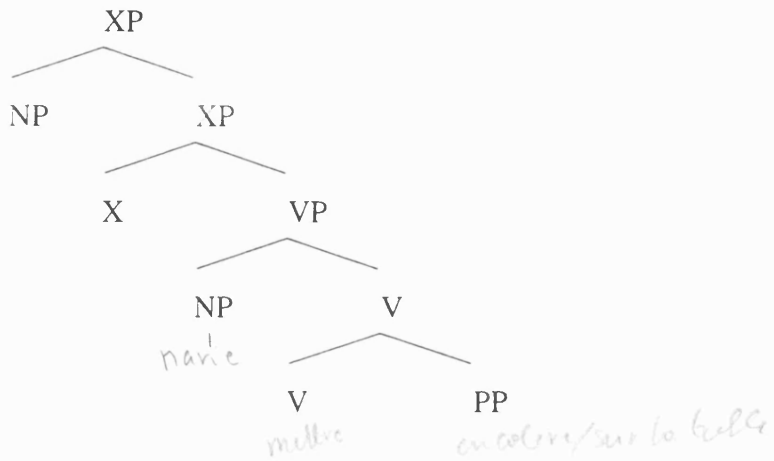
The indirect object in (44) is unspecified for thematic properties of a goal or an experiencer. It is merely a syntactic position which can accommodate several dative marked elements (see McGinnis 1997 for similar evidence from Georgian). The interpretation of the indirect object as a goal or an experiencer will be determined by the combination of the verb and its arguments:

(45) a. give (NP, a headache) --> NP interpreted as an experiencer.

b. give (NP, a book) --> NP interpreted as a goal.

Consider, next, the structure of locative-type ObjExp constructions:

(46)



`Paul a mis Marie en colère`. `Paul a mis un livre sur la table`.

The direct object is at the spec of V, while the locative is its complement. The interpretation of the direct object as an experiencer or a theme will depend both on the features of this NP (to be an experiencer it has to be animate) and the properties of the other arguments:

(47) a. put (NP, P, anger) --> NP is interpreted as an experiencer.

b. put (NP, P, table) --> NP is interpreted as a theme.

In (46) the experiencer is the "stuff" which is being located, and the mental state is the container, or the location, into which it is put. The order could also be the other way around; the experiencer can be the container into which the mental state is "poured":

(48) hu hipil paxad / shiamum al ha kahal.
he dropped fright / boredom on the audience
`He frightened / bored the audience` (Hebrew)

(49) Chùr e eagal orm.

put he fear on me (SGaelic; D. Adger, p.c.)

The experiencer can either be the "stuff" which is put into the container of mental state, or it can be the container itself, where the "stuff" of mental state is put. This is reminiscent of the locative alternation, expressed by verbs such as *load*. The two options correspond to something like (50):

(50) a. This loaded fear/boredom/sadness on Nina.

b. This loaded Nina with boredom/sadness.

The two forms often co-exist within the same language:

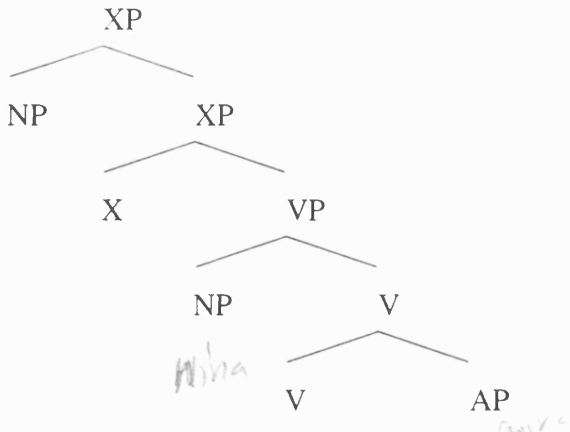
(51) a. ze mile oti be za'am / paxad / ecev.
this filled me with rage / fear / sadness
(Exp. container, mental state "stuff")

b. ze hixnis oti le xarada.
this entered me into anxiety
(Exp. "stuff", mental state container) (Hebrew)

It turns out that the category "experiencer", although it has some interpretive consequences, seems to be structurally indistinct from themes, goals or locations. Almost any argument position - direct object, indirect object, or a PP (with the exception of external arguments) may be interpreted as an experiencer, depending on the properties of the verb and its arguments. In section 5.4.5 I will discuss in more detail the conditions under which a verb is interpreted as a psych verb.

Finally, consider the structure of causative ObjExp forms:

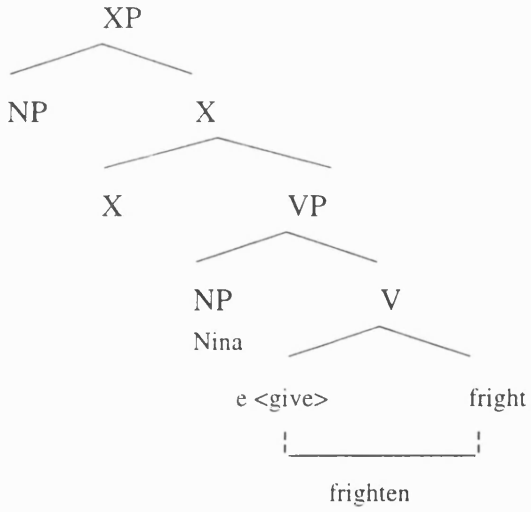
(52)



`Paul made Nina angry`. `Paul rend Marie triste`.

incorporated ObjExp forms have the same structure as the non-incorporated ones. The only difference is that the noun or the adjective form a complex with the (empty) verb, and the result is a lexical item which is pronounced as a single word:

(53)



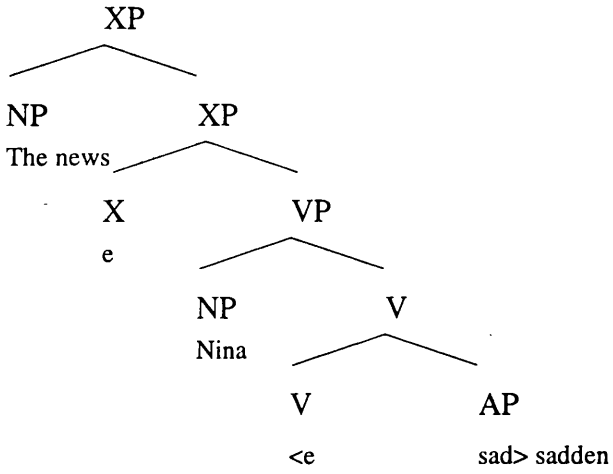
The empty verb projects a structure similar to *give*, that is, ditransitive. The verb and its direct internal argument are reanalysed as a single verb, *frighten*. [20] Many other

[20] I do not assume here any semantic decomposition of *frighten* into *give fright* (or *cause to be frightened*) at some level of Conceptual Structure. The syntax and morphology of these verbs provide a strong argument in favour of an incorporation analysis, as suggested by Baker (1988), HK (1997a). With HK (1997), I assume that this process takes place during the syntactic derivation, rather than in the lexicon.

English ObjExp verbs are formed in a similar way, and many of them are morphologically related, or even identical to a noun: *concern*, *worry*, *disgust*, *distress*, *anger*, etc.

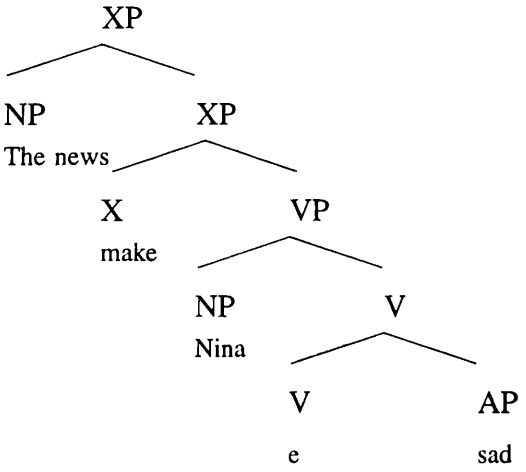
Incorporated causative forms, such as *sadden*, *sicken*, *annoy*, *amuse*, are formed through a reanalysis of an adjective and a verb into a complex, causative predicate:

(54) a. incorporated:



`The news saddened Nina`.

b. non-incorporated:



`The news made Nina sad`.

Many linguists argued that all ObjExp verbs are derived from an adjectival predicate through an affixation of a causative morpheme (cf. Pesetsky 1995). The fact that in

many languages ObjExp verbs often carry causative morphology (Finnish, Japanese, Hebrew) could serve as an argument for this. However, there is also plenty of evidence that ObjExp verbs are derived through noun-reanalysis. Consider the following example from Hebrew:

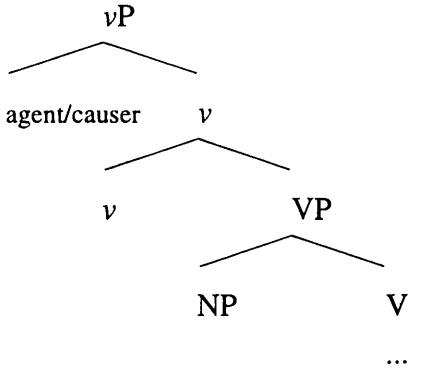
(55) a. ze he'eciv oti.
this saddened me (acc.)
b. ze hesev li ecev.
this caused to me sadness

(55a) is a morphological causative: the verb appears in the causative *binyan*, and takes a direct object. (55b) is an analytical causative: it has an overt noun, *sadness*, which is accusative marked. The entity to which sadness is caused (i.e., the experiencer, or causee), is marked with dative, in accordance with the pattern of analytical causatives in Hebrew.

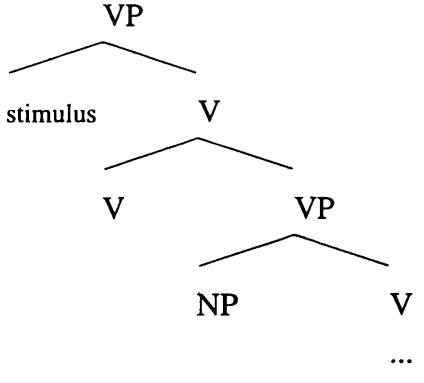
5.4.2 *v*P-shells and VP-shells

I referred above to the uppermost projection of the VP as "XP". I suggest that the identity of the XP is what distinguishes the stative from the non-stative reading: on the non-stative reading, this is *v*, the head projecting the agent/causer. On the stative reading this is a V head, that is, a projection of the lexical verb:

(56) a.



b.



I suggest that beside the standard *v*P shell we have a lexical VP-shell. This VP shell accommodates verbs which, on the one hand, have more than two arguments, but on the other hand have no agent. The stative ObjExp verbs is such a case.

The stative reading has no external argument. However, there is still causation on this reading: perception of the stimulus (the subject) by the experiencer (the object) triggers a mental state in the experiencer. This causation is stative: it triggers a state, but does not bring about a change of state.

The stative causer is an internal argument: we have defined an external argument as the argument at spec, *v*P, which is outside the lexical VP. But it is also external to the lower VP, the domain of change of state, reserved for the internal arguments. Thus, it cannot be interpreted as an affected argument or a measurer, because these properties are only associated with the lower VP. Recall the representation of the stimulus on the stative and non-stative reading:

(57) stative:

a. perception of stimulus: _____stop

mental state: .....stop

non-stative:

b. stimulus mental state

----------> .....(indefinite)

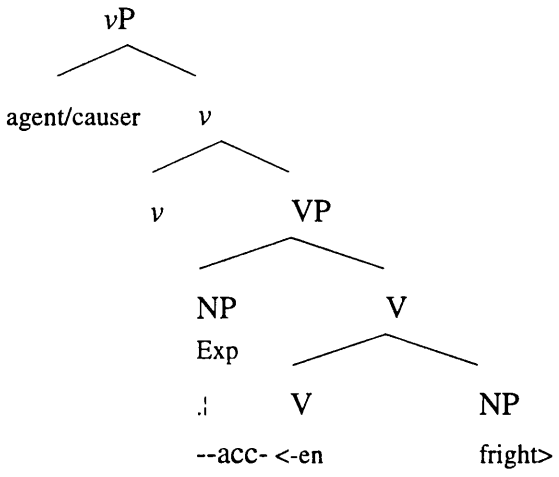
The fact that the stative causer is generated within the lexical VP is related to the fact that its presence is needed in order for the mental state to hold. The active causer does not form part of the temporal structure of the event. It merely brings about a change of state, and is "dismissed" once it has performed its action. The change of state holds independently of it. On the stative reading the existence of the mental state depends on the existence of the trigger/causer. The stative causer, unlike the non-stative one, forms part of the temporal path of the event: the mental state depends on its existence.

In chapter two I made the assumption (following Ramchand 1997) that an external argument is external to the temporal path which is criterial of the event. I also suggested that the temporal path defining the event is restricted to the projection of the lexical VP.

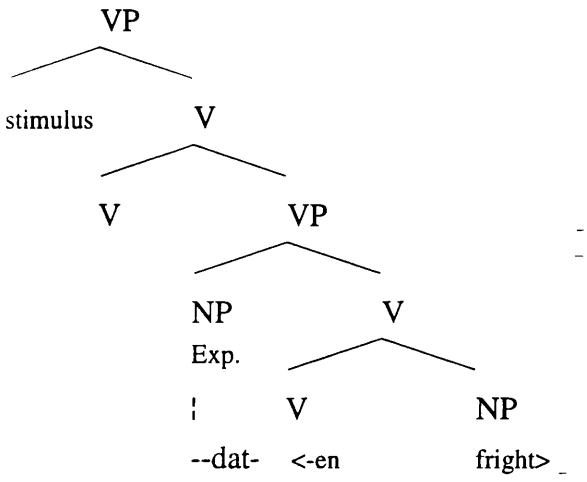
Consider now the position of the subject of ObjExp verbs: spec (upper) VP is internal to the temporal path which defines the event (because it is within the VP), but external to the domain of change of state and measuring out (the lower VP). The stative causer is an "external internal argument". I assume that spec VP thus accommodates arguments which *are* part of the temporal path of the event, but which are external to the domain of change of state and affectedness (i.e. the object domain). I assume that stative causers are the only arguments which can be generated at spec, VP.

Consider now the object position of ObjExp verbs. In all the six languages we looked at, the object is not a canonical direct object on the stative reading. It behaves differently from standard direct objects with respect to extraction of material (Italian), case marking (Finnish, Spanish) and allowing secondary predication (English). In many of these languages (English, Spanish, Greek, Hebrew) it behaves like an indirect object. On the agentive reading, on the other hand, the verb takes a direct object:

(58) a. incorporated, agentive:



b. incorporated, stative:



The non-incorporated reading is similar to the incorporated one except that the verb and its NP/AP complement are not reanalyzed as a single verb. They thus share the same structure with locatives, causatives or double objects. The only difference between the two is the specific type of the arguments (*concern*, *anger* etc. for direct objects, animate entities as indirect objects):

English does not distinguish the case marking of accusative and dative objects (unless there is a preposition), but in many languages experiencers surface as datives: Hindi, Georgian, Latin. [21]

Hebrew provides further evidence about dative marking of experiencers on the *stative* reading: beside the standard verb *annoy*, which takes accusative (59a), there is a more archaic form which takes the dative (59b):

(59) a. Ze / Gil icben / hirgiz oti
this / Gil annoyed me (acc.)

b. Ze / *Gil xara li
this / *Gil annoyed to me (dat.)

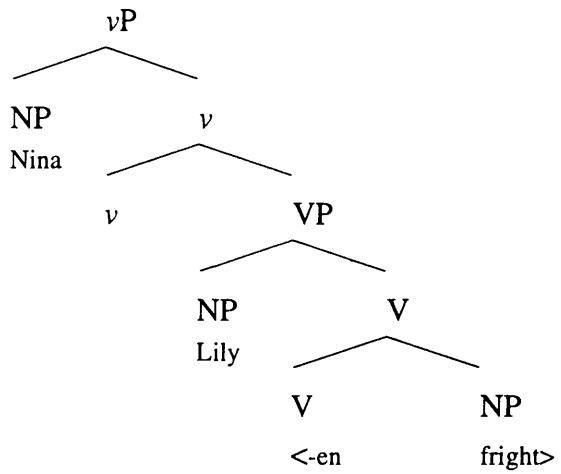
[21] English also has an adjectival paraphrase of ObjExp verbs, in which the object is marked with *to*:
(i) This is frightening / disgusting / irritating to me. (Postal 1971)

Interestingly, unlike the accusative marked object, the dative object is unambiguously stative, or "psych". It does not even allow an animate subject, which might be interpreted as acting on purpose.

5.4.3 The eventive reading

The eventive reading has the following structure:

(60)



`Nina frightened Lily`.

The subject is at spec, *v*. The object position (direct or indirect) and its case marking (accusative or dative) is language dependent: in the English type languages, this reading has a direct object, in the Spanish type languages - an indirect object.

Recall our discussion of agents and causers in chapter three: the difference between the two is in the way they are related to the lexical VP: an agent is generated at a *v* head which is selected by V, while a causer is generated at a *v* head which is a transitivization of a change of state predicate. It thus makes sense that the difference between a purely causative reading and an agentive one is manifested on the object.

In chapter three I suggested that the failure of ObjExp verbs to license a direct object on their stative/causative reading is related to the fact that they cannot appear as intransitive predicates. Recall the data:

(61) a. Nina frightened the children.
b. *The children frightened.

We also noted that intransitive ObjExp forms are acceptable if the language has some morphological means to "license" it: reflexive morphology, as in Italian or medio-passive *binyan* form in Hebrew: [22]

(62) a. Nina ha spaventato i bambini.
Nina has frightened the children.
b. I bambini si sono spaventati.
the children refl. are frightened. (Italian).

(63) a. Nina hivhila et ha yeladim.
Nina frightened(caus.) OM the children.
b. ha yeladim nivhalu.
the children frightened (middle). (Hebrew).

I assume that psych verbs (in fact all verbs) start off as a root, √fright or √annoy, which is not specified for a syntactic category (cf. Marantz 1996). This root can be made into a noun, *fright*, an actual lexical item in the language. This noun may take a verbal affix (*-en*, or simply an empty one), to form the verb *frighten*, or to serve as a complement of a lexical verb, as in *give fright*. Unlike verbs like *break*, which can stand on their own as intransitives, ObjExp verbs are not fully licensed verbs. They require

[22] Pesetsky (1995) notes that many psych verbs are "inherent reflexives" on their intransitive reading, such as French *s'étonner* (be amazed), Italian *arrabiarsi* (get angry) and *preoccuparsi* (worry).

some further morphological licensing, further verbalizing of the verb-plus-noun complex. This, I argued, can be done through extra verbal morphology (reflexive clitics in Romance, medio-passive *binyan* in Hebrew) or by adding a *v* head, which takes an external argument in its spec. This *v* may either be selected by the V, as in the agentive reading, or it may be projected from it without being selected, just to license it morphologically. This is the causative reading. (Alternatively it may be lacking, as with the stative reading, but then the question of licensing the direct object does not arise). ObjExp verbs thus alternate between three readings: one which lacks *v* altogether (stative), one which has *v* which is not selected (eventive) and one in which the lexical verb selects for *v* (agentive).

The difference between English and Spanish is as follows: in English the existence of *v* already licenses the direct object position for all verbs. Spanish forces stricter requirements: verbs which are morphologically derived from nouns only license direct objects if they have a true agent. In other words, in Spanish the existence of a canonical object depends not on what happens at the bottom of the lower VP (whether there was a change of state), but on whether there is a selection relation between the lexical verb and *v*. In English, it is change of state in the lower VP which is sufficient to license a direct object.

5.4.4 More VP-shells

In this section I bring up few more cases in which VP shells are required. There are several other cases in which verbs alternate between a stative and a non-stative reading, as in (64):

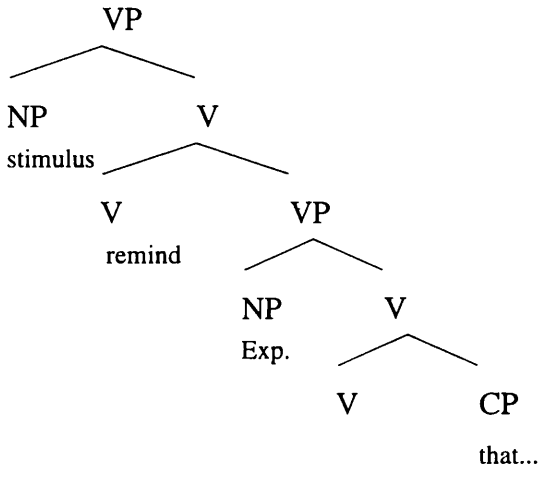
(64) a. Nina reminds Paul that he has to meet the Dean.

b. The note in his diary reminds Paul that he has to meet the Dean.

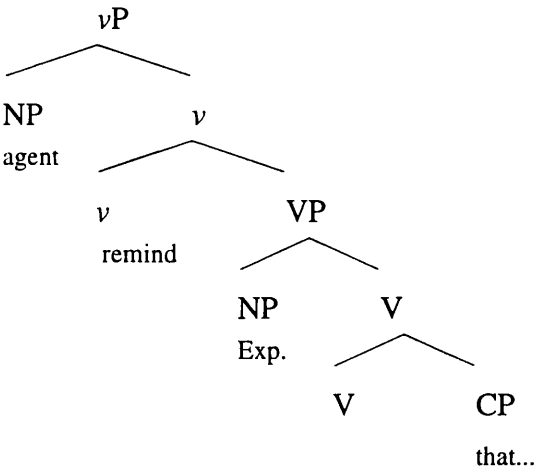
(64a) is ambiguous: on its agentive reading, Nina actively reminds Paul about the meeting (e.g. by speaking to him). In this case she is an agent, generated at spec, *v*P. On the stative reading of *remind* she serves as a stimulus - for example, Paul sees her and this reminds him that he has a meeting. [23]

In this case, the stimulus is generated at spec VP. With a non-animate subject, no such ambiguity exists (64b). The subject cannot be an agent, and is always generated at spec, VP:

(65) a. *remind*, stative:



b. *remind*, non-stative:



[23] With a prepositional complement. *remind* has only a stative reading:
(i) Nina reminds Paul of his great aunt / of his trip to Africa.

As with ObjExp verbs, on the active reading there is a real change of state in the experiencer. Once Nina actively reminds Paul of the meeting, he is "reminded", in a sense, irreversibly (of course, he may forget about it afterwards, just like any result state may not hold forever, but this does not matter for the linguistic properties of this reading). On the stative reading there is no such change of state: while perceiving Nina or the note in the diary, Paul is aware of his having to meet the Dean.[24]

A group of verbs which have similar properties includes *show*, *provoke*, *demonstrate*, *reveal*, and *prove* (cf. Johnson 1985):

(66) a. Nina proves that being rich does not make you happy. (ambiguous)

b. This research proves that being rich does not make you happy. (unambiguous)

On the agentive reading of (66a) Nina is either an agent, that is, she is actively trying to prove that fact, by carrying out a survey or something similar. On the non-agentive reading she is not doing anything. Rather, she is "a living proof", a rich person who is unhappy. (66b) can only have the non-agentive interpretation. I assume that in such cases the subject is generated at spec, VP.

Finally, the VP shell may also be the appropriate structure for the non-agentive reading of the double object construction there may be a non-agentive reading, which is sometimes referred to as "causative give" (Oehrle 1976, Pinker 1989, Goldberg 1995):

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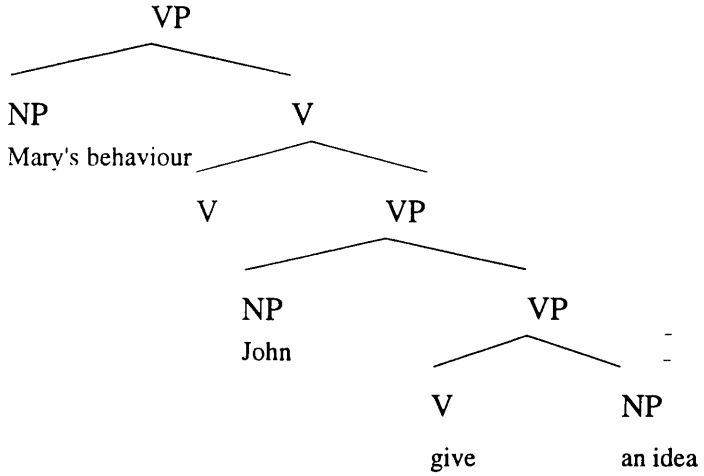
[24] There seems to be a correlation between tense/aspect and the interpretation favoured by such verbs. With perfective part tense, which strongly favours an interpretation of a single, punctual event, the non-stative reading is much preferred:
(i) Nina reminded Paul that he has to meet the Dean.
The precise way in which the stative and non-stative readings interact with tense and aspect is beyond the scope of this chapter.

(67)



`Mary's behaviour gave John an idea`.

There is no volitional agent nor a transference of a physical object. The act of giving is "contact"-like: one entity, the givee, "catches" something out of the other. The "giver", who is like a trigger with which the contact is established, may be generated at spec, VP. [25]

5.4.5 "Psych-non psych" alternations

We saw that many psych verbs are identical in structure to ditransitive and locative verbs, and that the interpretation of the verb as "psych" or "normal" depends on the properties of the verb and its arguments. In section 5.4.1 I listed some non-incorporated forms which alternate between a psych and a non psych interpretation according to the choice of internal arguments. This alternation is not limited to such forms. There are quite a few verbs which may have both a psych and a "physical" use. English examples of such verbs are *shake*, *agitate*, *disturb*, *hit*, *strike*, *move*, *hurt*, and *bother*:

[25] It may be that other cases which take a lexical VP shell include transitive verbs with a special stative use, such as:
(i) This porridge feeds five people.
(ii) This room sleeps four persons.

(68) a. John disturbed the table.

b. John's behaviour disturbed everyone.

Ruwet (1972) lists more than a hundred such verbs for French, including *agiter*, *briser*, *epater*, *blesser*, *gêner*, *heurter* etc.

What are the requirements a verb has to fulfil in order to be interpreted as a psych verb?

The first requirement is that the verb must have one argument which is animate. This argument will be interpreted as the experiencer. Consider the following:

(69) a. Nina turned the TV on.

b. Nina turned Paul on.

The interpretation of *turn on* as a psych verb or a "normal" verb depends only on the choice of an animate object.

However, animacy of one argument is not sufficient for a verb to be assigned a psych interpretation. Consider the examples below:

(70) a. Le serpent a fasciné sa proie, puis lui a sauté dessus.

`The snake fascinated its prey, then leapt upon it`.

b. La beauté d'Ava Gardner fascinait les spectateurs.

`Ava gardner's beauty fascinated the audience`. (Ruwet 1972:228)

(71) a. ha picuc hexrid et ha xalonot.

the explosion made-shudder OM the windows

`The explosion made the windows shake`.

b. ha xadashot hexridu otanu.

the news made-shudder us

`The news terrified us`. (Hebrew)

In these cases a psych interpretation is achieved when the external argument is incapable of physical action. It is thus interpreted as triggering a mental state in the experiencer rather than physically affecting the object.

Finally, with non-incorporated forms there is also the requirement that one of the internal arguments be an emotion or a mental state (*psy-chose* in Bouchard 1995):

(72) a. This child gave Mary a book.

b. This child gives his parents some worry / enormous joy.

(73) a. Hu hipil sefer al ha ricpa.
he dropped a book on the floor

b. Hu hipil paxad / shiamum al ha kahal.
he dropped fright / boredom on the audience
`He frightened / bored the audience` [26]

A psy-chose, according to Bouchard, is a psychological object found only in mental spaces (as opposed to the physical space). Bouchard further argues that just about any change of state verb may become a psych verb if we substitute a psy-chose for the physical object. Bouchard introduces a general criterion for interpretation is that the psy-chose must be able to establish contact with its object (just like a physical object should be able to establish contact with its object). Thus, well-formedness conditions rule out the uninterpretable sentences:

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[26] The psych and non-psych interpretation often correlates with case alternation on the object: dative for the animate experiencer, locative for an inanimate object:

(i) a. ze noge'a bi.
this touches at me
`It touches me (physically)`.

b. ze noge'a li.
this touches to me
`It concerns me`. (Hebrew)

The same dative/locative alternations occur in Italian (*gli (=dat) credo*, I believe him, vs. *ci (=loc) credo*, I believe in it) and Spanish. In old Spanish inanimate givees are marked in the same manner as location (Fernandez 1998).

(74) a. Water filled the box.

b. ??Water filled the audience.

c. Anxiety filled the audience.

d. ??Anxiety filled the box.

(74d) is ill-formed, because psy-chose from a mental space cannot establish contact with an object in the physical space. Bouchard argues that whenever a subject cannot be interpreted as agentive or active, the verb will only yield a psych interpretation (or no-interpretation). Bouchard's intuition seems to me to be on the right track. Note that even verbs which do not have a standard psych interpretation, like *kill*, yield a psych interpretation if the subject cannot be construed as agentive (75b):

(75) a. Oedipus killed his father.

b. This joke really killed the audience.

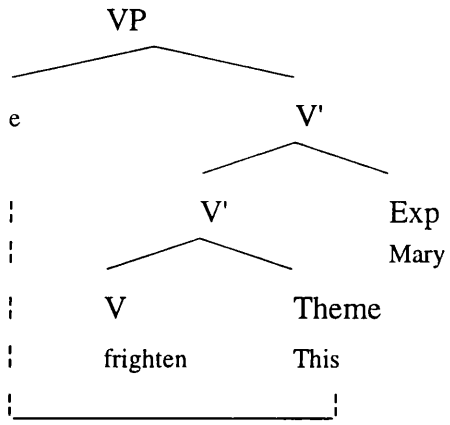
The only difference between incorporated and non-incorporated forms, according to Bouchard, is that in the former the psy-chose is already incorporated into the verb, and therefore it always gives rise to a "psych construction". Part of my argument here is that this is not always the case. At least with respect to syntactic behaviour, a verb like *frighten* can behave as a standard agentive verb, not exhibiting any of the properties of psych verbs, provided that it has an agent. However, I share Bouchard's claim that there is no syntactic structure specific to psych verbs. The same core structures describing causation, location and giving are also those used in psych constructions.

5.5 Against an inversion account

5.5.1 Against an unaccusative analysis of ObjExp verbs

The analysis of ObjExp verbs which I suggested here differs substantially from that suggested by B&R (1988), as well as several other linguists (most notably Grimshaw 1990). I will refer to their view as the "inversion" hypothesis. This hypothesis is a revival of an old idea that ObjExp verbs are derived from SubjExp verbs through some movement (known as *psych movement*, or *flip*; see Lakoff 1970, Postal 1971). An assumption crucial for the inversion account is that the trigger/causer originates in a position lower in the clause, and then moves past the experiencer, into the subject position, thus inverting the D-structure order. According to B&R (1988), ObjExp verbs are in fact unaccusative: their thematic grid includes a Theme and an Experiencer. The Theme is generated as the sister of V, while the Experiencer is adjoined to V':

(76)



`This frightens Mary`.

The argument works as follows: the experiencer is associated with inherent accusative Case in the thematic grid. Because there is no agent, no structural accusative Case can be assigned to the Theme (cf. Burzio's generalization). The Theme thus has to move to the subject position, to be assigned nominative. This Theme argument is interpreted as causing or triggering the mental state in the Experiencer. With SubjExp

verbs no such inversion exists: the Experiencer is generated as an external argument, and the Theme is licensed as an object by the verb.

There are three principal motivations in favour of an unaccusative account:

1. B&R (1988) make reference to specific thematic roles, Theme and Experiencer. Their working hypothesis is that both SubjExp and ObjExp verbs have similar thematic roles. Any version of UTAH would require some 1:1 correlation between thematic roles and D-structure positions. Building on evidence which ranks the experiencer higher than the theme, B&R suggest that the theme starts off lower than the experiencer, and moves into the subject position overtly. [27]

2. The second argument in favour of an unaccusative account is the set of syntactic properties exhibited by ObjExp verbs. As shown convincingly by B&R, these verbs seem to lack an external argument on the one hand, while their object does not behave like a canonical object. These two facts put two together may indicate that the subject of these verbs has moved from the object position.

3. Finally, the phenomenon of backward binding, which I will discuss separately, may give rise to the assumption that the theme starts off lower than the experiencer at D-structure.

In spite of these arguments, I believe that the unaccusative account of ObjExp verbs cannot be maintained, for the following reasons:

1. First, as noted by Pesetsky (1995), ObjExp verbs differ from unaccusatives in some important ways. They do not allow *ne*-cliticization, they select *have* auxiliary, like other transitive verbs, rather than *be*, and, unlike unaccusatives, they do passivize. Pesetsky's conclusion is that while ObjExp verbs lack an external argument, they are not unaccusatives: ObjExp verbs pass tests for lack of an external argument (reflexivization, the causative construction), but not tests for true unaccusativity. I share Pesetsky's observation here (although my account is very different from his, which involves

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[27] A different direction, taken by Pesetsky 1995, is to assume that the thematic roles involved in each case are not identical. Pesetsky retains the notion of an experiencer, but argues that the theme is a Causer in the ObjExp verbs, and a Target or Subject Matter in the SubjExp case. Modifying slightly the thematic hierarchy according to the new roles, UTAH can be respected.

movement of the causer argument from one theta position lower in the clause into another, higher one).

2. The second argument against an unaccusative account has to do with the status of the theme in ObjExp verbs. Many linguists have noted that ObjExp verbs are causatives (see Grimshaw 1990 and Pesetsky 1995 for some recent references). These verbs are also associated with causative morphology in many languages (e.g. Japanese, Finnish, Hebrew). According to B&R and Grimshaw, the Theme starts off as a direct object and then moves to the subject position where it is interpreted as a causer. Recent work on argument structure and on the syntax-lexicon interface has established the generalization that causation is uniquely associated with external arguments, and cannot be initiated by an internal argument (Dowty 1991, Davis and Demirdache 1995, HK 1997). Similarly, a prototypical Theme is taken to be an affected argument, an undergoer, a participant which measures out the event by the change of state it undergoes (Dowty 1991, Tenny 1992). In short, causation of change can only be associated with the external argument, while the internal argument is associated with undergoing change. Things being so, it is impossible to imagine a theme which is generated VP-internally and is interpreted as a causer. Under a traditional characterisation of thematic roles in which *frighten* takes an "Experiencer" and "Theme", and given the (correct) observation that ObjExp verbs involve some causation even though they lack an external argument, it was perhaps plausible to ascribe causation to the Theme, contra our intuitions about the prototypical roles of Themes (in fact, Pesetsky (1995) argued that the participant which B&R label Theme is a Causer).

3. The specific formulation suggested by B&R has also been criticized by Dowty (1991) and Bouchard (1995) for being non-explanatory: Dowty and Bouchard argue that this analysis does not explain what is it about this particular group which makes them syntactically unaccusatives (compare this to true unaccusatives, such as *faint*, which can be characterized in terms of undergoing, proto-patients and other object-related properties). B&R's unaccusative analysis is thus a syntactic device, but it has no explanatory force behind it.

4. My last objection has to do with the notion of "psych verb" and the reference made by syntactic rules to the "experiencer" role. I have argued that non-incorporated forms of ObjExp verbs are identical to locatives or datives, except for the specific properties of their arguments (i.e., one argument is an emotion vs. a physical object, one argument is human vs. non-human). If we want to maintain an unaccusative account for such verbs we would have to assume that *put* has two lexical representations in French, one unaccusative, to fit the psych use, and one standard, agentive. Such an assumption would make little sense, given the identical constructions in which the two verbs are used. Furthermore, non-incorporated forms also show very clearly that any syntactic position can be interpreted as an experiencer: direct object, indirect object or a locative PP. Crucially, an NP argument of a certain verb, occupying the same position, can be interpreted as an "experiencer", a "goal", a "location" or a "theme", according to the properties of the other NP (cf. *he gave me a book* with *he gave me a headache*). I therefore believe that making reference to the "experiencer" role in the theta grid is misleading. As shown above, almost any verb can have an experiencer under specific circumstances, including very "agentive" verbs (e.g. *It really killed us*, *What's eating Joyce?*, *An idea hit Mary*).

To sum up: the fact that a large number of verbs can alternate between a psych reading and a standard reading would make an unaccusative account of ObjExp verbs implausible. [28]

5.5.2 The inadequacy of Backward Binding as motivating an inversion account

Let us return to the phenomenon of backward binding (BB) which was mentioned briefly before. BB involves binding of an anaphor contained within an NP by an antecedent which appears lower in the clause. As noted by many linguists, this phenomenon is allowed by ObjExp verbs:

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[28] This criticism has already been raised by Ruwet 1972 against Postal's 1971 movement analysis.

(77) a. Each other's supporters frighten John and Mary.

b. Stories about herself worry Mary.

The structure suggested by B&R accounts for the BB facts: if the subject in (77a) subject is a D-structure object, it is generated lower than the Experiencer at D-structure:

(78) a. D-structure: e frighten John and Mary each other's supporters.

b. S-structure: each other's supporters frighten John and Mary.

The anaphor is bound at D-structure, and therefore the sentence is well-formed. We would expect other verbs with derived subjects to behave like ObjExp verbs, while those with deep subjects should not allow backward binding:

(79) a. Each other's enemies seemed to John and Mary to be doing well.

b. *Each other's enemies killed John and Mary.

However, there are several reasons to believe that backward binding is not part of standard binding theory, and that its occurrence with ObjExp verbs is not necessarily indicative of their argument structure. Note, first, that an anaphor such as *himself* is only allowed within a "representational" NP, which can be captured as some representation of the antecedent (e.g. a picture):

(80) a. Pictures of himself amuse Paul a lot.

b. *Friends of himself amuse Paul a lot.

c. Books about himself amuse Paul a lot. (Books representing him).

d. *Books of himself amuse Paul a lot. (Books belonging to him).

Second, Bouchard (1995) shows that backward binding exists with verbs which do not have derived subjects under any analysis (81a, below). Likewise, as pointed out by

Marantz (p.c.), they exist with periphrastic causatives, where a derived subject certainly cannot climb from the lower predicate to the matrix one (81b):

(81) a. These rumours about himself caught John's attention. (Pesetsky 1995:FN 28)

b. Each other's remarks made John and Mary angry.

Finally, backward binding is only allowed if the anaphor is contained in an NP. An anaphor on its own cannot have its antecedent lower in the clause:

(82) a. *Herself worried Mary.

b. *Each other annoyed John and Mary.

If we adopt the claim that the Theme is generated below the Experiencer, the pattern in (82) is unexpected: if the anaphor is bound at D-structure, why is (82) ungrammatical while (77) is? On the other hand, if we assume the version of binding theory advocated by Reinhart and Reuland (1993), the difference between (77) and (82) is explained: the anaphors in (77) are logophors, that is, they are not arguments of the predicate (a part of an NP argument is not considered an argument). Therefore, they are not subject to principle A, and their distribution is governed by discourse considerations. In (82), on the other hand, the anaphor is an argument of the verb, and the construction is ruled out by the Chain Condition, which requires that the referential expression be higher than the anaphor.

To conclude, I assume here, along with Reinhart and Reuland (a.o.), that BB does not fall under standard binding principles, but has to do with "point of view" phenomena (see also Tenny 1997 for discussion of this). It thus cannot be used to motivate an inversion account.

5.6 Subject Experiencer verbs

5.6.1 SubjExp verbs as locatives

Consider now Subj(ect)Exp(eriencer) verbs: *love, hate, adore, appreciate* etc. Work by Croft (1986), B&R (1988), Grimshaw (1990), Dowty (1991) and Tenny (1992), a.o., has established two important facts about these verbs, which distinguish them form ObjExp verbs:

1. Unlike ObjExp verbs, they are always stative.

2. They do not exhibit any psych properties, but behave like normal verbs. As pointed out by B&R (1988), these verbs in Italian can have a reflexive reading with *si*, can appear under the causative construction and allow extraction from their object.

I suggest that SubjExp verbs, like ObjExp verbs, are essentially locatives. The basic relation they express is that of location. As with ObjExp verbs, the experiencer can either be the "stuff" which is at some mental state, or the container, which is filled by mental state. Consider the following examples from English: [29]

(83) a. Nina is in love (with Paul).
(experiencer "stuff", mental state location).

b. There is in me a great admiration for painters / a great fear of thunderstorms.
(experiencer container, mental state "stuff").

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[29] Some of the SubjExp verbs are expressed through possession relation:

(i) a. I have a great admiration for him.
b. J'ai peur (de...)
I have fear (of...)

The relation between possession and location has long been recognized in the literature (See, for a recent reference, Kayne 1993).

A similar pattern exists in Hebrew and French:

(84) a. ani be xarada / acabim.
I at fear / nerves.
`I feel fear / I am nervous`. (exp. "stuff", m.s. container)

b. yesh bi paxad (mi xatulim).
there is in me fear (of cats).
`I am afraid of cats. (exp. container, m.s. "stuff") (Hebrew)

(85) a. Pierre est en colère.
Pierre is at anger.
`Pierre is angry`. (exp. "stuff", m.s. container)

b. Il y a en Pierre un profond mépris de l'argent.
There is in Pierre a deep contempt of money
`Pierre has a deep contempt for money` (Bouchard 1995:266)
(exp. container, m.s. "stuff")

In some languages SubjExp predicates are not verbs: relations such as *love*, *hate* etc. are expressed through nouns which are put in locative constructions. Irish is an example of this:

(86) a. Tá eagala orm.
is fear on me
`I am afraid`.

b. Tá lúcháir orm.
is gladness on me
`I am glad`.

c. Tá fuath do Y ag X.
is hatred to Y at X
`X hates Y`.

d. Tá cion ar Y ag X.
is fondness on Y at X.
`X is fond of Y`. (McCloskey and Sells 1988)

The same holds for Scottish Gaelic. Note that the location relation expressed in SubjExp verbs in this language is identical to that expressed by "physical" locatives:

(87) a. Tha eagal orm.
Be-present fear on me
`I am afraid`.

b. Tha Calum anns a'gharradh.
Be-present Calum in the garden
`Calum is in the garden`. (Ramchand 1997).

5.6.2 Types of location: the difference between SubjExp and ObjExp verbs

It turns out that both SubjExp and ObjExp verbs are locatives. I suggest that the difference between the two groups lies in the *type* of locative relation expressed in them. SubjExp verbs express *static* location: something is somewhere. A semantic representation of this would be something like (88b):

(88) a. Mary is angry / Marie est en colère

b. Ee & be at anger (e) & experiencer (Marie, e) & Hold (e)

ObjExp verbs express non-static location: something is being put, or located, somewhere. Unlike SubjExp verbs, they are bi-eventive:

(89) a. Blood sausage disgusts Nina.

b. (Et) [t=now & Ee & [perception (e) & perceiver (e, Nina) and perceived (e. blood sausage) & hold (e, t) & (Ee') & [feel disgusted (e') & experiencer (e', Nina) & stimulus (e', blood sausage) & hold (e', t) & Cause (e, e')]]].

ObjExp verbs involve two events, a perception event and a mental state. Perception triggers or causes the mental state. With SubjExp verbs there is only one state which is not being caused by an outside force: it is "there".

Consider, next, the verbs used in non-incorporated forms of SubjExp and ObjExp verbs:

(90)	ObjExp	SubjExp
Verb:	*put* (French, SGaelic)	*be* (SGaelic, Irish, English, French)
	make (French, English, Hebrew)	*have* (French, English, Hebrew)
	turn (French)	
	drop (Hebrew)	
	throw/cast (Hebrew)	
	give (English, French)	
	fill (English, Hebrew)	
P:	*into/onto/unto/to/at* (directional)	*in/at* (static)

French has minimal pairs of non-incorporated SubjExp and ObjExp verbs, which only differ with respect to the verb used in them - *be* and *have* for SubjExp verbs, *put* and *give* for ObjExp:

(91) a. mettre qqn en colère. (put someone at anger, ObjExp)

b. être en colère. (be at anger, SubjExp)

(92) a. donner du souci (a qqn.). (give worry to smn., ObjExp)

b. avoir du souci. (have worry, SubjExp)

The verbs used in ObjExp constructions, such as *turn*, *put*, *give* etc., involve dynamicity: something is being located in a position which is different from its initial place (this is true for the stative reading as well: the location is then not "change of location", that is, it holds only as long as the locator is present, as shown before). The verbs used in SubjExp constructions are static: *be* and *have*. It is the event structure of the verb used in the non-incorporated construction which determines whether the verb will be a SubjExp or an ObjExp predicate.

ObjExp verbs are thus complex statives, or stative causatives. They have some temporal internal structure, or a temporal path. Their event structure includes two separate points: a causing event, which is a perception event, and a result state, that is, a mental state (Pylkkänen 1997). SubjExp verbs conform to the traditional characterisation of states, being made of one "chunk".

The two types of location are also expressed through the choice of prepositions by the verb. SubjExp verbs tend to select for "static" preposition, expressing location: *in*, *at*. ObjExp verbs tend to select prepositions which have some dynamic component in them: *into*, *onto*, *to*. Other prepositions, e.g. *on*, may be either static or dynamic, depending on the verb (*put* vs. *is*). [30]

The difference in the type of location explains the difference in the syntactic realization of the so-called experiencer. When location is non-static the experiencer is being manipulated by another argument, either as stuff being put into a mental state, or as a container into which a mental state is put; in such a case it is necessarily at a lower position, and the "manipulator" is the external argument (stative or agentive). If the sentence simply expresses a static location, then the verb simply asserts that the

[30] There is no systematic study of the event properties of prepositions, but it would be interesting to check if some psych constructions exhibit the type of ambiguity observed with motion verbs (Higginbotham 1993):
(i) The bottle floated under the bridge.

experiencer is located somewhere. I assume that in such cases the experiencer may serve as an external argument. In the next section I will go through the evidence for this in some detail.

5.6.3 A locative as an external argument

Fernandez (1998) shows that in Spanish a locative can serve as an external argument in cases where the verbs has no external argument. Adopting this claim, I will show that SubjExp are no exception: the locative element in them, or the experiencer, is an external argument. [31]

Consider first the standard position of locatives in the VP. They are normally taken to be PPs which are generated in a low position in the clause, below the indirect object and the direct object:

(93) a. Nina put the book *on the table.*

b. Ruth walked *in the park.*

c. Paul pushed the cart *into the room.*

However, if there is no external argument, a locative may be generated externally. This is done, I assume, to satisfy some well-formedness requirement on clauses (such as predication, or the EPP). [32] It has been shown that many Spanish verbs which lack an external argument (i.e., an agent) have a locative element which is generated externally and serves as satisfying the EPP (Fernandez 1998). These verbs include weather verbs,

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[31] I will not discuss locative inversion in English or other languages here. As argued convincingly by LRH (1995), locative inversion is not an indicator of unaccusativity (or lack of an external argument), but is rather governed by discourse considerations.

[32] An argument in favour of a separation between the so-called phi-features of T (Case/agr.) and its EPP feature, which require that it have an overt specifier, was raised recently in Chomsky (1997).This hypothesis was motivated by data from Icelandic, where a dative element can serve as an overt specifier for T, while a lower subject establishes long-distance agreement with the verb (and T).

as well as other verbs with no external argument. Traditionally, these verbs are referred to as "impersonal constructions". Two examples of this are:

(94) a. En este cuarto huele a rosas.
in this room smells like roses
b. En Barcelona ha occurido un accidente.
in Barcelona has happened an accident.

In fact, the English correlates of (94) would also have some element, *it* or *there*, in the subject position, for the same purpose. [33]

Fernandez (1998) shows convincingly that such locatives are indeed external arguments, and that they differ form locatives associated with agentive verbs, which are generated in the standard, lower position. I will bring here three arguments supporting the external status of such locatives.

First, Fernandez notes that while locatives in standard constructions may be involved in idiom formation, locatives in impersonal constructions are excluded from the domain of special meaning. This exclusion is typical of external arguments (cf. Marantz 1984):

(95) a. poner unapica en Flandes.
put a flag in Flandes
`do something no one has been able to do before`.
b. Poner / estar entre la espada y la pared.
put (smn.)/ be between the sword andthe wall
`put someone / be in an impossible situation`.

---

[33] In accordance with the Spanish data, many post-verbal subjects in Hebrew are marginal or ungrammatical without some locative element. I assume that this locative occupies spec, TP. If it is a clitic, it may carry the verb along, and thus follow it. Note, that any element marked with the locative preposition may serve as spec, TP, even if it is a temporal NP rather than a locative:

(i) a. hit'alef ?(po) yeled.
fainted here a kid
b. ??/*(be Tel Aviv) / ??/*(be 1991) nafal matos
in Tel Aviv in 1991 fell a plane

c. hay gato encerrado.
there is cat caged
`there is some catch`.

d. faltar (a alguien) un hervor / un tornillo.
lacks (to someone) heat / a screw
`He's dumb / crazy`.

e. *Faltan hombres entre la espada y la pared.
lack people between the sword andthe wall

Although unaccusative verbs may form part of an idiom (95c-d), the locative element in them cannot be part of an idiomatic construction (95e).

Second, when such verbs appear in raising constructions, it is always the locative which raises:

(96) a. En esta caja parece faltar dinero / el dinero.
in this box seems to lack money / the money

b. *Dinero / el dinero parece faltar en esta caja.
money / the money seems to lack in this box

To further motivate the different structural realization of the two types of locatives, Fernandez show that extraction from a co-ordinate structure which has two external locatives is allowed. Extraction from a co-ordination of a standard locative and an external one is not allowed:

(97) a. En esta ciudad es donde nieva y occuren cosas raras.
`In this city it snows and strange things happen`.

b. *Aqui es dond llueve y acampan los turistas.

`Here is where it rains and the tourists camp`.

Finally, Fernandez shows that the "external" locatives receive a compositional theta role, which is determined by the verb and its other argument (the "Theme"). This indicates that their status is indeed like that of an external argument:

(98) a. En esta tienda hay pan.
in this shop is bread
`Bread is available in this shop`.

b. En esta tienda haymucha suciedad.
in this shop is much dirtiness
`This shop is very dirty`.

c. A Juan falta valor.
to Juan lacks courage
`John is a coward`.

d. A Juan falta un dedo
to Juan lacks a finger
`John has one finger missing`.

e. A Juan falta dinero.
to Juan lacks money
`John needs money`.

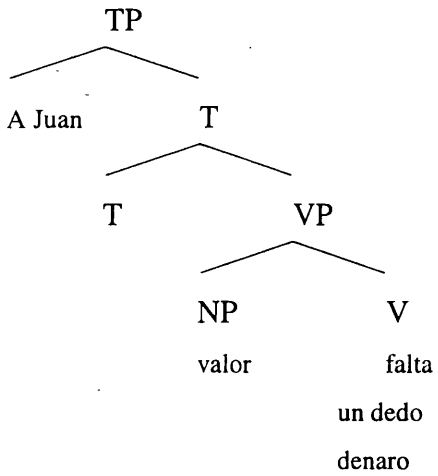
In (98c-e) the same verb is interpreted in three different forms, which similarly affect the interpretation of the dative subject. The semantic role borne by *John* in each case differs according to the specific combination of the verb and its argument. [34]

What is the position in which external locatives are generated? I argue that they are merged directly at spec, TP. Recall, that in order to satisfy the EPP we can either move

[34] The role of the dative is taken here to be similar to that of the locative. Datives and locatives alternate in Spanish in many cases, depending on whether the NP they mark is animate or inanimate.

an element into spec, TP, or merge it there, as in the case of expletives. The locative elements behave like external arguments, and therefore I assume that spec, TP is their base position:

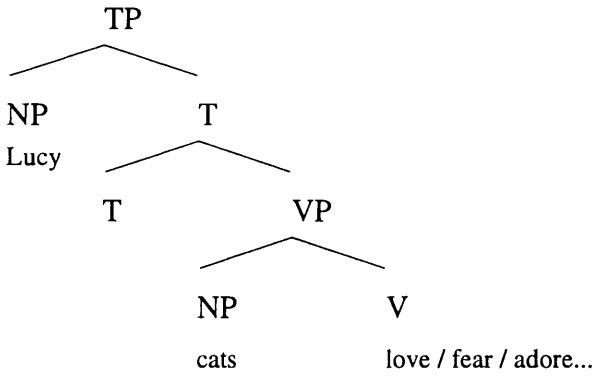
(99)



`John is a coward` , `John has one finger missing`, `John needs money`

I suggest that the structure in (99) is also shared by SubjExp verbs. The experiencer is an external argument and is merged at spec, TP:

(100)



`Lucy loves / fears / adores cats`.

The stative verb has no *v* head, hence no agentive subject. The subject which is generated at spec, TP is an external argument. I suggested in chapter two that an external argument is external to the temporal path constituting the event. SubjExp verbs do not have such temporal path: they are made of one chunk. Their subject is thus

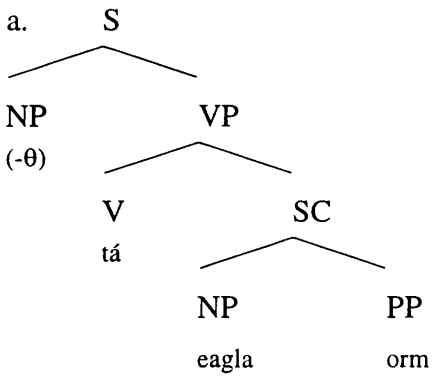
external anyway. The verb and its internal argument denote a property. The subject is the argument of which this property is predicated, or where the property is located (cf. Ramchand 1997). I assume that the verb *love* is related to the homophonous noun, and that *Nina has a great love for cats* has essentially the same structure as (100).

There are thus two types of external arguments: an active one, generated at spec, *v*P, and a stative one, generated at spec, TP. Both are external to the lexical VP. Given that the subject of SubjExp verbs is external, it is not surprising that they do not exhibit "psych effects", as do ObjExp verbs (cf. section 5.7 for further discussion).

I assume that the experiencer can also surface as a locative PP, as in *There is in Paul a great admiration for cats* (I ignore the question of whether the experiencer is at spec TP in English or at some other position).

Let us compare this to the situation in Irish and Scottish Gaelic, where the locative is at a lower position. McCloskey and Sells (1988) suggest the following D-structure for such verbs:

(101) a.



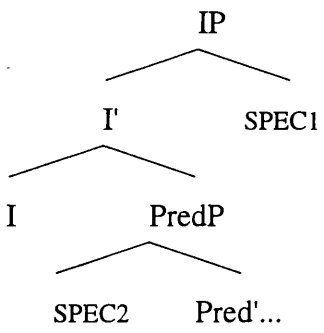
b. Tá eagla orm.
is fear on me
`I am afraid`.

McCloskey and Sells assume that a defining property of the verb *be* (tá) is that it takes a small clause and a non-thematic subject. They argue that the NP of the small clause serves as the surface subject of the clause, and assume that in the overt syntax, it

may move to the non-thematic subject position. However, the fact that movement of this NP is not obligatory indicates that in Irish, there is no need for an overt element to appear at spec, TP in order to satisfy the EPP.

Ramchand (1997) argues that there are two subject positions available in Scottish Gaelic, correlating with the stage and individual-level distinction. The subjects of stage level predicates are generated at the specifier of a phrase she calls Predicate Phrase (PredP), while the subjects of individual level predicates are generated at spec, IP, which is right adjoined to the head:

(102)



Tha eagal orm.
Be-present fear on me
`I am afraid`. (Ramchand 1997)

With *tha*, the stage-level copula, the subject is generated at spec, PredP. With the I-level copula, the subject is generated at spec, IP.

5.6.4 "Psych-non-psych" alternations with SubjExp verbs

I noted before that many ObjExp verbs alternate between a psych-reading and a non-psych, "physical" one (*disturb*, *hurt*, etc.). I would now like to argue that the same holds for SubjExp verbs. Consider the following examples (the French ones are taken from Ruwet 1972):

(103) a. Paul worships his nephew.

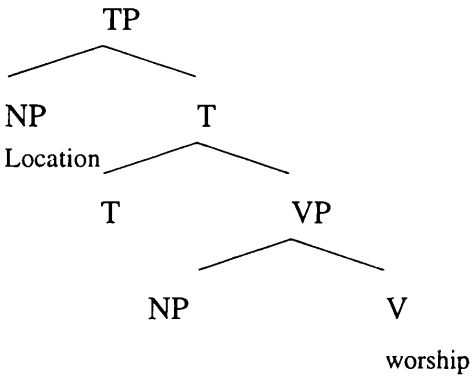
b. Son grand-père adore cet enfant.

(104) a. The Mayans worshipped the sun.

b. Certains peuples adorent les animaux.

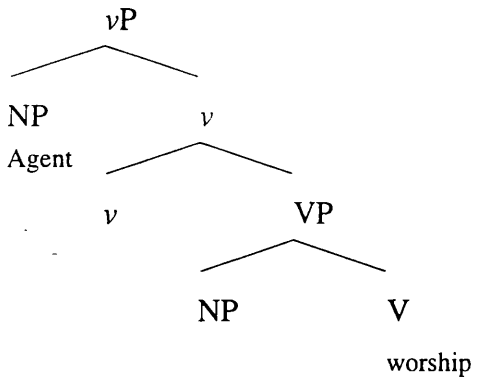
Worship is ambiguous between two meanings: have a feeling of awe/adoration, and make acts of worship. Under the first meaning (103), the subject is a locative, and is interpreted as an experiencer. Under the second meaning (104), the subject is an agent (in fact, both (103) and (104) are ambiguous, but (103) is more easily interpreted as a psych verb, while those in (104) lend themselves more easily to an agentive interpretation). On the agentive reading of *worship* the verb is not interpreted as a psych: the people who worship the sun may simply perform some rituals, without experiencing any feeling. As with ObjExp verbs, the subject alternates between being generated at spec, *v*P and at another thematic, non-agentive position. This time, the stative position of the subject is generated above the agentive subject:

(105) a.



`Paul worships his nephew`

b.



`The Mayans worshipped the sun`.

It is important to note that the precise interpretation of *worship* will be determined by the whole structure with which it is associated. The lexical item √worship has some core meaning in it, probably something like "express a feeling of worship". Whether it will have the psych meaning of having a feeling of adoration, or the agentive meaning, of performing an act of adoration, will depend on the syntax in which it is embedded. This verb behaves in a similar way to *flatter*, which allows both an agentive reading, performing flattering, or a psych one, in which an individual feels flattered. The difference is in the type of the VP in which the root appears: whether it is headed by a *v* head or whether the argument is generated at TP.

5.7 Italian ObjExp verbs revisited; the *piacere* group

I would now like to go back in this section to the specific problems posed by Italian ObjExp verbs, as pointed out by B&R (1988). Recall the syntactic properties noted by B&R's with respect to these verbs: they cannot bind a reflexive clitic, they cannot appear in the causative construction and they do not allow extraction from their object. Recall also that it was shown in section 5.2 that these properties only hold for the stative reading of ObjExp verbs, and that when an agentive reading is forced, these verbs behave like standard transitive verbs.

It would have been plausible to ascribe all these properties to the fact that the stative reading lacks an external argument, as Belletti and Rizzi do. However, this explanation cannot work. The reason for this is the existence of a third group of ObjExp verb in Italian, the *piacere* group. The object of these verbs is marked with dative case instead of accusative.

These verbs differ syntactically from accusative ObjExp verbs (to which I will refer, following B&R, as the *preoccupare* group) in a number of ways. Most interestingly, although these verbs do not have an external argument, they are not subject to the same restrictions with respect to reflexivization and causativization. In section 5.7.1 I will discuss the properties of the *piacere* group in some detail. Then, in sections 5.7.2 - 5.7.4 I will examine the behaviour of both groups (*preoccupare* and *piacere*) with respect to reflexivization, causativization and auxiliary selection.

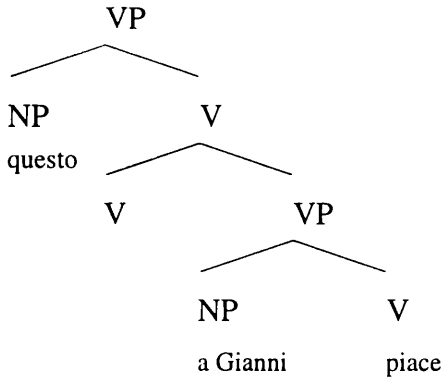
5.7.1 The piacere group

Apart from *piacere* (sometimes translated as *please*) itself, the group of dative ObjExp verbs includes *dispiacere* (displease, be sorry) as well as *scocciare* (annoy) and *interessare* (interest), which may alternate between dative and accusative objects. B&R point out three principal difference between *piacere* verbs and *preoccupare* verbs. First, their object is marked with a dative case:

(106)	Questo	piace	a Gianni.	/	Questo	mi	piace.
	this	pleases	to Gianni	/	this	to me	pleases

B&R assume that the structure of *piacere* verbs is identical to that of *preoccupare* verbs, except for the object case. I will assume the same here:

(107)



The second difference is that the word order of *piacere* verbs is relatively free, while with standard ObjExp verbs it is fixed (cf. B&R 1988):

(108) a. Questo piace a Gianni.
b. A Gianni piace questo.
c. Questo preoccupa Gianni.
d. *Gianni preoccupa questo.

Following B&R (although modifying the assumptions a bit) I will take the dative NP in (108b) to be attracted as a topic from its base position.

Finally, *piacere* verbs select for *be* auxiliary while other ObjExp verbs select for *have:*

(109) a. Questo ha preoccupato Gianni.
this has worried Gianni
b. Questo è sempre piaciuto a Gianni.
this is always pleased to Gianni

Piacere verbs, like (some of the) *preoccupare* verbs, allow a non-stative reading. This reading is always agentive. *Piacere* verbs do not include a change of state as part of their meaning (e.g., the experiencer turns from "not pleased" into "pleased"; see also the dative marking of the object as opposed to objects undergoing change of state which are marked with accusative case - cf. chapter two), and therefore the eventive reading is excluded.

The agentive reading is achieved by using the verb in the imperative or embedding it as the complement of *try*. I argue that on their agentive reading *piacere* verbs are not interpreted as psych verbs. Instead, the event they denote is interpreted as an activity or an accomplishment (depending on the tense and aspect of the verb), that is, acting in some way in order to please someone:

(110) a. Gianni piace a Maria.
`Maria likes Gianni`. (stative)

b. Gianni cerca di piacere a Maria.
`Gianni tries to be nice to Maria`.(agentive, activity)

c. Prova a piacergli!
`Be nice to him!`. (activity)

d. Maria è finalmente riuscita á piacergli.
`Mary finally managed to be liked by him / to get him to like her`.
(accomplishment)

e. Mi ci sono voluti due mesi per piacergli.
`It took two months for him to like me` / `It took me two months to get him to like me`. (accomplishment)

(110a) is stative. (110b) and (110c) are agentive: the matrix verbs (110b) and the imperative (110c) ensure that only the agentive reading exists in these cases. Note, that in these two sentences the verb is not psych: the agent tries, but not necessarily succeeds, in triggering a mental state in the experiencer. (110d) and (110e) do include a

mental state in the experiencer. They can also be interpreted as agentive, namely, the "pleaser" is aiming at trying to please.

I argued in section 5.2 that a stative causer can trigger a state (which only holds as long as the stimulus is perceived), but not a change of state. How to explain (110e) and (110d), which seem to involve some change of state (as implied by their being an accomplishment), but not (necessarily) an agent? I suggest that in these cases the agent brings about the following change of state in the experiencer: from being indifferent to the stimulus, it becomes affected by it, or susceptible to its charms. After the change of state took place perceiving the stimulus triggers a mental state in the experiencer. Schematically, the change of state is as follows:

(111) before: after:

stimulus ..... stimulus: .....

mental state: ø (none) mental state: _____

In (110e) it took the agent two months to bring about the change from (111a) to (111b): before that, he did not trigger any mental state in the experiencer. Afterwards, he acts as a stimulus, triggering some feeling in the experiencer whenever he perceives it.

Finally, an intriguing property of *piacere* verbs is that they pattern differently with respect to the tests employed by B&R. Recall that *preoccupare* verbs cannot have a reflexive reading with *si. Piacere* verbs, on the other hand, can:

(112) a. Gianni si piace.

`Gianni likes himself`.

b. Abbiamo insegnato ai bambini a piacersi.

`We taught the children to like themselves / think highly of themselves`.

This reading of *piacere* is stative. *Gianni* is not an agent, who is aiming at pleasing himself, but rather someone who thinks highly of himself. [35]

Note, further, that *piacere* verbs, unlike *preoccupare*-type verbs, can also appear in the causative construction:

(113) a. Gianni ci ha fatto piacere il gelato.
`Gianni made us like ice cream`.

b. *Gianni ci ha fatto preoccupare Maria.
Gianni made us worry Maria.

In what follows I will consider the behaviour of both verb classes with respect to these tests.

5.7.2 Reflexivization revisited

Why is the reflexive reading allowed with *piacere* verbs, but not with *preoccupare* verbs? If the two classes are structurally indistinct except for the case marking of the object, then we would expect that the difference with respect to reflexivization should stem from the difference in case marking. In order to get a better picture of the data, consider the compatibility of all verb classes in Italian with reflexive *si*:

(114) Allow reflexive:

a. Agentive transitive: Gianni si lava
(Gianni washes himself)

b. SubjExp verbs (stative): Gianni si ama
(Gianni loves himself)

c. *piacere* verbs: Gianni si piace.

[35] The reflexive reading with *piacere* is non-standard, and some speakers accept it less easily than others. However, these speakers find this construction only for pragmatic reasons, and they get a strong contrast between reflexive *piacere* and reflexive *preoccupare* (which is strictly ungrammatical).

(Gianni likes himself / thinks highly of himself)

d. Ditransitives: Gianni si compra un libro.
(Gianni buys himself a book)

e. Agentive ObjExp: Gianni si spaventa per indursi a studiare...
(Gianni frightens himself in order to urge himself to study)

(115) Disallow reflexive:

a. Unaccusatives: Gianni si arrabia.
(Gianni gets angry / *angers himself)

b. Unergatives: *Gianni si telefona.

c. stative ObjExp verbs: Gianni si preoccupa.
(*preoccupare* type) (Gianni worries / gets worried / *worries himself)

Most current theories of *si* assume that the reflexive reading involves co-indexation of two arguments (Reinhart 1996, Manzini and Savoia 1998). The incompatibility of unaccusatives and unergatives with the reflexive reading is thus straightforward, because they have only one argument. Leaving intransitives aside, it seems that *preoccupare* verbs on their stative reading are the only two-argument verbs which disallow a reflexive reading with *si*.

The most straightforward solution would be to assume, with Reinhart (1996) and Manzini and Savoia (1998), that a reflexive reading requires an external argument, stative or active, and therefore ObjExp verbs cannot have this reading. However, this will leave the reflexive reading with *piacere* verbs unexplained.

It seems that a two-argument verb allows a reflexive reading in two cases only:

1. When there is both an external argument (active or stative, as with SubjExp verbs) and accusative case (SubjExp verbs, transitives and ditransitives, which always include a direct object).

2. When there is neither an external argument nor accusative (*piacere* verbs).

Stative *preoccupare* verbs are the only case in Italian where there is accusative case but no external argument. This strikes one as a violation of Burzio's Generalization (BG), which states that a verb assigns accusative case iff it has an external argument. [36]

Although BG proves efficient in treating some cases of passives and unaccusatives, there are, nonetheless, a number of phenomena which violate it. In chapter two I discussed Hebrew and Icelandic unaccusatives which mark their subjects with accusative case, although they have no external argument (cf. Marantz 1991 for more such cases):

(116) a. kara li et ha davar ha ze
happened to me OM the thing the this(Hebrew)

b. katuv (m) / *ktuva (f) et ha hoda'a (f) ba yoman.
Written-passive OM the note in the diary

(117) Strompinn blés af husinu
the chimney-ACC blew off the house (Icelandic; Maling&Zaenen 1990)

If there is no accusative case on the object then it has to move to the next case position. If, for some reason, accusative case on the object is maintained, then no movement takes place. Suppose that BG is not a constraint on morphological case assignment. Rather, it is a constraint on syntactic processes which affect arguments, such as passivization. We can thus have accusative case on the object with no external argument, as with ObjExp verbs or in Hebrew and Icelandic unaccusatives. However, BG cannot be violated when certain grammatical processes (passive, reflexive *si*) are involved: with these processes, it requires that if you "do" something to accusative case, you should also do something to the external argument. In the passive, accusative case

[36] B&R (1988) realize that ObjExp verbs are a problem for BG; They assume that BG applies only to structural accusative case, whereas the accusative case on the experiencer is inherent. However, when it comes to auxiliary selection, B&R submit that this process is sensitive to morphological accusative, whether inherent or structural.

is absorbed, while the external argument is dethematized. In the reflexive, accusative is absorbed as well, but the external argument is not dethematized, but is being marked by *si*. I assume that in order to have a reflexive reading with *si* a verb only needs (any) two arguments: one is absorbed (the object), the other marked as referentially identical to the absorbed argument. [37]

If the absorbed argument is marked with accusative, then the second argument, which is marked by *si*, necessarily has to be an external argument (this is part of the requirement forced by BG as formulated here). ObjExp verbs which alternate between a stative and an agentive reading, like *spaventare*, can have a reflexive reading on their agentive reading, but not on their stative reading, as shown in section 5.2:

(118) a. ??Gianni si spaventa. (on the reflexive reading)
Gianni self frightens

b. Gli studenti si spaventano prima degli esami per indursi a studiare di piu.
`The students frighten themselves before exams in order to urge themselves to study harder`.

Unlike *spaventare*, *preoccupare* is inherently stative. Because it cannot allow an external argument, a reflexive reading cannot be attained: because accusative case on the object is absorbed, *si* also "seeks" an external arguments to mark. There is no such argument, and the reflexive reading cannot thus be attained. With *piacere* no such problem arises: the object is marked with dative, not accusative. When dative is absorbed, *si* need not make any assumptions concerning the identity of the other argument. Any argument will do in this case, including the VP-internal stative causer.

Finally, note that on the eventive reading ObjExp verbs allow only the inchoative interpretation of *si*, not the reflexive one:

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[37] With ditransitive verbs it is also the dative which can be absorbed. Consider (i):
(i) Gianni si compra un libro.
Gianni buys himself a book

(119) a. ??Gianni si è spaventato senza farlo apposta.

`Gianni frightened himself accidentally`. (??as reflexive)

b. Gianni si è spaventato.

`Gianni got frightened`. (only inchoative)

c. Questa mattina, dopo una notte in biancho, Gianni si è spaventato dopo essere visto allo specchio.

`This morning, after a sleepless night, Gianni got frightened (*frightened himself) after having seen himself in the mirror`. (only inchoative)

It seems that with active external arguments (that is, those generated at spec, *v*) the reflexive reading requires a true agent, not a causer. To account for that I will assume, following Reinhart (1996) and Manzini and Savoia (1998) that reflexive and inchoative *si* are essentially the same process, spelling out the external argument (reflexive) or the internal one (inchoative). I will further assume that *si* always picks the highest argument which is *selected* by the lexical verbs (or generated at a projection selected by the lexical verb - cf. discussion in chapter three). ObjExp verbs may alternate between an agentive and a causative reading. Following my discussion in chapter three, I assume that on the agentive reading the verb selects for *v*. Therefore, *si* marks the argument at spec, *v*. On the causative reading the verb does not select for *v* and therefore *si* marks the internal argument, which is the next available candidate.

5.7.3 The causative construction revisited

Recall the contrast between *preoccupare* verbs and *piacere* verbs with respect to the causative construction:

(120) a. *Questo lo ha fatto preoccupare /commuovere/attrarre ancora di più a

Mario.

`This made Mario worry / move / attract him even more`.

b. Gianni ci ha fatto piacere il gelato.

`Gianni made us like ice cream`.

Again, let us look at the general pattern of Italian verbs with respect to this construction. Verbs which allow this construction include:

(121) a. Transitives:

Gianni ha fatto mangiare la mela a Maria.

Gianni made Maria eat the apple.

b. Unergatives:

Gianni ha fatto lavorare Maria.

Gianni made Maria work.

c. Ditransitives:

Gianni gli farà portare questi libri a Maria.

Gianni will make him take these books to Maria. (Burzio 1986)

d. *piacere* verbs:

Gianni ci ha fatto piacere il gelato.

Gianni made us like ice-cream.

e. non-stative *preoccupare*-type verbs:

Gli ho fatto spaventare il candidato per farlo lavorare di piú.

`I made him frighten the candidate$_i$ to make him$_i$ work harder.`

Verbs which disallow this construction include:

(122) a. passives and other verbs with derived subject (Burzio 1986):

*Gianni ha fatto essere licenziato (a) Mario

'Gianni made Mario be fired'. (B&R 1988)

b. stative ObjExp verbs:

*Questo lo ha fatto preoccupare /commuovere/attrarre ancora di più a Mario.

`This made Mario worry / move / attract him even more`.

All the verbs which allow this construction have an external argument, except for the *piacere* verbs. The difference between *preoccupare* verbs and *piacere* verbs thus seems to stem from the difference in case marking on the object.

I noted in chapter two (section 2.5.3) that the case pattern in causative constructions in Romance is ergative: when the causativized verb is mono-argumental (unaccusative or unergative) then this argument is marked with accusative:

(123) a. Gianni ha fatto lavorare Maria

Gianni made Maria work.

b. Gianni ha fatto cadere un vaso.

Gianni made a vase fall.

When the causativized verb is has two arguments, then the internal argument is marked with accusative case, and the external - with dative case:

(124) a. Gianni ha fatto mangiare la mela a Maria.

Gianni made Maria eat the apple.

b. Gianni ha fatto temere Paolo a Maria.

Gianni made Maria fear Paolo.

The subject of an intransitive verb is marked with the same case as the object of a transitive verb, thus conforming to the ergative pattern. As I argued in chapter two, it is only the T-dependent default case, in this case nominative, which changes structurally under this construction:

(125) a. nominative --> accusative (in intransitives)

b. nominative --> dative (in transitives)

c. accusative --> accusative

d. dative --> dative

If a verb has a dative object then it remains dative marked and does not "count" as an argument participating in the case alternation system: that is, a verb with two arguments of which one is dative marked will mark its second argument with accusative case (126a). For example, a ditransitive verb will have two dative arguments under causativization, the original dative and the argument formerly marked with nominative (126b):

(126) a. **Lo** farò scrivere / telefonare a Maria

I will make him (ACC) write / phone (to) Maria

b. Gianni **gli** farà portare questi libri a Maria.

Gianni will make him (DAT) take these books to Maria. (Burzio 1986)

We can conclude that a dative marked argument which appears in the causative construction is either inherently marked with dative (e.g. an indirect object) or it is a subject of a transitive verb, that is, an external argument.

Now consider again the following pair:

(127) a. *Questo lo ha fatto preoccupare ancora di più a Mario.

`This made Mario worry him even more`.

b. Gianni ci ha fatto piacere il gelato.

`Gianni made us like ice cream`.

The dative marked argument with *preoccupare* verbs is marked with nominative on the non-causative reading. With *piacere*, on the other hand, the dative argument has

not changed its case marking. Dative case does not "count" for the calculation of case-pattern changing. *Piacere* is thus considered as an intransitive verb with respect to its case marking, and its single argument is marked with accusative. The case pattern of the two classes under the causative construction is as follows:

(128) a. *preoccupare*:

nominative	-->	dative
accusative	-->	accusative

b. *piacere*:

nominative	-->	accusative
dative	-->	dative

I assume that dative case in a causative construction has thematic content. An argument bearing dative case in this context may be interpreted as either of the following:

1. An original dative (e.g. indirect object) which has not changed.
2. A former external argument of a transitive verb.

These are the only structural relations in this construction which are spelled out as dative case. ObjExp verbs have accusative case on their object. Therefore they participate in the ergative pattern and their argument which was nominative marked on the non-causative form is turned into dative. However, this argument is not a former external argument. It thus violates the thematic requirements on dative case in these environments. What happens here is a clash between a morphological, purely technical process of case marking and case changing in certain contexts, and the thematic interpretation associated with certain morphological cases. Recall that on the agentive of the verb causativization yields no difficulties:

(129) Gli ho fatto spaventare il candidato per farlo lavorare di più.
'I made him frighten the candidate to make him work harder'.

Here, the dative marked argument is a former external argument, as with standard transitive verbs, and no such clash arises. Again, the problem also does not arise when *preoccupare* is used intransitively:

(130) a. Questo ha fatto preoccupare Lucia.
`This made Lucia worry`.

b. preoccupare (intrans):
nominative --> accusative

In this case there is no dative case in the causativized verb, so no clash arises between its case marking and its thematic interpretation.

5.7.4 Auxiliary selection in ObjExp verbs

The last problem to be discussed here is the pattern of auxiliary selection in Italian psych verbs. Consider first the general auxiliary selection pattern for Italian verbs:

1. Transitives, unergatives, *preoccupare*-type: avere.

(131) a. Gianni ha mangiato una mela.
Gianni has eaten an apple.

b. Gianni ha telefonato.
Gianni phoned.

c. Questo ha preoccupato Gianni.
This has worried Gianni.

2. Unaccusatives, all verbs marked with *si* (reflexives, passives, impersonal and unaccusatives), *piacere*-type: essere.

(132) a. Gianni si è arrabiato.

Gianni *is* got mad.

b. Gianni si è lavato

Gianni *is* washed himself.

c. Questo è piaciuto a Gianni.

This pleased Gianni.

As noted by B&R, auxiliary selection in Italian seems to be sensitive to the presence or absence of accusative case: morphological accusative (inherent or structural) triggers *avere*, otherwise the auxiliary is *essere* (ibid:333).

A possible explanation of this pattern could work as follows: suppose that all instances of the same morphological case on arguments have to be checked or licensed by a certain functional head. This assumption is standard within minimalist theory. In our case, we can assume that all accusative case on objects in Italian is checked by *v* and all nominative case by (finite) T. [38]

v thus has two functions: theta-marking the external argument and case-marking the object. Burzio's generalization argues that the two functions are dependent on each other. However, we have seen that there are cases where each function is kept separately. Consider the four possible cases:

1. *v* only theta-marks the external argument: unergatives, transitives with no accusative case (*hit at the wall*).

2. *v* only case-marks the object: unaccusatives, passives and experiencer verbs which assign accusative (Hebrew); ObjExp verbs (*preoccupare*), SubjExp verbs (*temere*).

3. *v* both theta marks the external argument and checks accusative case: transitives.

4. *v* neither marks the external argument nor checks accusative case: unaccusatives (although in Hebrew they can have accusative sometimes, see above); *piacere* verbs. This is the only case when *v* is missing.

[38] I ignore here instances of accusative case on non-arguments, e.g. adverbs.

I will have to modify my assumptions slightly, and assume that VP-shells may have a *v* head on top of them, whose function is only case checking. [39] As long as this *v* is not a theta-marker (i.e., has no spec), no violation of FI arises.

The correct generalization seems to be as follows:

(133) avere is selected when both T and *v* are present. Otherwise, the auxiliary is essere.

T and *v* are the two heads which check morphological case on arguments. *have* is thus a reflection of a fully fledged tree structure, in which both heads are present. This is also compatible with the intuition that *be* is the default auxiliary, which is more basic than *have* (e.g. Kayne 1993). The presence of *v* may be required either for thematic marking (e.g. with unergatives) or for case assigning / checking. (133) predicts correctly that *preoccupare*-type verbs, transitives and unergatives take *avere*, while unaccusatives (including piacere), passives, and reflexives take *essere*. [40] A possible problem would be verbs of the *piacere* class which take an accusative case in Italian (such as *elude*, *escape* and *please* in English). According to B&R, no such verbs exist in Italian.

Auxiliary selection is thus a purely morphological process, which involves the activation of two functional heads, T and *v*. It also correlates with semantic characteristics, because only a specific group of verbs lacks *v* altogether. However, the fact that *preoccupare* verbs, which lack the thematic properties of *v* but have its case-marking properties, and unergatives, which have the thematic properties of *v* but lack its case-marking properties, pattern alike, shows that auxiliary selection is a morphological process, depending on *v*.

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[39] cf. Collins (1997), who argues that *v* is present with unaccusatives as well.

[40] An extra assumption is needed for reflexives, in which *v* does seem to mark the external argument. I will assume here that once accusative case is absorbed in the process of reflexivization, *v* is not transparent for auxiliary selection processes anymore.

5.8 Summary

The discussion in this chapter has some empirical and theoretical consequences both for a theory of VP structure and for the syntax-lexicon interface.

Empirical consequences:

1. Psych verbs do not have special syntactic constructions. Syntactic rules do not make reference to role labels in the theta grid, such as « Experiencer ». Any argument (DO, IO, PP) and any thematic label (Theme, Location, Goal) can be interpreted as an experiencer in the right context.

2. The analysis of ObjExp verbs is more fine-grained than standardly assumed: they have three semantic readings, which correlate with different syntactic structures. All properties associated with psych verbs hold, universally, for the stative reading. None of these properties exist with the agentive reading. Some (depending on the language) exist with the eventive reading.

3. Data from ObjExp verbs motivate a position in the VP which is external to the object domain but internal to the lexical VP. This is the stative causer, which is an "external-internal" argument: outside the domain of affectedness and measuring out, but still within the temporal path of the event. It is interpreted as a causer, but instead of causing an independent change of state it triggers a state which only holds as long as the causer is present.

SubjExp verbs also motivate the existence of a stative external argument at spec, TP. This argument behaves like an external argument, but it is stative.

Consequences for the syntax-lexicon interface:

1. Change of state and agentivity are properties which are relevant to the interface between the lexicon and the syntax. According to the presence or absence of these properties, ObjExp verbs take different syntactic forms. This further corroborates our initial assumption that aspectual properties are the set of lexical properties which are relevant for the syntax (cf. Tenny 1987, 1994). ObjExp verbs, a group of verbs which allow readings with both, none or one of these properties, were used here as a test case for abstracting away syntactically relevant semantic properties.

2. ObjExp verbs provide a strong motivation for a predicate-based approach to the interface: First, a large number of verbs alternate between a psych and a non-psych reading (cf. *strike*). Second, even on their psych reading, they alternate between further three readings which are realized differently. Any attempt to project all this from the lexicon will result in enriching the lexical component - and will be missing the point. I suggest, instead, that a large part of the specific meaning of a verb, in particular its event-contours (agentivity, telicity) is determined by the syntax in which the verb appears.

3. The following division of labour between the lexicon and the syntax emerges: syntactic structures narrow down the set of interpretations that can be associated with a particular tree, and provide a coarse-grained approximation of the possible interpretations it might have. However, the precise interpretation of the verb as a locative, a dative or a psych verb will be determined according to the properties of the verb and its arguments. The precise interpretation of (the single entry of) *frighten* as stative or an agentive verb will be determined by the identity of the *v*/V head.

Appendix 1: The treatment of the different readings of ObjExp verbs in the literature

The fact that ObjExp verbs may optionally be associated with agentivity or non-stativity has been recognized by a number of linguists. Ruwet (1972), B&R (1988), Grimshaw (1990), Bouchard (1995), Pesetsky (1995) and Anagnostopoulou (1997), among others, have argued that ObjExp verbs may have an agentive reading. Some also note that with respect to some phenomena (in particular backward binding and other binding phenomena - cf. Grimshaw 1990; see Anagnostopoulou for Greek object clitic doubling), the agentive reading behaves like standard verbs. However, the effects of agentivity were noted as an epiphenomenon, not something which partly defines the behaviour of ObjExp verbs. There is no attempt that I am aware of to look at the syntactic behaviour of these verbs on their agentive and non-agentive readings.

Independently, the contrast in stativity between SubjExp and ObjExp verbs was used by a number of linguists in order to explain the different lexicalization patterns of the experiencer: a subject in one group and an object in the other (Croft 1986, Grimshaw 1990, Dowty 1991, Tenny 1992). Croft (1986) observes, that while SubjExp verbs are always stative, ObjExp verbs at least allow an inchoative (that is, including change of state) reading. This pattern, Croft notes, is stable across languages (e.g. English, Russian, Lakhota and, I add, Hebrew, Latin, Italian and Classical Greek). Tenny (1992) notes that a delimiting PP can force an eventive reading on ObjExp verbs, but is incompatible with SubjExp verbs, thus serving to distinguish their aspectual properties:

(1) a. * John feared the truth into drinking.

b. The truth frightened John into drinking. (Tenny 1992:17)

The difference in event-type has been used by a number of linguists to explain the initial problem of mapping (i.e., how can an Experience be either a subject or an

object). I will review here three solutions, by Tenny (1992) Grimshaw (1990) and Dowty (1991).

Tenny (1992) takes aspectual structure to be a constraint on thematic structure, abstracting away the syntactically relevant information. She thus argues that an argument bearing the Experiencer role can be construed, depending on the predicate, as either measuring out the event (as in the verbs of change of state), or not (as in stative verbs). Mapping rules, associating aspectual roles with syntactic positions, map the measure Experiencer into the object position and the non-measure Experiencer into the subject position. My only reservation is, why should the thematic category *Experiencer* exist at all? Experiencers have no relevance for syntactic realization: we have seen that any argument can be interpreted as an experiencer under specific circumstances. It is the property of change of state, not the property of experiencing a mental state, which is relevant for the syntax and which makes the experiencer of ObjExp verbs appear at the object position (and Tenny actually assumes that). If we assume that thematic labels, though irrelevant for the interface with the syntax, still have an independent existence, the acquisition of verbs is thus made more complicated: children not only have to learn labels such as "Experiencer" and "Theme", but also to cope with the fact that those labels are aspectually ambiguous (i.e., either measure out the event or not). Alternatively, we could assume that all that the child has to learn is that the interpretation of measuring out the event is available only at the direct object position. Coming across a (non-derived) subject, she knows that it cannot possibly be a measure. Coming across a predicate with no direct object (most SubjExp verbs in English, except *fear* and few others), she knows it cannot denote a measured event.

Grimshaw (1990) assumes that the mapping between the lexicon and the syntax is governed by prominence hierarchies along two dimensions: the thematic dimension and the aspectual dimension. Arguments are ordered within the hierarchy in such a way, that the most embedded argument is the least prominent one. The thematic hierarchy is ordered as most hierarchies proposed (cf. chapter one, section 1.3.1.2), with the Agent as the most prominent argument and the Theme as the least prominent one. The

aspectual or causal hierarchy has to do with the event structure of the predicate. In the aspectual hierarchy, the Cause argument (i.e. the argument which causes the event), or the argument which is associated with the first sub-event (i.e., which initiates the action), is the most prominent:

(2) a. (Agent (Experiencer (Goal/Source/Location (Theme))))

b. (Cause (other (...)))

(Grimshaw 1990:24)

Normally, thematic and aspectual prominence converge: the most prominent argument in the thematic hierarchy is also aspectually most prominent. The case of ObjExp verbs is different, because with these verbs there is a mismatch between thematic and aspectual prominence: the Theme, which is thematically least prominent, is aspectually most prominent, because it is the causer of the event (i.e. the frightener, amuser etc.). In these cases, Grimshaw argues, aspectual prominence overrides thematic prominence, and the Theme thus ends up as the subject:

(3) a. The building frightened the tourists.

b. *frighten* (x (y))

Exp Theme

Cause ...

Like Tenny, Grimshaw assumes that there is an aspectual tier mediating between the lexicon and the syntax. Her theory includes a multi-levelled mapping from the lexicon: from lexical conceptual structure, through the level of argument structure, into D-structure. Thematic prominence, according to Grimshaw, is responsible for mediating between LCS and PAS, and aspectual prominence governs the mapping from PAS into D-structure. Therefore it is the Theme, which is aspectually most prominent, which will be lexicalized as the subject at D-structure. I mentioned in section 5.5 the problematic

status of an internal argument which moves into a subject position where it is interpreted as a causer.

Dowty (1991) discusses psych verbs as a test case for his prototype theory of thematic roles and argument selection. As discussed earlier, Dowty regards thematic roles as prototypes, containing clusters of properties, or rather, entailments made by predicates with respect to one of their argument positions (cf. chapter 1, section 1.2.2.1). He then postulates an argument selection procedure, according to which, the more Proto-Agent properties an argument has, the more probable that it would be lexicalized as a subject, and the more Proto-Patient properties it has, the more probable that it would be lexicalized as an object. [41]

Dowty notes that the both SubjExp and ObjExp verbs entail the property of sentience / perception with respect to their Experiencer participant, and the property of causing "some emotional reaction or cognitive judgement in the experiencer" (ibid:579) with respect to their Stimulus. Both these properties (sentience and causation) are P-Agent properties. Furthermore, there are no other entailments made by the predicate which could distinguish the two. The result, in Dowty's terms is, that "each argument has a weak but apparently equal claim for subjecthood" (ibid.). This means there is no way to determine straightforwardly which argument would be the subject of the predicate. The way out of this indeterminacy, Dowty suggests, is to look also at the P-Patient properties that these predicates entail: on their inchoative reading an ObjExp verb entails change of state with respect to its Experiencer, but does not make any additional entailments (such as motion) with respect to the Stimulus. [42] The verb now has two arguments, both equal with respect to P-Agent properties, but one of the

[41] Dowty claims that his "Argument Selection Rules" do not form a lexically-determined linking mechanism, but rather are "a constraint on what kind of lexical predicates may exist in a natural language, out of many imaginable ones" (ibid., 576). This is not made clear by way in which these rules are stated. also, there is a confusion between the assumption that Proto-properties are entailed by predicates with respect to syntactic position, and the way in which the selection rules are stated.

[42] Dowty's example is "*the package in the back seat surprised John*", which does not entail that the package did anything.

arguments also has a P-Patient property, i.e. change of state. This argument thus makes a "better" Patient, and is therefore lexicalized as the object.

Appendix 2: Two possible experiencers: the grammatical realization of point of view

Throughout my discussion of psych verbs I treated them as being semantically relatively simple: one entity triggers an emotion, another entity is filled with emotion. Note, now, that some cases are more complicated than this. In particular, some psych verbs are similar to propositional attitude verbs in that they involve *two* points of view: the experiencer's, and the speaker's. Consider the following case:

(1) a. The offer of a senior position at BT flattered Nina (experiencer: Nina).
b. This dress flatters Nina. (experiencer: speaker).

In (1a) the internal argument, *Nina*, is an experiencer, who feels flattered. In (1b) Nina does not have to be at any mental state of being flattered, nor does she have to be aware of the fact that the dress becomes her. The experiencer in this case is the speaker, who thinks that the dress flatters Nina. (1a) is presented from the point of view of one of the arguments (sometimes called internal point of view, cf. Ruwet 1991), while in (1b) it is the speaker's point of view from which the event is presented (or external point of view - ibid.).

Not all psych verbs allow such alternation. Most of them simply report the feeling of the experiencer argument from his/her own point of view, while the speaker's point of view cannot be expressed. However, some verbs do allow the duality between two viewpoints. Consider the following:

(2) Sa patronne humilie constamment Jean et il ne s'en rend même pas compte.
`His boss constantly humiliates John, and he does not even realize it`.
(Bouchard 1995:272).

The experiencer of humiliation is not the entity towards which the humiliation is aimed. Rather, it is an outside point of view given by the speaker, who reports it. No such outside viewpoint is allowed by, say, *frighten*.

Ruwet (1972) notes that there are constructions in which an external viewpoint is achieved with just any psych verb:

(3) a. Oscar est ennuyé du fait / de ce qu'il va devoir payer tellement d'impôts.
`Oscar is annoyed about the fact that he'll have to / about having to pay so much taxes`.

b. Le fait / ce qu'il va devoir payer tellement d'impôts est ennuyeux pour Oscar.
`The fact that he will have to pay so much taxes is annoying for Oscar`.
(Ruwet 1972:208)

As noted by Ruwet, (3b) may be uttered by Oscar's accountant, while Oscar himself is away, and is unaware of the fact that he will have to pay high taxes. In (3a), on the other hand, Oscar must be aware of the fact, and be actually annoyed. The external point of view is thus associated with the construction of an adjective and the preposition *for*. The same holds for English as well:

(4) a. Paul is annoyed by the budget cuts.

b. The budget cuts annoy Paul.

c. The budget cuts are annoying for Paul / everyone who is on welfare.

(4a) and (4b) assert that Paul is annoyed and is, of course, necessarily aware of the fact. In (4c), on the other hand, Paul may not be aware of the budget cuts. The speaker is the one who judges it as annoying for Paul. This reading could be paraphrased as "bad news for Paul / everyone who is on welfare". The difference between the constructions above is strongly reminiscent of the contrast between some instances of the dative construction and the double object construction:

(5) a. Nina told a story to Greg (but he wasn't listening).

b. Nina told Greg a story (*but he wasn't listening).

(6) a. Nina taught French to Greg (for months, but he still cannot speak it properly).

b. Nina taught Greg French (*but he still cannot speak it properly).

(7) a. She is going to sing a song for her late lover.

b. *She is going to sing her late lover a song. (Tenny 1994)

Recall the difference between DAC and DOC with respect to the status of the indirect object: the double object construction entails some affectedness of the indirect object, or full transference of the action: the "goal" has heard the story, has learned French, or is just aware of the song for him (Oherle 1976, Pinker 1989, Tenny 1994, Goldberg 1995). When the indirect object is marked by *to*, no such obligation exists. It seems that an experiencer which is marked by *to* or *for* behaves in the same way: when it is a subject, a direct object or an indirect object in the DOC, it must be in a mental state. When it is an indirect object marked by *to* or *for*, it does not:

(8) a. This dog frightened Nina.

b. Nina is frightened at the dog.

c. This dog gave Nina a fright last night.

d. This dog is frightening for little children.

It may be that the specific nature of this construction has to do with the status of the adjective: *frightening*, *annoying*, *amusing*. All adjectives with *-ing* have a component of modality in them: capable of inducing fear / annoyance etc. This modality component means "capable of inducing a certain mental state in general". The person who judges it to be so is the speaker, with the external viewpoint. The speaker can judge the situation to be frightening in general, or for specific cases:

(9) a. Rosemary's baby is a frightening film.

b. Rosemary's baby is a frightening film for mothers to be.

I have not been able to identify more such constructions in English, so that I can test their properties in more detail. It seems to me, however, that all such constructions will be adjectives, rather than verbs. Another example which comes to mind is *-some* adjectives: *fearsome*, *awesome*, *tiresome* - all of which have such aspect modality in them.

Another case of external and internal viewpoint is verbs which alternate between a control reading and a reanalysis reading, such as *threaten* verbs which were discussed in chapter three. Consider the following:

(10) a. This boy promises to become a good musician. (Ruwet 1991)

b. This patient requires a lot of care. (Bouchard 1995)

The two sentences are ambiguous between a control reading, in which the subject has actually made a promise or a request, and a reanalysis reading, in which it is asserted that there are good prospects for the boy to become a musician, or that a lot of care is required for the patient. Now, control forces an internal point of view: it is the subject itself which is aware of the situation and acts. The speaker merely reports this internal viewpoint of the subject of the sentence. With reanalysis, the viewpoint from which the sentence is uttered is the external one, that of the speaker. It is the speaker who judges the situation to be such that there are good prospects for the boy to become a musician, or that a lot of care is required for the patient. The subject itself may, but does not have to be aware of the situation. Ambiguities between external and internal viewpoints are quite rare. First of all, with inanimate subjects only the reanalysis, and external viewpoint, exist:

(11) a. This book promises to become a best-seller.

b. The rock threatens to hit the wall.

c. The coma victim requires a lot of care.

Secondly, control and reanalysis interact with person properties of the subjects in a way which often disambiguates them: proper names and first person pronouns are almost impossible to construe with a reanalysis reading. They tend to force a control reading:

(12) a. I promise to become a leading linguist.

b. Nina requires a lot of care.

The literature on point of view has argued that all referential expressions and pronouns are inherently associated with a point of view (see Tenny 1997 and references therein). Still, the difference between first person pronouns and second and third person pronouns is intriguing, and correlates with other properties which distinguish them (split ergativity phenomena, agreement patterns etc.).

Finally, consider an interesting case of verbs which are very close in meaning, and differ with respect to their viewpoint encoding. These verbs are *want*, *need*, *lack* and *miss*. Consider, first, *want*. It has the meaning of desire, perhaps the most common one. It also has the meaning of lacking something, which is somewhat archaic:

(13) a. Nina wants to buy a house.

b. Nina wants a new watch.

c. Nina wants Paul to go home (desire)

(14) a. The children do not want for anything

b. This house wants nothing as it is. (lack)

Finally, *want* also has the meaning of "need":

(14) a. Your flight is at 8:00. so you want to be at the airport at around 7:00.

b. You want to wash your hands before you start eating.

The desire reading of *want* is a control one, in which the viewpoint is internal, belonging to the subject rather than to the speaker. With the "lack" reading, the viewpoint is necessarily external: the speaker is the one who judges whether something is wanting. The same holds for the "need" reading: it is always the external viewpoint which is expressed. The speaker is the one whose opinion is expressed. This reading could be paraphrased as *It is desirable that....* The person who judges this thing as desirable is, of course, the speaker. As with *threaten* verbs, with inanimate subjects only the external viewpoint is achieved. Interestingly, some sentences could be ambiguous between the desire reading and the need one:

(15) She wants to stay away from Paul.

(15) could have either an external viewpoint, or an internal one. On the internal viewpoint reading, it is the subject, she, who has a desire to stay away from Paul. On the external viewpoint, it is the speaker who expresses his/her opinion, that she should stay away from Paul, even though she need not be aware of the fact. As with *threaten* verbs, if we substitute a proper name for *she*, there would be no ambiguity, and only the control reading will be achieved. We can conclude by saying that the precise viewpoint depends both on the verb and on the properties of its subject.

Need exhibits similar properties to *want*. Consider (16):

(16) Nina needs new shoes.

(16) is ambiguous with respect to whose viewpoint is expressed: on one reading, the speaker merely reports Nina's opinion. This is the internal viewpoint. On the other reading, it is the speaker's opinion, that Nina needs new shoes, and she herself need not be aware of this fact. The external viewpoint is appropriate if the speaker sees Nina entering a shoe store. The second - if (s)he notices that Nina's shoes are in a bad condition.

Finally, consider the pair *miss* and *lack*:

(17) a. Nina misses her former home / her family.

b. Nina lacks courage / the ability to cope with the situation.

Miss forces an internal viewpoint, while *lack* is inherently associated with an external viewpoint. It seems to me, that viewpoint is one of the chief differences between these two otherwise very similar verbs. The subject of *miss* is necessarily aware of the lack or deficiency it has, while that of *lack* does not.

Because point of view encodes feelings and judgements of participants with respect to events, it interacts with psych verbs, and with the grammatical encoding of the experiencer. There is a debate as for whether point of view is a grammatical phenomenon or whether it is governed by extra-grammatical mechanisms. I hope to have shown that it does, at least, interfaces with the grammar, in that certain syntactic structures are associated specifically with an internal or an external viewpoint.

Appendix: Aspect in grammatical theory

This appendix is concerned with several issues regarding aspect which have some relevance for the discussion in chapters one and two but which are not directly necessary for the material presented in this work. I will be discussing four issues here: lexical vs. grammatical aspect and their interaction, telicity vs. boundedness, object quantificational properties and its interaction with lexical aspect and the process of event composition.

1. Lexical aspect and grammatical aspect

The term "aspect" is normally taken to mean either of two things:

1. Event-structure or event-type: the relationship between the verb, its arguments, and the type of event that the two, taken together, denote (for example, the difference between *Nina ate a banana* and *Nina ate bananas*, and between *Nina ate a banana* and *Nina saw a zebra*).

2. The internal temporal structure of the event, or the *way* in which it is presented (i.e., the difference between *Nina ate a banana* and *Nina was eating a banana*).

The first type is called *lexical aspect.* It is also known as *Aktionsart*, *situation aspect* (Smith 1991) and *inner aspect* (Verkuyl 1972, 1993). The second type is usually referred to as *grammatical aspect* or *verbal aspect*, and is sometimes called *viewpoint aspect* (Smith 1991) or *outer aspect* (Verkuyl 1993).

I assume that lexical aspect is the domain which is relevant for the interface with the syntax, and which affects the argument realization of the predicate. This aspectual level is determined at the level of the VP, according to the structure the verb takes. Grammatical aspect operates over basic verbal predications, modifying them. This aspectual domain is related to higher projections in the tree, such as T, Asp etc. In the rest of this section I will present briefly both types of aspect and the phenomena which

are associated with each of them. I will show that lexical aspect (but not grammatical aspect) is relevant for the syntactic realization of arguments.

Lexical aspect has to do with the type of event which the predicate or, more precisely, the predicate combined with its arguments, denote. Verbs differ from one another with respect to the events they denote, in particular, with respect to the internal temporal properties of these events. Some verbs denote stative events (*know*), while others denote actions (*run*). Some denote telic events which have a set, inherent endpoint (*eat an apple*), and some denote atelic events, which do not have such an endpoint (*laugh*).

Linguists and philosophers distinguish between a fixed number of types that verbs refer to (often referred to as *verb-classes* or *situation-types*). The basic classification is suggested by Vendler (1967), based on discussion in linguistics and philosophical work which goes back, as is often stressed, to Aristotle (Metaphysics 1048b). This classification divides verbs into four groups, according to the following parameters:

1. The temporal duration of the event they denote (i.e., whether it is durative and "takes" a period of time or whether it is instantaneous).

2. Whether the event has a fixed temporal endpoint (i.e., whether it is telic).

Vendler distinguishes four such classes:

1. Accomplishment: durative, has a fixed temporal endpoints (*build a house*).

2. Activity: durative, has no fixed temporal endpoint (*walk, laugh*).

3. Achievement: instantaneous, has a fixed endpoint (*reach the top*).

4. State: instantaneous (i.e., a state is made of a series of instants during which the state holds), has no fixed endpoint (*love music*). [1]

Situation types interact with the argument structure of the verb: it has been observed that each point, process or endpoint, is associated with one argument

[1] Other linguists further decompose aspectual classes, adding more features to their calculus: Smith (1991) adds stativity, as distinguishing between states and semelfactives such as *cough*; Bach (1986) uses a more complex feature system, distinguishing between dynamic states (*sit*) and non-dynamic states (*love*), or a happening (*recognize*) and a culmination (*reach the top*)).

(Pustejovsky 1991, van Hout 1996). Thus, accomplishments are transitive, two argument verbs, while processes and achievements tend to be intransitive verbs. Furthermore, because achievements have a single argument which undergoes a change of state or some change of location, they are unaccusatives. Activities, which have a single argument which is engaged in some activity, are unergatives. There arises the question whether situation types are primitives, or whether they can be derived from more basic terms (e.g., process, transition). Following work by Pustejovsky (1991) and others, I will assume here that they can (see also the arguments raised by Verkuyl which will be mentioned in the discussion about telicity and boundedness). However, I will be using terms such as *activity*, *accomplishment* etc. as convenient names to refer to event types with certain properties.

Grammatical aspect is best taken to be, following Smith (1991), the perspective, or viewpoint from which the event is presented (hence the term *viewpoint aspect*). Smith (1991) regards grammatical aspect as a zoom lens, which can concentrate either on the event as a whole or on some part of it. If the lexical properties of *eat* constrain the types of events *eat* can denote, to events in which John eats an apple, or in which John eats, grammatical aspect further modifies the event, by characterizing its internal temporal structure: an event can be presented as a single whole, or as a completed event (e.g., *John ate an apple*, *John has eaten an apple*), or as an incomplete event (e.g., *John was eating an apple*). There are two principal viewpoints from which events are presented: the *perfective* viewpoint and the *imperfective* one. Perfective viewpoints focus on the situation as a whole, with initial and final points:

(1)

Imperfective viewpoints focus on part of a situation, including neither initial nor final point.

(2) I..../////////...F

Following Smith (1991), I will assume here that viewpoints focus on situation types. Syntactically speaking, grammatical aspect takes as its "input" the basic VP structure and the event-type it denotes (I will not discuss the interaction between the two in detail here). Consider the following example (Smith 1991:95):

(3) a. Mary was walking to school.

b. Mary walked to school.

The situation [Mary walk to school] is telic, and has a natural endpoint. (3a) is presented from a perfective viewpoint, which focuses on the situation as a whole. Therefore, the endpoint of the situation (i.e., Mary getting to school) is part of what is focused. (3b) is presented from an imperfective viewpoint. What is focused here is *a part* of the event of Mary walking to school: some internal part of the event, not including the initial or final points. [2]

Smith suggests the following schema to present the interaction of the Accomplishment situation with the viewpoint from which it is presented:

(4) a. I F

////////////////////

b. I.....F

//////

[2] Smith argues that the focused part of the situation has a special status: only what is focused by viewpoint is visible for semantic interpretation. In other words, only what is visible is *asserted*. (Visible information is what is available for the hearer when computing the truth conditions of a sentence. Its status is like that of a conventional implicature (Grice 1975), which cannot be cancelled. Speakers may make other inferences on the basis of the situation type and aspectual viewpoint. Such inferences are conversational, and can be cancelled (ibid.)).

The I(nitial) and F(inal) points come as part of the situation type, which, in this case, include both points.

The contrast between perfective and imperfective viewpoints is the contrast between focusing on the whole event, or on some part of it (Smith 1991). Another contrast, derived from the former one, is that the perfective does not distinguish the internal phases of the situation, whereas the imperfective "pays essential attention to the internal structure of the situation" (Comrie 1976:16).

Grammatical aspect modifies the basic predication of verbs (in which lexical aspect plays a crucial role). The same situation type can be presented either from a perfective or from an imperfective viewpoint. Note, for example, that the two types of aspect are differently marked: lexical aspect is conveyed by the constellation of the verb and its arguments, whereas grammatical aspect is usually marked by verbal morphemes. The lexical aspect of a verb, or its basic situation type, is always transparent, no matter what is the viewpoint aspect or the properties of the object. In (5), events pertaining to all four situation types are presented from a perfective viewpoint. They are taken as single wholes, but their situation type is evident:

(5) a. John lied on the floor (state).
b. John sang (activity).
c. John ate an apple (accomplishment).
d. John won the race (achievement).

Similarly, in (6) the same events are presented from a perfective viewpoint. Thus, only the internal part of the event is focused on, but the situation types of each verb is clear:

(6) a. John was lying on the floor (state).
b. John was singing (activity).
c. John was eating an apple (accomplishment).

d. John was winning the race (achievement).

The distinction between grammatical and lexical aspect is not always made explicit. In particular, the completed reading which is associated with perfective viewpoints is mixed with the telic interpretation of events. I will discuss this in the following section.

2. Telicity and boundedness

Situation types refer to verbs in isolation. They are labels, put on the predicate itself. There has been two main objections to the use of situation types as primitives in the theory of aspect. The first is that situation types are not linguistic entities, but rather, philosophical categories (Verkuyl 1993). The second objection, also put forward mainly by Verkuyl (1972, 1993), is that aspectual interpretation is not determined by verbs in isolation, but rather, by the sentence as a whole. Verkuyl (1993) uses the term *Aspectuality* to refer to the aspectual value of a sentence as *durative* or *terminative* (roughly meaning temporally unbounded and bounded). This aspectual value is calculated compositionally, and the verb's Aktionsart is only one ingredient in this calculus, among several others:

1. The lexical aspect of the verb (e.g., whether the event type is a state, activity, accomplishment or achievement).
2. Grammatical aspect or verbal aspect: whether the event is presented from a perfective, completed viewpoint (*Nina built a house*), or an imperfective, incomplete one (*Nina was building a house*).
3. The properties of the subject and object NPs: whether they are quantized NPs (*build two houses*) or mass nouns or bare plurals (*build houses*).
4. Adverbial expressions of duration or completion (such as *for an hour, in an hour*).

Consider the following examples:

(7) a. John ate an apple / three apples.

b. John was eating an apple.

c. John ate apples.

Only (7a) has what Verkuyl (1993) calls a *terminative* reading, i.e., referring to something bounded in time. (7b) asserts that there was an event of eating an apple, but does not imply that this event is completed. It thus has a *durative* reading of an event that lasted some time, but was not necessarily terminated. (7c) is also durative: it asserts that there was an event of apple eating, but this event does not refer to anything bounded. Apple eating could have lasted forever.

I argue that lexical aspect and aspectuality refer to two different domains: that of the basic predication of the verb and its arguments, and that of the sentence as a whole. The terms *telic* and *atelic* are often used as applying to both situation types and to sentences. This, however, is not precise. Telicity is an inherent property of the predicate in combination with its arguments (more precisely, its internal arguments). A telic situation does not become atelic just because it is presented from an imperfective viewpoint. For example, (8a) and (8b) are both telic events - both have the same inherent endpoint, the point at which the house is built:

(8) a. Nina built a house (telic, terminative)

b. Nina was building a house (telic, durative)

The difference between (8a) and (8b) is that the first is terminative (or completed, or presented from a perfective viewpoint) while the latter is durative (incomplete, imperfective, etc.). We need a distinction between the characterization of the basic verbal predication ((a)telic) and the characterization of the actual aspectual value of a sentence (e.g. terminative / durative). Following Depraetere (1995), I will distinguish here between *telicity* and *boundedness*. Telicity is the property of having an inherent endpoint, which may be potentially realized. Boundedness, on the other hand,

is the actual temporal boundaries of the event. Boundedness can be affected by anything which contributes to the realization of these temporal boundaries: perfective or imperfective viewpoint, temporal adverbs, and so on. Telicity, on the other hand, is associated with basic configurations of verbs and their arguments. For example, [Mary make a chair] is telic, while [Mary sleep] is not. Sentences are not interpreted as telic or atelic, but rather as being *bounded* or *unbounded* in time. (A)telicity and (un)boundedness often coincide. However, there are several possible ways for them to interact:

(9) a. John ate an apple (telic, bounded).

b. John was eating an apple (telic, unbounded) .

c. John eats apples (atelic, unbounded).

d. John ate apples (from two to four) (atelic, bounded).

(9a) and (9b) are both telic: they have an inherent endpoint, the consumption of the apple. Only in (a) is this endpoint realized (because the event is presented from a perfective viewpoint, which includes the endpoint of the situation). (9a) is therefore both telic and bounded, while (9b) is telic, but unbounded (because of the perfective viewpoint). (9c) is atelic, because the properties of the object affect the telicity of the event: when the object is not bounded in space, the event cannot be measured over time (see Mourelatos 1978, Bach 1986, Krifka 1992 for the strong linkage between the properties of the object and the aspectual properties of the event). (9d) is atelic, but bounded: the fact that the event is presented from a perfective viewpoint entails that it is terminated. Further specification of this termination can be given by the adverbial phrase, "from two to four".

It turns out that viewpoint aspect affects the boundedness of sentences: in particular, progressive and habitual aspect tend to force an unbounded reading, while perfectives force a bounded one. However, viewpoint aspect does not have an effect on the telicity of the predicate (This amounts to saying that viewpoint aspect does not

affect the situation type to which the verb belongs). Telicity is computed according to the properties of the verb and its arguments. [3]

Telicity is associated with two situation types only: accomplishments and achievements. Temporal boundedness is available to all sentences types:

(10) a. Rose slept (for two hours)

b. Simon was drinking beer (for two hours)

c. Mary made a chair (in two hours)

d. Jane ran to the store (in two hours)

(10a) and (10b) describe atelic events. (10c) and (10d) describe telic events. All sentences, however, are bounded in time: by virtue of being presented from a perfective viewpoint (combined with past tense) they are interpreted as lasting a certain period of time. This time period can also be specified explicitly (by durational adverbs for atelic events, and adverbs of completion for telic events).

Telicity is therefore a property of events. Boundedness - a property of sentences. The two can operate independently: we have telic, unbounded events and atelic, bounded events. I regard telicity as a *potentiality* of having a natural endpoint. Whether this natural endpoint is present in the actual sentence depends on the sentence's viewpoint and sentential adverbs. However, this potentiality is important for the syntax-lexicon interface. It regulates a large part of the relationship between verbs' event structure and their syntactic realization.

Associating predicates (as opposed to full sentences) with situation types, or with terms such as "telic" or "atelic" has been challenged (see, especially, Verkuyl 1993), in particular because of the claim that aspectual value is compositionally calculated for the whole sentence and not just for verbs on their own. To motivate this

[3] Here I differ from Depraetere (1995), who assumes that habituals (e.g. *Mary goes to school every day*) render the event atelic. I assume that habituals belong to the viewpoint of the sentence and affect only its boundedness. The event itself [Mary go to school] has a well-defined inherent endpoint.

claim, Verkuyl (1993) brings examples of verbs which are termed as "telic", which form atelic (or durative) sentences:

(11) Judith was eating a sandwich (ibid., 10)

If we regard telicity as a property of event-types, there is no problem with (11): the predicate [eat a sandwich] may be telic, thus having an inherent endpoint. In (11) this potential endpoint is not realized, because of the imperfective viewpoint. However, it is important to keep this potentiality of verbs to have inherent endpoints. Verbs such as *eat*, *read* or *make* (to which Verkuyl 1993 ascribes the property [+ADD TO]), are different from atelic verbs such as *love* or *sleep*, which never include such endpoints.

Finally, consider the role of adverbial modifiers in determining the telicity / boundedness of the sentence:

(12) a. Mary slept (for two hours / ??in two hours).

b. Mary sat on the floor (for two hours / ??in two hours).

(13) a. Mary ate an apple / built a house (in two hours / ?for two hours).

b. Mary reached the top (in two minutes / *for two minutes).

As noted in Higginbotham (1993), *for* adverbials simply measure the duration of the event, while *in* adverbials require two different points in time: the point from which the event is measured and the point at which it terminates: either the process and telos denoted by the verb, or other points provided by adverbs etc. *In* adverbials thus modify telic events, which include an endpoint. [4] *For* adverbials, on the other hand, are compatible with activities or states, which are homogeneous, and made of one "chunk".

[4] The initial point may be either overtly realized, as in *Mary ate an apple (in five minutes)*, or implicit, as in *Mary reached the top (in five minutes)*. In the first sentence the initial point is the point at which the process of eating began. In the second sentence it is the point (which is not given to us) at which she started going towards the top.

When combined with accomplishments and achievements, which necessarily include two points (process, explicit or implicit, and telos or endpoint), they yield a strange result.

However, the combination of adverbials and situation type is not rigid. Accomplishments and achievements can be combined with *for* adverbials, while activities and states can be combined with *in* adverbials (Higginbotham 1993, Jackendoff 1997b):

(14) a. Mary laughed in four minutes.

b. Mary sat on the floor in four minutes.

(15) Mary built a house for five years.

In order to interpret (14) speakers force an initial point on the event, to which the *in* adverb can refer. For example, in (14a) it may be that Mary laughed four minutes after a certain event took place (e.g., John trying to make her laugh). Similarly, when confronted with a sentence like (15) speakers modify it in order to make it compatible with the *for* adverbial. The emphasis is put on the *process* of building, which took five years. Such process is referred to by Jackendoff (1997b) as aspectual coercion.

In this work I therefore sometime use *in/for* adverbials as diagnosers of (a)telicity, but never as a single, decisive test.

3. Quantificational properties of the object and lexical aspect

I noted briefly before that the object contributes to the telicity of the verbal predication. Let us now examine the quantificational properties of objects in more detail.

Consider, first, the following data:

(16) a. Mary drank wine (atelic)

b. Mary drank a glass of wine (telic)

c. Mary ate apples (atelic)

d. Mary ate three apples (telic)

All the events described above are bounded, by virtue of being presented from a perfective point of view, in the past tense (i.e., terminating prior the time of utterance). However, they differ with respect to their aspectual properties. (16b) and (16d) are telic events: they describe events with precise (potential) endpoints, namely, the consumption of a glass of wine or of three apples. (16a) and (16c), on the other hand, are atelic. They have no such well defined endpoint. Drinking wine or eating apples can go on indefinitely, without a natural endpoint.

Obviously, the differences in telicity cannot be attributed to the verbs' properties or verbs' aspect, as these are identical in both the telic and atelic cases. The only difference between the telic and atelic events in (16a-d) is the properties of their direct objects: the telic events have objects which are well individuated, and can be measured precisely (a glass of wine, three apples). The atelic events, on the other hand, have objects whose limits are "fuzzy" and hard to measure (wine, apples). The difference between predicates such as *a glass of wine* and *three apples* on one hand, and *wine* and *apples* on the other hand, is known as the difference between *count nouns* and *mass nouns* (or *bare plurals*). [5]

The importance of the properties of the verb's arguments for the aspectual interpretation of the sentence is well known. In particular, Verkuyl (1972, 1993) assumes that a necessary condition for a terminative reading of a sentence is that its arguments have the property [+SQA] (specified quantity of A, A being the denotation of

[5] See also the distinction between "fuzzy" objects, which are often referred to as "stuff" (e.g. gold, wine, milk), and well individuated objects which are "things" (Pelletier 1979).

the head noun). Bare plurals (e.g. *apples*) and mass nouns (e.g. *wine*) lack the property [+SQA]. Others, including definite or partitive mass nouns (e.g. *the wine*, *of the wine*) are [+SQA].

The effect of NP properties on the aspectual properties of sentences is widely agreed. However, there is still a question, why should this be so? I showed before that objects are those entities which undergo the change of state specified in the event: an apple is consumed, a house is built, etc. On an intuitive level, we can say that when the object has precise, well-individuated spatial limits, there should also be precise temporal limits to the event. But if the object is unlimited - milk, apples, houses, etc., then there is no inherent, natural endpoint to the event: eating an apple takes a certain amount of time, until the apple is eaten. As with all incremental themes, a direct mapping holds between "bits of object" and "bits of events" (see chapter two).

The parallelism between the properties of the object and the telicity of the event has been noticed by a number of linguists (Mourelatos 1978, Dowty 1979, Bach 1986). A formal treatment of the relationship between the two is suggested in Krifka (1992), where a correspondence is established between the *temporal constitution* of verbal expressions (which is the situation type to which they belong, including their properties of (a)telicity) and the *nominal reference* of their objects (i.e., whether they denote mass nouns or quantized objects). [6] I will review Krifka's analysis here, simplifying it somewhat at certain points.

As a starting point, Krifka notices the similarity between quantized objects and telic events on the one hand, and cumulative objects and atelic events on the other hand: quantized objects (e.g., *an apple*, *a glass of wine*) have precise limits. Telic events are events with precise endpoints (or limits). Cumulative objects, on the other hand, have no precise endpoints (e.g. *apples*, *wine*).

---

[6] The similarity between nominal and verbal aspect was already noted in Verkuyl (1972), where it is dealt by assuming features such as [+SPECIFIED QUANTITY], which are projected from arguments to the VP. Other, model-theoretic approaches include Dowty (1979) and Bach (1986). I follow Krifka (1992) in my discussion, because his treatment best fits the approach I take with respect to the place of NP properties in the general schema of aspectual properties.

Following that, Krifka notices that for telic verbs (e.g. transitive *drink*), it is the nominal reference of the object (cumulative or quantized) which determines the temporal constitution of the event as telic or atelic:

(17) a. drink wine (cumulative object, atelic event)

b. drink a glass of wine (quantized object, telic event)

When the verb *drink* combines with a quantized object, it forms a telic event. When it combines with an atelic object, it forms an atelic event. This generalization only holds with verbs of consumption or creation (e.g., *eat*, *drink*, *break*, *make*). Other verbs, in particular statives, do not observe it:

(18) a. see zebras (cumulative object, atelic event)

b. see a zebra (quantized object, atelic event)

The verbs which are aspectually affected by their objects' properties are measured verbs. [7] Measured verbs describe some change of state, which is measured by their objects. Intuitively, the effect of the object-measurer on these verbs is clear: measured events can be described as consumption, change or creation across time. As time goes by, the change of state which measures the event progresses. However, only when the measurer object has precise, well defined limits does the event have an inherent, well defined endpoint: if the event describes the consumption of three apples or the building of every house, then the event lasts the precise amount of time it takes to exercise these actions. But if the event describes consuming apples or building houses, there is no reason for the event to be limited in time. Measured verbs are interpreted as limited in time by virtue of the fact that eating an apple or building a house cannot go on indefinitely. If, however, the object has no precise spatial limits, then there is no reason why the event

[7] See also Verkuyl's (1993) term, [+ADD TO].

should be temporally limited: eating apples or building houses can go on forever, if there are enough apples to eat or houses to build.

The indifference of non-measured verbs to the properties of their objects is also intuitively clear: since they do not describe any change of state over time, there is no importance to the spatial limits of their objects. For example, seeing is a state, and its object has no measuring role. Therefore, seeing two zebras and seeing zebras are events of the same type, both being atelic.

Krifka (1992) develops a formal system to capture the correlations between verbal and nominal aspect. In his system, there are variables corresponding to objects (*O*), events (*E*) and times (*T*). With the operators *U* (join), $\leq$ (part) and < (proper part), he can define reference types such as cumulative and quantized:

(19) a. $\forall P[CUM(P) \leftrightarrow \forall x,y\ [P(x) \wedge P(y) \rightarrow P(xUy)]]$ (cumulative reference)

b. $\forall P[QUA(P) \leftrightarrow \forall x,y\ [P(x) \wedge P(y) \rightarrow \neg y<x]]$ (quantized reference)

With the terms *CUM* (cumulative) and *QUA* (quantized) we can give semantic representations for different object types:

(20) a. wine $\leq O \wedge CUM$ (wine) (a cumulative object predicate)

b. a.glass.of.wine $\leq O \wedge QUA$ (a.g.o.w.) (a quantized object predicate)

c. apples $\leq O \wedge CUM$ (apples) (a cumulative object predicate)

d. five.apples $\leq O \wedge QUA$ (five.apples) (a quantized object predicate)

CUM and *QUA* apply also to events. Krifka (1992) suggests to regard atelic predicates (e.g. *run*) as cumulative event predicates, and telic events (e.g. ***run a mile***) as quantized event predicates:

(21) a. run $\leq E \wedge CUM$ (run)

b. run.a.mile $\leq E \wedge QUA$ (run.a.mile)

To relate the notation above to the traditional characterization of (a)telicity Krifka introduces the function *TP*, which "maps events to the last time point in their run time". Following this, we can define telic events as having a set terminal point, *STP*. Ignoring the details of the denotations of TP, and of events with set terminal points, atelic and telic predicates are assumed to have the following properties:

(22) a. run < E ^ ¬STP(run)

b. run.a.mile < E ^ STP (run.a.mile)

The way to capture the impact of arguments on the aspectual properties of the event is based on the idea that "with certain thematic relations, the reference properties of the syntactic arguments carry over to the reference properties of the complex construction" (ibid., 38). Suppose the object in question is *wine*. *Wine* is cumulative, and therefore every sub-quantity of *wine* is itself *wine*. Consequently, every sub-event of the event of *drinking wine* is itself an event of *drinking wine*. However, if the object is *a glass of wine*, which is quantized, then no proper part of *a glass of wine* is itself *a glass of wine*. Consequently, no sub-event of the event of *drinking a glass of wine* is itself *drinking a glass of wine*. Krifka calls this a homomorphism from objects to events.

Mediating between objects and events is done, according to Krifka, by the thematic relation of the verb. Thematic relations map event to objects, thus stating that every part of drinking a glass of wine corresponds to a part of the glass of wine, and they also map events to objects, namely, stating that every part of the glass of wine being drunk corresponds to a part of the drinking event. The formal characterization of the mapping relation is as follows:

(23) a. $\forall R[MAP\text{-}O(R) \leftrightarrow \forall e, e', x\ [R(e,x) \wedge e' \leq e \rightarrow Ex'\ [x' \leq x \wedge R(e', x')]]]$

(mapping to objects)

b. $\forall R[MAP\text{-}E(R) \leftrightarrow \forall e, x, x' [R(e,x) \wedge x' \leq x \rightarrow Ee' [e' \leq e \wedge R(e', x')]]]$

(mapping to events)

As mentioned before, not all thematic relations observe this homomorphism. Krifka distinguishes different relations between verbs and their objects, such as gradual effected patient (write a letter), gradual consumed patient (*eat an apple*), gradual patient (*read a letter*), affected patient (*touch a cat*) and stimulus (*see a horse*), which are distinguished by three features (*summativity*, namely, cumulativity for two-place relations, *uniqueness of objects* and *graduality*), all of which are formally defined. However, it seems that these distinctions are too fine grained with respect to the interface with the syntax (e.g., distinguishing effected or consumed objects). From examining a large number of predicate types in a number of languages, it appears that the property which is relevant for the telicity of a predicate is measured change, no matter of which type. The prototypical measurer may be gradual, as in *mow the lawn*, but verbs such as *die*, *appear*, *explode* or *break*, which denote a change of state which is not gradual, also have measurer arguments.

4. Event-type shifting and event composition

It has been observed by many linguists that the same predicate may denote either an activity or an accomplishment, or either an achievement or an accomplishment:

(24) a. Mary read. (Activity)

b. Mary read a book. (Accomplishment)

(25) a. The glass broke. (Achievement)

b. Mary broke the glass. (Accomplishment)

A change in the argument structure of the verb brings along a change in the situation type to which it belongs, and vice versa. The phenomenon is referred to as "event-type shifting" (Pustejovsky 1991, van Hout 1996). Based on this phenomenon a number of theories suggested that situation types are non-atomic entities, but rather, composed of more basic building stones. For example, Pustejovsky (1991) distinguishes three aspectual primitives: a state, a process and a transition. A State (S) is a single event, which is evaluated relative to no other event (e.g. *love*, *know*):

(26) S
|
e

A Process (P) is a sequence of events, identifying the same semantic relation (*run*, *push*):

(27) P
/ \
$e_1, e_2...e_n$

A Transition (T) is an event identifying a semantic expression which is evaluated relative to its opposition (e.g., closed, as opposed to not-closed):

(28) T
/ \
E_1 $\neg E_1$

Verbs on their own denote one such event-type (e.g., *love* denotes a state, *run* a process, *close* a transition). Basic event types can further be combined to form more complex event types, through a process of *event composition*. One familiar example of composition is adding a PP to a process, resulting in a transition:

(29) a. Mary ran (process)

b. Mary ran to the store (transition)

The event of running, basically a process, is interpreted as a transition, from not being in the store into being in the store when the verb is combined with a directional PP. Other instances of event composition include resultatives (*hammer the metal flat*), in which the resultative phrase turns the predicate from a process into a transition, and causativization (cf. chapter four). [8]

Work by Pustejovsky (1991), Grimshaw (1990) and Grimshaw and Vikner (1993) links event-structure and argument structure, through placing arguments according to their position with respect to the event. For example, notions such as Causer, Agent or external argument are associated with the initial subevent of the verb. This idea was adopted and extended by van Hout 1996, Levin and Rappaport 1996 and, to some extent, Borer 1996. In all these approaches, arguments are taken to correspond to event-participants: the external argument to the causer or initiator of an event, the internal argument to a measurer, affected argument, or subject of result.

[8] Pustejovsky assumes that there is a separate level of semantic representation called Event Structure (ES), where such information is specified and later mapped into other semantic levels of representation (such as LCS). I am not following this assumption in this work, but I adopted, however, the idea of event-composition, and the non-atomicity of events.

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