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The Grammatical Structure of Verbal Predicates

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The Grammatical Structure of Verbal Predicates

A dissertation submitted in partial satisfaction of the requirements for the degree Doctor of Philosophy in Linguistics

by

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For Nancy

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PUBLICATIONS AND PRESENTATIONS

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ABSTRACT OF THE DISSERTATION

The Grammatical Structure of Verbal Predicates

by

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Doctor of Philosophy in Linguistics

University of California, Los Angeles, 1989

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Verbal predicates can be characterized, it is claimed, according to whether the head verb projects a θ-grid, and whether it projects a categorial selection feature. The organization of the thesis is driven by a desire to build up the grammatical machinery needed for the description of different kinds of predicates, and show how various constructions fit into this view.

In Chapter One, I examine a construction found in English and other languages, called 'light verbs', in which an NP in object position acts as the thematic head of a VP predicate, but where the verb selects the categorial nature of its complements, thus constituting a second basic type of verbal predicate. This construction provides evidence for a view of the lexical representation of argument structure in

which θ-roles and categorial selection are independent.

In Chapter Two, I argue for the existence of a temporal argument of verbs. It is argued that temporal arguments are empty categories in the specifier position of VP, and are subject to the Visibility Condition on θ-role assignment.

In Chapter Three, the temporal argument hypothesis is extended to other categories. It is argued that assignment of a temporal θ-role is a prerequisite to the assignment of an external θ-role. The hypothesis that temporal arguments are generated in specifier positions receives additional support from the distribution of number agreement in NP.

Chapter Four treats constructions, including the passive and perfect, which use the past participle; it is argued that a unified treatment of the past participle is possible within the theory of lexical representations argued for in Chapter One, along with the temporal argument hypothesis. The perfect construction provides evidence for a third type of serial predicate, where a light verb fails to subcategorize.

In Chapter Five, I argue that certain serial verb constructions in Kwawu Akan are to be described as predicates of a fourth type, where the head verb projects a θ-grid, and fails to subcategorize. The thematic and structural properties of these constructions fall out almost in their entirety from considerations made necessary in the preceding chapters.

CHAPTER ONE: LIGHT VERBS AND LEXICAL REPRESENTATION

1. Serial Predicates

1.1. *θ- and X'-Theory.*

It is generally held within the theory of grammar outlined in Chomsky (1981) that lexical items assign θ-roles to complements, with the notion 'complement' being defined in terms of X'-theory. Specifically, the most prevalent view of X'-theory holds that (1a), (b), and (c) constitute the set of phrase structure (PS) rules for a grammar (abstracting away from language-dependent properties such as the order of the elements in (1)):

1 a. XP → ([SPEC,X']) X'

b. X' → X YP*

c. $X^n \rightarrow X^n$ ZP (n ≥ 1)

The rules in (1) are taken to be abstract schemata holding of all lexical categories; in the theory of Chomsky (1986a), these schemata hold of all categories.

In the theory of Stowell (1981), the lexical properties ("θ-grid") of X specify which things can or must appear in the position of YP in (1b), called the complement position. By the Projection Principle (Chomsky (1981)), these things must be represented as sisters to X at each of the levels D-structure, S-structure, and Logical Form (LF). Thus θ-theory alone determines the content of a phrase, and θ- and X'-theory together determine its structure. The upshot of this is that, at least with respect to the relation between heads and complements, the structure of a phrase XP is a direct reflection of the thematic structure of X.

Many people have suggested that this statement holds true for some non-complements, as well. Koopman and Sportiche (1986,1988), for example, propose that simple sentences, such as (2), have the structure shown, where the subject NP originates as the subject of a small clause VP (note that this structure for VP is permitted by (1c)):

2. $[_{IP}$ Fred$_i$ INFL $[_{VP}$ $[e]_i$ $[_{VP}$ drinks tea]]]

Part of the rationale behind this proposal is that, since

Fred gets its θ-role from VP, it should be a sister to VP at D-strucure; under this theory, then, all θ-roles are assigned under sisterhood. The structure of the VP in (2) is determined by the thematic structure of *drink*, which specifies that it assigns two θ-roles, one of which is an external argument, the other an internal argument, in the sense of Williams (1981).

In this thesis, I consider two kinds of constructions where the structure of a phrase is not determined directly by the thematic structure of its head. More specifically, in such cases, which I will refer to as 'serial predicates', a thematic relation exists between X and YP, where YP is not a sister to an X'-projection of X at any level of structure. In such cases, a predicate may have a thematic head which is not the X'-theoretic head of the predicate category. One such kind of construction is an instance of what is traditionally referred to as a 'serial verb' construction; constructions of this type in the West African language Akan are discussed in Chapter Five.

In this chapter, I will be concerned with cases where the external θ-role of a VP is determined directly not by V, but by an NP complement to V. Such a case, I argue, is (3):

3. Fred gave anchovies a try

In Section 2 I argue that both the NPs *anchovies* and *Fred* in (3) are thematically related to a predicate represented by the NP *a try*, and that *gave* has essentially a place-holding function, and does not assign any θ-roles. Consequently, (3) means approximately[1] the same thing as (4):

4. Fred tried anchovies

The verb *gave* and the noun *try* in (3) may be said to be in series, in that the thematic head of the predicate, the noun *try*, is not the X'-theoretic head, which is the verb *gave*.

In Section 3, I deal with the indefiniteness requirement on the predicate NP in examples like (3). In Section 4, I propose a theory of lexical representation upon which the account of these phenomena is based, and argue that this theory, along with the Projection Principle of Chomsky (1981), predicts the properties discussed in Section 2. First, however, we must turn to some necessary preliminaries.

1.2. *Raising and Control.*

It is usual in Government-Binding theory to treat apparent cases of long-distance thematic dependency in one

of two ways, either as cases of raising or control. In order to see that the complex predicates discussed here are not cases of raising nor of control, it is necessary to look at properties of these two kinds of constructions.

In raising constructions, exemplified in (5), the subject NP gets its θ-role from the italicized embedded predicate, via its trace:

5 a. Fred$_i$ seems [e]$_i$ *to like apple pie*
b. Six firemen$_i$ are [e]$_i$ *waiting outside*
c. Susan$_i$ is believed [e]$_i$ *to have been seen* [e]$_i$

In the classic cases, a large part of the evidence for the raising analysis comes from the fact that the subject NP can appear next to the italicized predicate, with the subject position filled by an expletive element. Thus (6a-c) correspond to (5a-c):

6 a. It seems that Fred likes apple pie
b. There are six firement waiting outside
c. It is believed that Susan was seen yesterday

Secondly, the matrix raising verb imposes no selectional requirements on the subject; e.g., all of the examples in (7) are grammatical:

7 a. Sincerity seems to be admired by John
b. Mary's leg seems to hurt
c. It seems to be snowing outside

Thus the subject of a raising predicate forms a chain with its trace(s); the entire chain must be associated with a unique θ-role, by the Θ-Criterion (Chomsky (1981)).

In control constructions such as (8), an NP seems to be assigned a θ-role via the coindexed empty category by the italicized embedded predicate:

8 a. Fred$_i$ wanted [e]$_i$ *to leave*
b. John persuaded Jane$_i$ [e]$_i$ *to leave*
c. It$_i$ rained before [e]$_i$ *snowing*

In this case, however, the NP in question is assigned a θ-role by the matrix predicate, and the empty category (PRO) in the embedded sentence is assigned a different θ-role. Thus, PRO can be replaced by an overt NP (accompanied by a change in structure):

9 a. Fred wanted Bill to leave
b. John persuaded Jane that Fred left
c. It rained before it snowed

Moreover, the matrix verbs in (8) and (9) impose selectional restrictions on the controlling NP:

10 a. % Sincerity wanted to be admired by John
b. % Mary's leg persuaded Jane to leave
c. * The sky rained before snowing

Since the two positions in question are assigned different θ-roles, they cannot form a chain, without violating the Θ-Criterion.

The distribution of control configurations is further restricted by the theory of PRO, the empty category in (8) which receives a θ-role in the embedded sentence. In particular, PRO occurs only in ungoverned positions. Thus, PRO is impossible in non-subject positions (11), where it is governed by V or P; as the subject of a tensed S (12), where it is governed by AGR in INFL; as the subject of an infinitive which is the complement to an S'-deletion verb, (13), where it is governed directly by the verb (see Chomsky (1981)); and as the subject of a small clause complement (14) (see Stowell (1981,1983):

11 a. * John$_i$ saw PRO$_i$ (= "John saw himself")
b. * Fred$_i$ bumped into PRO$_i$
(= "Fred bumped into himself")
c. * stories about PRO$_i$ annoy Jane$_i$

(= "stories about herself annoy Jane")

12 a. * Fred$_i$ said (that) PRO$_i$ left already
b. * John$_i$ promised (that) PRO$_i$ would be there
c. * It seemed (that) PRO$_i$ was a genius

13 a. * I$_i$ believe PRO$_i$ to be a nice guy
b. * It seems PRO to be a genius
(= "it seems that someone is a genius")
c. * Fred$_i$ caused PRO$_i$ to cry

14 a. * We$_i$ don't consider PRO$_i$ fools
b. * John$_i$ expects PRO$_i$ out of this house by six
c. * Susan$_i$ made PRO$_i$ a doctor
(= "Susan made herself a doctor")

PRO does occur, however, as the subject of an infinitive that is not the complement to an S'-deletion verb (15); as the subject of a clausal gerund (16); and as the subject of a small clause adjunct (17) (following Stowell's (1983) treatment of secondary predicates):

15 a. Fred$_i$ wanted [$_{CP}$ [$_{IP}$ PRO$_i$ to leave]] (= (8a))
b. Susani promised Jane [$_{CP}$ [$_{IP}$ PROi to be in touch]]
c. [$_{CP}$ [$_{IP}$ PRO to be a good student]] is important

16 a. Fred$_i$ swam before PRO$_i$ showering
b. We$_i$ all remember PRO$_i$ being a teenager
c. PRO being a good student is important

17 a. Larry$_i$ drove home [PRO$_i$ drunk]
b. Susan$_i$ came home from school [PRO$_i$ a doctor]
c. Fred$_i$ drove the car$_j$ [PRO$_{i/j}$ in that condition]

In (15), PRO is (i) not governed by AGR in INFL (since INFL does not contain AGR), and (ii) protected from government by the matrix verb by the presence of two maximal projections, IP and CP, separating it from the verb. The availability of PRO in clausal gerunds is probably due to the presence of both IP and CP boundaries in these structures.

The small clauses in (17) differ from those in (14) in that they are adjuncts, instead of complements. Thus, the theory of government must determine that the subject of a small clause is governed just in case the small clause is a complement. The theory of Chomsky (1986a; henceforth *Barriers*) has this property. In the *Barriers* theory, government is defined as follows: First, define *Blocking Category* (BC):

18. γ is a BC for β iff both (i) and (ii):

i. γ is not L-marked; and
ii. γ dominates β

Next, define *barrier*:

19. γ is a barrier for β iff either (i) or (ii):
i. γ closely[2] dominates δ, δ a BC for β; or
ii. γ is a BC for β, γ ≠ IP

A category α L-marks γ if α is an X^0 projection of a lexical category (i.e., is a lexical head: N, V, or A), and γ is a complement to α. α governs β if α m-commands β, and no barrier[3] for β excludes α[4]; 'm-command is defined in (20):

20. α m-commands β iff (i) and (ii):
i. neither α nor β dominates the other, and α≠β;
and ii. ∀γ, γ a maximal projection, if γ includes α then γ includes β

A category γ includes α if every segment of γ (in the sense of May (1985)) dominates α; γ excludes α if no segment of γ dominates α.

This theory predicts the contrast between (14) and (17). Consider the structure (21), where γ is a small clause, and β its specifier:

21. ...V [$_\gamma$ β...]

If V L-marks γ, then γ is not a BC, and hence not a barrier, for β; in this case V governs β. If V does not L-mark γ, then γ is a BC for β; since $\gamma \neq$ IP, by assumption, it is also a barrier for β. Thus, V fails to govern β in this case, assuming that V is excluded by γ. V L-marks a small clause just in case it is a complement; hence, a lexical head X governs the subject of a small clause AP, NP, or PP[5] just in case the small clause is a complement to X. Hence, PRO is the subject of a small clause just in case the small clause is not a complement to a lexical head.

An important aspect of both raising and control constructions is that the constructions are theta-independent. As long as the structural configuration is correct, an argument bearing any θ-role (or none at all, in the case of raising) may raise or be controlled. Some of the examples above illustrate this, and more are provided in (22) for raising, and (23) for control structures:

22 a. John seems [[e] to have been expected [[e] to be killed [e]]]

b. It is expected [e] to rain

c. there appear [e] to be six children in the yard

23 a. John hopes [PRO to be expected [[e] to be killed [e]]]

b. It will rain before PRO snowing

c. Sincerity impresses John without PRO awing him

In raising constructions, the subject may bear any θ-role, or none at all. In particular, (22a) shows that it need not originate as an external argument of some predicate; but need only pass through the subject position of the embedded sentence. PRO in (23) also may bear any θ-role; in particular, it also need not be an external argument of any predicate, but may originate as an internal argument, as in (23a). The theta-independence of raising and control constructions will be important in distinguishing them from complex predicate constructions.

2. Light Verbs

2.1. *Introduction.*

Let us return to examples like (3), repeated here:

3. Fred gave anchovies a try

As pointed out in Section 1, both the NPs *Fred* and

anchovies receive their θ-role from the noun *try*. In particular, notice that the verb *give* does not seem to assign θ-roles to any of these NPs; there is no sense of giving referred to in (3). Compare (3) with a 'normal' use of *give*, such as (24):

24. Fred gave Bill the book

In (24), the subject NP *Fred* is assigned a θ-role that includes the notion of Source; but there is no sense of Fred as the Source in (3). Rather, Fred is interpreted simply as the Agent of *try* in (3).

Similarly, *Bill* is assigned the θ-role Goal in (24); i.e., the endpoint of the movement undergone by the Theme argument, *the book*. But in (3), the first object *anchovies* is not assigned the Goal θ-role, but rather seems to be the Theme of *try*. That *anchovies* is not the Goal in (3) is especially clear, given that Goal arguments of double object verbs are always [+animate], as illustrated by (25):

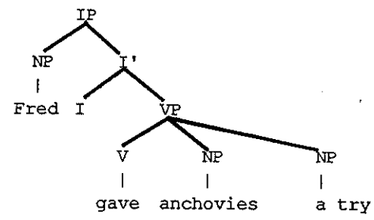
25 a. % Fred gave the table a book

b. % Mary sent the dartboard a dart

(25a) is grammatical only under an interpretation where *the table* identifies some group of people, for instance, in a Bridge tournament; (25b) receives no natural interpretation at all, since *the dartboard* cannot be understood as referring to a [+animate] entity.

It is also clear that, in (3), the NP *a try* does not receive the Theme θ-role from *give*, as *the book* does in (24); indeed, it does not seem to receive any θ-role at all, at least in the usual sense of the term. At the very least, *a try* does not refer to anything which undergoes movement, or whose location is in question in (3). Thus, it appears that *give* assigns no θ-roles, and that the noun *try* determines all of the θ-roles assigned by the predicate in (3). Nevertheless, I argue below that the subcategorization requirements of *give* are met in (3), and that the structure of this sentence is roughly (26) (irrelevant details omitted):

26.



Give subcategorizes for two NP complements, thus providing the structural positions to which the θ-roles of *try* are assigned. Verbs which have this property of *give* in (3) I

will call Light Verbs, though this term has been used slightly differently elsewhere (see esp. Grimshaw and Mester (1988)): they are 'light' in the sense that they do not assign θ-roles to their complement(s).

2.2. *Idioms.*

At this point it may be objected that sentences like (3) are nothing more nor less than idioms, and that there is nothing particularly interesting about their θ-marking properties, since idioms have idiosyncratic and unpredictable θ-marking properties, virtually by definition. This would be a valid objection if (3) were the only example that worked this way; however, this kind of construction is relatively productive in English with the verbs *give*, *have*, and *take*. The examples in (27) illustrate this for *give*:

27 a. Fred gave Henry a push
b. Fred gave Henry a punch
c. Fred gave Henry a shove
d. John gave the rope a pull
e. John gave the rope a yank
f. John gave the rope a tug
g. Jane gave the ball a toss

Like (3), the sentences in (27), with the form 'X gave Y a Z', mean the same thing as sentences with the form 'X Z'd Y':

28 a.	Fred pushed Henry	(= (27a))
b.	Fred punched Henry	(= (27b))
c.	Fred shoved Henry	(= (27c))
d.	John pulled the rope	(= (27d))
e.	John yanked the rope	(= (27e))
f.	John tugged the rope	(= (27f))
g.	Jane tossed the ball	(= (27g))

These examples contrast with true idioms in this respect; some idioms with *give* are given in (29):

29 a.	not give a damn/hoot/shit	'not care'
b.	give up	'surrender'
c.	give (out)	'break'
d.	give way	'yield; break'
e.	not give X the time of day	'not pay attention to'

In the case of the idioms in (29), there is no way to predict the meanings on the right from the meanings of the parts of the idioms on the left. For instance, nothing about the meaning of the nouns *damn*, *hoot*, *shit*, or any of the other nouns that could appear in this position in

(29a) has anything to do with the meaning of the predicate as a whole, which is 'not care'. The situation is the same with the other examples[6].

With the constructions illustrated in (27), however, the situation is quite different: the meaning of the sentence is entirely predictable from the meaning of its various parts, as shown by the systematic translation from the form in (27) to the form in (28). All that is needed to determine the meaning of these constructions is the meaning of the parts along with the assumption that *give* is used as a light verb in these cases.

The constructions in (27) do have some features of idioms, however. In particular, both the light verb constructions and the idioms with *give* as the head share the property that their meanings have nothing to do with the normal meaning of *give*. The correct response to the criticism that the constructions in (27) are idioms is not to completely deny their idiom-like nature, but rather to say that there are many different kinds of idioms, with greatly varying degrees of semantic transparency. Light verbs are as it were one step above true idioms, in that they are semantically transparent, given a correct understanding of their nature, and are more or less productive, for a closed class of governing verb, and appropriate choice of nominal predicate (see below).

A similar objection can still be voiced about (27), however; viz. that these are simply metaphorical extensions of the uses of *give*, and as such are perhaps not particularly interesting for θ-theory. In the remainder of this chapter, I will compare light verb constructions with both literal and metaphorical uses of the verbs in question, and show that metaphorical extensions have all of the syntactic properties of the literal uses, and that they both differ from light verb constructions in many observable respects.

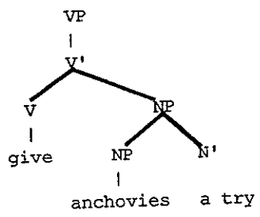
2.3. *Subcategorization of Light Verbs.*

2.3.1. I claimed in Section 2.1 that light verb *give* has the same subcategorization properties as normal, or 'heavy' *give*. In this section I will justify that claim, as well as provide further evidence that the θ-roles assigned to the arguments of a light verb are determined by the object NP, and not be the verb itself.

If it is true that the θ-role of the first object NP in (3) and (27) is determined by (the head of) the second NP, and not by the verb, then we might expect the first NP to be contained within the second NP, given the discussion of the connection between phrasal structure and θ-theory in Section 1. In other words, we might expect VP to have the structure shown in (30), where V governs an NP small

clause, rather than that shown in (26):

30.



Although it has been claimed (e.g., by Kayne (1984)) that double object constructions are NP small clauses, there are some important differences that can be observed between the two kinds of structures. First, while the subject of a small clause can undergo Heavy NP Shift (31), the first NP in a double object construction cannot (32):

31 a. I consider [e] crazy [anyone who takes astrology seriously]

b. John considers [e] a friend [anyone who helps him with his homework]

32 a. * I gave [e] a present [every one of my relatives back home]

b. * John sent [e] a package [that woman we saw him kissing the other day]

The first NP object of light *give* cannot undergo Heavy NP Shift:

33 a. * Mary gave [e] a pull [that long string that hangs down from the airshaft]

b. * Fred gave [e] a try [those disgusting-looking fish they put on pizzas]

The ungrammaticality of (33) cannot be due to a general prohibition on movement in these constructions; (34) shows that the first object of light *give* can undergo NP movement:

34 a. Anchovies seem [e] to have been given [e] a try

b. Henry was given [e] a push

Second, the subject of a small clause is easily accessible to WH-movement (35), while the first object in double object constructions, including those with light *give*, undergoes WH-movement with marginal results (36):

35 a. who do you consider [e] foolish?

b. which students does Harry consider [e] potential linguists?

36 a. ?? who did you send [e] the letters?

b. ?? which students did you give [e] a schedule?

c. ?? which topping did you give [e] a try?

In these respects, then, the two NP complements to light *give* pattern like the two NP complements to regular *give*, in contrast with small clause constructions. While these differences do not prove that double object constructions do not have a structure like (30), it does show that there are structural differences between double object and NP small clause constructions. Whatever these differences are, light *give* is clearly a double object verb in the same sense that normal *give*, and other double objects are.

2.3.2. Note, however, that it is apparently only true to a certain extent that light *give* has the same subcategorization properties as normal *give*; notice that the examples in (27) become markedly worse when *give* is followed by an NP denoting the Theme argument and a *to*-phrase denoting the Goal argument:

37 a. ?* Fred gave a push to Henry

b. ?* Fred gave a punch to Henry

c. ?* Fred gave a shove to Henry

d. * John gave a pull to the rope

e. * John gave a yank to the rope

f. * John gave a tug to the rope

g. * Jane gave a toss to the ball

This behavior contrasts with normal *give*, as is well known:

38 a. John gave a book to Mary

b. Fred gives his earnings to charities

c. I am giving my computer to the museum

d. Joe is giving an examination to his students

But this fact can be explained under the theory of light verbs presented here; in particular, by the assumption that light *give* cannot assign a θ-role to its NP complements. To see this, let us first consider the structure of sentences like those in (38). At first glance, it appears that *give* in (38) is making use of a subcategorization frame like (39):

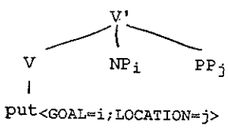
39. give, +V,-N, [_ NP PP_{to}]

I.e., that it subcategorizes for the category P to link to its Goal argument. Any verb in English which takes a true Goal argument can take that argument as a PP headed by *to*, so it is arguably the case that the specification in (39) that P = *to* is redundant, and simply follows from the fact

that the preposition *to* is somehow inherently linked to the notion Goal.

One possible way of making this intuition precise is to claim that certain θ-roles can be assigned only indirectly, by a preposition which is selected for that purpose by a governing verb. Under this approach, the verb assigns a less specific θ-role to PP, while the preposition assigns a more specific θ-role to its object. For example, suppose the verb *put* assigns the Theme and Location roles to its complements, with the Location role associated with a PP complement, as illustrated in (40):

40.



The actual θ-role assigned to the object of the preposition is dependent on which (locative) preposition is used; for example, *on* and *into* assign different locative θ-roles (or different versions of the Locative θ-role) to their NP complements in this configuration.

While something like this story works well for the PP complement of *put*, it misses important generalizations about the *to*-phrase complement to verbs like *give*: *give* cannot assign any θ-role to a PP complement other than Goal; hence it is not the case with *give*, as it is with

put, that it assigns a less specific θ-role to PP, and leaves it to the preposition to determine the exact θ-role assigned to NP. This is shown by the fact that *give* can take no other preposition as the head of its complement:

41 a. * Fred gave his book in the box
b. * John gives his money in his favorite charities
c. * Mary gave her package on the table

Moreover, this account of the function of *to* fails to account for the fact that *to* is unnecessary: verbs like *give* can assign the Goal θ-role directly to NP, apparently, in the double object construction. Thus, it seems that *to* does not actually assign the Goal θ-role, though it does seemed to be associated with this role in some way.

Suppose instead that we treat *to* in (38) not as a prepositional head, but rather as an overt affix marking dative Case; essentially following the analysis of Stowell (1981). This provides an account of some otherwise odd facts about *to*. The NP marked by *to* can often c-command[7] a category outside of the *to*-phrase; hence in (42a), *Jane* binds *herself*, since it c-commands it at D-structure; in (42b), *he* can be a variable bound by the quantified NP *nobody*; and in (42c) and (d), *him* binds *Fred*, leading to

a violation of Binding Condition C:

42 a. [pictures of herself$_i$]$_j$ appear to Jane$_i$ [[e]$_j$ to be on sale
b. Fred said to nobody$_i$ that he$_i$ was stupid
c. * It appears to him$_i$ that Fred$_i$ is a genius
d. * Bill said to him$_i$ that Fred$_i$ owed him twelve dollars

If the structure of the *to*-phrases in these sentences is (43a), then these facts are surprising, since NP does not c-command (or m-command) anything outside of PP:

43 a. [$_{PP}$ [$_{P'}$ *to* NP]]
b. [$_{NP}$ *to*-NP]

However, if the structure of the *to*-phrase is something like (43b), where *to* is a phrasal affix, and not the head of a phrase, then NP can c-command outside of the *to*-phrase.

Chomsky (1986b) distinguishes between two different kinds of Case-marking: structural and inherent. Structural Case is assigned at S-structure, and is not theta-dependent, while inherent Case is assigned at D-structure, and is sensitive to the θ-role of the NP. More specifically, Chomsky (op cit.; Ch. 3) claims that inherent

Case is subject to a Uniformity Condition, given in (44) (Chomsky's (272)):

44. If α is an inherent Case-marker, then α Case-marks NP if and only if α θ-marks the chain headed by NP.

It is clear, based on the discussion above, that dative Case is an inherent Case in English, since it can only be assigned to an NP bearing the θ-role Goal (or Experiencer). By the Uniformity Condition, an NP bearing inherent dative Case must be assigned Case by the same element that assigns its θ-role. Let us return now to the contrast between (37) and (38); I repeat (37d) and (38a) for illustration:

37 d. * John gave a pull to the rope
38 a. John gave a book to Mary

In the grammatical (38a), *give* assigns the Goal θ-role, and dative Case, to *Mary*, in conformity with the Uniformity Condition. In (37d), however, *give* does not assign the Goal θ-role to *the rope*; in fact, we established in Section 2.1 that it does not assign any θ-role to that NP. If *give* assigns no θ-role to NP, then it cannot assign inherent dative Case to NP, by the Uniformity Condition.

Thus the ungrammaticality of (37) may be due to the fact that the object NP in question is not assigned the Goal θ-role, which is a necessary condition for dative Case assignment. This can be shown not to be the case, however. Consider (45):

45 a. I gave Fred a speech
b. I gave Fred a talk

In (45b), *Fred* receives the θ-role Goal, apparently determined by the noun *talk*, and not by the verb *give*. There is also an irrelevant interpretation of (45b) where *a talk* refers to a concrete object, viz. the written text of a lecture. To see that *Fred* does not get its θ-role from *give*, note that *a talk* is not assigned the Theme role: it is not in motion, nor is its location in question in (45b).

Again, it could be objected that this is a metaphorical extension of *give*, and hence of the notion Theme. But (45b) contrasts with the nearly synonymous (45a), in several ways: first, the second object in (45a) may be definite, but the second object in (45b) may not:

46 a. I gave John this speech
b. ?? I gave John this talk[8]

The indefiniteness restriction is a property of all light verb constructions; hence the ungrammaticality of (47), contrasting with (27):

47 a. ?* Fred gave Henry the push
b. ?* Fred gave Henry the punch
c. ?* Fred gave Henry the shove
d. * John gave the rope the pull
e. * John gave the rope the yank
f. * John gave the rope the tug
g. * Jane gave the ball the toss

This restriction to indefinites in light verb constructions is discussed in detail in Section 4.

Secondly, notice a peculiar difference in the interpretation of *a speech* in (45a) as opposed to *a talk* in (45b). Both nouns *speech* and *talk* can refer to something like a prepared lecture presentation, as in (48):

48. my talk/speech at the conference went smoothly

However, while *a talk* might marginally have that interpretation in (45b), *a speech* must have that interpretation in (45a), in my judgement. Thus, it seems that *a speech* must be referential, and hence receive a θ-role, while *a talk* is a predicate, and does not refer.

Note finally that the dative alternant of (45a) is grammatical, while the dative alternant of (45b) is not:

49 a. I gave a speech to Fred
b. ?* I gave a talk to Fred

(49b) is grammatical only under the interpretation where *a talk* refers to the written text of a lecture, and it was physically transferred from my possession to Fred's. Thus, even though *Fred* receives the Goal θ-role in (the relevant interpretation of) (49b), it cannot be assigned inherent dative Case.

It must be, then, that the thing that assigns this θ-role to NP, namely the NP *a talk*, cannot Case-mark NP. However, nouns in general are able to assign inherent Cases, including dative, as illustrated in (50):

50 a. Fred's gift of ten dollars to Jane
b. the talk to Fred went well

Therefore, it must be that *talk* in (45b) does not govern *Fred*. This is precisely what we expect, if the structure of this sentence is like (26), where the first object NP is not included by the second NP, hence the head of the second NP does not govern the first.

Furthermore, the first object in the examples in (27) behaves as if it is assigned structural (accusative) Case, and not inherent Case. One test for this is passivization: passive morphology absorbs structural, and not inherent Case (see Chapter Three for discussion of passive). Examples where (27) is passivized, with the first object moved to the subject position, are all grammatical:

51 a. Henry was given [e] a push
b. Henry was given [e] a punch
c. Henry was given [e] a shove
d. The rope was given [e] a pull
e. The rope was given [e] a yank
f. The rope was given [e] a tug
g. The ball was given [e] a toss

This supports the conclusion that inherent Case cannot be assigned in constructions with light verb *give*[9].

Hence, the ungrammaticality of dative *to* with light *give* actually provides further evidence in support of the conclusion that light *give* retains the subcategorization properties of normal *give*. Below, I will discuss how exactly the NP arguments in (26) are assigned θ-roles.

2.4. *Other Light Verbs.*

2.4.1. Besides *give*, other verbs in English which appear

in light verb constructions commonly are *take* and *have;* some examples are given in (52) for *take*:

52 a. Fred took a hike
b. Joe took a walk
c. Henry takes a shower every morning
d. Sue took a tumble
e. Jerry took a look
f. Jane took a peek
g. Harry took a piss

In these examples, the NP complement to *take* acts as the head of the predicate; hence, sentences of the form 'X took a Y' can be translated as 'X Y'd':

53 a.	Fred hiked	(= (52a))
b.	Joe walked	(= (52b))
c.	Henry showers every morning	(= (52c))
d.	Sue tumbled	(= (52d))
e.	Jerry looked	(= (52e))
f.	Jane peeked	(= (52f))
g.	Harry pissed	(= (52g))

The subject θ-role in (52) is not determined by *take*, or at least is not the same θ-role that *take* normally assigns to its subject. Normal *take* assigns a θ-role to its

subject that includes the notion of Goal; however, in (52), the subject is not interpreted as a Goal. Rather its θ-role seems to be determined by the NP predicate inside the VP.

Secondly, notice that the indefiniteness requirement noted above for the second object of light *give* holds also for the object *take* in (52), though some examples are better than others:

54 a. ?? Fred took the hike
b. ?? Joe took the walk
c. * Henry takes the shower every morning
d. * Sue took the tumble

Moreover, note that light *take* retains the basic subcategorization features of normal *take*, viz. that it must have a single NP object; hence (55a), where *take* has no object, is ungrammatical under any interpretatioon, and (55b,c), with light *take* having two NP objects, is also ungrammatical:

55 a. * Fred took (in the house)
b. * John took his dog a walk (='John walked his dog')
c. * Mary took her friends a shower (with hot water)

(='Mary showered her friends with hot water')

Normal *take* can apparently govern a double object construction, unlike light verb *take* in (55b,c):

56 a. Fred took Jim a wrench
b. Jane took him a present

However, unlike double objects with *give* (57a,b), passivizing the first object of *take* in (56) leads to marginal or unacceptable results (57c,d):

57 a. Jim was given a wrench
b. Jane was given a present
c. ? Jim was taken a wrench
d. ? Jane was taken a present

Perhaps, then, the double object construction with *take* is different from the double object construction with *give*, in that *take* assigns some sort of inherent Case to its first object. Alternatively, the *take* which appears in the double object construction may be a different verb from the *take* which feeds light verb formation.

2.4.2. The light verb use of *have* is even more productive; examples are given in (58):

58 a. Joe had a laugh (over that one)
b. Jane had a tumble
c. We had a nice walk
d. Fred had a try
e. Mary has a book
f. John has a teacher
g. Bill has a car
h. Pat has a sister

In (58a-d), the object NP is a nominalization of an intransitive, non-stative verb, and the sentence as a whole is non-stative. In examples (58e-h), the noun that heads the NP object of *have* is concrete, and the sentence as a whole is stative.

Examples (58a-d), with the form 'X had a Y', translate systematically to the form 'X Y'd'[10]:

59 a.	Joe laughed (over that one)	(= (58a))
b.	Jane tumbled	(= (58b))
c.	We walked	(= (58c))
d.	Fred tried	(= (58d))

This test does not work with (58e-h), however, since the noun heading the direct object is not a nominalization of a

verb. In this case, however, examples (58e-h), having the form 'X has a Y', may, translate systematically into the form 'X's Y exists', or they may mean simply 'X possesses a Y'. It is the former interpretation that arises with light verb *have*.

As is the case with light *give* and *take*, there is an indefiniteness requirement with the use of *have* in (58a-d), as shown by the ungrammaticality of the examples in (60):

60 a. * Joe had the laugh (over that one)
b. * Jane had the tumble
c. * We had the nice walk
d. * Fred had the try

Thus, this use of *have* parallels the light verbs *give* and *take* in imposing an indefiniteness requirement on its direct object.

The same restriction holds for *have* in (58e-h), as well, though it is a little more difficult to demonstrate. First, notice that sentences parallel to (58e-h), but with definite direct objects, are perfectly grammatical:

61 a. Mary has the book
b. John has the teacher
c. Bill has the car

d. Pat has the sister

It is clear, however, that this use of *have* has a different meaning from its use in (58e-h): Whereas the sentences in (58e-h) are ambiguous between 'X possesses a Y' and 'X's Y exists', those in (61) can only have the interpretation 'X possesses a Y'. For instance, (58e) may mean either that Mary is holding some book, or that Mary is an author; but (61a) cannot mean that Mary is the author of the book in question, but only that she is the possessor of some book. Similarly with the other examples: (61b) gives the impression that John is holding the teacher hostage, while (58f) can easily mean just that John is someone's student; etc. The subject in (58e-h) receives whatever θ-role the noun heading the direct object could assign to its genitive position. Thus this use of *have* patterns with light *give*, *take*, and the *have* of (58a-d) in (a) taking a direct object which acts as the head of the whole predicate, and (b) requiring that NP to be indefinite.

2.5. *NP as a Predicate.*

I now turn to arguments showing that the direct object NP of a light verb is a predicate, and not an argument. The first argument has already been given; viz. that the selectional restrictions on the other object position of light *give* are dictated by the second object NP, and not

by the verb. Another argument that NP is a predicate comes from a consideration of implicit (internal) arguments, which is a companion argument to the argument from selectional restrictions. Other arguments come from a discussion of properties distinguishing arguments from predicates in general. I turn first to a discussion of implicit arguments.

2.5.1. In the discussion above, it was observed that the subcategorization features of light verb *give* are just those of normal *give*. Specifically, in all of the examples cited so far, light *give* governs a double object construction, as does normal *give*; moreover, the inability of light *give* to govern a *to*-phrase was explained by the hypothesis that the second object, and not the verb itself, assigns a θ-role to the first object.

Now notice that normal *give* may also just govern one NP object, to which it assigns the θ-role Theme:

62 a. Jill gives gifts
b. Did you give Christmas presents this year?
c. John gave books

In all of the examples in (62), the Goal argument, though not represented syntactically, is understood. (62a), for

instance, means that Jill gave gifts *to some person(s)*; similarly for examples (b) and (c).

The same is true of the examples in (63), which parallel the examples in (27), except for missing the first object:

63 a. Fred gave a push
b. ? Fred gave a punch
c. Fred gave a shove
d. John gave a pull
e. John gave a yank
f. John gave a tug
g. ? Jane gave a toss

The θ-role that is assigned to the first object in (27) is understood, or implicit in (63). For instance, (63a) means that Fred pushed *somebody or something*, and similarly for the other examples.

However, it is not always true of light verb *give* that when it governs just NP, one θ-role is implicit; consider (64):

64 a. Harry gave a laugh
b. Jane gave a start
c. Mary gave a scream
d. Susan gave (out) a groan when she heard the news

In these examples, there is no implicit argument, in contrast with (63); (64a), for instance, just means that Harry laughed. Clearly, the difference between (63) and (64) is that the predicate nouns in the former correspond to verbs which must assign and internal θ-role, while the predicate nouns in the latter correspond to verbs which need not, or cannot, assign an internal θ-role.

Thus, while some of the verbs corresponding to the nouns in (63) may be intransitive, they are always interpreted as having an implicit internal argument (usually the Theme); thus (65a) means 'Fred pushed *something or someone*', etc.:

65 a. Fred pushed to get to the head of the line
b. ? Fred punched until his hands were tired
c. Fred shoved to get up front
d. John pulled as hard as he could
e. John yanked as hard as he could
f. John tugged as hard as he could
g. ? Jane tossed until her arm was tired

Even though the Theme NP is not syntactically represented, the verb is understood as assigning the Theme θ-role; for a discussion of the properties of implicit internal arguments, see Rizzi (1986).

The verbs corresponding to the predicate nouns in (64), however, do not have this property: these verbs in general

do not assign internal θ-roles:

66 a. Harry laughed till his sides hurt
b. Mary started when she heard the news
c. John screamed at midnight
d. Jane groaned when she heard the news

In these examples, there is no implicit Theme.

Verbs such as *scream* and *groan*, which we might call 'manner of utterance' verbs, are particularly interesting in this regard. These verbs may optionally take a Theme argument, referring to the content of some utterance: *John screamed his wife's name; Jane groaned that she was sick*. In these cases, the verb actually describes a particular manner of speaking: violently loud, in the case of *scream*, and in a unhappy-sounding manner in the case of *groan*. In their intransitive uses such as (66), however, these verbs do not necessarily refer to manners of speaking; instead, they may refer to particular kinds of vocal activity, but which might have absolutely no propositional or linguistic content at all. In other words, these verbs are not necessarily understood as assigning their Theme role to an implicit argument, when there is no overt argument.

This state of affairs is exactly what is predicted by

the hypothesis that, in light verb constructions with *give*, a predicate NP, and not the verb, assigns the θ-role to the first NP object. If that NP predicate has a θ-role to assign to that position, it will either assign it to an NP in that position, or the θ-role will be implicit. If, on the other hand, the predicate NP does not have a θ-role to assign to that position, then there is no θ-role to be implicit. Thus, the contrast between (63) and (64) provides an argument in support of the hypothesis that NP is a predicate in light verb constructions.

2.5.2. Arguments can also be provided to the effect that NP has the syntactic properties of predicates, and not of arguments. The first centers around the indefiniteness requirement that light verbs impose on NP. As it turns out, light verbs require of their NP predicate objects something slightly different than indefiniteness. Notice first of all, that some apparently definite NPs are possible in this position:

67 a. John gave the rope the hardest pull
b. Fred has the same teacher as Wilma
c. Mary had the most exhilarating shower
d. Sue took the Walk of a Thousand Steps

Moreover, many kinds of indefinite NPs are not allowed in

this position:

68 a. ?* John gave the rope some pulls
b. ?* Jill had some looks
c. Fred took a certain shower
(* under the intended reading)

(68c) is grammatical only under the interpretation where *a shower* is referential.

This same pattern holds for NP small clause complements, e.g., as the complement to *consider* or *be* (see Stowell (1978)) as in (69):

69 a. I consider this the most miserable day of the year
b. We all consider Superman the same person as Clark Kent
c. John considers Mary his best friend
d. This is the Walk of a Thousand Steps
e. * I don't consider July 3 and May 13 some holidays
f. * Tolstoy's works are few books
g. John is a certain man (* under intended reading)

The allowable definite NPs in (67) and (69a-d) are all of a semantic type; viz. they are NPs which refer, not to individual objects or persons, but to 'offices' or

functions which an individual could fill. The unacceptable indefinite NPs in (68) and (69e-g) are those with an indefinite determiner which is not *a(n)*. As (69) shows, these are the same restrictions that NP small clauses observe, an approximation of which is that no determiner can be used other than the indefinite article, or a numeral, except in the case of 'office' NPs. This restriction on predicates is discussed in more detail in Section 3.

The NP predicate in a light verb construction can be displaced by WH movement. Argument NPs may form WH phrases in a variety of ways; if a single interrogative pronoun is used, either *who* or *what* is used, depending on whether the NP is [+animate] or [-animate], respectively. On the other hand, if a predicate NP is replaced by an interrogative pronoun, it is always *what*, regardless of whether the head noun is [-animate] or not. Thus, (70b) cannot be asking for an answer like (a), though (c) can; on the other hand, (f), but not (e), can be asking for an answer like (d), showing that *fool* is [+animate]:

70 a. John is a fool
b. Who is John?
c. What is John?
d. A fool is in the house
e. What is in the house?

f. Who is in the house?

Some light verb constructions with *have* can use NPs as predicates, where the head noun is [+animate]; some examples are given in (71):

71 a. I have four sisters
b. John has a teacher
c. Jane has three friends

The only interrogative pronouns that can replace these NPs is *what*, and not *who*:

72 a. what/*who do you have?
b. what/*who does John have?
c. what/*who does Jane have?

Only *what* can be used to ask a question that seeks something like (71) as an answer.

Finally, the NP object in light verb constructions fails to behave like an argument, in that it is not able to undergo NP movement; the following are ungrammatical under the relevant interpretation:

73 a. * a book is had (by John)
b. * a teacher is had (by Fred)

c. * three friends are had (by Jane)
d. * a tumble was taken (by John)
e. * a pull was given the rope (by Sue)
f. * a laugh was given (by Harry)

(Example (73e) is probably ruled out independently for many English speakers, by whatever rules out NP movement of the second of two objects for these speakers.) While a restriction against NP-movement of predicates is not really independently motivated, the ungrammaticality of the sentences in (73) is otherwise unexplained, given that *take* and *give* normally allow passivization of their direct objects.

A variety of tests indicate that the direct object of light verbs is a predicate, and not an argument. This evidence supports the theory outlined so far.

2.5.3. Although the NP object of a light verb has the internal characteristics of a predicate, there is one systematic difference between these NPs and other NP predicates. Consider again (58e), repeated here:

58 e. Mary has a book

We observed that this sentence has an interpretation in

which Mary is the author of some book; i.e., that it means 'Mary's book exists': the subject of the sentence can be assigned any θ-role that NP could assign to its genitive position.

But this is rather different from other cases of NP predicates, as shown in (74):

74 a. $Mary_i$ is $[e]_i$ a linguist
b. I consider Mary a linguist
c. $Mary_i$ came home $[PRO_i$ a linguist]

In all of these examples, the NP predicate *a linguist* assigns a θ-role that it could not assign to its genitive position; let us call the θ-role that NP small clause predicates assign the Property role, for the sake of discussion. Moreover, NP predicates in small clause constructions cannot assign to their subjects any θ-role that could be assigned to their genitive positions. Thus, it seems rather odd at first that, if *a book* is a predicate in (58e) which assigns a θ-role to the subject *Mary*, it does not mean that Mary is a book, but instead means that she is the author of some book.

This is a problem which is discussed at some length in Chapter Three. For now, it will suffice to notice that this is not a problem unique to the light verb analysis, but is related to the analysis of process nominals.

Consider (75a), a process nominal with a deverbal noun, and (b), a sentence using that verb:

75 a. Caesar's conquest of Gaul
b. Caesar conquered Gaul

The noun phrase (75a) is configurationally similar to the sentence (75b): *Gaul* is assigned the Theme θ-role, which must be internal to the predicate, unless the external argument (Agent) is missing or oblique; moreover, the Agent θ-role must be assigned to the subject position in the case of the verb, and to the genitive position in the case of the nominal, or it is in a *by*-phrase; these options are illustrated in (76):

76 a. Gaul's conquest (by Caesar)
b. Gaul was conquered (by Caesar)

Whatever the ultimate details of the analysis of (75) and (76) are (see Chapter Five), it is clear that the noun *conquest*, like the verb *conquer*, assigns the θ-role Agent to its subject[11].

But *conquest* cannot assign the Agent θ-role to its subject if it is a small clause predicate; all of the examples in (77) are semantically odd, since *Caesar* must be assigned the Property θ-role, and is not interpreted as

Agent:

77 a. Caesar is a conquest of Gaul
b. I consider Caesar a conquest of Gaul
c. Caesar returned [PRO a conquest of Gaul]

Moreover, the θ-role that *conquest* assigns to its subject in (77) cannot be assigned to any position in the process nominal: *Caesar* is unambiguously Agent in (75a).

For some reason, the θ-role that nouns assign to their subjects differ systematically between the small clause and process nominal environments. The NP predicate in light verb constructions patterns with process nominals in this respect. This fact is explained in terms of the temporal argument structure hypothesis in Chapter Three.

2.6. *Against a Raising Analysis of Light Verbs.*

Having established that the direct object of light verbs is a predicate which assigns θ-roles to other arguments in the construction, it is natural to assume, as a null hypothesis, that the recipient of the θ-role that NP assigns to its subject is in fact the subject of NP, and not of VP. That is, either the subject of light verb constructions is a derived subject, having moved there from the subject position of an NP small clause, or it controls

PRO in that position. In this section, I argue against the proposal that these are raising constructions; at the end of Section 3, I will argue against a control analysis. Instead, I claim that the predicate NP does not assign its subject θ-role 'locally' (i.e., within an NP small clause structure), but assigns it (indirectly) to the subject position of VP.

Recall that, in raising constructions, no selectional restrictions are imposed on the target subject position. Hence, if (78) is the structure of light verb constructions with *have*, there should be no restrictions imposed by *have* on the kind of NP that can be its subject:

78. $[NP_i$ *have* $[_{NP}\ [e]_i\ NP]]$

In fact, however, this is not the case. To see this, we have to consider some properties of *have* in general.

Have in English is used in many different constructions, aside from the light verb construction, which do not all appear to be related. These constructions can be divided into two groups, according to whether *have* denotes an event or a state. There are further regularities in these two groups, which are retained in the light verb constructions with *have*. (79) gives examples of eventive *have*; (80) of stative *have*:

79. *causative:*
a. {Fred/*the cockroach/*fear} had John jump off the balcony
b. {The Triumvirate/*the sword} had Cicero killed

NP is an event:
c. {Fred/*my ashtray} is having {his/its} daily cigarette
d. {I have my/??my car has its} annual checkup on Friday
e. Have the party on Saturday!

malefactive/benefactive:
f. {John/*the desk} had his/its legs chopped up
g. {Sue/*the library return slot} had a book returned to her/it

80. *possessive:*
a. {Susan/*the parking space} has the car today
b. {John/*the bedroom} has my desk
c. {The bank/*the table} has all my money

circumstantial:
d. {This desk/this man} has a leg missing
e. {He/?the phone} has my parents on the other line

f. Joe has his friends over for coffee[12]

All of the eventive uses of *have* require [+animate] subjects. While some stative uses also have this requirement (e.g., the possessive), the eventive uses all require that the subject be an (intentional) Agent; this requirement does not hold of the possessive construction with *have*.

Many of the nominal predicates (e.g., *laugh*) with eventive light verb *have* in (58) are derived from verbs which select a [+animate] subject; however, these often do not impute intention to the subject:

81 a. John laughed unintentionally
b. Fred cried involuntarily
c. ? Sue danced involuntarily

When these are nominal predicates with light verb *have*, however, intention is imputed to the subject:

82 a. * John unintentionally had a laugh
b. * John had a laugh unintentionally
c. * Fred involuntarily had a cry
d. * Fred had a cry involuntarily
e. * Sue involuntarily had a dance
f. * Sue had a dance involuntarily

Thus, light *have*, when it heads an event predicate, imposes some selectional restrictions on its subject. This supports the claim that light *have* is not a raising verb, since raising categories do not impose selectional restrictions on their subjects.

Secondly, although light *have* requires a [+animate] subject, *take* does not (at least not as strongly):

83 a. The heat is taking my energy (from me)
b. This project takes all my time

In certain light verb constructions with *take*, the subject need not be [+animate], though the same predicate with *have* would need a [+animate] subject; this accounts for the contrast between (84c) and (d):

84 a. Fred took a slide down the hill
b. Fred had a slide down the hill
c. My backpack took a slide down the hill
d. * My backpack had a slide down the hill

The selectional restrictions of *have* lend support to the claim that light verb *have* is not a raising verb.

2.7. *Against a Tough-Movement Analysis.*

2.7.1. Another possible analysis of light verb constructions, besides raising, control, and the one outlined above, is that the subject NP originates as the subject of the sentence, but its θ-role is determined by being coindexed with a null operator which binds a variable in a θ-position lower down. This is essentially the analysis traditionally given to *tough*-movement constructions, illustrated in (85):

85 a. $Fred_i$ is easy [Op_i [PRO to please $[e]_i$]]
b. $dishonesty_i$ is difficult [Op_i [PRO to admire $[e]_i$]]
c. $John_i$ is tough [Op_i [PRO to consider [$[e]_i$ stupid]]]

These constructions share many features with raising constructions, including the absence of selectional requirements imposed on the subject and the possibility of expletive *it* as a subject (*it is easy to please Fred*). They differ from raising constructions, however, in that the subject NP (*Fred*, in (85a)) does not head an A-chain containing the θ-position ([e] in the examples). Instead, the subject forms an A-chain all by itself, and the null operator *Op* forms an A'-chain with the empty category in

the θ-position.

This analysis is forced by the dual considerations of Chain theory and Binding theory (Chomsky (1981,1986b)). If (85a) were derived by NP movement from the D-structure (86a), deriving the S-structure (86b), then $[e]_i$ in (b) is an anaphor:

86 a. [Δ is easy [$_{IP}$ PRO to please Fred]]
b. [$Fred_i$ is easy [$_{IP}$ PRO to please $[e]_i$]

As an anaphor, it is subject to Condition A of the Binding theory, which says that it must be locally A-bound within its binding domain. But its binding domain is the embedded IP in (86b), and $[e]_i$ is free in this domain.

Moreover, the position of $[e]_i$ in (85) is a Case-marked position; then if the S-structure is (86b), *Fred* and *[e]* could not form an A-chain, since A-chains have just one Case position (Chomsky (1986b)); if they do not form a chain, then *Fred* can get no θ-role, resulting in a violation of the θ-criterion. If, on the other hand, the S-structure is as shown in (85), then *Fred* is its own A-chain, and *Op* and *[e]* form an A'-chain, each chain having a unique Case position. *Fred* gets its θ-role at LF by a rule of Chain Composition (Chomsky (1986b)), which forms a compound chain out of the two coindexed chains.

2.7.2. A *tough*-movement analysis of light verb constructions would provide as an S-structure for *John has a sister*, the structure (87):

87. [John$_i$ [$_{VP}$ *Op*$_i$ [$_{VP}$ has [a sister [e]$_i$]]]]

(Alternatively, *Op* is adjoined to NP, rather than to VP.) In the preceding section, I argued that light verb *have* imposes selectional restrictions on its subject position, over and above the θ-role provided by the predicate NP. This provides one argument, then, against the *tough*-movement analysis of these constructions, just as it argued against a raising analysis.

A second argument comes from the fact that there is no apparent Case-marker of the variable inside NP in (87): the head noun cannot assign Case to that position, since nouns do not assign structural Case. The only plausible Case position inside NP, and hence the only candidate for the position of the variable, is the prenominal genitive position. But prenominal genitives cannot be displaced by Move-a, as shown in (88):

88. * whose did you meet [[e] sister]

We must conclude, therefore, that a *tough*-movement style analysis is unworkable for light verb constructions.

English

f. ? There arrived *several policemen* at the scene of the crime

g. There occurred *many riots* that spring

i. There are *no lights* in my room

j. There is *exactly one woman* for me

k. % There is *the woman* in the hall

l. % There are *the twelve books* on the table

m. % There are *the senators*

n. % There are *the Smiths*, whom Fred likes

o. * There exist *every light verb* in English

p. * There arrived *the police* at the scene of the crime

q. * There occurred *most of the riots* outside

r. % There is *Bill's night-light* in my room

s. % There is *Nancy* for me

(The sentences marked by '%' are grammatical, but only under irrelevant interpretations; the existential reading is not available for these sentences.) The NP in an existential *there*-insertion sentence must be indefinite, as in (a-j); hence ungrammaticality results if it is a proper noun (n,s), has a prenominal genitive (r), or has a definite determinter, such as *the, every, most*, etc.

Keenan (1987) shows that the class of determiners which qualify as 'indefinite' by being possible in *there*-insertion contexts are just those that meet the semantic

criterion of 'intersectivity'. Roughly, every determiner is interpreted as a function involving the set denoted by the N' the determiner is attached to, and the set denoted by the remainder of the sentence. For example: *every man*$_x$Ψ(x) (where Ψ(x) is an open sentence containing one free occurrence of the variable x) is true just in case the set of men is a subset of the set of x that Ψ(x) is true of; *some dog*$_x$Ψ(x) is true just in case the intersection of the set of dogs with the set of x that Ψ(x) is true of is not the empty set; etc.

A determiner is *intersective* if it can be interpreted just by looking at the intersection of the two sets; thus, *every* is not intersective, since just looking at the intersection of the set of men (for example) with the set of x that Ψ(x) is true of will not tell us if there are any men who do not satisfy Ψ(x), i.e., if the men form a subset of the set of x that Ψ(x) is true of, or if they merely intersect it. *No* and *some*, on the other hand, are intersective, since we need only look at the intersection of the two sets to see if it is empty or not.

Thus, whatever the syntactic cause of the DE, this construction makes reference somehow to the interpretive criterion of intersectivity, and not obviously to any special syntactic criteria at all. It is important to note that any intersective determiner permits an NP to appear in

3. Internal Structure of the Predicate NP.

3.1. *Introduction.*

In Section 2.5.2, it was observed that there is a peculiar requirement on the form of the predicate NP in light verb constructions, and that this requirement holds for NP predicates in general. In this section, I show that this is not an instance of the so-called Definiteness Effect found in subject-inversion sentences, and I propose an account of this requirement on predicates in terms of the DP hypothesis (Abney (1987); Fukui and Speas (1986); Kuroda (1985)), essentially following a proposal by Stowell (1987a).

3.2. *The Definiteness Effect.*

3.2.1. Subject-inversion sentences in English with existential *there*, exemplified in (89), exhibit a phenomenon known as the Definiteness Effect (DE):

89 a. There is *a woman* in the hall

b. There are *twelve books* on the table

c. There is *some book* that nobody has read

d. There are *few people that Fred likes*

e. There exist *no fewer than three light verbs* in

existential *there*-insertion contexts.

3.2.2. There is a class of apparent exceptions to the DE in existential *there*-insertion contexts. (90) illustrates some grammatical cases of existential contexts, where the inverted subject NP is definite:

90 a. There was the prettiest girl in class today
b. There was the biggest riot in the park last week
c. There are the smartest people in this field

In each case, an NP modified by an adjective in the pseudo-superlative apparently violates the DE.

Interestingly, the superlative NPs in (90) have a peculiar interpretation. Note that (90a), for example, is not interpreted as meaning that the girl who is prettier than all others happened to be in class today. Rather, it means that a girl was in class today who was unusually, even surprisingly, pretty. This is often referred to as the 'elative' interpretation of the superlative, and is the only possible interpretation of the sentences in (90).

This contrasts with the counterparts to (90) without *there*:

91 a. The prettiest girl was in class today
b. The biggest riot was in the park last week

c. The smartest people are in this field

The examples in (91) are all ambiguous between the elative reading, and the true superlative reading. Thus, (91a) can mean either 'an unusually pretty girl was in class today' or 'the girl that is prettier than all others was in class today'.

3.3. *NP Predicates.*

3.3.1. The availability of any intersective determiner in *there*-insertion contexts contrasts with the behavior of NP predicates in light verb constructions, as well as with NP small clause predicates, as noted in Section 2.5.2. The only determiners that can appear in light verb NP predicates are the indefinite article[13], numerals, and sometimes *only, no, some* with plural, *many*, and *several*. Determiners such as *few, a certain, some* with singular, etc., though intersective, cannot occur:

92 a. ?* We gave many laughs
b. ?* John gave Bill few shoves
c. * I took a certain look
d. ? We all took many looks
e. I took a couple of looks

The acceptability of the various determiners varies[14].

In all cases, however, the indefinite article is the most acceptable option, and the determiners *few*, and *a certain* are unacceptable. This is probably due to the fact that while *only, no, some, many*, and *several* may specifiy a number (perhaps indefinite), and hence can be treated as members of the extended class of numerals, *few* and *a certain* carry different information.

Note that *some* may occur with both plural and singular NPs: *some student(s)*, etc. There is a slight semantic difference between the two, however. Singular *some* can either be an existential quantifier, or it means the same thing as *a certain*. Plural *some*, however, if not an existential quantifier, means *a certain number of*. Consequently *some*, though always intersective, can appear with a predicate NP only if it is plural:

93 a. * I took a certain/some look
b. I took a certain number of/some looks

True quantifiers, such as the existential quantifier *some*, occur only with arguments. This is discussed in Section 3.4.

This same contrast holds roughly for NP small clauses. The indefinite article occurs freely, while *few* and *a certain* are uniformly excluded (94-96):

94. *raising:*
a. John is considered a friend of mine
b. * The Smiths are considered few doctors
c. * John is considered a certain doctor

95. *ECM:*
a. I consider John a friend of mine
b. * I consider the Smiths few doctors
c. * I consider John a certain doctor

96. *control:*
a. John came home a linguist
b. Fred's children graduated few linguists
(* under intended reading)
c. Fred graduated a certain linguist
(* under intended reading)

Numerals, however, as well as *only, no, some, many*, and *several* are largely unacceptable in this environment (97-99), in contrast with light verb nominals:

97. *raising:*
a. ?? John and Bill are considered two friends of mine
c. ?? Those people are considered only friends
d. ?* Those people are considered no friends of mine

e. * John and Jill are considered some friends of mine
f. * Those people are considered many friends of mine
g. * Those people are considered several friends of mine

98. *ECM:*
a. ? I consider John and Bill two friends of mine
c. ? I consider those people only friends
d. ?* I consider those people no friends of mine
e. * I consider John and Bill some friends of mine
f. * I consider those people many friends of mine
g. * I consider those people several friends of mine

99. *control:*
a. ?? John and Bill came home two doctors
c. ? John and Jill came home only doctors
d. * John and Sue came home no linguists
e. * John and Harry came home some linguists
f. * Our friends came home many linguists
g. * Our friends came home several linguists

The difference between light verb nominals and small clause nominals is related to the difference, observed above, in the θ-role each assigns to its subject. This issue is treated in terms of the temporal argument hypothesis in Chapter Three.

3.3.2. Predicate NPs, in both light verb and small clause constructions, can be definite under certain restricted conditions. Thus, although the definite NP predicates result in ungrammaticality in (100) and (101), they are acceptable in (102) and (103):

100. *light verbs:*
a. * I gave John every push
b. * Fred took every look
c. * Jane had most laughs

101. *small clauses:*
a. * I consider the Smiths every friend of mine
b. * The students came home every winner
c. * Our friends are considered most linguists

102. *light verbs:*
a. I gave John the biggest push I could
b. Fred took the longest look
c. Jane had the laugh of her life

103. *small clauses:*
a. Anselm considered God that being greater than which nothing can be conceived

b. Caesar returned home the conqueror of Gaul
c. Fred is considered the best man for the job

The grammatical examples all make use of NPs with the determiner *the* which refer to offices (often unique) that individuals can occupy; that is, the NP does not name an individual, but rather names its intension. Many definite descriptions with *the* can have this kind of reference. Names can do so only very marginally; thus, *I consider John Fred* is marginally possible under an interpretation where *Fred* does not name an individual, but rather defines a (set of) properties that some (perhaps unique) individual in the world must have. Perhaps that property is nothing more than bearing the name 'Fred'. This interpretation is not possible with true quantified NPs, however; hence the ungrammaticality of (100) and (101).

This same interpretation is made use of in a limited number of constructions in English in which a verb selects an NP with such an interpretation. Verbs with this property include *appoint, elect, nominate, name, call, make,* and perhaps a few others (see Stowell (1987a)). In this construction, the 'office' NP often appears without a definite determiner:

104a. Caesar called himself (the) conqueror of Gaul
b. We elected John {Ø/our/?the} president

c. The president appointed Jones (??the) ambassador to China
d. I've called Tom my friend for many years now
e. They named Fred (the) Most Valuable Player

In each of these cases, the second NP refers to an office (perhaps unique) which the referent of the first NP is to occupy.

Many of the grammatical examples in (102) and (103) contain definite NPs modified by the superlative form of an adjective. As with other cases of definite descriptions as predicates, superlatives in this case name not individuals, but intensions, or offices. The elative reading of the superlative is also available in these cases; for example, (102b) is ambiguous between 'Fred looked for a longer period than anyone else' (superlative) or 'Fred looked for a surprisingly long time' (elative). The same kind of ambiguity holds for (103c). This ambiguity of the superlative in predicate contrasts is in striking contrast to the use of the superlative in *there*-insertion contexts, which can only be elative. This provides an added measure of support for the claim that the 'indefiniteness' requirement on NP predicates cannot be reduced to the DE, nor vice versa.

In sum, although the DE makes reference solely to the

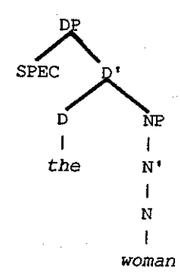
logical notion of intersectivity, the restriction on NP predicates is both more restrictive, and less restrictive. It is more restrictive, in that many intersective determiners are not possible in predicative NPs, and less restrictive in that a class of definite NPs, which are not possible existential *there*-insertion sentences, are possible as NP predicates. Crucially, the NP predicate in a light verb construction patterns in this respect with predicates, and not with inverted subjects in the existential *there*-insertion construction.

3.4. *DP and NP.*

3.4.1. Having established that the 'indefiniteness' requirement on predicate nominals is not the DE, we must now ask what it is exactly. In this section I propose, following Stowell (1987a), that common noun phrases that serve as arguments are of the category DP (determiner phrase), while predicate nominals, including NP predicates in light verb constructions, are of the category NP. This analysis accounts for the variety of data presented in section 3.3, and also serves as the basis of the analysis of the interaction of light verb constructions with the Projection Principle, discussed in Section 4.

The basic idea of the DP hypothesis is that a common noun phrase, such as *the woman* in *the woman is sitting on your desk* has the structure (105):

105.



Various arguments have been made in the literature defending this hypothesis; see especially Abney (1987), Fukui and Speas (1986), Kuroda (1985), and Stowell (1987a). Defending the DP hypothesis in full would therefore be, to a certain extent, redundant, as well as beyond the scope of the present work. For the task at hand, I will concentrate just on those aspects of the DP hypothesis which are directly relevant to this thesis.

The specific form of the DP-hypothesis I will adopt is that outlined by Stowell (1987a), according to which argument common noun phrases have the structure (105), but predicate nominals are bare NPs. I will therefore consider evidence for this specific proposal.

3.4.2. One kind of evidence for this claim has already been discussed, viz. the ungrammaticality of certain determiners with predicative NPs, discussed in Section 3.3.

In order for this set of data to follow from the DP/NP distinction, it must be the case that the determiners *few, some* with singular, and *a certain* are of the category D, and head DPs, while the other determiners, belonging to the extended class of numerals, are constituents of NP; the latter cases are treated in Chapter Three. Moreover, definite quantifiers such as *every, most*, etc. must be treated as belonging to the category D, and not as constituents of NP.

There is strong evidence supporting a different categorial treatment of determiners which appear with predicate nominals from those which occur only in arguments. Consider first the case of the indefinite article (and bare plurals). CNPs[15] with the indefinite article can be interpreted as existentially quantified (among other things[16]); as such, they behave just as we expect quantified NPs to behave. Specifically, they may take part in scope interactions:

106a. Most boys like a girl in the twelfth grade
b. Every man loves a woman with brown hair

Both of the sentences in (106) are two ways ambiguous, depending on whether the indefinite CNP takes scope over the subject or not. Thus, (106a) can mean either 'for most

boys (x), x likes some girl in the twelfth grade', or 'for some girl in the twelfth grade (y), most boys like y'. In the first instance, each boy may like a different twelfth-grade girl; while in the second instance, there is at least one girl who is liked by every boy.

In the theory of May (1977,1985), this ambiguity reflects the effects of Quantifier Raising (QR), a variety of Move-α applying to quantified CNPs at LF. The S-structure (106a) is associated with two different LFs after each quantified CNP undergoes QR: one where *most boys* asymmetrically c-commands[17] *a girl in the twelfth grade* (i.e., *most boys* has wide scope), and another where *a girl in the twelfth grade* has wide scope.

This ambiguity disappears, however, if the indefinite CNP is a nominal predicate. Consider the small clause examples (107):

107a. Every linguist is a French Horn player
b. We consider most students fools

These sentences are unambiguous. In particular, (107a) means just 'for every x, x a linguist, x is a French Horn player', and cannot mean 'there is a French Horn player x, such that every linguist is x'. That is, only the subject wide scope reading is possible for (107a). Similarly, (107b) can only mean 'for most x, x a student, we consider

x (a) fool(s)', and cannot mean 'there are x, x a fool, such that we consider most students x'. The latter case would seem to presuppose the existence of fools, while (107b) clearly does not.

The same lack of ambiguity holds for CNP predicates in light verb constructions. Thus, while (108a), with non-light verb *take*, is ambiguous according to the relative scope of the quantifiers, (108b) is not:

108a. Everybody took a wrench
b. Everybody took a look

In particular, (108b) can only mean 'for every x, x took a look', and cannot mean 'there is an x, x a look, such that everybody took x'.

The same set of facts holds true for other determiners which can appear with predicate nominals. (109) gives examples of sentences containing the quantifiers *many* and *some*, which are scopally ambiguous:

109a. Every boy likes many girls
b. Most boys admire some men

(109a) can mean either 'for all x, x a boy, x likes many girls' (subject wide scope --'SWS') or 'there are many x, x a girl, such that every boy likes x' (object wide scope --

'OWS'); (109b) can mean either 'for most x, x a boy, x admires some men' (SWS) or 'there are x's, x a man, such that most boys admire x' (OWS).

This ambiguity disappears when the CNP with *some* is either a small clause predicate (110a) or a light verb predicate (110b):

110a. ?? Most linguists are some friends of mine
b. Everybody gave the rope some pulls

These can have only the SWS reading: (a) 'most x, x linguists, x are friends of mine'; and (b) 'for all x, x gave the rope some pulls'.

These facts can be accounted for neatly under a theory in which predicates could not undergo QR at LF. Such a restriction cannot follow from any prohibition against A'-movement of predicate nominals, however, since no such prohibition exists:

111a. what$_i$ do you consider John [e]$_i$?
b. [what kind of idiot]$_i$ do you think I am [e]$_i$?
c. [a linguist]$_i$ is what$_i$ John became [e]$_i$
d. [how long of a walk]$_i$ did John take [e]$_i$?

The examples in (111) demonstrate that WH movement of

predicate nominals is perfectly productive. Also, Heggie (1988) analyzes sentences like (112) as having the structure shown, where the predicate nominal has undergone Topicalization:

112. [[the teacher]$_i$ is$_j$ [$_{IP}$ John [e]$_j$ [e]$_i$]]

Thus, overt A'-movement of predicate nominals is quite productive[18].

Moroever, such a restriction cannot follow from a prohibition against LF movement of predicates. In double interrogation sentences, such as (113a), WH phrases *in situ* move to [Spec,C'] at LF. Evidence that this is the case comes from consideration of island effects. (113b) and (c) differ from (113a) in that the WH phrase *in situ* is contained in an island which does not contain the target [Spec,C']:

113a. who do you think likes which color?
b. ?? who made the claim that Fred likes which color?
c. ?? who wonders whether Harry likes who?

The examples in (114), which parallel those in (113), show that the same holds for a predicate nominal WH *in situ*:

114a. who do you think became what?

b. ?? who made the claim that Fred is what?
c. ?? who wonders whether Jim considers Fred which kind of fool?
d. ?? who wonders whether John took how long of a walk?

The island effects for WH *in situ* argue that these phrases undergo WH movement in the derivation of LF from S-structure. If that is the case, then the contrast between (114a) and (114b-d) shows that there can be no prohibition against LF A'-movement of predicate nominals.

But if predicate nominals can undergo various types of A'-movement in general, then what could prevent them from undergoing QR? The most likely possibility is that QR applies to phrases of the category DP only. Then, if predicate nominals are not DPs, QR cannot apply to them. It is quite plausible that different instantiations of Move-α (defined in terms of the target of movement, the principles forcing their application, and the levels at which they can or must apply) select different values for α. QR, then, is simply Move-DP, applying at LF. A theory in which predicate nominals are NPs, while argument CNPs are DPs, predicts the range of facts discussed in this section.

3.5. *PRO in DP*.

Another aspect of the DP hypothesis concerns the

distribution of PRO. In Section 1, it was claimed that PRO cannot be governed; but if this is the case, then it is impossible as a constituent of NP, if NP is an argument. Consider the structure (115), where V L-marks NP:

115. V [$_{NP}$ PRO N']

Since NP is L-marked, it is not a BC, and hence not a barrier, for PRO. Thus, PRO is governed.

Yet Clark (1985) has argued that structures such as (115) occur in retroactive nominal constructions (see Section 2.7). The DP hypothesis, however, resolves this paradox. Consider the structure (116), where V L-marks DP:

116. V [$_{DP}$ D [$_{NP}$ PRO N']]

In this case, DP cannot be a inherent barrier for PRO, just as NP could not in (115). However, D does not L-mark NP in (116), hence if NP includes PRO, NP is a BC, and a barrier, for PRO, leaving PRO ungoverned. Whether NP in (116) includes PRO or not (see Chapter Three), D' is a barrier by minimality (Chomsky (1986a)); hence, in either case, PRO is not governed by V. PRO is still excluded inside the predicate nominal of a light verb construction, since these are NPs, and not DPs. Thus, the structure (117b) for

(117a) is ruled out:

117a. John took a look

b. John$_i$ took [$_{NP}$ PRO$_i$ a look]

In this case, PRO is governed, since NP is L-marked and not a barrier. I return to this issue in Chapter Three.

3.6. *Functional Categories.*

The claim that argument CNPs are DPs, while predicate nominals are bare NPs raises a technical problem for my claim that light verbs retain the subcategorization features of the verb they derive from. For example, if *take* subcategorizes for a DP complement, then it ought not to be able to take a bare NP complement in a light verb construction. A simple solution would be to claim that *take*, *give*, and *have* subcategorize for either DP or NP. But this would render my claim vacuous, for if these verbs have two subcategorization features, one of which is only used in light verb constructions, then it is pointless to claim that light verbs make use of the same subcategorization features as the normal verbs from which they derive. Instead, then, I claim that these verbs' subcategorization feature is only partially specified, so that either DP or NP may satisfy this requirement.

Chomsky (1970) proposes that the grammatical categories

N, V, A, and P are defined in terms of the binary features [±N,±V]. In particular, nouns are [+N,-V], verbs are [-N,+V], adjectives [+N,+V], and prepositions [-N,-V]. Certain grammatical relations, then, can be made sensitive to categorial features: arguments are [-V]; structural Case assigners are [-N]; etc.

Two binary features provide for the four lexical categories, but do not leave room for the 'functional' categories INFL, COMP, and DET. To provide for these, we could introduce a third feature; for present purposes, it does not matter what the feature is, for the moment let us call it [±L(exical)]: all of the lexical categories are [+L], while all of the functional categories are [-L]. In particular, let us assume that Determiners are [+N,-V,-L]. This makes some sense, since DPs are arguments, hence [-V], and never assign structural Case, and thus are [+N][19].

Now the subcategorization features of light verbs is simple: *take*, *give*[20], and *have* require complements that are [+N,-V], and the feature [±L] is left unspecified. In the next section, it will be shown that underspecification in subcategorization need not be stipulated as a property of light verbs, but that specification for the feature [±L] is probably redundant in any case. Thus, the light verb properties of *take*, *give*, and *have* do not follow from this underspecification; rather, the underspecification

follows from their status as possible light verbs, in a sense.

4. A Theory of Lexical Representation.

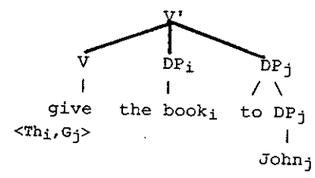
4.1. *Categorial Selection and θ-grids.*

4.1.1. In the tradition of generative grammar, lexical items must be specified as to what kind of complement structure they can or must have. In the *Aspects* theory (Chomsky (1965)), this is accomplished solely by means of the theory of strict subcategorization, in which the category and position of complements to a head is specified in that head's lexical entry. Stowell (1981) argues, however, that the mechanism of strict subcategorization is too powerful, and therefore fails to capture significant generalizations about word order and complement structure. In particular, Stowell argues that the number, and to some extent, the category of complements of a verb (or other lexical head) follows from the interaction of the θ-criterion with that verb's θ-grid, while the order of complements follows from principles of Case theory.

A θ-grid is a lexical specification of the set of θ-roles that the verb assigns to its internal arguments (complements), along with indices indicating which argument receives which θ-role. For example, the θ-grid of the verb *give* specifies that it assigns the Theme and Goal roles to

its complements, as in the structure (118)[21]:

118.



Pesetsky (1982) takes this program a step further, and claims that lexical items do not have categorial selection ('c-selection') features such as subcategorization frames at all, but that everything about a verb's complement structure, including the category of arguments, follows from the interaction of the verb's semantic selection ('s-selection') features (the θ-grid) with general principles governing the relation between category and kind of referent.

All of Section 2 of this chapter, however, provides an argument against this conclusion. It was observed in that section that certain verbs retain subcategorization features of some kind, requiring certain categories of complements to appear, even though the verb does not assign θ-roles to these complements. Some sort of c-selection feature must be retained, therefore, even if it is less powerful that strict subcategorization. In this section, I argue that the c-selection properties of lexical heads is

nothing more than a list of categorial features which must (or perhaps merely can) be governed by that head in a syntactic representation, and that it is in principle separable from the θ-grid, and vice versa. Though there is a close connection between these two features (in the usual case), this connection is somewhat less than identity.

4.1.2. As a starting point, suppose that the c-selection feature of a lexical item is just an unordered list of the categories of possible complements. For example, the c-selection feature of *put* is {DP,PP}, indicating that *put* takes two arguments, one of which is a DP, and the other of which is a PP. In addition, *put* has a θ-grid, <THEME,LOCATION>, indicating its thematic properties.

Moreover, the elements in the θ-grid must be linked in some way to the c-selection feature; to this end, let us simply assign indices to the θ-roles and to the categories, linking the two sets of features. The assignment of indices follows (to the extent that this is possible) conventions regarding the relation between category and the kind of referent, as in Pesetsky's theory; in the case at hand, THEME is linked to DP, and LOCATION to PP; the other way around being ruled out by general conventions. Unlike Pesetsky, however, I propose that these conventions govern the association between θ-grids and c-selection features already present in the lexicon, and does not derive the c-

selection features. The lexical entry of *put* so far is (119):

119. put, [+V,-N]: c-selection: {DP$_i$,PP$_j$}
θ-grid: <THEME$_i$,LOCATION$_j$>

I follow Jaeggli (1986) in assuming that the association between θ-grids and c-selection features observes yet another principle, namely that they must be linked to one another, as far as possible; this constraint is stated in (120):

120. *Linking Condition on Lexical Representations:*
Θ-grids and c-selectional features are maximally linked.

The Linking Condition makes it possible, in principle, for lexical entries to take either of the forms exemplified in (121a) or (b), while ruling out (c):

121a. c-selection: {XP$_i$,YP}
θ-grid: <THEME$_i$>

b. c-selection: {XP$_i$}
θ-grid: <THEME$_i$,GOAL>

c. c-selection: {XP$_i$,YP}
θ-grid: <THEME$_i$,GOAL>

In (119a), the θ-grid is 'saturated', i.e., every element in it is associated with an element in the c-selection set; hence, the two lines are linked up as far as possible. In (b), every element in the c-selection set is linked to an element in the θ-grid; hence, they are linked up as far as possible. In (c), on the other hand, there is an empty position in both lines, hence they are not linked up as far as possible.

The lexical entry (119c) is ruled out by the Linking Condition, while both (a) and (b) are permitted by this constraint. In fact, it turns out that (a) may be impossible, for independent reasons. This issue is taken up below, in Section 4.3 of this chapter. Entry (b), on the other hand, is quite common. In Section 2 it was observed that *give* can optionally occur with just one nominal complement, to which it assigns the θ-role Theme. In that case, illustrated in (122), the Goal role is implicit:

122. John didn't give Christmas presents this year

I.e., the verb still has a θ-grid that includes Goal, but

it does not select a category that corresponds to that role.

It is important to note that the Linking Condition is a condition on lexical, and not syntactic, representations. It should not be confused with a constraint that says that every subcategorized position must receive a θ-role. The latter constraint, to the extent that it is true, follows from the interaction of the θ-criterion and the Projection Principle, which are discussed below.

We may think of the assignment of θ-roles as proceeding quite mechanically under this approach. An argument β is assigned a θ-role τ by a predicate α if τ appears in the θ-grid of α, and bears the index[22] of β. The categorial selection feature is interpreted as requiring the presence of a certain category as a complement; if the selectional feature bears an index *i*, then a category with index *i* is selected. If α has a selectional feature, then by the Linking Condition, either τ is implicit (i.e., not assigned to a syntactically represented argument), or it is associated with a selected category. In the latter case, τ bears the index of β just in case β is a complement of α. In a sense, then, θ-roles are 'assigned' in the lexicon, while the complement structure of a lexical item is dictated solely by c-selection features.

4.1.3. Another part of a lexical item's lexical entry

involves if and how it assigns Case to the categories it governs. In particular, let us distinguish between complements which are not dependent on structural Case assignment, and complements which are dependent on structural Case. The latter are 'direct' arguments, and are assigned structural accusative Case by a governing transitive verb, or undergo NP movement, if governed by an verb that does not assign an external θ-role. If governed by a noun, the direct argument will either move to a genitive position, or trigger *of*-insertion. The former are oblique arguments of various sorts, including selected PPs, such as the Location argument of *put*, and inherently Case-marked DPs, such as the *to*-phrase in the case of *give* and other dative verbs.

To a certain extent, the c-selection features exemplified in the preceding section are redundant. Suppose, instead of selection for specific categories, lexical heads specify for each complement whether it is Case-dependent (i.e., a direct argument), or Case-independent (indirect argument). If it is Case-independent, it is either inherently Case-marked, in which case its Case (and category, presumably) follows from the θ-role it is linked to; or it is a selected PP, in which case its category must be specified. Case-dependent complements will always be of a category which can be

assigned Case, i.e., DP, CP, or, in the case of light verbs, NP (the lexical entry may specify categorial features for its direct argument, for example, to choose between DP and CP).

In that case, the lexical entry of *put* is as in (123):

123. put, [+V,-N]: c-selection: $\{[+N,-V]_i^{direct}, PP_j\}$
θ-grid: $\langle THEME_i, LOCATION_j\rangle$

The lexical entries so far for normal *give*, *take*, and *have* are given in (124):

124a. give[23], [+V,-N]: c-selection:
$\{[+N,-V]_i^{direct}, [+N,-V]_j^{direct}\}$
or: $\{[+N,-V]_i^{direct}, (X_j)\}$
θ-grid: $\langle THEME_i, GOAL_j\rangle$

b. take, [+V,-N]: c-selection: $\{[+N,-V]_i^{direct}, (X_j)\}$
θ-grid: $\langle THEME_i, (GOAL_j)\rangle$

c. have, [+V,-N]: c-selection: $\{[+N,-V]_i^{direct}\}$
θ-grid: $\langle THEME_i\rangle$

Note that both *give* and *take* have optional indirect arguments linked to GOAL in the θ-grid; assume these are to be assigned inherent (dative) Case, as per the discussion

in Section 2.

Take differs from *give* in that *take* assigns the Goal role only optionally; but *give*, while only optionally taking the dative position, must be interpreted as assigning the Goal θ-role, even if it is implicit. This points up the essential roles of the θ-grid vs. the c-selection feature: the latter directly relates to syntactic positions, while the former does not. The distinction between *take* and *give* in this respect could not be naturally captured in a theory which made use of just one or the other of the c-selection and θ-grid features.

The lexical entries for the light verbs *give*, *take*, and *have* is derived[24] from the lexical entries in (124) by deleting the θ-grid[25], with the result (125):

125a. give, [+V,-N]: c-selection:
$\{[+N,-V]^{direct}, [+N,-V]^{direct}\}$

b. take, [+V,-N]: c-selection: $\{[+N,-V]^{direct}\}$

c. have, [+V,-N]: c-selection: $\{[+N,-V]^{direct}\}$

One automatic result of deleting the θ-grid is that the Linking Condition is vacuously satisfied, and items named in the c-selection feature do not have indices.

4.1.4. These verbs are all verbs which assign an external θ-role, and this property is partially retained in the light verb form: all of these light verbs still license an external argument position, though they do not exactly assign a θ-role to that position; rather, the θ-role is assigned indirectly by the complex predicate. Crucially, however, the D-structure position of the subject of light verb constructions is as an external argument, as was determined in Section 2. Let us suppose, then, that the property of licensing an external argument is a part of the lexical entry separate from the θ-grid and c-selection feature, and hence retained when the θ-grid is deleted. Assume that the exact θ-role of the subject of non-light verbs is derived in some way compositionally from the internal structure of the predicate, following Marantz (1984). In Chapter Three, I will provide independent evidence in favor of this hypothesis.

Moreover, the status of the verb with respect to the distinction between events and states is retained under light verb formation. Hence, normal *give* and *take* typically head phrases referring to events, and also occur only in light verb constructions that refer to events; *have* can be either eventive or stative, as illustrated in Section 2.4, and can consequently be either eventive or

stative as a light verb. Let us assume, then, that each lexical entry contains this information as well; for lack of more perspicuous term, I will refer to this as the aspectual feature, without meaning to imply that it contains all the aspectual information of a predicate; other aspectual categories are discussed in Chapter Two.

There are two more features, then, to add to the lexical representations. Each of these four features is, in principle, independent of the others, though it is an empirical issue whether and to what extent they actually are independent. As we have seen, the c-selection feature and the θ-grid are separable features, but they are not completely independent, their connection being mediated by the Linking Condition. At the end of this chapter, I will discuss some facts which suggest that there may be a close relation between the aspectual and c-selection features in the lexical representation.

4.2. *The Projection Principle.*

4.2.1. Chomsky (1981) proposes the Projection Principle, restated in (126):

126. Lexical requirements are satisfied at every level of syntactic representation.

Chomsky (1986b), however, states the Projection Principle

slightly differently; viz. as (127):

127. Lexical structure is represented categorially at every level of syntactic representation.

In the present system, not all lexical features or requirements govern categorial structure. In particular, c-selection features are responsible for the complement structure of lexical items, but θ-grids are not a requirement on categorial structure; recall that a θ-role may fail to be assigned to a syntactic position, in which case that θ-role is implicit. A θ-grid, then, is a lexical requirement having to do with interpretation, but is only indirectly linked (via the Linking Condition) to categorial structure.

Interpreted literally, then, (127) is too strong, since it is possible for at least one aspect of lexical structure, namely elements in the θ-grid, to fail to be represented categorially. But the θ-grid is a lexical feature that plays a role in syntactic representations; the exact nature of this role will become clear below. To lead into this discussion, I will assume a slightly more general statement of the Projection Principle, as in (128):

128. *Projection Principle:*
Lexical features are projected to every level of representation.

Where this is understood as entailing the statement in (126).

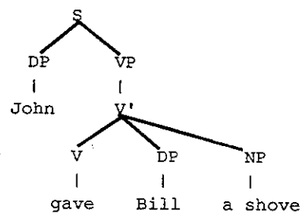
It is clear, then, that the fact that light verbs retain their subcategorization, or in our terms the c-selection, feature of the verb they derive from follows from the Projection Principle. When the θ-grid is deleted, the c-selection feature remains, and constitutes a lexical requirement of the verb; specifically, that those categories must be complements.

Note also that the fact that light verbs fail to assign θ-roles to their complements does not violate the Projection Principle, since the assignment of θ-roles is not a lexical feature of these verbs. More precisely, if a normal verb (i.e., with both c-selection and θ-grid features) failed to assign θ-roles to its complements, the Projection Principle would still be satisfied, as long as the correct categories appear as complements to the verb. This situation would violate the Linking Condition, however, since the θ-grid and the c-selection feature are not maximally linked.

4.2.2. How exactly do the θ-roles of the predicate nominal *a shove* get associated with the argument positions

occupied by *John* and *Bill* in the D-structure (129)[26]?

129.



The nominal form *shove*, derived from the verb, has a θ-grid containing a Theme role. Let us interpret a θ-grid as a feature of N, which percolates to all projections of N; then NP inherits the θ-grid of its head.

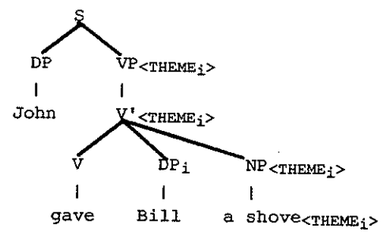
The DP *Bill* is not c-selected by *shove*, so it is not assigned its θ-role by lexical association of θ-roles to selected positions. Let us assume, then, that θ-roles can also be discharged under predication, following Williams (1980), if they are not discharged by association with c-selection requirments. Predication requires mutual c-command between the 'subject' and predicate, according to Williams; hence the Theme role of *shove* can be assigned to *Bill* under predication.

Suppose that the θ-grid feature of heads such as *shove* percolates not just to projections of N, but farther up the tree. The θ-grid feature of *shove*, then, is shared by the categories V' and VP. This would capture the intuition

that the predicate nominal is in some sense the 'head' of the whole light verb predicate, though it is not its X'-theoretic head. To force this extra percolation, suppose that in order to assign a θ-role to an external argument, a predicate must have a θ-grid feature. Since VP in (129) takes an external argument (as a lexical requirement of *give*), that argument must receive a θ-role, else violate the θ-criterion; hence, by hypothesis, VP must have a θ-grid. In particular, in order to assign the external θ-role of *shove*, VP must have the θ-grid feature projected by *shove*.

A more fully specified representation of (129), showing the projection of θ-grids, is (130):

130.



(Recall that the index *i* on the θ-role Theme means only that that role is born by the argument with that index, and not, e.g., that that role is unassigned at that level.)

The projection of θ-grids is not absolutely free, or else we would expect rampant long distance predication. I

propose, in fact, that it is subject to two constraining factors. The first is that the θ-grid feature is unique: categories have just one such feature. For example, in the structure (130), if *give* had the θ-grid <THEME,GOAL>, it would have to project to VP; but it could not in (130), since then VP would have two distinct θ-grid features. This principle is relevant to the discussion of serial verbs in Chapter Five.

The second constraining factor is that θ-grid features cannot project to functional categories. We can formalize this principle as (131):

131. *Functional Category Convention:*
Functional categories do not have lexical features.

Where the functional categories are Determiner, INFL, and COMP[27], and lexical features include the four features discussed in Section 4.1, crucially including θ-grids. It follows that, though NP in (130) can project its θ-grid to V', VP could not project a θ-grid to INFL', since INFL cannot have lexical features. Hence, the θ-grid of *shove* in (130) can project no higher than VP.

Also, NP could not project a θ-grid if it is governed by Det, since Det cannot have lexical features. It follows

from the Functional Category Convention that predicate nominals are NPs, and not DPs: DP cannot assign θ-roles, since it cannot have lexical features such as θ-grids. This is similar to Stowell's (1987a) account of this contrast: Stowell claims that Det is a 'referential' operator, which turns names for kinds (NPs) into referring expressions. In our terms, Det is a referential category, in that it is a category which must bear a θ-role, rather than assign one. NP on the other hand must assign a θ-role, rather than bear one[28]. This theory predicts (correctly, as we have seen) that the predicate nominal in a light verb construction is a bare NP.

4.2.3. The discussion of (130) above actually glosses over one point: how do we guarantee that the Theme role of *shove* is assigned before the Agent role, given that they are both assigned under predication. The answer is fairly simple: Suppose that the external θ-role (Agent, in this case) carries a requirement that it closes the predicate. Then, if it is assigned to *Bill* in (130), the Theme role will go unassigned, and *John* will get no θ-role[29].

4.3. *The Θ-Criterion.*

Throughout the discussion so far, I have implicitly assumed a version of the θ-criterion, which is roughly the statement (132):

132. *θ-Criterion:* Every argument is assigned exactly one θ-role, and no θ-role is assigned to more than one argument.

This differs from the formulation given by Chomsky (1981) only in that it allows θ-roles to go unassigned; this, as we have seen, is necessary to describe implicit arguments.

An important result in Chomsky (1981) is that the θ-criterion conspires with the Projection Principle to rule out raising to object. Since I have reinterpreted the Projection Principle and the θ-criterion in this chapter, it is worthwhile to see if this result is retained in the present system. Let us consider two possible raising to object derivations for the sentence *I belive John to be stupid;* the first starts with the D-structure (133a), and derives the S-structure (133b), by making *John* a sister to *believe*:

133a. I believe [John to be stupid]

b. I believe John$_i$ [[e]$_i$ to be stupid]

This derivation is clearly ruled out by the Projection Principle. If the c-selection feature of *believe* permits a DP complement, then the D-structure (133a) does not incorporate this lexical feature. If, on the other hand,

believe does not permit a DP complement, then the S-structure (133b) does not satisfy that requirement.

Now consider the case where the D-structure is (134a), and the S-structure (134b) is derived by moving *John* into the position of Δ:

134a. I believe Δ [John to be stupid]

b. I believe John$_i$ [[e]$_i$ to be stupid]

In this case, the Projection Principle is satisfied, assuming that *believe* c-selects a DP and a clause (either CP or IP). It is this derivation which violates the θ-criterion under Chomsky's (1981) analysis, since the DP position that is a sister to *believe* would have to be assigned a θ-role by *believe*.

This is not a requirement of the present theory, however. Suppose *believe* had the following c-selection and θ-grid features:

135. believe, [+V,-N]: c-selection: {DP,IP$_i$}
θ-grid: <THEME$_i$>

This lexical entry satisfies the Linking Condition, and permits the derivation (134) to satisfy the Projection Principle. The θ-criterion as stated in (132) is not

violated, since nothing forces *believe* to assign a θ-role to the DP position it selects.

Let us assume that raising to object derivations in fact do not exist, and that Chomsky's result should be retained. Then the (132) is insufficient, and must be replaced by a principle which forces the DP position selected by *believe* in (135) to be a θ-position. This does not run counter to the spirit of the present theory, for we need not require that believe assigns a θ-role to that position, but only that that position receives a θ-role.

One candidate for such a principle is suggested by Brody (1987), who formulates the θ-criterion as in (136):

136. All and only θ-positions contain arguments at D-structure.

This formulation does not quite work, however, since nothing guarantees that the DP position selected by *believe* is in fact a θ-position. Suppose we revise Brody's θ-criterion to (137):

137. All and only lexically selected positions are filled at D-structure.

(137) forces the object position in (134) to be filled at D-structure. If it is filled by an argument, then the θ-criterion forces it to be a θ-position, since the θ-criterion must be satisfied at every level. If the position is not an argument, then it is a predicate; in either case, (137) rules out raising to that position.

(137) is probably unnecessary, however. It seems reasonable to suppose that any (L-marked) category either receives or assigns a θ-role; i.e., is either an argument or a predicate. Assuming this to be the case, the position of Δ in (134) is ruled out, since it is L-marked, and is neither a predicate nor an argument.

This can also be used to rule out (138a), repeated here, as a lexical representation:

138a. c-selection: {XP$_i$,YP}
θ-grid: <THEME$_i$>

Since YP is not assigned a θ-role, it must be a predicate; i.e., it must assign a θ-role. YP then projects its θ-grid to VP (assuming (138a) to be a verb's lexical entry); then its θ-grid must be non-distinct from that of the verb; hence it must assign the Theme role to XP; more specifically, the θ-grid of Y must be <THEME$_i$>.

It is an empirical issue whether (138a), leading to the structure (139), should be permitted or not:

139. [$_{VP}$ V XP YP]

In (139), XP is in a position to be assigned a θ-role both by V, to which it is a complement, and by YP, which assigns a θ-role to XP under predication. Similar structures have been proposed in the literature, e.g. by Baker (1989) (see Chapter Five for discussion). If it turns out that structures such as (139) do not occur, we can rule it out by appealing to a strict interpretation of the θ-criterion, by which a particular argument can be an argument of only one predicate. If it turns out that such structures do occur, then a less strict version of the θ-criterion can be used.

4.4. *Auxiliary* have.

I have argued that light verbs such as *have*, *give*, and *take* have lexical representations which are derived from the lexical entries of normal *have*, *give*, and *take* by eliminating the θ-grid. I propose now, and argue more extensively in Chapters Four and Five, that lexical entries may be derived by eliminating, or 'bleaching', the c-selection feature of a verb. In the case of English, if we delete the c-selection feature of light verb *have*, we get (140) as a result:

140. have, [+V,-N]: [+external argument]
[event] or [state]

(140), I propose, is basically the lexical entry for the auxiliary verb *have* used in the perfect construction in English and other European languages. This is discussed at length in Chapter Four; but for now, I am interested in the aspectual feature in (140).

In Section 2.6, it was ovbserved that *have* can be either eventive or stative; as expected, it may occur as an auxiliary with either eventive or stative verbs:

141a. John has not called his mother in three years
(eventive)

b. John has not resembled his mother for three years
(stative)

It was also observed in Section 2.6 that when *have* is eventive, it selects an intentional Agent as its subject. This is not the case, however, with the perfect auxiliary *have*:

142a. The car has approached this intersection before

b. This computer has emitted harmful radiation in the past

This suggests that the eventive vs. stative nature of perfect predicates derives solely from the thematic verb (past participle), and not at all from *have*. This suggests (though other factors may be responsible) that when the c-selection feature is eliminated in a lexical entry, the aspectual feature is eliminated along with it. There is very little evidence to bear on this issue, though I return to it briefly in Chapter Three.

5. Summary of Chapter One.

In this chapter, I have argued for the existence of a closed class of verbs, called light verbs, which have the c-selectional properties, but not the thematic properties, of the regular verbs from which they are derived. As a result of this thematic 'bleaching', these verbs are unable to assign θ-roles to their complements; the complements therefore must either be non-arguments (i.e., predicates) or must get their θ-roles elsewhere. It was observed that light verbs take a predicate nominal complement, which then provides the θ-roles to the other arguments in the construction. Thus, a serial predicate, consisting of a light verb and a nominal predicate, is formed. This process is described by assuming the free projection of θ-grids, constrained by the convention that functional

categories cannot have θ-grids. As a result, the observed categorial distinction between argument and predicate nominals (DP and NP, respectively) was derived. I return briefly to light verb constructions in Chapter Three.

discussion at hand, so I will continue to use the term c-command unless I specifically wish to distinguish m-command from c-command. However, I argue in Chapter Three that important results are derived by assuming m-command to be the structural relation relevant to binding theory.

8. (46b) can only be grammatical if *this* is used in the colloquial sense of 'a certain', usually used to begin a story; that this use of *this* is indefinite is shown by the grammaticality of (i):

i. there was this girl, see, and ...

There-insertion requires indefiniteness of the NP, so *this* must be indefinite in this reading. But see Section 3, where I show that the indefiniteness requirement on the predicate NP in a light verb construction differs from the definiteness effect in *there*-insertion contexts in certain respects.

9. Dominique Sportiche (personal communication) points out that the unacceptability of dative *to* with light *give* in English contrasts with the acceptability of dative *á* with the light verb *donner* in French; hence the grammaticality of (i) with a dative object:

i. Marie a donné un baiser á Jean
'Marie gave a kiss to Jean'

Since *á* is assumed to be an inherent Case-marker, (i) would seem to pose a problem for the proposed account of the ungrammaticality of (37).

There is a difference, however, between English *to* and French *á*, which explains the difference between (i) and (37). Although an inherent Case-marker, *á* is not restricted to Goals, but can also mark the external argument of a causativized verb, as in (ii):

ii. Marie a fait telefoner Pierre á Jean
'Marie had Jean call Pierre'

As the external argument of *telefoner*, *Jean* is not governed by *telefoner*, but is presumably adjoined to VP. Hence, *á* is associated with a wider variety of θ-roles than *to*, and unlike *to* does not require government by the θ-marking verb, but only θ-assignment. Hence, there is no reason that *Jean* cannot be assigned inherent dative Case in (i), since it receives its θ-role from *un baiser*.

Another difference between the construction in (i) and the English light verb construction, which is not explained, is that the predicate NP in (i) can undergo NP movement in the passive:

iii. un baiser a eté donné á Jean
'a kiss was given to Jean'

This contrasts with the English light verb construction, as illustrated by (73).

NOTES

1. There are aspectual differences between (3) and (4); this issue is treated briefly in Chapter Three. Except where this difference is specificaly important to the discussion at hand, I will ignore it in the text, and continue to impute synonymy to pairs like (3) and (4).

2. 'Closely dominates' is a relation between two maximal projections: α closely dominates β if (i) α, β maximal projections; (ii) α dominates β; and (iii) $\sim\exists\gamma$, $\gamma \neq \alpha$, $\gamma \neq \beta$, γ an X^{max}, such that α dominates γ and γ dominates β.

3. Barriers to government are also introduced by the Minimality Condition, by which a single-bar (or perhaps any) level projection of some head δ becomes a barrier for β.

4. Horvath (1981) also proposes that government is sensitive to a directionality parameter. Stowell (1983) adopts this proposal to allow PRO as the subject of an adjunct small clause in English:

i. John came home $[_{AP}$ PRO drunk]

Without the directionality parameter, PRO is governed in (i), since no barrier for PRO excludes $[_A$ *drunk*]. This

predicts that constructions like (i) should be impossible in SOV languages, where the direction of government is leftward, since PRO would again be governed by $[_A$ *drunk*].

An alternative would be to revise the Minimality Condition in *Barriers* to allow X' to (optionally) be a barrier for government of [SPEC,X'] by X. I have not thoroughly considered the consequences of this proposal.

The same result could be achieved outside of the Minimality Condition, by making use of the notion of 'canonical' government, as Horvath and Stowell do. Suppose that α canonically governs β if α governs β, α precedes or follows β (choice governed by parameter, following Horvath), and α c-commands β; where 'c-command' is taken in the strict sense of Reinhart (1976), distinct from 'm-command'. In (i), PRO is governed, but not canonically so, by $[_A$ *drunk*], since it is m-commanded, but not c-commanded, by the adjective.

5. I discuss VP small clauses in Chapter Three.

6. Some idioms are more transparent than others: *give way* and *not give X the time of day* are perhaps more easily made sense of than the others.

7. Or perhaps m-command if that is the relevant structural relation for binding; this issue is not relevant for the

10. While there is some overlap between the set of nouns that can be predicates with ligh verb *have* and the set of nouns that can be predicates with light verb *take*, as can be seen by comparing the examples in (58a-d) to those in (52), many nouns can appear with one but not the other. I have no explanation for this fact.

11. For discussion of cases like (76a), see Clark (1985), Safir (1987).

12. This example is ambiguous between a stative reading (= 'Joe's friends are at his place for coffee') and an eventive reading (= 'Joe usually gets together at his place with his friends for coffee').

13. Including no article, in the case of indefinite plurals.

14. For some reason, predicate nominal objects of *give* and *take* allow numerals more readily than the object of *have*:

i. John took three looks

ii.??John had three looks

(ii) is at best marginal under the light verb interpretation, i.e., where it is approximately synonymous with (i), and means 'John looked twice'. It is acceptable

under a different interpretation, however, where it means roughly 'John had two appearances'; the latter interpretation is stative, the former eventive.

15. For the remainder of this chapter I will use the term 'common noun phrase (CNP)' as a category-neutral way to refer to nominal arguments and predicates, to avoid confusion with the notion NP as it is used specifically within the DP hypothesis.

16. See Carlson (1977).

17. This is not strictly true in the theory presented in May (1985), though the intuitive content is the same in both variants.

18. Though it cannot occur in Cleft constructions, such as (i), as Heggie notes:

i.? It's a teacher that John is

19. Though Det apparently fails to license *of*-insertion, a property of the feature [+N], according to Stowell (1981). Levin and Rappaport (1986) suggest, however, that adjectives also do not productively license *of*-insertion, thus it may be that this is only possible with constituents

of NP.

20. The subcategorization properties of *give* are a more complicated matter; see esp. Larson (1988) in this regard; I will continue to assume a simple subcategorization property for *give*, for expository purposes.

21. The structure (118) follows the results of the previous sections. For ease of exposition, I have assumed that the phrasal Case affix *to* is adjoined to DP.

22. The index that appears in θ-grids and c-selection features is not the same as the index used to mark binding and coreference relations, since each argument must have a unique θ-index. Assume θ-indices are identified with referential indices at some post-LF level of interpretation (so as not to violate the θ-criterion), so that referents are associated with their logical (grammatical) function.

23. Again, abstracting away from the exact description of double-object constructions; see Larson (1988).

24. This is not a productive derivation, of course. Rather, let us assume that light verb formation characterizes a lexical redundancy, perhaps reflecting an historical development. It is interesting, however, that

the same set of verbs seem to behave as light verbs in other languages, suggesting that there are more that just historical factors involved.

25. And getting rid of the option of inherent Case-marking, as per the discussion in Section 2.

26. The structure (129) abstracts away from the issue of the position of the subject at D-structure, which is discussed in Chapter Three.

27. Perhaps Preposition is a functional category, as well, as Abney (1987) claims.

28. This forces a difference between the present theory and Stowell's with respect to the treatment of names. Stowell claims that names are bare NPs, since these NPs are referential to begin with, and do not need Det to make them referential. In my theory, names must be DPs, since they are arguments. It is unclear what empirical difference, if any, this makes. In my theory, names can undergo QR, while in Stowell's they cannot; but even if names do QR, they could not trigger scope ambiguities with other DPs, since they are not quantificational, so it is not clear what empirical issues, if any, differentiate the two approaches.

29. In some cases, however, it seems possible that light verb *give* can assign an 'extra' Cause θ-role to its subject, if an external θ-role has been assigned internal to VP. Consider (i):

i. That gave John a laugh

In (i), the external (Agent) θ-role of *laugh* is assigned to the object DP *John*, and another θ-role, Cause, is assigned to *that*. That this is not an option with *shove*, i.e., that (129) is unambiguous, indicates that perhaps only semi-agentive roles, such as the subject θ-role assigned by *laugh*, can be assigned VP-internally in this fashion. I will leave this issue aside for now.

CHAPTER TWO: TEMPORAL ARGUMENT STRUCTURE

1. Preliminaries.

1.1. *Introduction.*

In this chapter, I argue for the existence of a temporal argument structure for verbs, as well as for other categories. The arguments for the existence of such an argument in syntactic representations are of two general types. There are arguments relating to the temporal interpretation of sentences and phrases: In Section 2, I argue that the semantics of temporal reference, as it interacts with aspectual categories, is best understood in terms of an extension of θ-role assigment, taking verbs to assign a temporal θ-role. The temporal θ-role is argued in Section 3 to be dependent on the structure of V', in such a

way as to argue for its syntactic presence as an argument of V'. In Section 4, I show how the temporal argument interacts with non-selective operators, which provides a separate argument for its syntactic reality.

There are also arguments for temporal argument structure based on the purely syntactic and morphological behavior of different grammatical categories; these are the topic of Chapter Three. Specifically, I conclude that the temporal arguments are in the specifier positions of the head that assigns their θ-role.

1.2. *Tests for Stativity and Eventiveness.*

Before turning to specific proposals about the syntax of the event/state distinction, it is necessary first to know exactly what we mean by these terms, and how we know when a given predicate is eventive or stative; to that end, I will discuss a number of constructions which distinguish categories along just these lines.

The first construction that tests for the event/state distinction is the morphologically simple present tense of verbs. Jackendoff (1972) notes that stative verbs in the simple present can be interpreted as referring to present time in English, while event verbs in the present cannot refer to present time, but must be interpreted as either habitual or narrative. Consider the two sets of sentences (1) and (2):

1 a. John resembles his mother
b. Fred fears confrontations
c. Harry knows Latin
d. Sue's attitude upsets me
e. The team is in Los Angeles for the weekend
f. That car belongs to John
g. Bill has his own desk now

2 a. John hits his brother
b. Fred kisses Jane
c. Harry sucks up to his teachers
d. Sue waits for her boyfriend to call
e. The team comes to Los Angeles for the weekend
f. That car breaks down in the cold
g. Bill arrives by train

For all of the examples in (1), it is possible for them to refer to the present time; (1a), for example, can be naturally uttered upon seeing both John and his mother just once.

The sentences in (2), however, can only be habitual, immediate future, or narrative. (2a), for example, can mean that an event of John hitting his brother is common, and is often repeated; this is the habitual reading.

The sentences in (2) can also be used to refer to an imminent event, or to an event in a narrative. The habitual, immediate future, and narrative interpretations are also possible for the stative sentences in (1), but unlike the statives, the eventive sentences in (2) cannot receive a present time interpretation.

Present time in event sentences is denoted by the progressive construction. The progressive construction, in fact, only permits eventive verbs, and hence constitutes our second test. Putting all of the sentences in (2) into the progressive, as in (3), is perfectly natural, and can receive a present time, or immediate future interpretation:

3 a. John is hitting his brother
b. Fred is kissing Jane
c. Harry is sucking up to his teachers
d. Sue is waiting for her boyfriend to call
e. The team is coming to Los Angeles for the weekend
f. That car is breaking down from the cold
g. Bill is arriving by train

Putting the sentences in (1) into the progressive, as in (4), leads to ungrammaticality

4 a. * John is resembling his mother
b. * Fred is fearing confrontations

c. * Harry is knowing Latin
d. ? Sue's attitude is upsetting me
e. * The team is being in Los Angeles for the weekend
f. * That car is belonging to John
g. % Bill is having his own desk now

(4d) is marginally acceptable, perhaps on analogy with the eventive use of *upset*, as in *John is busy upsetting the children*. (4g) is grammatical, but only under a completely different interpretation, e.g., where Bill is consuming his desk. Note that the progressive is essentially an operation that turns eventive predicates into stative predicates.

The third test involves locative adjunts. Davidson (1966) claims that locative adjuncts can modify a predicate only if that predicate refers to an event. Some stative predicates appear to allow locative adjuncts, especially those headed by *be*:

5 a. Mary is attractive in her swimsuit
b. John is unhappy in the desert

It is not clear that the locative adjuncts in (5) are modifiers of *be*, rather than of the adjectival predicate.

There is no obvious semantic test for modification in this case, since it is not clear how modification of *be*

would differ semantically from modification of the adjectival predicate. However, some syntactic evidence for the constituent structure comes from AP small clauses that are governed by a verb other than *be*:

6 a. I consider Mary attractive in her swimsuit
b. John$_i$ seems [e]$_i$ unhappy in the desert

In (6a), it is clear that *in her swimsuit* modifies *attractive*, and not *consider*; similarly, *in the desert* modifies *unhappy* in (6b), and not *seems*.

Interestingly, (6b) contrasts in this respect with the syntactically parallel (7):

7. John$_i$ became [e]$_i$ unhappy in the desert

Both *seem* and *become* select AP small clauses, the subject of which raises to the higher subject position, as shown. But while (6b) is unambiguous, with *in the desert* modifying only *unhappy*, (7) is possibly ambiguous as to whether *in the desert* modifies *unhappy* or *became*, and certainly prefers the latter reading. But this follows from Davidson's claim, since *become* is eventive, and *seem* stative.

Thus, putting locative adverbs in the sentences in (2),

as in (8), is acceptable with the locative phrase taken as a modifier of VP, while putting locative modifiers of VP into (1), as in (9), leads to ungrammaticality:

8 a. John is hitting his brother *in the kitchen*
b. Fred is kissing Jane *in the back room*
c. Harry is sucking up to his teachers *in the hallways*
d. Sue is waiting *at home* for her boyfriend to call
e. The team is coming to Los Angeles *on Route 66*
f. That car is breaking down *at the intersection*
g. Bill is arriving *in the station*

9 a. * John resembles his mother *in the kitchen*
b. % Fred fears confrontations *in the back room*
c. * Harry knows Latin *in the hallways*
d. ?* Sue's attitude upsets me *at home*
e. * That car belongs to John *at the intersection*
f. Bill has his own desk *in the station*

In (9b), the locative phrase clearly must modify *confrontations*, and not *fears*; similarly, the locative phrase in (9f) modifies *desk*, and not *have*, since this sentence can be true even if Bill is not at the station.

A final test for stativity in English (as far as I know, unnoticed previously) is selection by the predicate *come* +

infinitive, meaning 'evolve' or 'develop'. The sentences in (10) are grammatical, with stative sentences embedded under this predicate:

10 a. I've come to admire John over the years
b. Fred's behavior came to bother me eventually
c. How did you come to be a linguist?
d. Susan came to resemble her mother
e. Jane came to know Harry pretty well
f. Louise came to associate parties with good food

In these sentences, *come* + infinitive means to pass from one state into another; (10a), for example, means that I have gone from a state of not admiring John to a state of admiring him.

Embedding eventive sentences under *come* + infinitive leads to ungrammaticality under the intended reading:

11 a. Bill came to hit Fred
b. John came to learn English
c. Susan came to arrive at the station
d. Harry came to run a mile
e. Joe came to suck up to his teachers
f. Fred came to wait for the train

In (11), *come* + infinitive can only mean 'come for the

purpose of', and cannot mean to pass from one state to another. *Come* + infinitive differs in this respect from *happen* + infinitive, which takes either eventive or stative complements:

12 a. Susan happens to resemble her mother
b. Fred happened to bump into his brother downtown

Armed with this battery of tests, we can now proceed to an analysis of the event/state distinction.

2. Temporal Reference.

2.1. *Time Adverbs.*

2.1.1. Enç (1985), citing Partee, notes that time adverbials systematically receive a different interpretation in event sentences than in stative sentences. Consider the following sentences with time adverbial PPs headed by *at*:

13. *eventive:*
a. Fred laughed at six o'clock
b. John left at six o'clock
c. Sue ran at six o'clock

stative:
d. Fred was in Los Angeles at six o'clock
e. John resembled his sister at six o'clock
f. Jane was running at six o'clock

In the eventive sentences (13a), (b), and (c), *at six o'clock* refers to the onset of the event. This is especially clear in examples (a) and (c), where the event in question is an activity, in the terminology of Vendler (1956), and hence has no inherent endpoint. Thus, (13a) can refer to an event of Fred's laughing which begins at six, and continues for any length of time. I will refer to the onset-reference of time adverbials as the 'delimited', or 'bound' interpretation. As we will see in Section 4, the delimited interpretation is more general than simple onset-reference.

The *at*-phrases in the stative sentences (13d-f) need not receive the delimited interpretation; (13d), for instance, can be true even if Fred had never been outside Los Angeles. Thus eventive and stative verbs differ in whether or not the delimited interpretation on time adverbials is required.

Note that the delimited interpretation of *at*-phrases in event sentences extends beyond the simple past tense. The sentences in (13a-c) can also receive a habitual

interpretation, in which the delimited interpretation is still required; this is seen more clearly in (14), where the verbs are in the morphologically simple present tense, and hence most naturally interpreted as habitual or narrative:

14 a. Fred laughs at six o'clock
b. John leaves at six o'clock
c. Sue runs at six o'clock

The PP *at six o'clock* names the time at which the relevant event habitually begins.

The contrast between (13c) and (f) is interesting in this respect. While the *at*-phrase in (13c) must receive the delimited interpretation, that is not the case for (13f), as noted. However, (13f) is actually ambiguous in a way that (13d) and (e) are not. Specifically, (f) can receive the delimited interpretation, but only when it is interpreted as habitual; i.e., when it means 'John was in the habit of (starting his) running at six'. It seems to be true for progressives in general that time adverbials may be either delimiting or not, and if they are delimiting, then the sentence is interpreted as habitual.

2.1.2. Time adverbs receive a more thorough treatment below; for now, it is only necessary to establish the

distinction between the delimited and non-delimited interpretations of time adverbials. Before moving on to a syntactic account of these facts, let us first turn to a discussion of the distribution of time adverbs. I first examine some evidence that time adverbials are always immediate constituents of some projection of V; then I turn to some apparent counterexamples, and argue that these cases can be accommodated by this generalization, as well.

Time adverbials are possible modifiers of any verb, whether eventive or stative; although the interpretation of time adverbs is dependent on this distinction, their distribution, strictly speaking, is not. There are varying degrees of acceptability of specific-time denoting adverbs with stative verbs; the examples in (15) are arranged in descending order of acceptability, in my judgement:

15 a. John was in Los Angeles at noon
b. Jane had her mother's car at noon
c. Fred resembled his mother at noon
d. Moe feared his father at noon
e. Sue's behavior upset me {?at noon/yesterday}

But all of these examples are basically okay, when supplied with an appropriate context. Moreover, the unacceptability of those on the bottom of the list decreases as the time

referred to becomes less specific, as indicated for (15e).

When a verb selects a small clause complement, a time adverb is potentially ambiguous as to whether it modifies the verb or the small clause predicate; this is true in both ECM and raising constructions, as in (16):

16. *ECM:*
a. I considered Fred foolish yesterday
b. I considered Fred a linguist yesterday
c. I expect Fred out of my house tomorrow
raising:
d. Fred seemed [e] foolish yesterday
e. Fred was [e] a linguist yesterday
f. Fred is expected [e] out of my house tomorrow

There is evidence to suggest that the time adverbials in (16) are unambiguously constituents of VP, and not of the small clause, however.

This evidence comes from time adverbs containing bound pronouns. Specific-time denoting adverbs headed by *when* can occur freely in sentences where a raising category such as *be* governs an AP, NP, or PP small clause:

17 a. John was angry when his mother showed up
b. John was a good student when his mother showed up
c. John was in the hall when his mother showed up

It is possible for a quantified phrase in the subject position of these sentences to bind a pronoun contained within the time adverb (I use quantifiers such as *no* to avoid interference from E-type pronouns (Evans (1980)):

18. *AP:*
a. no boy$_i$ was angry when his$_i$ mother showed up
b. who$_i$ [e]$_i$ was angry when his$_i$ mother showed up

NP:
c. no boy$_i$ was a good student when his$_i$ mother came by
d. who$_i$ [e]$_i$ was a good student when his$_i$ mother came by

PP:
e. no boy$_i$ was on the front steps when his$_i$ mother showed up
f. who$_i$ [e]$_i$ was on the front steps when his$_i$ mother showed up

The bound pronoun interpretation is impossible, however, in ECM small clause constructions; these contrast minimally with semantically parallel ECM infinitivals with *be* in this respect:

19. *AP:*

a. I consider no boy$_i$ *(to be) angry when his$_i$ mother shows up

b. who$_i$ did you consider [e]$_i$ *(to be) angry when his$_i$ mother showed up?

NP:

c. I consider no boy$_i$ *(to be) a good student when his$_i$ mother comes by

d. who$_i$ did you consider [e]$_i$?*(to be) a good student when his$_i$ mother came by?

PP:

e. I expect no boy$_i$??(to be) on the front steps when his$_i$ mother shows up

f. who$_i$ did you expect [e]$_i$ *(to be) on the front steps when his$_i$ mother showed up?

This contrast can be explained under the assumption that time adverbials cannot be constituents of AP, NP, or PP. On the observational level, it seems to be the case that a pronoun can be interpreted as a variable bound by a quantifier only if it is c-commanded by the true variable bound by that quantifier; this is stated in (20) as the Bound Variable Pronoun Condition (BVPC) (Koopman and Sportiche (1982)):

20. *Bound Variable Pronoun Condition:*

If a quantifier Q binds a pronoun P as a variable, then the variable V bound by Q c-commands P.

For concreteness, let us assume that this condition holds at LF. Quantifiers binding a pronoun which undergo QR at LF must A-bind the pronoun at S-structure, since their S-structure position is the position of the variable at LF (May (1977;1985)). WH phrases which undergo WH movement in the derivation of S-structure from D-structure may c-command a pronoun without being able to bind it, as in the Weak Crossover cases in (21):

21 a. ?? who$_i$ does his$_i$ mother love [e]$_i$?

b. ?? who$_i$ do pictures of him$_i$ annoy [e]$_i$?

This is because, by (20), it is the position of the variable with respect to the pronoun which is relevant, and not the quantifier itself.

In (18), the S-structure position of the quantifier, and the LF position of the variable, is the subject position of IP, where it c-commands the time adverbial; this is true whether the time adverbial is a constituent of VP or of the small clause. The contrast shown in (19), however, shows that the placement of the time adverbial is crucial. The

grammatical variants in (19) are directly parallel with (18): the quantifier or variable is the subject of IP. In the ungrammatical examples in (19), however, the variable is not the subject of IP, but of an AP, NP, or PP small clause. In that case, it cannot bind a pronoun. It must be the case, then, that the variable in the small clause subject position does not c-command the pronoun; but this could not be the case if the time adverbial were contained in the small clause itself, since the subject of the small clause c-commands everything in that clause. If time adverbials are always constituents of VP, then we expect that a variable could bind a pronoun inside a time adverbial if the variable were in a position to c-command constituents of VP; this is indeed the case when the variable is the subject of IP, as in (18).

We also expect to find a contrast between structures where the small clause is AP, NP, or PP, and structures with VP small clauses. The expected contrast shows up in (22):

22 a. * I make no boy$_i$ angry when his$_i$ mother shows up

b. * I make no boy$_i$ a linguist when his$_i$ mother shows up

c. I make no boy$_i$ stand on the steps when his$_i$ mother shows up

d. I make no boy$_i$ run a mile when his$_i$ mother shows up

Causative *make* takes AP, NP, or VP small clause complements. As (22) shows, the category of the complement affects the availability of the bound pronoun interpretation in the time adverbial: it is possible with VP complements, but not with AP or NP complements. Stative VP complements to causative *let* pattern with (22c) and (d) in this respect:

23 a. I let no boy$_i$ know fear when his$_i$ mother shows up

b. I let no boy$_i$ worry when his$_i$ mother shows up

The subject of a VP small clause c-commands a time adverbial, while subjects of AP, NP or PP small clauses do not. This is explained if time adverbials can be immediate constituents of projections of V, but not of any other category.

2.1.3. This generalization forces an analysis in which time adverbials in sentences with *be*, as in (24), are constituents of the VP headed by *be*, and not of the predicate:

24 a. John was angry yesterday

b. Fred was a linguist yesterday

c. Mary was in Los Angeles yesterday

Although semantically, *yesterday* modifies the AP, NP or PP predicate in (24), structurally it is external to the small clause, and immediately dominated by a projection of *be*. But this analysis appears to fly in the face of grammatical examples where the AP, NP and PP predicate in the small clause is a coordinate structure, with each conjunct containing a time adverb, as in (25):

25 a. John was angry yesterday, but calm today
b. Fred was a linguist yesterday, and a street person today
c. Mary was in Los Angeles yesterday, and on a mountain today
d. I considered John foolish yesterday and stupid last month
e. I considered Fred a fool yesterday and a friend last night
f. I expected Mary in Los Angeles yesterday and here today

If (25a) has the structure in (26), then this is a counterexample to the claim that time adverbials must be contituents of VP:

26. John$_i$ was [$_{AP}$ [e]$_i$ [$_{A'}$ [$_{A'}$ angry yesterday] but [$_{A'}$

calm today]]

There is evidence that (26) is not the structure of (25a), however, and that none of the examples in (25) involve coordinated small clause predicates. Consider (27), where the direct object of *buy* and a time adverbial seem to form a consituent that can be coordinated:

27. John bought the table yesterday and the chair the day before

If *the table yesterday* forms a constituent, however, which can appear in NP positions, then there is no reason that it could not be conjoined with a similar NP, which together form the object to a preposition, as in (28a); (28b) shows that this is not the case, however:

28 a. John put his clothes on the table and (on) the chair
b. John put his clothes on the table yesterday and *(on) the chair the day before

Secondly, such strings cannot be subjects:

29. * the table yesterday and the book last week were

stolen

It must be, then, that *the table yesterday* is not a constituent in (27), and hence that (27) does not involve simple coordination. It must then be a case of gapping of some kind (see Neijt (1979)). Martin (1986a) observes that verb gapping cannot "pied pipe", i.e., prepositions cannot be part of the gap, if their object is part of the remnant:

30. John went to Los Angeles, and Fred _ *(to) New York

Whatever explains (30), then, presumably also explains (28b).

But if (27) involves gapping from a structure where IPs or VPs are conjoined, then (25) could, as well. The structure of (25a), then, is not (26), but (31), where Δ stands for the gapped verb *was*:

31. John$_i$ [[$_{VP}$ was [$_{AP}$ [e]$_i$ angry] yesterday] but [$_{VP}$ Δ [$_{AP}$ [e]$_i$ calm] today]]

A detailed analysis of gapping goes beyond the scope of the present work; it is sufficient for present purposes to observe that gapping constructions allow apparent non-constituent coordination.

Additional evidence that (25) are gapping constructions comes from the fact that simple coordination does not require complete parallelism between adjuncts, while gapping does. To illustrate, consider (32), where VPs are conjoined, one with a time adverbial, the other without:

32 a. John ran yesterday and played
b. Jane will sing a song tomorrow and go home

Similar examples with gapping constructions are not grammatical:

33 a. * I considered John foolish yesterday and stupid
b. ? I considered John a fool yesterday but a friend
c. * I expected Mary in Los Angeles yesterday and here

Also, in simple coordination structures,the conjuncts are required to be of the same category; but this is not the case in (34), similar to (25):

34 a. I considered John stupid yesterday and a fool today
b. Fred believes himself handsome and a lady-killer

The grammaticality of (34) is explained, if the categories that are conjoined are VP, with the head of the second

conjunct gapped.

The evidence supports the claim, therefore, that time adverbials must be constituents of VP. There is a class of counterexamples which cannot be explained away so easily, however. Consider (35), where time adverbials are clearly contained inside DP:

35 a. [*Yesterday*'s pay] was a pittance
b. [Caesar's conquest of Gaul *in 54 B.C.*] was the topic of discussion today
c. [the terrorist's arrival in town *at midnight*] alarmed the police

Also, consider (36), where a time adverbial appears to be contained inside AP:

36. ? the only agent [available to his clients *at midnight*]

(35) are discussed in Chapter Three; I will assume that (36) is a reduced relative construction, pending further analysis. For the time being, let us idealize matters somewhat, and assume that time adverbials are necessarily constituents of VP.

2.1.3. To account for the facts discussed in Section 2.1, let us suppose that verbs take a temporal argument, which in turn may license time adverbial modifiers. One way of making this proposal concrete is to assume that time adverbs have clausal structure; i.e., have a subject position. Since these are not selected phrases, the subject position is not governed, and hence can only be PRO. The temporal argument of the verb controls PRO in the subject position of the PP small clause. I argue in Chapter Three that the temporal argument is in [Spec,V']; the structure of (37a) is therefore (37b):

37 a. John ran at six o'clock
b. John [$_{VP}$ TEMP$_i$ ran [$_{PP}$ PRO$_i$ at six o'clock]]

TEMP refers to a period including the onset time of the event, as per the discussion in Section 2.1, and therefore so does PRO. The propositional content of the PP small clause is then that the onset of John's running is at six o'clock. If the preposition is changed to *after*, then the propositional content of the PP should be that the onset of John's running is after six o'clock; indeed, that is the correct interpretation for *John ran after six o'clock*. The role of various prepositions is discussed more fully in Section 2.3.

Suppose we replace *run* in (37) with a stative verb,

such as *exist*, as in (38):

38 a. John existed at/after six o'clock
b. John [$_{VP}$ TEMP$_i$ existed [$_{PP}$ PRO$_i$ at/after six o'clock]]

Following the discussion in Section 2.1 again, the referent of TEMP does not include the onset of John's existence, but only some arbitrary point during it; consequently PRO has the same reference, since it corefers with TEMP, and the propositional content of PP varies accordingly.

Suppose PRO in adjuncts is subject to the Minimal Distance Principle, and is controlled by the nearest c-commanding argument. Then in the small clause cases discussed in Section 2.1.3, if the time adverbial small clause were contained inside the small clause complement, as in (39), then the nearest c-commanding argument would be the subject of the small clause:

39. ...TEMP consider [$_{AP}$ John angry [PRO yesterday]]

But *yesterday* cannot be predicated of *John*, hence this structure is impossible. Instead, the time adverbial small clause must be in a position where TEMP in [Spec,V'] is its nearest c-commanding argument; i.e., it must be a constituent of some projction of V.

If this analysis of time adverbials is correct, then the reference of TEMP is independent of the presence or absence of a PP time adverbial; it is possible for structures like (40a) and (b) to occur, parallel to (37b) and (38b), respectively:

40 a. John [$_{VP}$ TEMP ran]
b. John [$_{VP}$ TEMP existed]

In other words, a temporal argument may exist in a VP, even if there is no time adverbial around for it to control. I propose that the essential difference between eventive verbs like *run* and stative verbs like *exist* is just in how they determine the relation of TEMP to the rest of the sentence, and consequently, that both kinds of verbs require the presence of TEMP in their specifier positions.

2.1.4. Stowell (1988) disputes the formulation of the conditions on bound variable pronouns given as (20), on the basis of examples like (41):

41. John greeted [every doctor]$_i$ after she$_i$ arrived at the airport

In (i), the quantifier does not c-command the bound pronoun

at S-structure, hence the variable bound by the quantifier does not c-command the pronoun at LF. Instead, Stowell, argues, the correct formulation of the condition on bound variable pronouns is just that they be c-commanded by the quantifier at LF; he proposes a different account of the weak crossover facts.

Since PP time adjuncts such as in (41) have clausal structure, the structure of (41) is (42):

42. John $[_{VP}$ $[_{VP}$ TEMP greeted no doctor$]$ $[_{PP}$ PRO after CP$]]$

Suppose, following Larson (1985), that the CP complement to a temporal preposition contains a non-overt wh-operator, so that CP in (42) is essentially a free relative clause. Let us also treat *when*-adjuncts, as in (19), as free relatives, so the structure of a sentence with a *when*-adjunct is (43):

43. John $[_{VP}$ $[_{VP}$ TEMP greeted no doctor$]$ $[_{CP}$ when ...$]]$

Now, suppose, as seems reasonable, that free relatives are universal quantifiers at LF, and undergo QR to take scope over a clause. In (42), CP can have scope just over PP, the smallest clause containing it; but in (43), CP must take scope over the entire S:

44 a. no doctor$_i$ [John [[greeted [e]$_i$] [$[_{CP}$ Op she$_i$ arrived$]_j$ [PRO after [e]$_j$]]]]]

b. $[_{CP}$ Op she$_i$ arrived$]_j$ [[no doctor]$_i$ [John [[greeted [e]$_i$] [e]$_j$]]]

In (44a), but not (b), the quantified NP *no doctor* c-commands the pronoun *she* at LF. If it can be guaranteed that the universal quantifier (i.e., the free relative clause) must take scope over everything in its clause (including other quantifiers), then (44b) is the only LF possible for (43), analagous to the examples in (19); hence, in these cases, even if it is maintained that the Bound Variable Pronoun Condition is as in (45), rather than (20), the results of Section 2.1.2 can be maintained:

45. *Bound Variable Pronoun Condition (revised):*
If a quantifier Q binds a pronoun P as a variable, then Q c-commands P at LF.

2.2. *Periods and Times.*

It is crucial to note that the important aspect of the 'reference' of TEMP is as a time relative to the event or state denoted by the verb phrase, and not to a time established independently. Thus, in both *John ran at six*

o'clock and *John existed at six o'clock*, the reference of TEMP includes six o'clock; what is different in the two cases is the role that the time six o'clock plays in the event or state described. For this reason, it is perhaps more perspicuous to refer to the θ-role of TEMP, rather than its reference. Eventive and stative verbs, then, assign different (sets of) θ-roles to TEMP, fixing its relation to the rest of the sentence differently, just as different θ-roles assigned by the verb to other arguments fix their relation to the rest of the sentence differently.

A useful way to think of the different θ-roles assigned to TEMP is in terms of different aspectual categories, or Aktionsarten. Consider the following sentences:

46 a. John arrived
b. John laughed
c. John built a house

These sentences each have different aspectual properties: (a) refers to an instantaneous event; (b) on the other hand, refers to an event of indefinite duration; in the terminology of Vendler (1956), the former is an *achievement*, and the latter is an *activity*. (c) refers to an event whose duration is defined by the completion of the house (cf. Voorst (1988); Tenny (1987)); this kind of event is referred to by Vendler as an *accomplishment*.

These three terms name the aspectual categories of events, and are all different from *states*. These categories are also referred to in the Aspectual literature as *Aktionsarten*.

Let us consider these categories in terms of a graph such as (47), where the time period D (marked by outlined hyphens) is the complete duration of the event or state, defined in terms of its onset, or beginning, time t_B and its endpoint t_F:

47.

```
                D
<-----------|---------------|------------->
            tB              tF
```

I will sometimes refer to D in (47) as the *situation* of an event or state. Throughout this chapter, I will repeatedly refer to parts of the diagram (47), including D, t_B, and t_F.

An activity is an event which has no inherent endpoint; if such an event takes place over a certain period of time P, then it is also the case that that event took place over a period of time Q, Q properly contained in P, as long as the onset of P and the onset of Q are both equal to t_B. Some examples of verbs which typically refer to activities are *run, laugh, cry, walk, sew, climb, juggle, dance, listen, treat, chew (on something), eat (at)*, etc. For

example, if it is true that John ran for two hours, then it is true of the first 25 minutes of that two hours that John ran or has run.

Now suppose that the temporal argument of an activity predicate refers to a period P, during which the event in question took place. We can capture the semantics of activities by taking P to be any subperiod of D, such that the onset of P is t_B.

Accomplishments and achievements, unlike activities, have inherent endpoints. An accomplishment is an event which takes a certain amount of time to complete, and which is not an event of the named type until the endpoint is specified. Some examples of predicates which refer to accomplishments are *build a house, run a mile, climb a tree, cure, create, dance a waltz, eat a potato,* etc[1]. If John builds a house, and it takes him two weeks, then it is not true until the end of the two weeks that John has built a house, though the event described, of building a house, began two weeks earlier. A period P is a possible referent of the temporal argument of an accomplishment just in case P=D, i.e., the onset of $P=t_B$, and the endpoint of $P=t_F$, and $t_B \neq t_F$.

An achievement also has an inherent endpoint, but it differs from an accomplishment in that the endpoint defines the entire duration of the event. Some verbs which

typically refer to achivements are *arrive, reach (the top), recognize, be born,* etc. If John reaches the top of a mountain, then the event described begins and ends at the instant that John goes from not being at the top to being at the top. Achievements have no duration at all, in contrast with both activities and accomplishments. Thus, we could assume that temporal arguments of achievements take their referent from the set of time points; however, there is no real reason to do so. For the sake of uniformity, then, let us assume that the temporal arguments of achievments refer to periods, also, taking periods as sequences of points (see below). Then a period P is a possible referent of the temporal argument of an achievement predicate just in case P=D, and $t_B=t_F$; i.e., just in case $P=D=\{t_B\}$.

How do these categories differ from states? Recall that events in general differ from states in making crucial reference to the onset of the situation, i.e., to t_B in (47). For example, suppose that an *at*-phrase predicated of a period-referring argument, as in (48a), has the interpretation (48b):

48 a. P is at t_i

b. P = the period beginning and ending at t_i.

This accounts for the oddness of *at*-phrase modifiers of

accomplishment predicates, in contrast with the other aspectual categories:

49 a. John ran at six

b. John arrived at six

c. ?? John built a house at six

(c) is odd because it is odd for *build a house* to be accomplished in an instant. In all three of the eventive aspectual categories, the onset of P is just t_B, the onset of D. From this it follows that predicating *at six o'clock* of the temporal argument of an event predicate entails that six o'clock is the onset of the situation of the event. This is the desired result, according to the discussion in Section 2.1.

As noted in Section 2.1, this property is lacking in stative predicates. Recall that an *at*-phrase time adverbial in stative predicates does not necessarily mark the onset of the situation; but need only mark an arbitrary point within D. One possible way to handle this fact would be to stipulate that the temporal argument of a stative predicate can refer only to time points, and arbitrarily selects as its referent a point within D. This approach would require a revision of the semantic interpretation of *at*-phrases, since the formula given in (48b) is defined only for periods. Also, we will see below in the

discussion of tense that such an approach is empirically inadequate in certain important respects.

Instead, the approach I will take is to maintain uniformity, and have temporal arguments of states refer to periods. The difference between events and states, then, is just that, whereas P (the referent of the temporal argument) must have the same onset as D for events, there is no such requirement for states. In other words, a period P is a possible referent of the temporal argument of a stative predicate just in case P is a subperiod of D in (47). Suppose an *at*-phrase is predicated of P in a stative predicate, stating that P is at t_i; by (48b) it follows that t_i is the onset of P, just as with event predicates. But in this case, since the onset of P is not necessarily the onset of D, t_i is not necessarily the onset of D. In fact, t_i can be any arbitrary point contained in D, since P is any arbitrary subperiod of D.

The different requirements that different kinds of predicates impose on P, the referent of the temporal argument, can be thought of as different θ-roles assigned to that argument. Just as θ-roles, in the usual sense, define the role that a particular argument has in the event or state described, so the aspectual categories define different roles that P can play in the event or state described. In Section 3, I will pursue the idea that the

different aspectual categories correspond to the different θ-roles assigned by predicates to their temporal arguments.

One syntactic test which distinguishes activity and stative predicates from accomplishment predicates concerns their compatibility with various time adverbials referring to the situation or duration of the event in question (see Tenny (1987)). For example, time adverbs headed by the preposition *for* can occur with activity and stative predicates, but not with accomplishment predicates; while time adverbials headed by the preposition *in* can occur with accomplishment predicates to refer to the duration of the event, but with activity and state predicates, an *in*-time adverb can refer only to the period of time between the present (or reference time) and the onset of the event:

50. *accomplishments*:

a. John built a house in/*for twelve weeks

b. Fred ran a mile in/*for four minutes

c. Susan cured Frank's illness in/*for three days

activities:

d. John laughed for/*in three and a half minutes

e. Fred ran for/*in four minutes

f. Susan treated Frank's illness for/*in three days

states:

g. John was in town for/*in three days

h. Fred feared his uncle for/*in the past six years

i. Susan resembled her sister for/*in a while

(* for intended reading only)

I will refer to this test throughout this chapter and the next.

2.3. *The Interpretation of Tense.*

2.3.1. In this section, I will provide a sketch of a simple semantics of verb tense, which will then form the basis for discussion in the remainder of this chapter, as well as in Chapter Three. The tense logic I provide is essentially that of Reichenbach (1947), but with at least one important innovation, inspired by the discussion in section 2.2. I will begin by outlining Reichenbach's approach, and then proceed to my own adaptation of it.

Reichenbach's theory of the tenses of verbs makes crucial use of the notion of a reference time. He proposes that the role of simple morphological tense in English is to establish the relation between the reference time r and the speaking time s[2,3]. Morphological present tense has the effect of establishing that r=s; past tense that r is before s (r<s); and future that r follows s (r>s).

The event time e is then situated in time with respect to r, and not directly with respect to s. For instance, the perfect construction has the effect of establishing that e precedes r. If r=s, as in the present, then e<s. Thus, in the present perfect, the reference point is just the speaking time, while the event time is past with respect to that. In the past perfect, the past tense morphology establishes that r<s, and the perfect morphology establishes that e<r; hence this tense is used to refer to events that are past with respect to a past time (r). Simple verbs (i.e., lack of perfect morphology) establish that e=r.

It is clear from the discussion in Section 2.2, however, that Reichenbach's tense logic, appealing though it is, cannot work. This is because the temporal reference of events and states is not drawn from the set of time points, but from the set of periods. We must then revise the tense logic accordingly; this is a relatively trivial task, but it has the consequence that the results of Section 2.2 can be integrated into a tense logic making use of Reichenbach's insights about reference times.

Take the universe as being a time line, for simplicity; i.e., as constituting a sequence of time points. For convenience, assign to each time point in T, the set of all time points, an integer[4] index i; moreover, let '<' ('precedes') and '>' ('follows') be relations between

elements of T, such that $t_i<t_j$ iff $t_j>t_i$, and $t_i=t_j$ iff neither $t_i<t_j$ nor $t_i>t_j$. Σ is the time line universe, where Σ consists of T and an ordering relation among its elements, such that $\forall i$, $t_i<t_{i+1}$. We can then speak of time points t_i and t_j bearing 'an ordering relation in Σ', or more simply, 'an ordering relation'. P such that $T\supseteq P$, is a *period* iff $\forall t_i,t_j\in P$, if $t_i<t_j$, then $\forall k$ such that $t_i<t_k<t_j$, $t_k\in P$.

We define ordering relations among periods, also (for typographical convenience, I will use the same symbols, with the understanding that they are not, properly speaking, the same relations): For P,Q periods, P<Q iff $P\cap Q=\emptyset$, and for p, q arbitrary elements of P and Q respectively, p<q. Note that this is equivalent to saying that P<R iff $\forall p\in P$, $\forall q\in Q$, p<q. Also, P>Q iff Q<P. Note that it is not the case that P=Q iff neither P<Q nor P>Q; in fact, it is possible for both $P\neq Q$ and $P\cap Q\neq\emptyset$, in which case P and Q are not in a precedence relation at all.

The speaking point, in Reichenbach's (1947) terminology, is essentially a variable in some formula, which presumably fixes the speaking or reference context. Let us define the *speakingcontext* S as a period, rather than a point. S will take the place of Reichenbach's speaking time in this system; since 'speaking point' is not really the correct characterization of s in Reichenbach's scheme, I will use

the terms 'context' or 'context period'.

Now the heart of Reichenbach's tense logic carries over to this system: the morphological tenses in English (past, present, future) have the following interpretations, where R is an arbitrary period established in some way by the discourse context, which takes the place of Reichenbach's reference time r:

past:	$\exists S$, $R<S$
present:	$\exists S$, $R=S$
future:	$\exists S$, $R>S$

(In future I will leave out the quantifier, and just write 'R<S', etc., with the understanding that the exact value of S is not crucial.) The perfect construction is interpreted as P<R, where P is the referent of the temporal argument. Non-perfect verbs establish that P=R.

The basic mechanism of the tense logic is just the same as in Reichenbach's system; the formulas provided by the morphological tense and the tense provided by the participle or regular verb are conjoined, with the following results:

simple present:	$P=R$ & $R=S$
present perfect:	$P<R$ & $R=S$ ($\therefore P<S$)
simple past:	$P=R$ & $R<S$ ($\therefore P<S$)

past perfect:	$P<R$ & $R<S$ ($\therefore P<S$)
future:	$P=R$ & $R>S$ ($\therefore P>S$)
future perfect:	$P<R$ & $R>S$

We predict that the simple past, present perfect, and past perfect constructions all entail past time, and that the simple future entails future time for an event; these predictions are correct, as (51) illustrates:

51 a. John built a house
b. John has built a house
c. John had built a house
d. John will build a house

In (51a-c), the event of John's building a house is entirely in the past, and in (51d), the event is entirely in the future[5]: John has not yet begun to build the house.

Note, however, that this tense logic makes no prediction about the relation between P and S in the case of the future perfect. Consider (52):

52. John will have built a house

This sentence means only that at some specified point in the future, the house will be complete. It does not entail that the construction is not already underway, however, as

does (51d). Thus, the Reichenbachian tense logic outlined here makes the correct predictions about the sequential relation of the event and the context.

Of course, the whole point of Reichenbach's approach in terms of reference times is to capture the fact that the present perfect and the simple past do not mean the same thing. The meaning of the different tenses, then, must crucially take R into account. There is an intuition that the present perfect refers to a past event (or state) that is of 'present relevance', while the simple past simply refers to a past event (or state). This intuition is difficult to formalize, but it could take shape in the form of a statement to the effect that R is the time of 'relevance' in some sense. This, I believe, is the essential insight of the Reichenbachian system.

It should be pointed out that the tense logic provided in this section is not a complete semantics of verb tenses. For instance, one aspect which is not captured by this tense logic is the treatment of habitual tenses. My use of the tense logic is simply to establish a connection between verb tense and aspect, and thus the task of providing a complete semantic analysis of verb tenses is beyond the scope of the present work.

2.3.2. The use of periods in the tense logic, rather than

points, allows the incorporation of the results of Section 2.2. To see the results of this, consider the simple past tense sentences in (53):

53 a. John ran
b. John has run
c. John will run

The simple past tense is interpreted as establishing that R<S, and that P=R; thus, P<S. For an activity predicate, such as *run*, this entails that the onset of P ($=t_B$) is in the past (i.e., before S), but it does not entail that John has finished running. Consequently, although the preferred interpretation of (53a) is that John is no longer running, this is not entailed by the sentence, in my judgement. Similar considerations hold for (53b), where it is perhaps more clear that John may be still running. Since the future tense entails that P (and hence t_B) is after S, (53c) entails that John has not yet started running.

Now consider accomplishments, illustrated in (54):

54 a. John built his cabin
b. John has built his cabin
c. John will build his cabin

Again, the future tense entails that the event has not

started, as predicted by our tense logic. However, in (54a) and (b), unlike in (53a) and (b), the event must be over. This follows from the difference in aspectual category: recall that accomplishments require that P=D in (47), whereas activities require only that the onset of P equal the onset of D. Thus, for accomplishments, if P<S, then D<S; i.e., the entire event is in the past. Similar considerations hold for achievements, where P=D as well.

Now consider the stative sentences in (55):

55 a. John was in LA
b. John has been in LA
c. John will be in LA

For statives, P is any subperiod of D. In the simple past (55a), as well as the present perfect (55b), P<S, from which it follows that at least some part of D precedes S, though it does not follow that all of D is before S; in this respect, states are like activities. In the future (55c), however, there is no implication that John is not already in LA. This follows from the analysis of aspect, as well, since P>S does not entail that D, and hence t_B, is after S, since P need not include t_B in statives.

The same considerations hold for the interpretation of temporal prepositions like *before* and *after*. Consider (56):

56 a. John ran before/after six
b. John built his cabin before/after six
c. John arrived before/after six
d. John was in LA before/after six

The temporal PP is predicated of the temporal argument of the verb, as discussed in Section 2.1. Consequently, (56a) with *before* entails that P is before six[6]; but this does not entail that all of D was before six, i.e., that John was through running by six. Although this is perhaps a preferred reading of (56a), it is not entailed by it; consider (57):

57. John ran before the starter's pistol went off

It is clear that John need only have false-started for this sentence to be true, and he need not have come to a stop before the pistol was fired. On the other hand, the version of (56a) with *after* entails that P is after six, from which it follows that t_B is after six, and hence that D is after six.

For accomplishment predicates, such as (56b), a *before*-phrase produces the entailment that P is before six, from which it follows that all of D is before six, since P=D.

Again, the *after*-phrase says that P is after six, and hence D is after six. The same considerations hold for achievement predicates, illustrated in (56c).

Since, for states, P is an arbitrary subperiod of D, (56d) with a *before*-adverbial does not entail that D is before six. In this respect, states are like activities. However, (56d) with an *after*-adverbial does not entail that D is after six, since P need not contain t_B; in this respect, states differ from events of all types.

As a summary, consider (58), which illustrates graphically the relations between P and D for the various aspectual classes, with D shown in outlined hyphens, and P marked as a separate line in boldface:

58 a. *activities*:

```
                D
<---------- |---------------|------------->
            |-------->
             P
```

b. *achievements*:

```
            D
<---------- |---------------------------->
            |
            P
```


c. *accomplishments*:

```
                D
<---------- |---------------|------------->
            |---------------|
             P
```

d. *states*:

```
                D
<---------- |---------------|------------->
                <-------->
                    P
```

3. The Syntax of Temporal Arguments.

In this section, I argue that the temporal argument of verbs is base-generated in the [Spec,V'] position, and is assigned a θ-role by V'. The syntactic properties of this argument are argued for in a discussion of its referential properties. The TENSE morpheme in INFL is argued to interact syntactically with the temporal argument in a way that supports treating the temporal arguments of verbs as a Case-marked empty category, i.e., pro or variable.

3.1. *V' as a θ-assigner*

3.1.1. In Section 2 I proposed that the various aspectual

categories of verbal predicates are to be represented as different θ-roles assigned by the predicate to its temporal argument. I claim that the D-structure position, and hence θ-position, of the temporal argument is the specifier position in VP. Part of the justification for this claim, which is presented in this section, is that the θ-role of the temporal argument is determined compositionally by the contents of V'. This state of affairs is expected, if the temporal argument is in the [Spec,V'] position, and θ-role assignment is achieved under sisterhood, since this position is a sister to V'.

The idea that θ-role assignment by non-minimal projections is compositional goes back to Chomsky (1981), and is elaborated by Marantz (1984), who claims that the θ-role assigned by VP to the subject argument is determined compositionally by VP. Marantz cites as evidence for this claim sets of sentences such as the following:

59 a. Fred threw a baseball
b. Fred threw a tantrum
c. Fred threw a party

The verb *throw*, Marantz claims, does not directly determine the θ-role of the subject: that θ-role differs in each of the three examples in (59), while the choice of verb remains constant. Instead, the verb determines its

thematic relation with the object NP differently in each of these examples, and the θ-role of the subject derives (in part) somehow from that relation.

It is not clear, however, that Marantz's examples fully support this claim. In particular, it is not clear why examples such as (59b) and (59c) do not involve idiomatic uses of *throw*. Marantz notes that there is no obvious way to decide a priori what constitutes an idiom, since there is often a continuum between fully literal and fully idiosyncratic constructions. While it is certainly true that there are varying degrees of idiomaticity, as noted in Chapter One, it does not follow that the notion of an idiom is not useful in explaining (59). Note also that a theory in which both the subject and object θ-roles, or even just the subject θ-role, are determined directly by the verb could handle the alternation in (59) just as well as Marantz's theory. In short, while Marantz's theory accommodates the facts of (59), it does not explain them.

Nevertheless, I believe that elements of Marantz's essential claim are correct, though his evidence is insufficient to prove it. In arguing for my claim that the temporal argument gets its θ-role from V', I present evidence that the θ-role assigned to the temporal argument (the 'temporal θ-role') is dependent on the relation between the verb and its complements; I must be careful,

however, to show that this dependency is in the direction I claim, and that it is not the case, for example, that the relation between the verb and its complement(s) is dependent on the temporal θ-role.

Since this is fairly tricky point to prove, it is worthwhile making clear from the outset exactly what the empirical consequences of my claim are; i.e., what kind of facts bear on the issue. The claim is that the θ-role assigned by V' to [Spec,V'] is dependent on the internal properties of V' in (60):

60.
```
      VP
     / \
  Spec  V'
```

This claim would be vacuous if the properties of V' relevant for assignment of the temporal θ-role to [Spec,V'] were not independently observable; determining these properties is the goal of Section 3.1.2, below. For the time being, let us assume that the relevant properties are represented structurally inside V'.

The claim that the θ-role assigned to Spec in (60) is dependent on the structure of V' is best explicated by pointing out what it does not mean. It does not mean that changing the structure of V' necessarily changes the θ-role assigned to Spec; it may be the case that two different V' assign the same θ-role. What it does mean is that the

content and structure of V' determines the thematic relation with Spec, and not the other way around.

A strong version of this hypothesis is that, given two occurrences of V' which are structurally and lexically identical, they will necessarily assign the same θ-role to Spec; i.e., that V' is aspectually unambiguous. A weaker version is that a given V' may assign a given θ-role freely, as long as the structure and content of V' is compatible with general conditions on the assignment of that particular θ-role; i.e., V' may be ambiguous with respect to th θ-role it assigns to Spec, if it is structurally and lexically compatible with more than one θ-role. Of course, if there are no general conditions on the assignment of the temporal θ-role, then the weak version of this hypothesis is vacuous. The weak and strong versions of this hypothesis are discussed in the following sections.

3.1.2. Let us turn first to characterizing the dependency between the complement structure of a verb and the temporal θ-role it assigns. The basic facts are well known, having been outlined before by Voorst (1988) and Tenny (1987). Basically, if an eventive verb takes an 'affected' direct object argument, then it will head a phrase denoting an accomplishment or achievement, and not an activity. Thus, some verbs necessarily denote accomplishments, and hence necessarily take affected direct objects:

61 a. John built *(his house)

a'. John built his house {in/*for} four weeks

b. Mary cured *(Fred's illness)

b'. Mary cured Fred's illness {in/*for} four weeks

Other verbs are ambiguous between activities and accomplishments, but take direct objects only in the latter instance:

62 a. John climbed the tree {in/?*for} ten minutes

a'. John climbed {*in/for} ten minutes

b. Fred swam the channel {in/*for} two days

b'. Fred swam {*in/for} two days

c. Dan drank the glass of water {in/*for} ten minutes

c'. Dan drank {*in/for} ten minutes

As (62a) and (a') illustrate, *climb* is either transitive or intransitive; if the former, then it must denote an accomplishment; hence the unavailability of a *for*-phrase, and the availability of an *in*-phrase in (62a) (see Section 2.2). If *climb* is intransitive, as in (62a'), then it must denote an activity; hence the unavailability of an *in*-phrase, and the acceptability of a *for*-phrase.

Now consider (63), with the verb *eat*:

63 a. John ate (the pizza)

b. John ate the pizza {in/?*for} ten minutes

c. John ate {in/for} ten minutes

The ambiguity of (63c) between an activity and an accomplishment reading points out that while the accomplishment reading is required if there is an affected direct argument, it is not dependent on there being one. At first glance, this seems to be a problem for the hypothesis that the temporal θ-role is assigned compositionally by V'. This is not clear, however, since we could state this generalization equally well by saying that the activity reading is dependent on there not being an affected direct argument.

Thus, verbs like *eat* appear to provide evidence that the strong version of the compositional θ-marking hypothesis is too strong; in both readings of (63c), the structure of V' is as shown below:

64.

```
V'
|
V
|
eat
```

According to the strong version of the hypothesis, this V' should be able to assign just one θ-role to [Spec,V']; if

that is the temporal θ-role, then this claim is incorrect, since apparently it can assign either one of two temporal θ-roles.

Abandoning the strong hypothesis is always an option; before doing so, however, we should examine closely the possibility that there is a lexical or structural explanation for (63c) which would allow us to maintain the strong version of our hypothesis. One possible approach would be to claim that *eat* optionally projects an internal argument, which may be phonologically null. Thus, the structure of (63c) on the activity reading would be (65a), while the accomplishment reading would have the structure (65b):

65 a. John [$_{VP}$ [$_{V'}$ ate] for ten minutes]

b. John [$_{VP}$ [$_{V'}$ ate [e]] in ten minutes]

The evidence against the existence of structures like (65b) in English is fairly strong, however; see Rizzi (1986) for discussion. For one thing, the empty category (ec) in (65b) does not correspond to any of the types of ec whose existence in English is independently motivated: it is governed (and Case-marked), hence cannot be PRO; it is A-free (and Case-marked), and hence cannot be NP-trace. It is A'-free, and hence cannot be a variable, unless it is bound by a null operator; but nothing licenses a null

operator in this construction. It cannot be pro, apparently, because pro is assumed not to exist in English; at the very least, pro is not freely available in direct object position in English, as it is in Italian, if Rizzi is correct.

The other alternative is to claim that there are two verbs *eat* in English, one of which is an activity verb, and the other of which is an accomplishment verb. This option is not particularly inviting, since it seems to reduce the strong version of our hypothesis to vacuity. However, there is some evidence that there may be some lexical operation on *eat* in the intransitive accomplishment use that is absent in the activity use. Note first of all that *eat* is one of a small class of unergative verbs in English which can denote an accomplishment; some others are illustrated in (66):

66 a. Fred ordered in two minutes (spoken in a restaurant)

b. Sue prayed in three minutes flat

c. Carol usually cooks in twenty minutes

d. Steve dined in an hour

Eat contrasts with semantically similar verbs in this respect, e.g., *drink*, as well as with other verbs which

alternate between unergative and transitive forms, as shown by the contrast between (62) and (63).

The verbs in (66) and *eat* all have in common that, when intransitive, they can be understood not just as taking implicit objects, but as taking implicit objects within a very narrow range of reference possibilities. For example, *John ate in ten minutes* means that John ate a meal in ten minutes, and not, for example, that he ate something which is not a typical thing to eat; e.g., wood; the activity *John ate for ten minutes* has no such semantic restriction. Similarly, (66a) means that Fred ordered his meal; (66c) that Carol usually cooks a particular meal; etc.

It is possible, then, that these verbs, when intransitive and denoting accomplishments, have a lexically 'incorporated' theme or patient argument (see Jackendoff (1987), Rizzi (1986) for similar proposals). When denoting activities, however, they do not have such an argument. Thus, *eat*, though having an implicit argument (in the sense of Chapter One) in both uses, has an incorporated argument only when it denotes an accomplishment. This raises the issue of how to represent such lexical incorporation. One straightforward way of doing this is to simply list the incorporated argument in the lexical entry; thus the two entries for *eat* are given in (67):

67. eat, [+V,-N]: c-selection: {}
θ-grid: <THEME>
|
MEAL

eat, [+V,-N]: c-selection: {([+N,-V]$_i$)}
θ-grid: <THEME$_i$>

This essentially says that there are two verbs *eat*, one of which means 'eat a meal'. Although this is not a pretty solution, it does save the strong version of the compositional θ-role hypothesis for now.

Setting aside these exceptional cases, we can state a preliminary generalization to the effect that a verb phrase denotes an accomplishment or achievement just in case it contains a direct object position. In terms of the compositional θ-role hypothesis, this can be stated as (68):

68. If V' (V eventive) contains a direct object at D-structure, then V' assigns a θ-role such that P=D.

Except for the *eat*-class verbs noted above, this can be treated as a biconditional. There are two kinds of exceptions to (68) as it stands, however. First, notice

that there are some transitive, eventive verbs in English which regularly denote activities:

69 a. The plane approached the runway {for/*in} three minutes
b. Dad paced the floor {for/*in} three hours

The direct objects in (69) differ from those in (61) and (62) in that they bear a Location-type θ-role, whereas the direct objects in (61) and (62) are assigned the Theme role[7].

We could revise the generalization (68) to (68'):

68'. If V' (V eventive) contains a direct object at D-structure bearing the Theme[8] role, then V' assigns a θ-role such that P=D.

However, even this version is not quite correct. If a direct object Theme is a bare plural or mass noun, for example, then verbs which typically denote accomplishments can denote activities:

70 a. Fred built houses {for/*in} twelve years
b. Sue climbed trees {for/*in} an hour
c. Julie swam laps {for/*in} thirty minutes
d. We drank beer {for/*in} an evening

e. John ate potatoes {for/*in} twenty minutes

The relevant property of the direct objects in (70) is that they do not refer to individual objects, but to types of objects, or perhaps to natural kinds (see Carlson (1977)).

The correct generalization, then, seems to be (68"):

68". Except in the case of *eat*-class verbs, V' (V eventive) contains a referential direct object at D-structure bearing the Theme role iff V' assigns a θ-role such that P=D.

Stating the generalization about the relation between objecthood and aspectual categories in this way has some interesting consequences, which are discussed below, in Section 3.1.3. The intuitive motivation for (68") is that if V' contains an element which necessarily refers to the endpoint of an event, then the temporal θ-role assigned by V' requires an endpoint; i.e., that t_F is contained in P. Put another way, V can have a temporal argument that does not include t_F only if V' does not contain a reference to t_F.

3.1.3. The statement (68"), which embodies the hypothesis that the temporal θ-role is assigned compositionally by V',

has some interesting consequences for the study of argument structure. It follows from (68") that if a VP refers to an accomplishment or an achievement, then it must contain a referential Theme direct object at D-structure, unless it is one of the *eat*-class of verbs. Consider for example manner of motion verbs such as *walk*, *run*, and *float*, illustrated in (71):

71 a. John walked {for/*in} three minutes
b. John walked into the center of the room {*for/?in} three minutes
c. Sam ran {for/*in} three minutes
d. Sam ran out of the room {*for/?in} three minutes
e. the sailboat floated {for/*in} two hours
f. the sailboat floated down the river {*for/in} two hours

As these examples indicate, intransitive manner of motion verbs, which usually denote activities, can denote accomplishments or achievements when followed by a directional PP. Voorst (198?) notes these facts, and argues that manner of motion verbs are unaccusative when followed by a directional PP, and unergative otherwise, and that this distinction is evidence for the aspectual nature of the unergative-unaccusative distinction. In fact, no other conclusion is consistent with the generalization

(68"): if *walk* in (71a) is an activity verb, then, since *John* is the Theme and referential, it is not inside V' at D-structure; hence it is an external argument. Conversely, if *walk* in (71b) is an accomplishment or achievement verb, then its Theme argument *John* is contained in V' at D-structure (Note that a different solution along the lines proposed for *eat* is not possible, since there is no implicit internal argument in (71b), (d), and (f)).

Voorst cites auxiliary-selection evidence from Dutch to support this conclusion, but there is evidence from within English, as well. Manner of motion verbs can appear in existential *there*-insertion contexts in English, but only if they are followed by a directional PP (Stowell (1981)); this is illustrated in (72):

72 a. there walked/ran *(into the room) three dogs
a'. into the room walked/ran three dogs
b. there floated *(down the river) two large rafts
b'. down the river floated two large rafts

(72a) and (b) show that *walk*, *run*, and *float* can appear in *there*-insertion contexts only when they take a directional PP adverbial; the locative inversion sentences (72a') and (b'), with the directional PP preposed, are argued by Stowell (1981) to involve PP moving through the subject of IP position. Both constructions are widely held

possible only with unaccusative verbs.

Moreover, although English no longer shows the unergative-unaccusative distinction in the selection of perfect auxiliary, as do Dutch, German, Italian, and many other European languages (see Burzio (1986)), it did until some time in the eighteenth century. Thus, Shakespeare could write (73):

73. He is walked up to the top of the hill...
(*Henry IV Part I*, I.ii.8)

The auxiliary *be* in Early Modern English, as in many European languages still, was used in the perfect construction with (eventive) unaccusative and raising verbs; see Chapter Three for discussion.

Similar considerations hold for other intransitive verbs in English, as well. Consider the behavior, for example, of the intransitive use of *melt*:

74 a. the ice melted in twelve hours
b. the ice melted for twelve hours

In these examples, *the ice* is the Theme argument, and there is no implicit internal argument in the sentence. Again, (68") forces the conclusion that *melt* is ambiguous

between being unergative and unaccusative, since it can be either an activity or accomplishment. (74a) is assigned the D-structure (75a) under this hypothesis, and (74b) the D-structure (75b):

75 a. Δ [$_{VP}$ Spec [$_{V'}$ melt [the ice]]]
b. [the ice] [$_{VP}$ Spec [$_{V'}$ melt]]

By (68"), Spec in (a) is assigned a θ-role by V' such that P=D (accomplishment), while in (b), it is assigned the activity θ-role.

This conclusion is at odds with the conclusion of Burzio (1986) regarding verbs which undergo the ergative alternation. One of Burzio's tests for unaccusativity in intransitives is that if the verb has a transitive form, the intransitive subject receives the same θ-role as the transitive object. *Melt* does show this alternation, and the θ-role assigned to the subject of intransitive *melt* (Theme) is assigned to the direct object when *melt* is transitive:

76 a. Harry melted *the ice*
b. *the ice* melted

This test is therefore not sufficient as a test for unaccusativity, if (68") is correct.

The ergative alternation is itself quite interesting. As noted, intransitive *melt* can be either an activity or an accomplishment, but transitive *melt*, as in (76a), must be an accomplishment (if the direct object is referential):

77. Harry melted the ice {?*for/in} two hours

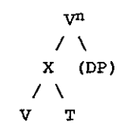
(77) is evidence that *melt* is subject to the generalization (68"); hence that the ambiguity of intransitive *melt* is due to structural ambiguity.

Note that the differential treatment of certain intransitive verbs as unaccusatives and unergatives goes against strong versions of the Universal Base Hypothesis, e.g., Baker's (1988) Universal Theta Assignment Hypothesis (UTAH). Someone wishing to save this hypothesis might argue that the Theme argument is always projected to the same position, but the temporal argument is projected to a different position in the two cases, rather than the other way around, as I argue. But the treatment of manner of motion verbs with directional PPs as unaccusatives is motivated independently of considerations of aspect, and hence argues against such an approach.

Until now, I have been assuming that the temporal θ-role is assigned compositionally by V'; but all I have so far demonstrated is that there is a dependency between the structure and content of V' on the one hand, and the

temporal θ-role on the other. We are now in a position to argue that the dependency is in the direction proposed, and not in the reverse direction. If the dependency is in the other direction, i.e., if the verb and its temporal argument compose to determine the content or structure of V', then we would expect the temporal argument and the verb to form a constituent, to the excusion of any direct objects; this is so because we expect that compositionality of meaning reflects constituent structure. Suppose, then, that the internal structure of the verb phrase were something like (78), where V^n is the projection of V that contains DP at D-structure (perhaps V'), DP is a referential direct argument, X is some projection of V, containing the verb and its temporal argument, and T is the temporal argument:

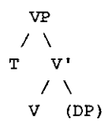
78.



We would have to restate the generalization (68") as (79):

79. X assigns the Theme θ-role to a referential direct object iff V assigns a θ-role to T such that P=D.

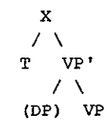
80.



where the verb composes with the direct object before assigning the temporal θ-role, then the significance of the Theme being the direct object in (68"), as opposed to the subject, say, is perfectly understandable and unmysterious. By (68"), V assigns the Theme role to DP just in case it (or rather, V') assigns the Accomplishment θ-role to T. There is no need to stipulate that only direct object Themes, and not subject Themes, are relevant to the choice of temporal θ-role; this simply follows from the fact that V' assigns the temporal θ-role compositionally.

These same facts can be used to argue that the temporal argument is projected lower than the D-structure subject, if there is one. Suppose that the temporal θ-role were assigned compositionally by the constituent containing the D-structure subject position[9], as in (81), where DP is the D-structure subject:

81.



If VP' assigns the temporal θ-role, then it is not clear why unergative *melt*, for instance, would assign a different temporal θ-role than unaccusative *melt*. If we

adopt (81), then we need to stipulate that the θ-role assigned to T is dependent on whether the Theme is the direct object or the subject at D-structure.

While this stipulation is not a priori impossible, it is unnecessary if T is internal to the subject position, as in (82):

82.
```
        VP'
       / \
   (DP)  VP
         / \
        T   V'
```

The hypothesis in which T's θ-position is [Spec,V'] embodies the idea that the aspectual differences between the two versions of intransitive *melt* correlate with different hierarchical arrangements of arguments[10].

The view of temporal argument structure presented here contrasts with the theory of temporal argument structure proposed by Kratzer (1988), who claims that the temporal argument (the event argument, in Kratzer's terminology) is external to the category containing the subject argument at D-structure in the case of eventive verbs and certain stative verbs, but not in the case of some stative verbs. The arguments presented in this section are all made on the basis of the behavior of eventive verbs, and it remains to be proven that the temporal argument of stative verbs is also an argument of V'. Nevertheless, it is clear that the

view of temporal argument structure I am proposing is different from that proposed by Kratzer.

3.1.4. The range of facts discussed in this section provides a partial argument for the syntactic existence of the temporal argument of verbs: If it is true, as I have just argued, that the best characterization of the aspectual category of verbs is such that it is dependent on the structure and content of V', and not the reverse, then it is clear that aspectual category cannot be entirely a matter of lexical form.

I have not presented any arguments to show that aspectual category is best represented as θ-role assignment to an argument by V', rather than merely being a semantic byproduct of the structure and content of V'. It is unclear exactly what semantic arguments could in principle be brought to bear on this issue; to some extent, they are notational variants. In the next chapter, I will provide evidence that the temporal argument is in [Spec,X'].

It should be pointed out that although the arguments presented in this section lead to the conclusion that T is projected higher than the direct object position, but lower than the D-structure subject position, they do not necessarily indicate that the position of T is actually [Spec,V'], as in (80) and (82), rather than adjoined to V',

for example, as in (83):

83.
```
        V'
       / \
      V'  T
     / \
    V  (DP)
```

Considerations from Chapter Three make [Spec,V'] the most plausible analysis, I believe.

Since TEMP is an argument, I will assume without argument that it is assigned a kind of structural Case by the verb, perhaps through the mechanism of Spec-head coindexing (Chomsky (1986a)); let us refer to this as 'temporal Case'.

4. Summary of Chapter Two.

In this chapter I have proposed that verbs have a temporal argument in [Spec,V'], whose referent is time period (or periods), and to which V' assigns a θ-role, which is interpreted as the aspectual category of the predicate. Evidence for this was deduced from the interpretation of tenses, and of PP time adverbs, and the interaction of these with aspectual category.

NOTES

1. Note that the progressive variants of these predicates are not accomplishments; the progressive is treated in Chapter Four.

2. I adopt a slightly different notation from Reichenbach's, using lower case letters to refer to time points. For typographical clarity, I will adopt the convention that lower case letters refer to time points, while upper case letters refer to periods.

3. Although s is perhaps most naturally construed as the time of utterance, it is not necessarily so, as Reichenbach in fact notes. In narrative contexts, for instance, simple present tense can be used to describe past events.

4. Intuitively, a set of real number indices might be more realistic; this issue is of no concern here, however, and I will continue to use just integers for convenience.

5. That the modal *will* is really future tense is questionable; see Enç (1985) for discussion. I use it here for illustration of the tense logic only.

6. I will take the prepositions *before* and *after*, when used as time adverbials, to have the interpretations 'P < Q' and 'P > Q', respectively, with '<' and '>' defined as in Section 2.3.1. From this it follows that Q is a period, since these relations are not (as yet) defined between periods and points. Interpret the formula 'P is before t', then, as meaning that P < {t}, and 'P is after t' as meaning that P > {t}.

7. Tim Stowell (personal communication) points out that these may involve abstract preposition incorporation (Baker (1988)), in which case the direct objects in (69) are not direct arguments of V at D-structure, and no reference to Theme would be necessary in (68).

8. It is possible that it will turn out that the notion Theme is not directly relevant, either, but should be replaced by some other notion of 'possible affected argument', or 'possible delimiter', in the sense of Tenny (1987). This is especially clear when considering light verb constructions of the kind discussed in Chapter One. In these constructions, illustrated in (i) and (ii), a VP denotes an accomplishment even though its complement receives no θ-role at all:

i. John gave a laugh

ii. Fred took a walk

In fact, these sentences differ from *John laughed* and *Fred walked* in just this respect, it seems. I will ignore this problem for the time being, however, returning to it in Chapter Three.

9. Following Koopman and Sportiche (1988), I assume that position is adjoined to VP; see Chapter One, Section 1. This hypothesis is adopted and discussed at greater length in Chapter Three.

10. More evidence that the subject θ-role is dependent on the temporal θ-role is provided in Chapter Three.

CHAPTER THREE: SUBJECTS AND SPECIFIERS

1. Introduction.

In the previous Chapter, I argued, primarily on semantic grounds, for the existence of a temporal argument in VP. I turn now to arguments for the existence of a temporal argument in VP and NP, which are based on syntactic and morphological, rather than semantic factors. There are two principal arguments: First, that systematic differences in argument structure between verbs and adjectives can be reduced to the presence, in the case of verbs, and the absence, in the case of adjectives, of a non-overt category in the specifier position not corresponding to any 'standard' argument; APs are argued, on independent grounds, not to license temporal arguments in the usual

case, so this argument provides strong evidence (albeit circumstantial) for the existence of temporal arguments in [Spec,V']. This argument is presented in Section 3. One consequence of this analysis is a generalization of Chomsky's (1981) Extended Projection Principle.

The second main argument, presented in Section 4, concerns the status of temporal arguments in NP. It is shown that syntactic, semantic, and morphological differences between different classes of NP reduce neatly to the claim that process nominals have, and NP small clauses lack, a temporal argument in [Spec,N']. This argument provides evidence which is less circumstantial, since it is shown that the temporal interpretation of process nominals correlates precisely with agreement morphology, in a way predicted by the present theory.

I turn first to an argument that the external θ-role, i.e., the θ-role assigned by VP, is dependent on the assignment and nature of the temporal argument. This is a necessary preliminary to the arguments in Section 3 and 4 regarding the difference between adjectives and verbs, and the different classes of nominals.

2. Subject Θ-Roles.

2.1. *Preliminaries.*

Recall the formulation of X'-theory in Chapter One, which consists of the three schemata in (1):

1 a. XP → ([SPEC,X']) X'

b. X' → X YP*

c. $X^n \rightarrow X^n$ ZP (n ≥ 1)

Stowell (1983) proposes that all categories can (or must) have subject positions, which he equates with the specifier position. Following up on this proposal, several recent authors, including Koopman and Sportiche (1986,1988), Kitagawa (1986), and Kuroda (1985), have proposed that the argument which surfaces as the subject of IP always originates inside VP, so that even 'non-derived' subjects are subjects of VP at D-structure. The various authors disagree, however, as to whether the 'subject' of VP is the [Spec,V'] position, or is a sister to VP.

X'-theory, as in (1), does not decide the issue: (1c) permits XPs of the form (2), where ZP is the 'subject' of XP:

2.

```
      XP
     / \
   ZP   XP
```

But nothing in X'-theory requires this structure to exist.

In this section, I propose that the 'subject of XP' is not a unified phenomenon in terms of X'-theory, but that the subject position is variously XP-adjoined, or

[Spec,X']. This variation seems at first to be partially governed by choice of X, though I will argue that this governance is only indirect, and that it is really governed by considerations relating to temporal argument structure. In particular, I argue that the 'subject' position in VP is VP-adjoined, following Koopman and Sportiche (1986,1988), while the subject of AP is usually the [Spec,A'] position.

2.2. *External Arguments.*

2.2.1. Recall from Chapter Two that the external argument of a verb phrase is projected external to the constituent that contains the temporal argument. Since the temporal argument is in [Spec,V'], it follows that the external argument of verbs is outside of (a segment of) VP. Within the VP-internal subject hypothesis, this means that the external argument is adjoined to VP', as in (3):

3.

```
      VP
     / \
   DP   VP'
```

Clearly, if the temporal argument occupies the specifier position in VP, then the subject argument (if there is one) cannot.

Marantz (1984) offers arguments that VP' in (3) is the assigner of DP's θ-role; although there are reasons for

rejecting his arguments (see Chapter Two), I believe that the claim is nevertheless correct, and that additional evidence can be adduced. There is a class of verbs which are ambiguous between stative and eventive interpretations. This class of verbs includes all of the verbs that assign the Experiencer θ-role to an object, e.g., *upset, amuse, annoy, bother, anger,* etc., as well as *show, prove, demonstrate, indicate,* and perhaps others. I will refer to the former as *upset*-class verbs, or simply psych verbs, and to the latter as *show*-class verbs. The observable difference between *upset*-class verbs and *show*-class verbs is that the latter are surface double-object verbs, while the former have only one (surface) object.

That these verbs are ambiguous between being eventive and stative can be shown by the tests outlined at the beginning of Chapter Two. Note, for example, that these verbs can be in the simple present tense without habitual import (4), and can also appear in the progressive construction with *be* (5):

4 a. John's behavior upsets me

b. the picture I took of Fred amuses him

c. the court's decision doesn't satisfy everyone

d. the presence of the horizon shows that the earth is round

5 a. John is upsetting the children

b. the clown has been amusing children all day

c. we're too busy satisfying our customers

d. Moe was showing Fred his pictures at dinner

Belletti and Rizzi (1988) argue that psych verbs of the *upset*-class are unaccusative, i.e., have no D-structure subject; Johnson (1986) extends this claim to include verbs of the *show*-class. According to these authors, the D-structures of (6a) and (b) are (a') and (b'), respectively:

6 a. the editorial upset Fred

a'. [Δ [$_{VP}$ upset [the editorial] [Fred]]]

b. the editorial proved to Joe that the earth was round

b'. [Δ [$_{VP}$ proved [the editorial] [to Joe] [that...]]]

The primary motivation[1] for this hypothesis is the relative acceptability of sentences like (7):

7 a. ? stories about herself upset Lois

b. ? pictures of himself amuse Fred

c. ? stories about himself show Frank that he is a fool

In (7), an anaphor inside the subject is bound by the

direct object (which is assigned the Experiencer θ-role), even though it is not c-commanded by that argument. Belletti and Rizzi propose that Condition A of the binding theory, which states that anaphors must be locally bound, can be satisfied at any level of representation, including D-structure. The D-structure of (7a) is (8), in their theory:

8. [Δ [$_{VP}$ upset [stories about herself$_i$] Lois$_i$]]

In (8), the Experiencer argument, *Lois*, c-commands the NP *stories about herself*, and hence c-commands *herself*, binding it.

There is evidence, however, that psych verbs and *show*-class verbs do not have an unaccusative derivation; this evidence comes from the analysis of *as*-gapping constructions. Stowell (1987b) shows that a CP gap in an *as*-construction must be in a lexically governed position at D-structure. Thus, the examples in (9), where the gap is the complement to a transitive verb, are grammatical, while those in (10), where the gap is the subject of a transitive verb, are ungrammatical (the antecedent of the gap is in italics):

9 a. this proved *that Bill was a genius*, as everyone

already knows [e]

b. Mary discovered *that the stove was hot*, exactly as the cookbook said [e]

c. we observed *that Saturn passed in front of the star*, just as the astronomer claimed [e]

10 a. * this proved *that Bill was right*, as [e] showed everyone that he was a genius

b. * Mary discovered *that the stove was hot*, exactly as [e] would predict that the cake was done

c. * we observed *that Saturn passed in front of the star*, as [e] proved that the astronomer was correct

Strikingly, when the gap is a derived subject, the result is grammatical; (11a-b) are examples of raising predicates, and (11c-d) are examples of passives:

11 a. this proved *that Bill was right*, as seemed [e] obvious to everyone

b. Mary discovered *that the stove was hot*, as was already [e] plain to see

c. we observed *that Saturn passed in front of the star*, as claimed [e] by the astronomer

d. Joe claimed *that the earth was round*, as shown [e] by the horizon

Psych verbs of the *upset*-class, which can take CP subjects, pattern with transitive verbs, as opposed to raising and passives, in not permitting *as*-gapping on their subjects:

12 a. * Mary announced *that her parents owned two houses*, as [e] upset everyone

b. * John understood *that it was illegal to spit on the sidewalk*, as [e] amused him to no end

c. * Fred knew *that he was being watched*, as [e] bothered him

If the *as*-gap is acceptable when lexically governed in its D-structure position, then (12) shows that the subject of *upset*-class verbs is not a derived subject, but is a subject at D-structure; a similar conclusion is reached by Pesetsky (1988). This means that Belletti and Rizzi's account of the odd binding facts in (7) cannot be correct. In a sense, this is not surprising, since there are other constructions in which a subject-contained anaphor can be bound by an object that fails to c-command it at S-structure, where c-command also fails at D-structure. Consider the examples in (13):

13 a. ? pictures of herself$_i$ hurt Sue$_i$'s head

b. ? stories about each other$_i$ make the women$_i$ proud of their accomplishments

In (13a), discussed in Campbell and Martin (1989), the antecedent of the reflexive is a genitive inside an NP. In Belletti and Rizzi's account, this would entail that at some point in the derivation, presumably D-structure, *Sue* c-commands *herself*, which in turn entails that *pictures of herself* is contained inside the DP headed by *head* at that level. But *pictures of herself* is clearly an argument of *hurt*, from which it receives its θ-role; therefore, even if (13a) has an unaccusative derivation, there is no way for *herself* to be c-commanded by its antecedent at D-structure.

In (13b), the subject containing the anaphor is the subject of a causative verb; such constructions are discussed by Martin (1986b). If Belletti and Rizzi are correct, then the causative verb *make* must be treated as a raising verb in (13b). Even if this is the case, the D-structure of (13b) would have to be something like (14a):

14 a. [Δ make [$_{AP}$ [the women]$_i$ proud [stories about each other$_i$]]]

b. [[stories about each other$_i$] make [$_{AP}$ [the women]$_i$ proud [e]$_i$]]

The subject of the AP, *the women*, is the D-structure subject of AP; see Levin and Rappaport (1986), Stowell (1987b), and below. In the analysis proposed by Belletti and Rizzi, the DP *stories about each other* moves to the position Δ, and in so doing, leaves a trace inside AP; this derives the S-structure (14b). This trace is an anaphor, in the theory of Chomsky (1981) and subsequent work, hence must be locally A-bound. But its antecedent is not contained inside its binding domain, which is AP; in short, this derivation violates the Specified Subject Condition (SSC).

An alternative analysis of the exceptional binding properties of (7) and (13), involving binding at LF, rather than at D-structure, is provided by Campbell and Martin (1989).

2.2.2. Having established that verbs of the *upset*- and *show*-class have underlying subjects, I now turn to a discussion of their thematic properties. All of these verbs assign a different θ-role to their subject when stative than they do when eventive, even though there is no apparent difference in their internal argument structure. For instance, *upset* and *show* assign the Agent θ-role to their subjects just in case they are eventive; when stative they assign a neutral Cause θ-role; this is illustrated in

(15) for *upset*, and (16) for *show*:

15 a. Fred is upsetting the children in the backyard
b. * Fred's behavior is upsetting Mary in the backyard
c. Fred's behavior upsets Mary
d. Fred upsets Mary

16 a. John is showing us that the earth is flat
b. * the absence of a horizon is showing us that the earth is flat
c. the absence of a horizon shows us that the earth is flat
d. John shows us that the earth is flat

When the verb is in the progressive, and modified by a locative adverb (both tests for eventivity), it must have an agentive subject, as the contrast between the (a) and (b) examples shows. In the simple present tense, the verb must be interpreted as habitual just in case the subject is interpreted as an agent: thus (c) is perfectly natural, referring to present time, while (d) must be habitual or narrative, if the subject is agentive.

Note also that the internal θ-roles assigned by verbs of this class do not vary between the eventive and stative readings: *show*-class verbs assign Experiencer and Theme

internally, and *upset*-class verbs Experiencer. The only difference between them, other than the θ-role they assign to the subject, is the θ-role they assign to their temporal argument. Hence, there is a dependency between the temporal and subject θ-roles with this class of verbs. Such a dependency can be analyzed in terms of compositional θ-role assignment by VP, as Marantz (1984) suggests. It is natural to assume, then, that the subject θ-role is assigned by VP, and VP in turn contains the temporal θ-role; hence variation in the temporal θ-role might give rise to various subject θ-roles.

A natural extension of this idea is that the assignment of the subject θ-role, i.e., the assignment of a θ-role by VP, is dependent on the assigment of a temporal θ-role, i.e., on the assignment of a θ-role by V'. Let us adopt this hypothesis, stated as (17):

17. *External θ-Role Assignment Hypothesis (EXTRAH):*
XP assigns a θ-role (to a subject) only if X' assigns a temporal θ-role.

Thus far, this hypothesis is motivated solely by the variation in subject θ-roles observed for verbs of the *upset*- and *show*-class.

3. Adjectives.

3.1. *External θ-Roles.*

3.1.1. EXTRAH, coupled with the assumption that adjectives do not assign temporal arguments, predicts that AP cannot assign an external θ-role. In this section, I propose (i) that this assumption is correct (at least in the usual case), and (ii) that the consequent prediction is also correct.

The claim that adjectives do not assign temporal θ-roles is relatively without problems. If APs could refer to either states or events, then the temporal argument would be necessary, in order to have something for A' to assign different temporal θ-roles to; but APs always refer to states, so there is no need, in this case, to posit a temporal argument, and hence a temporal θ-role. Second, note that APs regularly appear governed by verbs, from which the aspect of the clause derives entirely; hence, (18a), with *be*, is stative; (18b), with *become* is eventive, specifically an achievement:

18 a. our house is tall/old/white/unpainted
b. Fred became sick/green/hungry/available

Recall finally that the temporal argument of verbs receives a kind of structural Case from the verb, assigned through the agency of Spec-head agreement. If adjectives can assign temporal Case to their specifiers, then

adjectives can assign structural Case; but adjectives cannot assign structural Case to a direct complement. The only alternative is that the temporal argument of an adjective is Case-less, in which case it is either NP-trace or PRO. It can be neither in (18), however: the specifier position of AP is governed by the verb *be* or *become* in (18), and hence cannot contain PRO. NP-trace would need an antecedent, but both *be* and *become* assign temporal θ-roles, so their [Spec,V'] positions are not possible targets of movement. I conclude that adjectives do not take temporal arguments.

3.1.2. As noted, it should follow from this conclusion and EXTRAH that AP cannot assign an external θ-role; i.e., that adjectives do not have external θ-roles in the sense that verbs do. This conclusion seems to be correct, and derives a range of facts about adjective formation rules, as we will see below. There are two classes of potential counterexamples to this claim, however, involving apparent cases of adjectives which assign an external θ-role, e.g., Agent.

The first class of potential counterexamples is the present participle of unergative verbs used attributively, as in (19):

19 a. the running dog
b. a flying cow
c. visiting relatives

Here the present participle is used attributively, just as an adjective. There are two possible solutions to this problem, however. The first is to claim that the θ-role assigned by these present participles is not Agent, but Theme; since Theme can be assigned internally (see Chapter Two), these would not be a counterexample to the claim that adjectives assign only internal θ-roles.

The second approach is to deny the adjectival status of the present participles in (19). In fact, this seems to be the most plausible solution. Note, for example, that the present participle cannot be modified by an intensifier (20a), cannot appear in the comparative (b), nor superlative (c) constructions, which are all tests of adjectivehood:

20 a. * a very flying cow
b. * Jake is {runninger/more running} than Fido
c. * the {visitingest/most visiting} relatives

The second class of potential counterexamples to the claim that APs do not assign θ-roles include adjectives such as *protective*, *defensive*, and *offensive*, which are

derived from the verbs *protect*, *defend*, and *offend*, and seem to assign the same θ-role to their subjects as these verbs:

21 a. Jake protects his house
a'. Jake is protective of his house
b. Fred defends his claims
b'. Fred is defensive of his claims

It is not clear, however, that the subjects in (21a',b') are assigned the same θ-roles as in (a,b). In (a) and (b), the θ-role assigned to the subject is Agent: intentional action is imputed to Jake or Fred. This is not the case in (a') and (b'), however: here, Jake and Fred are claimed to have certain properties, perhaps mental properties, but are not necessarily intentional agents. Saying that Fred is defensive does not imply that Fred defends anything, but that he has a particular disposition regarding attacks on his claims.

Note that this cannot be due simply to the factor of intentionality present in (21b); it is possible to place the adjective *defensive* in a context where its subject is imputed to have intention, as in (22):

22. Fred is being defensive about his claims

In this example, *Fred* must be intentionally acting in a certain way characteristic of defensive behavior. But (22) is not synonymous with (21b); in particular, from (22) it does not follow that Fred is defending anything.

It appears then, that adjectives such as *protective* and *defensive* simply do not assign the same θ-roles as their verbal roots. Consequently, nothing can be determined about their ability to assign external θ-roles from (21), and the hypothesis that APs do not assign external θ-roles is saved.

3.1.3. Note finally that many morphological rules which derive adjectives from verb roots have the effect of deleting the external argument position. For instance, Adjectival Passive Formation (APF), discussed by Levin and Rappaport (1986), takes transitive verbs such as those in (23), and creates adjectives (from their past participles), as in (24):

23 a. John cooked the steak
b. Fred read the book
c. we stacked the books on the table
d. we stacked the table with books
e. Mary built Sue's house

24 a. the steak was *uncooked*
b. the book sat on the shelf *unread*
c. the books remained *stacked* on the table
d. the table remained *stacked* with books
e. Sue's house is *unbuilt* to this day

We can tell that the italicized participial forms in (24) are adjectives because of their distribution and morphology: *remain* selects only AP complements (Levin and Rappaport (1986)), so (c) and (d) must be adjectives; negative *un-* prefixes to adjectives, and not to verbal passive participles (Wasow (1977)), so (a), (b), and (e) are all adjectives.

In each of the examples in (24), the argument which bears the Agent θ-role in the corresponding example in (23) is missing. Instead, one of the internal arguments of the verb root illustrated in (23) is the subject of the AP in (24): in (a,b,c,e) it is the Theme argument, and in (d) it is the Location argument. Levin and Rappaport show that this is one of the essential characteristics of APF: that the external θ-role is suppressed, and one of the internal arguments shows up as the subject of AP.

In fact, the same thing happens with other adjective-formation rules; for example, consider *-able* affixation. Each of the transitive verb roots in (23) can be suffixed with *-able*, with the effect that the external θ-role is

suppressed, and one of the internal arguments shows up as the subject:

25 a. the steak was not cookable
b. John's book is hardly readable
c. large books are not stackable (*on small shelves)
d. * small shelves are not stackable (with large books)
e. custom houses are unbuildable

(25c) and (d) illustrate another aspect of *-able* affixation, viz. that the adjective derived cannot have any arguments other than its subject. This feature of *-able* affixation is not relevant to our main concern here, however, which is the obligatory suppression of the external θ-role (Agent, in all of these examples).

The suppression of the external θ-role in the adjectival passive could conceivably be attributed to the suppression of the external θ-role in the passive participle, from which the adjectival form is derived. However, there is no motivation for such a move in the case of *-able* affixation, which is not built on the passive participle, but directly on the verb root. Indeed, I will argue in Chapter Four that the passive participle is no different from the past participle used in the perfect construction in English, and that the 'suppression' of the external θ-

role is of a different nature from that evidenced by adjective-formation rules.

The fact that derivational rules deriving adjectives from verb roots regularly suppress the external θ-role of the verb root supports the claim that adjectives cannot assign such a θ-role. In a theory of grammar which incorporates EXTRAH, this fact follows entirely from the change in category from verb to adjective.

3.2. *Subject of AP.*

3.2.1. Levin and Rappaport (1986) also argue, however, that adjectives always have D-structure subjects. This is not contrary to my claim above, since I merely claimed that adjectives do not assign an external θ-role; it is still conceivable that they could assign an internal θ-role to their subjects. However, it is as yet unexplained why an adjective can assign an internal θ-role to its subject position, but a verb cannot.

The answer, in brief, is that while the 'subject' position of VP is VP-adjoined, the subject of AP is [Spec,A']. Let us assume, following Williams (1981), a division of labor in the lexicon between 'external' and 'internal' θ-roles. Assume that an external θ-role of X must be assigned by XP; i.e., to a position adjoined to XP. Thus, the Agent θ-role of an active verb must be assigned to the sister of VP, and not internal to VP. An internal

θ-role must be assigned inside XP; this leaves the question open as to whether an internal θ-role is assigned to a complement position (i.e., daughter of X'), or to [Spec,X']. I claim that internal θ-roles can in principle be assigned to [Spec,X'], but whether they are or not depends on whether a temporal θ-role is assigned to that position.

The claim that the subject of AP is [Spec,A'], while the subject of VP is VP-adjoined finds support in the distribution of small clauses. AP small clauses can be adjuncts, where the subject of the small clause is PRO:

26 a. Fred$_i$ came home [PRO$_i$ drunk]
b. we ate the meat$_i$ [PRO$_i$ raw]
c. we$_i$ ate the meat [PRO$_i$ naked]

VP small clauses with bare infinitives, which can be complements to causative and perception verbs (27), never appear in control configurations (28)[2]:

27 a. Fred made [Susan eat her pie]
b. we had [Mary kiss Fred]
c. John heard [it rain]

28 a. * Susan$_i$ came home [PRO$_i$ eat her pie]
b. * it$_i$ snowed [PRO$_i$ rain] (='it snowed while raining')

c. * Fred$_i$ killed John$_j$ [PRO$_{i/j}$ kiss Mary] (='F. killed J. while kissing Mary)

The examples in (26) and (28) all have the structure shown schematically in (29), where γ is a small clause adjunct, with subject β; assume α m-commands γ:

29. $\ldots\alpha\ldots[_\gamma\ \beta\ldots]$

Since γ is an adjunct, it is not L-marked; consequently, it is a BC and a barrier for anything it includes. If β is in [Spec,γ'], then α does not govern β, since β is included, and α excluded, by γ. If β is adjoined to γ, however, then γ does not include β, and hence is not a potential barrier; hence α governs β. Hence, if α is a potential head governor, then β is PRO just in case it is the specifier of γ; then the contrast between (26) and (28) follows from the assumption that the subject of AP is [Spec,A'], and the subject of VP is VP-adjoined.

As it stands, this argument predicts that a VP small clause could have a PRO subject, if it were not m-commanded by a potential head governor; e.g., if it were adjoined to VP in an infinitival construction. This is not possible, either, however:

30.* Fred$_j$ hopes PRO$_j$ to [[kill John] [PRO$_j$ kiss Mary]]

Thus, either INFL can always govern into VP-adjoined positions, even when it does not contain AGR, or (30) (and then possibly also (28)) is ruled out for independent reasons. Nevertheless, the availability of PRO as the subject of AP shows that this position is [Spec,A'].

3.2.2. Let us now turn to Levin and Rappaport's claim that AP always has a subject at D-structure. There are three pieces of evidence to support this claim; the first comes from a comparison of verbal passive participles and adjectives, including adjectival passives, with respect to phenomena associated with the Head Final Filter (HFF) (Williams (1982)). I will paraphrase the HFF eas saying that an attributive adjective is prenominal in English just in case it is the final element in its phrase, which is slightly different from Williams' formulation. Thus, adjectives with complements or modifiers are always post-nominal:

31 a. the sprayed wall (*with paint)
b. the wall sprayed *(with paint)

Adjectives with no complements or modifiers are always prenominal, as (31) shows.

Adjectival passives contrast with verbal passive participles in this respect; consider the noun phrases in (32):

32 a. the sunken ship
b. * the ship sunken
c. * the sunk ship
d. the ship sunk

The verb root *sink* is unique (or nearly so) in that its adjectival passive form, *sunken*, differs from its verbal passive form, *sunk*. As (32a,b) show, the adjective *sunken* must be prenominal when it is not modified; in this respect, it is just like other adjectives. The participle *sunk*, however, when not modified, must be post-nominal (c,d).

This contrast follows from the HFF on the twin assumptions that the adjective *sunken* has a D-structure subject, while the participle *sunk* does not, and that participles as well as adjectives are subject to the HFF. Let us assume that the subject of a post-nominal AP is PRO, controlled by the head of the NP; then (32b) and (d) have the structures (33a,b) resepctively:

33 a. * the ship$_i$ [PRO$_i$ sunken]

b. the ship$_i$ [PRO$_i$ sunk [e]$_i$]

(33a) violates the HFF because *sunken*, which is the final element in its phrase, is not prenominal; (32a), however, is grammatical, because *sunken* is prenominal. (33b), on the other hand, is well-formed because *sunk* is not the final element of its phrase: the trace of PRO is; similarly, (32c) is ungrammatical, where *sunk* is prenominal, in violation of the HFF. This analysis of the contrast in (32) depends entirely on there being a trace in (33b), but not in (33a); this follows, however, from the assumption that the verb *sink*, and its past participle *sunk*, assign the Theme θ-role to a complement position, while the adjective *sunken* assigns the same θ-role to a 'subject' position, which I argue below is [Spec,A'].

The second argument comes from *as*-gapping constructions. As discussed above, a CP gap in an *as*-construction must be lexically governed at D-structure; this provides a test for D-structure lexical government, and hence for D-structure subjecthood. CP subjects of adjectives, in contrast to CP subjects of verbs, are always subjects at D-structure (Stowell (1987b)):

34 a. John found out *that Bob was a fool*, as seemed [e] obvious to everyone
b. John found out *that Bob was a fool*, as was [e]

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