3

Complement Structures

3.1 Introduction

This chapter presents an overview of a lexically-based analysis of complementation in English and a comparison with competing analyses commonly accepted within GB. Among the topics treated here are 'equi' constructions, 'raising' constructions, and the analysis of the expletive pronouns it and there. In Chapter 7, we will present a modification that will allow many aspects of the analysis presented here to be derived from the interaction of more general principles.

3.2 Category Selection and Small Clauses

In much current work in syntactic theory, specifically within the framework of GB, it is assumed that all the verbs in (1) subcategorize for a single complement, as indicated:

(1)

a. Kim said [that Sandy left].
b. Dana preferred [for Pat to get the job].
c. Kim said [Sandy left].
d. Leslie wanted [Chris to go].
e. Lee believed [Dominique to have made a mistake].
f. René tried [PRO to win].
g. Terry preferred [PRO to go to Florida].
h. Tracy proved [the theorem false].
i. Bo considered [Lou a friend].
j. Gerry expects [those children off the ship].

The syntactic analysis of these and other complements as single constituents is in fact necessitated in GB by the Projection Principle, which requires that all mappings between levels of linguistic representation be homomorphic with respect to argument structure. That is, since the verb believe is assumed to be logically dyadic (designating, say, a relation between individuals and propositions), all of the syntactic representations (specifically D-structure and S-structure) where the verb believe occurs must also have exactly two syntactic dependents—one an NP (the subject), the other a clause. But, assuming the constituency indicated in (1), an issue arises as to the categorial status of the complements in (1h–j). As noted by Stowell (1983: 301), if these complements are treated as 'small clauses,' then:

[a] Logical Form, the verb assigns a theta-role to the clause as a whole, so it should be unable to specify the categorial features of anything other than the entire clause, given the restricted theory of subcategorization [that Stowell advocates]. In particular, the verb should be indifferent to the categorial status of the [small clause] predicate. But this is not the case:

(32) a. *I consider [John off my ship].
b. *I proved [the weapon in his possession].
c. *I expect [that man stupid].
d. *We all feared [John unfriendly].

This kind of selection for the category of the predicate is never permitted with infinital complements. (Note that insertion of to be before the [italicized] predicates in (32) renders the sentences grammatical.)

Stowell's observation then is that a standardly accepted constraint on subcategorization (namely the locality of subcategorization) is inconsistent with clausal analyses of the complements of verbs like prove, expect, and consider, for these verbs must select for the category of the phrase that follows. This criticism remains valid, not only against the S analysis of NP-AP and NP-PP sequences that Stowell attacks, but also against any version of the CP/IP analysis (Chomsky 1986b) of small clauses. Stowell's observations thus lead to the conclusion that both of the following analyses of expect and consider must be rejected:

2. For a critical discussion of these and related issues, see Postal and Pullum 1988.
Kitagawa (1985) seeks to defend the small clause analysis of the complements in question by arguing that they involve a purely semantic selection, rather than selection for category, as Stowell assumes. Kitagawa discusses examples like the following:

(4)  
   a. *The doctor considers that patient dead tomorrow.  
   b. Unfortunately, our pilot considers that island off the route.

(5)  
   a. *I expect that island off the route.  
   b. I expect that man dead by tomorrow.

From these examples, Kitagawa (1985: 3) concludes that 'consider selects a complement expressing [a] 'state of affairs', but not a complement expressing [a] 'change of state'. The selectional property of expect, on the other hand, is exactly the opposite. Kitagawa's conclusion then is that no category selection is involved with respect to the complements of consider and expect, a conclusion that renders the locality of subcategorization consistent with any small clause analysis of the complements in question, including the widely accepted CP/IP analysis.3

But the analysis of the complements of verbs of this sort must involve more than just semantic selection. If off the route fails to denote a 'change of state' and thus is incompatible with the semantics of expect, then why are examples with to be well-formed (as Stowell notes)?

(6)  
   I expect that island to be off the route.

And if expect has no access via subcategorization to the categorial properties of its complements, then why is there a contrast between (7a) and (7b)?

(7)  
   a. I expect that island to be a good vacation spot.  
   b. *I expect that island a good vacation spot.

Note that all of these complement types are possible with consider:

(8)  
   a. I consider that island to be off the route.  
   b. I consider that island to be a good vacation spot.  
   c. I consider that island a good vacation spot.

What these facts demonstrate is that (1) expect and consider both allow AP, PP, and infinitival complements; (2) when expect and consider subcategorize for AP or PP complements (but not when they combine with infinitival complements), semantic properties of the verbs in question interact with the semantic properties of these complements in a way that is not possible with consider.

3. There is reason to question Kitagawa's assumption that the complements in question inherently express different kinds of properties. The semantics of expect, when it takes an AP or PP complement, involves a state of affairs that is expected to be different from some previously existing state of affairs. Hence all such complements express states of affairs. Acceptability is reduced when the complement of expect expresses a state of affairs that is difficult to construe as a change from some other state of affairs. The proof of this is that the examples presumed to be ungrammatical by Kitagawa can in fact be contextualized. Suppose, for instance, that the manager of a cruise ship company suddenly discovers that a coup d'état is about to take place on an island that is currently on the route of the company's premier cruise ship. She might then with complete felicity say to her assistant: I expect that island off the route by tomorrow. Similarly, the semantics of consider involves a judgment that a certain state of affairs holds at the moment of considering. That patient dead tomorrow is not such a state of affairs, as the adverb introduces conflicting temporal information.
nature of the complements to make certain examples uninterpretable or hard to contextualize (see n. 3); and (3) consider, but not expect, also allows NP complements of the sort illustrated in (8c) (cf. *(7b)). These conclusions constitute an argument that the subcategorization properties of expect are inconsistent with the clausal analysis of its complements, given the familiar principle that subcategorization is local.

Of course the issue of semantic selection versus selection by syntactic subcategorization is notoriously vexed, plagued as it is by the difficulty of knowing whether our inability to explain a particular selection in semantic terms is due to the inadequacy of currently available semantic tools or else to the non-semantic nature of the selection in question. For example, perhaps the unacceptability of I expect Kim a success is due to the same kind of semantic factors that affect I expect that island off the route. To make good on this explanation, one would need to develop a precise account of how the denotations of predicative NPs are systematically different from those of other predicative expressions, and how this semantic difference renders predicative NPs inconsistent with the semantics of expect. This seems to us to be unlikely, as it is quite impossible to contextualize any examples like those in (9):

(9)  
  a. *We expect Kim a doctor (by the end of the year).
  b. *We expect that island a safe place (after the revolution).
  c. *We expect him a dead man (by tomorrow).

These remarks should not be interpreted as implying skepticism on our part about the possibility of adjudicating particular cases, or as indicating a bias toward syntactic explanations. Consider the following contrast, standardly taken to demonstrate that the verb seem must subcategorize for an AP (rather than a PP) complement:

(10)  
  a. *Sandy seems out of town.
  b. Sandy seems clever.

As argued by Maling (1983: 256), the selection in question must be semantic in nature, as seem allows a class of NPs that she terms ‘metaphorical’ PPs:

(11)  
  a. Lee sure seems out of it.
  b. Lee sure seems out of his mind.
  c. Lee sure seems under the weather.

Citing further contrasts like (12), Maling concludes that seem allows PP, AP, and NP complements, as long as they involve ‘gradable predicates’:

(12)  
  a. Robin seems a fool.

This conclusion seems reasonable enough, though one might quibble with Maling’s characterization of the semantic difference in question.

On the basis of similar contrasts, Maling (1983, p. 282, n. 9) also offers a semantic account of the complement selection exhibited by the verb become:

(13)  
  a. Lee became mad.
  b. *Lee became out of his mind.
  c. *Lee became lunatic.
  d. Robin became more and more like her brother.
  e. Robin became more and more unlike his former self.
  f. *Robin has become near the edge of bankruptcy.

Her analysis is that become selects ‘gradable, non-locative’ complements ‘of any category.’ The conclusion that semantic selection is at work here also seems plausible, though certain problems remain.

Thus there are clear cases where it can be demonstrated that an apparently syntactic selection is really semantic in nature. But this is not to say that all selections can or should be explained in semantic terms. Our own view of these matters is essentially that of Grimshaw (1979), namely that semantic selection must work hand in hand with syntactic subcategorization, in particular category selection, to explain the complex dependencies that particular lexical items exhibit.

This having been said, let us again turn to the small clause type of analysis. Problems of the sort Stowell raises for clausal analyses are pervasive. In P&S-87 (see also Sag and Pollard 1989), we pointed out the contrasts illustrated in (14)–(18), which involve a semantically-related class of verbs that we may refer to as ‘verbs of becoming’:

(14)  
  a. Kim grew political.
  b. *Kim grew a success.
  c. *Kim grew sent more and more leaflets.
  d. *Kim grew doing all the work.
  e. Kim grew to likeANCH.

(15)  
  a. Kim got political.
  b. *Kim got a success.

4. Jackendoff (1985: 280) reasons similarly (citing observations of Jane Grimshaw’s) to the conclusion that verbs like last and take select for complements of any syntactic category, as long as they ‘denote a period of time.’ The relevant examples are The meeting lasted/two hours/much too long/untill midnight.

5. For example, if the nongradability of prime-minister is supposed to be responsible for the deviance of *Robin seems prime-minister, then why is Kim became prime-minister well-formed?
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c. Kim got sent more and more leaflets.
d. *Kim got doing all the work.
e. Kim got to like anchovies.

(16)
a. Kim turned out political.
b. Kim turned out a success.
c. *Kim turned out sent more and more leaflets.
d. *Kim turned out doing all the work.
e. Kim turned out to like anchovies.

(17)
a. Kim ended up political.
b. Kim ended up a success.
c. *Kim ended up sent more and more leaflets.
d. Kim ended up doing all the work.
e. *Kim ended up to like anchovies.

(18)
a. Kim waxed political.
b. *Kim waxed a success.
c. *Kim waxed sent more and more leaflets.
d. *Kim waxed doing all the work.
e. *Kim waxed to like anchovies.

Let us add to the discussion the verb become, as well as further data about the
PPs discussed by Maling:

(19)
a. Kim became political.
b. Kim became a success.
c. *Kim became sent more and more leaflets.
d. *Kim became doing all the work.
e. *Kim became to like anchovies.

(20)
a. Kim became more and more like her brother.
b. Kim grew more and more like her brother.
c. Kim got more and more like her brother.
d. Kim turned out more and more like her brother.
e. Kim ended up more and more like her brother.
f. *Kim waxed more and more like her brother.

Are these contrasts reducible to semantic selection? We think not. These
verbs of becoming are all closely related semantically, and whatever dif-
ferences in meaning may exist among them seem insufficient to explain the full
range of their subcategorizational differences. Whereas all verbs of becoming
except wax allow PP complements (of the appropriate semantic type), only turn
out, end up, and become allow predicative NP complements. What possible

semantic difference between get and grow on the one hand and become on the
other could explain this difference in complement selection? Similarly, what
difference in meaning between end up and turn out could explain why only
the former allows a present participial complement? Why does get, but not
grow, allow a passive complement? Why does wax allow only AP comple-
ments? And so forth. In the absence of any semantic explanation for the con-
trasts in (14)–(20), we cannot avoid the conclusion that purely syntactic
subcategorization plays a significant role in explaining these data.

This conclusion is crucial, for it leads directly to the rejection of the CP/IP
analysis of these complements. It is possible to imagine reconciling the CP/IP
analysis with selections for infinitivals, that-clauses, or even gerund com-
plements, but if NP, PP, AP, passive, and participial complements may be sub-
categorized for, then, in virtue of the uncontroversial locality of subcategoriza-
tion, these phrases must be locally accessible to (i.e. presumably, sisters of)
the verbs that select them, and this is simply not the case in the CP/IP analysis.
Nor would matters be helped by allowing some of these verbs to take IP com-
plements directly, for such a proposal would still not render IP-internal NPs,
APs, PPs, and VPs local to the verbs that must subcategorize for them.

Much the same conclusion follows from an examination of examples like
(21)–(24), involving *verbs of considering*:

(21) a. We consider Kim to be an acceptable candidate.
b. We consider Kim an acceptable candidate.
c. We consider Kim quite acceptable.
d. We consider Kim among the most acceptable candidates.
e. *We consider Kim as an acceptable candidate.
f. *We consider Kim as quite acceptable.
g. *We consider Kim as among the most acceptable candidates.
h. *We consider Kim as being among the most acceptable candidates.

(22) a. *We regard Kim to be an acceptable candidate.
b. *We regard Kim an acceptable candidate.
c. *We regard Kim quite acceptable.

6. Historically, wax (cognate with German wachsen, 'to grow') occurred with a
wider range of complements than at present. In present-day American usage, wax oc-
curs most frequently with a handful of adjectives (e.g. poetical, lyrical), but is not re-
stricted to that class.

7. We are grateful to the late Dwight Bolinger for helpful discussion of these con-
trasts. For attempts to explain in purely semantic terms contrasts of the sort discussed
here, see Wierzbicka 1988 and Feeters 1989 (n.v.).
d. We regard Kim among the most acceptable candidates.

e. We regard Kim as an acceptable candidate.

f. We regard Kim as quite acceptable.

g. We regard Kim as among the most acceptable candidates.

h. We regard Kim as being among the most acceptable candidates.

(23) a. We rate Kim to be an acceptable candidate.

b. We rate Kim an acceptable candidate.

c. We rate Kim quite acceptable.

d. We rate Kim among the most acceptable candidates.

e. We rate Kim as an acceptable candidate.

f. We rate Kim as quite acceptable.

g. We rate Kim as among the most acceptable candidates.

h. We rate Kim as being among the most acceptable candidates.

(24) a. *We count Kim to be an acceptable candidate.

b. *We count Kim an acceptable candidate.

c. *We count Kim quite acceptable.

d. We count Kim among the most acceptable candidates.

e. We count Kim as an acceptable candidate.

f. We count Kim as quite acceptable.

g. We count Kim as among the most acceptable candidates.

h. We count Kim as being among the most acceptable candidates.

Here too, we find a class of verbs that are very closely related semantically, but whose complement selection properties vary considerably. Although future research could, of course, prove us wrong, we find it unlikely that there is a purely semantic account of the contrasts in (21)–(24). Our conclusion is that verbs must be able to select for the syntactic category of their complements. Consider, for example, allows infinitival, NP, AP, or PP complements, but not as-phrases, whereas regard allows only as-phrases. Rate allows any of the complements illustrated here, while count appears to allow only PPs or as-phrases. If the NP-XP sequences in these examples form small clauses (whether CPs Ss, Ss, or IPs), then the required subcategorization violates locality.

Note that even under the assumption that the immediately postverbal NPs in these examples are primary objects, assigned semantic roles by the matrix verb (an assumption that is difficult to reconcile with the grammaticality of such examples as We regard there as being no solution to this problem or We con-

sider it likely to rain), the small clause analysis must countenance nonlocal subcategorization restrictions, as illustrated in (25):

(25)

```
VP
  \--- V
    \-- NP
        \-- count
            \-- Kim
                \-- C'
                    \-- COMP
                        \-- IP
                            \-- PRO
                                \-- INFL
                                    \-- PP
                                        \-- *VP
                                            \-- *AP
                                                \-- *NP
```

In short, we see no way of reconciling the data considered here with a CP or an IP analysis unless (1) a semantic account of all the dependencies illustrated in (21)–(24) can be motivated or (2) the well-established principle of the locality of subcategorization is abandoned.

3.3 Stowell Structures

An alternative (and considerably more satisfactory) GB analysis of the phenomena at hand is developed by Stowell (1981, 1983). Stowell treats many of the complements discussed above as projections of the major categories N, V, A, and P, crucially modifying the X-theory he assumes in order to allow NPs, VPs, APs, and PPs to take subjects. His analysis is illustrated in (26):

8. For further discussion of problems associated with small clause analyses, see Williams 1983 and Lasnik and Saito 1991.
And SSs appear in other contexts as well, for example, in examples like (28): 9

(28)  a. We feared [Noriega in power].
     b. We didn’t like [the party on a Tuesday].
     c. They wanted [the party on a Tuesday].
     d. What, [me worry]?

However, there are compelling, independent reasons for rejecting the treatment of verbs of considering in terms of SSs. 10 First, there is the matter of constituency. If the NP-XP sequences occurring after consider and the like were SS constituents, then we should expect to find corresponding pseudocleft and it-cleft sentences like (29):

(29)  a. *What we considered was [Leslie in complete control of the situation].
     b. *It was [Leslie in complete control of the situation] that we considered.

However, these are systematically ill-formed.

Note that there is nothing otherwise preventing SSs of this form from appearing as a focussed constituent in either kind of cleft-sentence, as the examples in (30) are perfectly grammatical:

(30)  a. What we feared most was [Leslie in complete control of the situation].
     b. It was [Leslie in complete control of the situation] that we feared most.

Note that (29a)/(30a) and (29b)/(30b) are minimal pairs. The NP-PP sequences occur in identical matrix environments, yet only fear allows a missing small clause or SS complement. Hence one cannot explain the deviance of (29a, b) by appeal to such GB principles as the Case Filter, 11 which fails to distinguish between (29) and (30), or to any constraint barring clauses without complementizers from appearing in positions not adjacent to a governing verb. 12

The most straightforward explanation of these contrasts is that the verbs of considering take two complements (in addition to the subject): a primary object NP and a predicative complement. In this way, the deviance of the examples in (29) follows from the fact that the cleft clauses (i.e. what we considered — in (29a) and that we considered — in (29b)) would have to contain

10. Here, and throughout, we are indebted to Joan Bresnan for valuable discussion.
11. Such an appeal would involve the claim that the NP Leslie in (29) cannot be assigned case. See below (section 3.4).
12. See the discussion in Postal (1974: 128ff.), in response to a suggestion made by Howard Lasnik.
two gaps, a highly restricted circumstance in English (see Chapter 4)—and
certainly a circumstance inconsistent with the presence of a single focussed
constituent, as in these examples. These data thus provide significant evidence
against the Stowell-type analysis of these structures (as well as evidence
against any small clause analysis), which treats the complements of consider
and the like as a single constituent.

Clearly relevant to the matter of the constituency of the complements under
discussion here is the debate about the status of the transformation of 'Subject-
to-Object Raising' (SOR), which began in the early 1970s (see, inter alia,
Chomsky 1973; Postal 1974, 1977; Bresnan 1976; Bach 1977; and Postal and
Pullum 1988). At stake in this controversy has been the status of not just verbs
of considering, but rather the full range of examples where a given verb occurs
followed by an NP and an infinitive VP or other predicative complement, that
is, all the examples in (31):

(31)  
  a. Pat believes Chris (to be) a spy.
  b. Kim expects Sandy (to be) on time.
  c. Terry proved Dana (to be) wrong about the regulations.
  d. Lee prevented Dominique from being a scapegoat.

The structure proposed for such examples by Chomsky (1973), not different
in essential respects from the small clause structures currently assumed within
GB, is illustrated in (32):

(32)

\[
\text{VP} \rightarrow \text{V} \rightarrow \text{S} \text{ (or VP)}
\]

\[
\text{believes} \rightarrow \text{Chris to be a spy}
\]

In this structure, the NP Chris remains the subject of the embedded clause
throughout the transformational derivation.

On the analysis advocated by Postal (1974), the same example is assigned
the structure in (33) through the application of the SOR transformation:

(33)

\[
\text{VP} \rightarrow \text{V} \rightarrow \text{NP} \text{ (or S)}
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Postal offers numerous arguments for the SOR structure, many of which are
disputed by Bresnan (1976), and two of which are of immediate relevance here.

Postal's first argument concerns the 'complex NP shift' phenomenon ex-
emplified in (34)–(35):

(34)  
  b. Kim bought from René—a book which taught him organic
     knitting.

(35)  
  a. I showed the cookies to Dana.
  b. I showed to Dana—all of the cookies that could be made from
     betel nuts and molasses.

On the basis of such examples as those in (36), Postal (1974: 83) offers the
generalization in (37):

(36)  
  a. * Are happy—all of the men who recovered from mononucleosis?
  b. * I regret the fact that were destroyed—so many of our priceless
     relics.

(37)  
  Complex NP shift does not operate on NPs that are subjects at the
       point of application.

This generalization supports the SOR analysis in virtue of the fact that the
NPs whose object status is in question clearly do undergo complex NP shift:

(38)  
  a. Pat believes to be a spy—everyone who was working for the
     Warren Commission.
  b. ?Kim expects to be on time—every employee who was hired for
     the Christmas rush.
  c. Terry proved to be wrong—virtually everyone who challenged
     her.
  d. Lee prevented from being a scapegoat—that nice old professor
     who introduced the modification without prior approval.

This conclusion also bears directly on the analysis of verbs of considering dis-
cussed above, as the immediately postverbal NPs in these examples freely un-
dergo complex NP shift:

(39)  
  a. We would consider acceptable—any candidate who supports the
     proposed amendment.
  b. We would regard as acceptable—any candidate who supports the
     proposed amendment.

13. Bresnan (1976: 486) disputes the correctness of Postal's generalization on the
basis of 'locative inversion' examples like Near that town was situated for many
years after the war an old ruin that the Germans had bombèd, where the subject phrase (on
her analysis) an old ruin that the Germans had bombèd has been shifted. Her objections
are countered by Postal (1977), and are in any case obviated by the analysis of locative
inversion developed in Bresnan (n.d.). Hence, we will not review the details of this
controversy here.
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are countered by Postal (1977), and are in any case obviated by the analysis of locative
inversion developed in Bresnan (n.d.). Hence, we will not review the details of this
controversy here.
c. We would rate among the acceptable candidates—any one of them who supports the proposed amendment.
d. We would count among the acceptable candidates—any one of them who supports the proposed amendment.

Since the NPs that immediately follow verbs of considering freely undergo complex NP shift, they cannot be subjects. Hence we have another piece of evidence that the correct structure for these examples is the SOR structure illustrated in (40), rather than the small clause analysis or the alternative suggested by Stowell:

(40)

But this argument rests on the correctness of Postal’s generalization that subjects cannot be shifted, a generalization that one might challenge. In particular, one might propose to replace Postal’s condition with the one in (41):

(41) Complex NP shift leaves a trace, which must be properly governed.

The ungrammatical shifts in (36a, b) would involve traces that were subjects of finite verbs, and hence not properly governed. On an analysis in terms of S’s (or small clauses), on the other hand, the traces in (38) and (39) are all properly governed under the standard assumption that the matrix verbs occasion exceptional case marking (possibly accompanied by CP erasure).

To see that this alternative proposal fails to explain the data in question, we must compare the behavior of these complements with that of gerund phrases, illustrated in (42):

(42)

The constituency indicated here is motivated by such facts as the possibility of clefing and pseudocleffing gerund phrases (these examples should be compared with *(29) and (30)):

(43) a. It was [him doing that] that I resented —
   b. What I resented —was [him doing that].

We assume, following Postal (1974, 1977), that the subjects of gerunds never undergo raising. And, in keeping with Postal’s generalization, gerunds may not undergo complex NP shift (as noted by Postal (1977: 152, n. 15); see also Kayne (1984a, chap. 2)):

(44) *I resented doing that—the doctor that treated your pig.

Rizzi (1990: 35) seeks to explain the ungrammaticality of (44) as a violation of the condition (41) (slightly revised to require trace to be properly head-governed by its inflection). However, his approach fails to explain the fact that the accusative subject of a gerund phrase may be a trace in unbounded leftward extraction constructions:

(45) a. The man that I resented —stepping in front of me in line.
   b. Which man did you resent —stepping in front of you in line?
   c. It was Sandy that I resented —stepping in front of me in line.

Under standard GB assumptions, these traces must be properly governed (or properly head-governed). But this in turn undermines the alternative account of the condition on complex NP shift. That account fails to distinguish subjects of small clauses (which are properly governed and may be shifted) from gerund subjects (which are properly governed yet may not be shifted). On our view, complex NP shift involves linear ordering principles that sanction alternative ‘shifted’ orders of sister constituents. This analysis involves no traces at all. Leftward extractions like those illustrated in (45) are possible because of the existence of the Subject Extraction Lexical Rule presented in section 4 of Chapter 4.

14. One might attempt to salvage the proposed alternative generalization by imposing a further condition that traces left by rightward movement must be properly governed by a verb (presuming, following Reuland (1983), that the subjects of gerunds are governed by the inflection of the gerund). Such a proposal, though observationally adequate, lacks independent motivation.

15. This in turn requires that we regard examples like (i) as being free of parasitic gaps, which we take to occur only in unbounded dependency constructions analyzed in terms of the feature SLASH (see Chapter 4):

(i) The twins insulted, by not recognizing immediately, their favorite uncle from Cleveland.

Such examples may be a kind of Right Node Raising. We lack any precise analysis as yet.
A second of Postal’s arguments for the SOR structure, based on the positioning and interpretation of certain adverbs, is also worth reexamining in the present context. Postal (1974: 147) argues that the adverb in (46a) can only modify the verb of the embedded clause (outweigh), whereas the adverb in (46b) may modify the matrix verb prove:

(46)  
\[\text{a. I can prove that Bob easily outweighed Martha’s goat.} \]
\[\text{b. I can prove Bob easily to have outweighed Martha’s goat.} \]

He offers an account of this in terms of the following principle:

(47)  
A ‘sentential’ adverb cannot be inserted in a complement clause.

This principle, together with the SOR analysis of [prove NP VP[inf]] constructions, would explain the contrast in (46).

Bresnan (1976: 496) challenges this claim, arguing that the SOR analysis, taken together with Postal’s generalization, fails to explain such contrasts as (48) (due to Huddleston):

(48)  
\[\text{a. *I expected John quite confidently to give the lecture.} \]
\[\text{b. I persuaded John quite easily to give the lecture.} \]

Postal (1974: 153–154) accepts the data in (48), but claims that the contrasts necessary to motivate the SOR analysis can be reconstructed on the basis of different adverbials, such as quite without reason, in spite of protests, with my usual false optimism, etc.

However, as Bresnan (1976: 496) points out, these parenthetical adverbs, typically set off as an intonational phrase, have quite generally a wider distribution. In particular, they can appear within embedded clauses with matrix-modifying interpretation:

(49)  
\[\text{a. I arranged [for my relatives, in spite of protests, to have jobs in our department].} \]
\[\text{b. I had hoped [for the deanship, with my usual false optimism, to be given to Uncle Buddy].} \]

While we accept Bresnan’s observations about the data in (49), it is nonetheless true that Postal’s argument for the SOR structure can be resurrected if even one class of adverbials can be found that obeys the generalization in (47), yet occurs (with matrix interpretation) between the postverbal NP and the infinitival VP. Moreover, it appears that there is such a class of adverbs, one that includes in spite of myself and to this very day. These adverbials, unlike those considered by Postal, Huddleston, and Bresnan, cannot receive matrix interpretation when they appear within an embedded clause. Thus (50b) and (51b), constructed so as to make sense only if the adverbial has the matrix interpretation of the corresponding examples in (50a) and (51a), lack any sensible interpretation:

(50)  
\[\text{a. To this very day, I have been hoping for Kim to be proven innocent.} \]
\[\text{b. #I have been hoping for Kim to this very day to be proven innocent.} \]

(51)  
\[\text{a. In spite of myself, I have been hoping for Kim to get the job.} \]
\[\text{b. #I have been hoping for Kim in spite of myself to get the job.} \]

Yet the adverbs illustrated here seem perfectly acceptable with matrix interpretation in examples like the following:

(52)  
\[\text{a. I believe George Washington to this very day to have been a great statesman.} \]
\[\text{b. I believed Kim in spite of myself to be the most qualified candidate.} \]

And, predictably, such adverbs (with matrix modification) are also to be found after the primary objects of verbs of considering:

(53)  
\[\text{a. I consider George Washington to this very day to have been a great statesman.} \]
\[\text{b. I regard Kim in spite of myself as the most qualified candidate.} \]
\[\text{c. I count George Washington to this very day as one of the nation’s greatest statesmen.} \]

Thus, on the basis of these adverbials one can in fact resurrect Postal’s second argument for the SOR structures,16 structures that have been consistently rejected by Chomsky, Stowell, and most researchers working within the tradition of GB.17

The reason that such structures have been rejected, of course, is that they are inconsistent with the part of GB’s Projection Principle stated in (54):

(54)  
If $\alpha$ subcategorizes the position $\beta$, then $\alpha$ $\theta$-marks $\beta$.

That is, (54) would be contradicted by the assumption of the SOR structures for examples like (55), where the expletive pronouns are presumably assigned no $\theta$-role:

(55)  
\[\text{a. We believe it to be obvious that Sandy will win.} \]
\[\text{b. We believed there to be no alternative.} \]

However, as Postal and Pullum (1988) show in detail, the part of the Projection Principle stated in (54) must be abandoned. In particular, the clausal treatment of phrases like it to be obvious that Sandy will win and there to be no

16. For an analogous argument, based on adverbials, for SOR structures in Icelandic, see Andrews 1982.
17. Williams (1983) is a notable exception.
alternative that is required in order to reconcile the examples in (55) with the Projection Principle is unavailable in a large class of well-known cases where expletives may appear. Among the examples they cite in drawing this conclusion are those in (56):

(56)  
  a. We can prevent there from being a riot on Sunday.
  b. We take it as obvious that Sandy is qualified for the job.
  c. You owe it to yourself, in my opinion, to get an annual checkup.
  d. He never gave it a thought that Bolsheviks are human beings.
  e. I regret it very much that we could not hire Mosconi.
  f. We're going to have to wing it.

Given Postal and Pullum's conclusion, which we accept, that the part of the Projection Principle stated in (54) must be abandoned, it is plain that there is no theoretical obstacle to positing the SOR structures for all the verbs discussed above (i.e. believe, expect, and the verbs of considering). This conclusion, as we have seen, is motivated by other empirical considerations as well.18

These differing hypotheses about the nature of infinitival complements lead in turn to differing hypotheses about the nature of passivization. Under the standard GB assumption that the NP immediately following believe and the like is part of a small clause or a Stowell structure, it follows that passive must involve a movement transformation in order to allow for examples like those in (57):

(57)  
  a. Sandy was believed to be a spy (by almost everyone).
  b. Terry was expected to win the prize (by almost everyone).
  c. Bo was considered a great athlete (by all her coaches).
  d. Dana was regarded as among the leading candidates (by everyone).
  e. Gerry was counted among the leading contenders (by the entire committee).

These should be contrasted with the following examples, where the immediately postverbal NP cannot passivize (contrasts due to Postal (1974; 1977: 152, n. 15)):

(58)  
  a. *The doctor was resent examined by Kim (by our whole family).
  b. *Dana was resent having been chosen (by almost everyone).

What is the explanation for such contrasts in passivizability? In GB, the answer is that passivization (an instance of NP-movement) affects only those NPs that cannot be assigned case. The passive verbal forms in (57) have 'absorbed case,' and hence cannot assign case to the following NP. Movement is thus obligatory, because every NP must be assigned case in accordance with the case filter. But in (58), the postverbal NP is assigned case by the inflection of the gerund, and hence cannot be fronted by passivization, because case must be assigned uniquely. We will return to the matter of the case filter, on which this entire analysis hinges, in the next section.

By contrast, the HPSG account of these contrasts turns on the assumption that an immediately postverbal NP may passivize only if it is a primary object of the verb. Passive is an operation on grammatical relations, one that 'de-motes' subject arguments (universally, including impersonal passivization in many languages) and, in many instances, additionally 'promotes' more oblique syntactic dependents (e.g. primary objects in English, or perhaps primary and secondary objects in other languages) to subject status. This relational characterization of passivization represents a significant point of agreement among researchers working in diverse theoretical frameworks.19 The relational character of passive also explains the contrasts just noted: only in (57) is there a primary object to be passivized.

We note in passing that the arguments denying the relational nature of passive offered by Chomsky (1981) have no force in the present context. In discussing the examples in (59), for example, Chomsky (1981: 123) asserts that 'there is no independent sense of 'object' in which such examples ... are instances of change of grammatical relation from object to subject'.

18. Note that contrasts like (i)-(ii), due originally to Mark Baltin, have sometimes been taken as evidence against assigning object raising sentences the same structures as object equi sentences:

(i)  
  *John believes me himself to be aggressive.

(ii) John persuaded himself to be aggressive.

But, in fact, such contrasts involving the positioning of emphatic reflexives seem to provide no evidence for the constituency of me to be aggressive because of contrasts like (iii)-(iv):

(iii) John prevented himself from causing a riot.

(iv) *John prevented there himself from being a riot.

(iii) and (iv), as Postal and Pullum argue, cannot be treated in terms of a small clause structure, yet only (iii) allows the emphatic reflexive after the object NP. The conclusion we draw from these data (though we present no precise analysis here) is that emphatic reflexives may appear after an object NP only if the latter is assigned a semantic role. Assuming that the object of prevent is optionally assigned such a role (an assumption that is motivated on purely semantic grounds), this generalization extends to all of (i)-(iv) under the assumption that none of these examples involves a small clause structure.

19. For example, relational grammar (Perlmutter and Postal 1977, 1983), arc pair grammar (Johnson and Postal 1980; Postal 1986), lexical functional grammar (Bresnan ed. 1982; Bresnan 1982), generalized phrase structure grammar (Gazdar 1982; Gazdar et al. 1985), and categorial grammar (Dowty 1982a, 1982b), to name but a few.
Finally, Chomsky’s charge of ‘redundancy’ is based on his claim that ‘independent principles of much broader scope determine both when movement is necessary and that the new grammatical function assigned is that of subject.’ This claim, however, appeals to various principles that we regard as untenable, for example, the Projection Principle (see above) and the Case Filter (see section 3.4). In addition, some of the other ‘principles’ Chomsky is referring to are quite arcane in nature, for example, principles governing ‘function chains’; others, for example, the stipulation that passive morphology is ‘case-absorbing,’ have no independent motivation outside of the technical apparatus of GB theory.

In sum, the arguments against the relational formulation of passive are tied to a number of assumptions that are internal to GB and the utilization of movement rules rather than lexical rules. In the theory we develop here, these arguments have little, if any, force. In light of the successful analyses of passivization in numerous languages attained by researchers working within such frameworks as relational grammar, arc-pair grammar, (early) lexical-functional grammar, and categorial grammar, we would prefer to regard the relational analysis of passive as one of the established results of modern syntactic theory—a result that is inconsistent with assumptions standard in transformational syntax from Chomsky 1973 to the present day.

Our own account of passive, sketched in P&S-87, is stated in terms of a lexical rule that permutes the SUBCAT list of active transitive verb forms. Thus the SUBCAT lists for active forms of verbs of considering and other verbs that occur in the SOR structures, sketched in (60), are mapped into the corresponding SUBCAT lists in (61):

\[
(60) \quad \begin{align*}
    a. \text{SUBCAT} \{NP, NP, XP[+PRD]\} \quad &\text{(consider, rate)} \\
    b. \text{SUBCAT} \{NP, NP, PP[as]\} \quad &\text{(regard, rate, count)} \\
    c. \text{SUBCAT} \{NP, NP, PP[+PRD]\} \quad &\text{(count)} \\
    d. \text{SUBCAT} \{NP, NP, V[inf]\} \quad &\text{(believe, expect)}
\end{align*}
\]

\[
(61) \quad \begin{align*}
    a. \text{SUBCAT} \{NP, XP[+PRD], PP[by]\} \quad &\text{(considered, rated)} \\
    b. \text{SUBCAT} \{NP, PP[as], PP[by]\} \quad &\text{(regarded, rated, counted)} \\
    c. \text{SUBCAT} \{NP, PP[+PRD], PP[by]\} \quad &\text{(counted)} \\
    d. \text{SUBCAT} \{NP, V[inf], PP[by]\} \quad &\text{(believed, expected)}
\end{align*}
\]

And in virtue of Rule Schema 2, discussed in Chapter 1, these lexical entries give rise to passive phrases like (62):

\[
(62) \quad \text{考虑, 认为 (consider, rate)}
\]

It should be noted that, although we explicitly abandon, for the reasons summarized above, GB's Projection Principle, HPSG theory nonetheless embodies a strong theory of the nature of syntactic and semantic structures and the relation between the two. As explained in Chapter 1, the CONTENT values employed in HPSG are parametrized states of affairs (psoas), which are correlations of relations, roles, and polarities. Relations differ as to which roles they permit, and roles differ as to what type of objects they take as value. The nature of these objects is motivated on purely semantic grounds.

Our syntactic structures are the restricted subset of constituent structures given by the various universal schemata sketched in Chapter 1. These are subject to a certain degree of language-particular parametric variation. In contrast to the relatively 'flat' architecture of psoas (modulo embedding of psoas), these constituent structures may exhibit a certain hierarchical nature, for example, in the combination of subject and VP in English permitted as an instance of Schema 1. The arguments for such structures, at odds with aspects of semantic structures that can be semantically motivated, are too familiar to warrant repeating here, but are one of the important ways in which semantic and syntactic structures diverge.

The relation between syntactic and semantic structures is constrained in two fundamental ways: by the nature and structure of lexical signs and by universal and language-particular constraints. Thus in HPSG, as in virtually all approaches to syntax that are equally concerned with semantic analysis, the question of the relation between form and content is not a matter to be legislated in advance of empirical investigation (as is done, in essence, by simply asserting (Chomsky 1981: 29) that the Projection Principle will be taken 'as a guiding principle for the theory to be developed'). The precise nature of the syntax-semantics interface is an important empirical issue, one that is the topic of intense ongoing inquiry.

Lexical items have various kinds of semantic objects as their content, often critically linked to aspects of the context of utterance. For example, a verb has a psoa as its content and specifies the relation of that psoa as well as certain roles that are to be specified. The various dependents that a lexical item subcategorizes for may be semantically associated with other aspects of that lexical item's content. One important instance of such an association is role assignment, which is simply a lexically specified identification of all or part of the content of a syntactic dependent with the value of some role in the head's content. Not all dependents are assigned a role, however, and not all roles are linked to a dependent. Our theory thus countenances both unassigned syntactic arguments and 'implicit' arguments, hence explicitly denying in its totality Chomsky's $\theta$-Criterion.\footnote{22}

The various principles of universal grammar that we have put forth, for example, the Subcategorization Principle, the Head Feature Principle, and the Semantics Principle, interact with the token-identities specified within lexical signs to 'project' many of the syntactic and semantic properties of a phrase from those of the phrase's lexical head. Form and content are thus mutually constraining in HPSG, rather than isomorphic, as entailed by the Projection Principle.

The specific nature of the relation between form and content that emerges from HPSG theory will become apparent as we consider in more detail the analysis of various complement constructions.

3.4 Unsaturated Complements

In the previous section, we presented evidence for rejecting the CP and IP analyses (and the alternative proposed by Stowell) of infinitival and other predicative complements. This evidence, as noted, leads to the conclusion that many verbs and adjectives in English subcategorize for a complement that is itself unsaturated, that is, a complement that is specified as [SUBCAT(NP)], rather than [SUBCAT ( )]. Following the treatment sketched in P&S-87, we analyze not only VP complements as unsaturated, but also [+PRD] complements, such as among the acceptable candidates (PP[+PRD]), quite acceptable (AF[+PRD]), and an acceptable candidate (NP[+PRD]). We posit no phonetically unrealized PRO as a constituent in syntactic representations, though, as will become apparent, the NP within the SUBCAT value of unsaturated complements performs many similar functions.

22. There are of course canonical relations between syntactic and semantic argument structure. Oblique prepositional phrases that are syntactically selected are associated with a restricted set of semantic roles, as are primary and secondary objects in most, if not all, languages. Such canonical associations, which doubtless play a key role in the language acquisition process, may be cast as general principles constraining the nature of a particular language's lexicon, or of lexicons quite generally. Thus abandoning the Projection Principle as formulated in GB in no way entails abandoning the search for strong constraints on the relation between form and content. It simply moves the search into the lexicon, where generalizations about the relation between syntactic and semantic argument structure can be expressed. For some specific proposals concerning the structure of the lexicon, see P&S-87, Chapter 8.
Before proceeding, it is perhaps worthwhile to consider various possible objections to the VP complement analysis that we adopt (following, inter alia, Brame (1976) and Bresnan (1978)). Such objections have been raised by Koster and May and by Chomsky. Koster and May (1982) argue on the basis of examples like those in (63) that a grammar for English that allowed VP complements, as well as $S$ complements, would need to posit redundant phrase structure rules:

(63)  Sandy preferred [(for Lee) to leave].
      We have plans [(for Dana) to leave].
      It is possible [(for Leslie) to leave].
      [(For him) to prove the continuum hypothesis] would have been Gödel's greatest achievement.

The rules they consider as necessary under the VP complement analysis are those sketched in (64):

(64)  $VP \rightarrow V \{S, VP\}$
      $NP \rightarrow N \{S, VP\}$
      $AP \rightarrow A \{S, VP\}$
      $NP \rightarrow NP \{S, VP\}$

The redundancy they allege to be unavoidable clearly turns on the assumption that the class $\{S, VP\}$ is not a natural class, and hence must be specified disjunctively, as in (64).

Chomsky (1981: 25ff.) reasons similarly, rejecting the ‘considerably clum-
sier system of rules’ in (65), and with it any analysis of English that fails to acknowledge the clausal character of superficially subjectless infinitival phrases, that is, any analysis that fails to recognize $PRO$ subjects, as assumed within GB:

(65)  i. $VP \rightarrow CO \text{OMP } VP_1$
      ii. $S \rightarrow CO \text{OMP } S$
      iii. $S \rightarrow NP \text{ VP}_1 \text{ when CO \text{OMP } = for;}$
      $S \rightarrow NP \text{ VP}_2 \text{ otherwise}$
      iv. $VP_1$ is $to-VP$ and $VP_2$ is Tense-$VP$

These arguments, however, fall short of invalidating the VP complement analysis of subjectless infinitivals: from the fact that some $PRO$-less phrase structure analyses fail to express certain generalizations, it does not follow that all $PRO$-less phrase structure analyses fail to express those generalizations. The theory of complementation we develop here suffers from none of the inadequacies alleged by Chomsky and by Koster and May.

Our universal theory of immediate dominance schemata, summarized in Chapter 1, makes available $head$-marker structures like the following:

```
         X
        /
MARKER-DTR  HEAD-DTR
```

(66)

The mother and the $MARKER-DTR$ in such structures, licensed by Schema 4, share a specification for the attribute MARKING, while the $HEAD-DTR$ is specified as $[MARKING \text{ unmarked}]$. The $MARKING$ values $that$ and $for$ are two subsets of the sort $\text{comp}$; hence we will use the abbreviations $S(\text{comp})$ and $S(\text{unmarked})$ to distinguish clauses with $[MARKING \text{ marked}]$ from those specified as $[MARKING \text{ unmarked}]$. The $MARKER-DTR$, it will be recalled, also specifies a $SPEC$ value that must be token-identical with the SYN$E$ME value of the $HEAD-DTR$. The complementizer $for$, for example, is a marker specified as $[HEAD$ $|$ $SPEC$ $S[\text{inf}]])$, and the complementizer $that$ as $[HEAD$ $|$ $SPEC$ $S[\text{inf}$ $\lor$ $\text{base}]]$.

If, as in P&S-87, we follow Pullum (1982) and Gazdar et al. (1985) in treating the infinitive marker $to$ as a defective auxiliary verb whose head features include the specification $[\text{VFORM inf}]$, then there are three kinds of infinitival ($[\text{VFORM inf}]$) phrases in English, as shown in (67):

(67)  a. for Kim to resign ($S[\text{inf comp}]$)
      b. Kim to resign ($S[\text{inf unmarked}]$)
      c. to resign ($V[\text{inf}]$)

The question then is: Why are (67a, c), but not (67b), possible in the contexts Koster and May discuss? Are (67a, c) a syntactic natural class?

The answer to this question is to be found by considering a broader range of data. It is commonly observed that in numerous syntactic environments a clause must appear with a complementizer. This set of environments includes at least sentence fragments, subject position, and the focus position in various copular constructions:

(68)  What did they prefer?
      - For Kim to be reassigned
      -* Kim to be reassigned
      - That Kim be reassigned
      -* Kim be reassigned

(69)  What did they believe?
      - That they will be reassigned
      -* They will be reassigned

23. This is due to the $SPEC$ value of English complementizers (see Chapter 1, (37)). In other languages, a $SPEC$ daughter may select for a specific $MARKING$ value on the $HEAD-DTR$. 
rules or otherwise unmotivated complications of existing devices. In virtue of the independently motivated, universal schema for head-marker constructions, this complementizer will occur in structures like (76):

(76)  

\[ \text{MARKER} \quad \text{VP(comp, inf)} \]

\[ e \quad \text{to be reassigned} \]

The analysis just sketched effectively answers the objections raised by Koster and May and by Chomsky. The disjunctive category specifications in the rules Koster and May propose are replaced by the specification [inf, comp], a partial category specification that can be realized in exactly two ways: as a for-to clause or as an infinitival VP.

In addition, it is plain that the 'considerably clumsier' system of rules Chomsky considers (see (65)) has been replaced by an elegant and streamlined system under our proposal. His rules (i) and (ii) are two instances of the head-marker schema, corresponding to two different lexical SUBCAT specifications. The two rules he gives in (65iii) are both instances of Schema 1, which allows a single complement as sister to a phrasal head. Chomsky's stipulations (when COMP = for and otherwise in (65)) are eliminated entirely. Finite verb forms never co-occur with the complementizer for because finiteness (encoded as the head feature specification [VFORM, fin]) is projected onto the clause from the finite verb, in accordance with the Head Feature Principle, and the complementizer for selects clauses specified as [VFORM inf], as illustrated in (77):

(77)  

\[ \begin{align*}
\text{MARKER} & : \text{VP(comp)} \\
& \quad \text{[SPEC [inf]]} \\
\text{NP} & \quad \text{[unmarked, fin]} \\
& \quad \text{(HFP)} \\
\text{VP(fin)} & \quad \text{(HFP)} \\
\end{align*} \]

\[ \text{for} \]

\[ \text{(incompatible information)} \]

Hence the constraints that Chomsky assumes must be stipulated as actually derived through the interaction of lexical selection, universal rule schemata, and principles of the HPSG theory of universal grammar (e.g. the Head Feature Principle).
Compare this with the GB account of these same facts. In GB, it is assumed that PRO may never be governed and that all overt NPs must be assigned case, or else violations of the Case Filter are occasioned. Such case assignment is assumed, following Stowell (1981), to be subject to an adjacency condition. That is, it is assumed that every overt NP in a well-formed syntactic structure is adjacent to some lexical item that both governs and assigns case to that NP.

The Case Filter (Chomsky 1981; Stowell 1983) is often assumed to be responsible for the deviance of many of the complementizerless examples considered above, for example, those in (78):

(78)  
\[ a. \text{ *It was [Kim to be reassigned].} \\
    b. \text{ *What they preferred was [Kim to be reassigned].} \\
    c. \text{ *What they considered was [Sandy a fool].} \]

In these examples, the italicized NP, properly contained within the clefted clause (or Stowell structure), is not governed by the copula. Hence the examples are ill-formed because these NPs must be assigned case, yet there is no governing case-assigner available. The analogs of (78a, b) where the small clause is replaced by a for-to clause are grammatical, on this account, because the complementizer for assigns case to the relevant NP.

Exceptional case assignment may take place in structurally similar examples involving verbs like believe and expect in examples like (79), because it is stipulated either that these verbs trigger 'S-deletion' or else that their complements are disjunctively specified as either CP or IP. Under either analysis, it becomes possible for the verb to govern, and hence assign case to, the adjacent NP, even though it is properly contained within the clause that these verbs sub-categorize:

(79)  
\[ a. \text{ Sandy believes [Kim to be unpopular].} \\
    b. \text{ We expect [Dana to leave].} \]

The same is assumed to be true under the small clause analysis of verbs of considering:

(80)  
\[ a. \text{ Sandy considers [Kim unpopular].} \\
    b. \text{ Sandy regards [Kim as unpopular].} \]

Note that this GB account fails to relate the impossibility of clefted and pseudoclefted small clauses (e.g. (78a-c)) to the impossibility of clefted and pseudoclefted that-less finite clauses like the ones in (81):

(81)  
\[ a. \text{ *It was [Kim was reassigned].} \\
    b. \text{ *What they preferred was [Kim is reassigned].} \\
    c. \text{ *What they considered was [Kim was a fool].} \]

This is because tense is assumed to be a governor that assigns case to the subject of finite clauses (with or without the complementizer that).

However, quite apart from this argumentum ad generalisationem omissam, there are serious problems facing this appeal to the Case Filter. First, it is well-known that in many languages case assignment obeys no adjacency condition whatsoever. Relatively well-known facts of Icelandic, for example, demonstrate that verbs may assign marked case values to their subjects. In each of the following examples (from Andrews 1982; see also Thráinsson 1979) the indicated case of the subject is the only possible choice:

(82)  
\[
\text{ Mig langar að fara til Íslands. } \\
\text{ me.ACC longs to go to.LOC Iceland } \\
\text{ 'I long to go to Iceland.' } \\
\]

(83)  
\[
\text{ Honum mæltist vel f kirkjúinni. } \\
\text{ He.DAT spoke well in the church } \\
\text{ 'He spoke well in church.' } \\
\]

(84)  
\[
\text{ Verkanna getir ekki. } \\
\text{ the-pains:GEN is noticeable not } \\
\text{ 'The pains are not noticeable' } \\
\]

These contrast with the default subject case, namely, nominative, that must appear in examples like (85):

(85)  
\[
\text{ Dregurinn kyssti stúlkuna f blínum } \\
\text{ the-boy:NOM kissed the-girl:ACC in the-car:DAT } \\
\text{ 'The boy kissed the girl in the car.' } \\
\]

Icelandic word order exhibits more flexibility than English, however. Subjects are always case-marked in the way illustrated in (85), but they may sometimes be separated from their assigning verb by adverbs or other types of phrases, as in the following example from Maling 1980:

(86)  
\[
\text{ Thegar mer allt i einu datt i hug að... } \\
\text{ when me.DAT all at once fell in mind that... } \\
\text{ 'when it suddenly occurred to me that...'} \\
\]

Facts such as these call into question the idea that case assignment is based on the notion of adjacency. At the very least, these data require appeal to
otherwise unmotivated representations where the relevant notion of adjacency is assumed to hold prior to scrambling operations that are classified as part of the mapping from S-structure to phonetic forms.\footnote{Note in addition that the very existence of quirky case subjects in Icelandic causes otherwise unmotivated complications in the formulation of GB's case theory, which includes the claim that nominative case in finite clauses is assigned by INFL, rather than by the verb.}

A second argument of this same form can be based on languages where verbs assign case to more than one nonsubject dependent. We mention only in passing double object constructions in English, which are potentially counterexamples of this type (as recognized by Chomsky (1981: 94)). Such examples abound, however, in other Indo-European languages. In Sanskrit, for example, there is a class of verbs that allow accusative-marked objects and ablative-marked dependents as well as a subject. But among this class of verbs, there are some that also allow two accusative-marked objects (with the same interpretation). Examples of this kind must surely be treated in terms of case assignment, yet only one of the two accusative-marked objects can reasonably be analyzed as adjacent to the verb, even granting the questionable assumption of fixed-order S-structures for Sanskrit. Such widely known and well-documented examples from diverse languages can be multiplied at will.

A third objection to analyses that appeal to the Case Filter and case marking under adjacency is raised by the fact that there are numerous environments where NPs occur without any adjacent lexical item to function as their case assigner. Without appeal to ancillary principles, the Case Filter predicts that all of the following well-formed NPs should be ungrammatical:

\[(87)\]

\[a.\] NP fragments:
- Who left?—Pat.
- Ouch. My leg!
- Ms. Gilbert! Your briefcase.
\[b.\] Vocatives:
- Professor Harris!
- Dana!
\[c.\] Nonfinite main clause constructions:
- Me worry?
- George Bush in the White House?
\[d.\] Imperatives:
- You get yourself a new whipping boy!
- Nobody move!
\[e.\] Absolutives:
- His army in retreat, the general had no choice but to surrender.
- Her castle a ruin, she was forced to take refuge at the Hilton.

In none of these environments is there a tense element or an adjacent lexical governor to assign case.

Chomsky (1981) recognizes one of these problems ((87f)) and suggests that genitive case is assigned by a special rule that is not contingent on government by a lexical head (see Stowell (1983: 293) for a more precise formulation). And, as noted earlier, a similar assumption must be made for the accusative case assignment in (87g). But following this approach, six further ad hoc case assignment rules will be necessary to account for the data in (87), which must certainly do not exhaust the domain of counterexamples to the Case Filter.\footnote{Further arguments against the view that case must be assigned under adjacency are provided by Postal and Pullum (1988: 644). For additional critical discussion of GB's case theory, see Hudson (1992).} In our view, facts such as these suggest that the generalization embodied in the Case Filter is incorrect. There is no requirement that NPs be assigned case by an adjacent, governing lexical head.

Note finally that even if various devices were introduced to assign case in (87a-h), it is still left unexplained why cLEFTS and pseudocLEFTS do not also allow this device to assign case in the examples in (78). The potential for explanation in terms of case theory seems very low indeed. In fact, the potential for explanation seems nonexistent, for true Stowell structures, for example, those that occur as the complement of verbs like fear, can appear in focus position of both pseudocLEFTS and i-CLEFTS, as noted earlier ((89) = (30) above):

\[(88)\]

\[a.\] We feared [Noriega in power].
\[b.\] What we feared most was [Noriega in power].
\[c.\] [Noriega in power] was what we feared most.
\[d.\] It was [Noriega in power] that we feared most.

\[(89)\]

\[a.\] What we feared most was [Leslie in complete control of the situation].
\[b.\] It was [Leslie in complete control of the situation] that we feared most.
Complement Structures

And the examples in (89) provide crucial minimal contrasts with those in (90) (= (29) above), which are systematically ill-formed:

(90)  a. *What we considered was [Leslie in complete control of the situation].

b. *It was [Leslie in complete control of the situation] that we considered.

Thus it cannot even be stipulated that cleft constructions fail to assign case, for examples like (89a, b), which involve true Stowell structures (PPs with subject, let us assume), are completely well-formed. Under standard GB assumptions, there is nothing in the syntactic context of (89) and (90) that can be appealed to in order to explain why case assignment is possible in the former case, but not in the latter.

In our view, the best explanation for the contrast between these clefts and the impossibility of similar examples involving verbs of considering has nothing to do with case assignment. The contrasts follow directly from the hypothesis, motivated in the previous section, that verbs of considering take SOR (NP+XP) complement sequences, rather than small clauses or Stowell structures. This proposal has the further pleasant consequences that (1) the constraints on complementizerless clauses (both finite and infinitival) are given a unified account (as they are not, under the Case Filter analysis) in terms of the specification [MARKING comp]; (2) no appeal whatsoever is made to the Case Filter, which, as we have seen, makes numerous incorrect predictions (or else, if arbitrary case assignment rules are permitted, makes no empirical predictions whatsoever); and (3), in virtue of (2), the Case Filter can be eliminated entirely from the theory of grammar, allowing the theory of case to be formulated in terms of lexically specified syntactic argument structure (SUBCAT lists). This in turn has the consequence that subjects may be assigned case lexically (which, as we have seen, is the simplest analysis available for Icelandic (and many other languages)) and that interclausal case assignment is ruled out in principle—a highly desirable strengthening of the theory of grammar.

3.5 Equi and Raising

We now turn to the lexical treatment of controlled complements. As we have seen, unsaturated complements are of diverse syntactic types. However, verbs must be classified not only with respect to the syntactic category of the unsaturated complement they take, but also with respect to the standard distinction between equi and raising verbs, as illustrated in (91): 32

32. The terms ‘equi’ and ‘raising’ derive from the names of the rules posited for the analysis of the two constructions within one highly influential version of transformational grammar (see, e.g., Soames and Perlmutter 1979). The transformation of ‘Sub-

(91) Equi verbs and adjectives:

<table>
<thead>
<tr>
<th>VP(ing) complements</th>
<th>try, hope, eager, persuade, promise</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP(ger) complements</td>
<td>consider, try</td>
</tr>
<tr>
<td>[try to leave, persuade Sandy to leave]</td>
<td></td>
</tr>
<tr>
<td>AP [PRD] complements</td>
<td>feel, look</td>
</tr>
<tr>
<td>[considered dropping the course]</td>
<td></td>
</tr>
<tr>
<td>NP [PRD] complements</td>
<td>make</td>
</tr>
<tr>
<td>[made the boys, good little housekeepers]</td>
<td></td>
</tr>
<tr>
<td>PP [PRD] complements</td>
<td>got, count</td>
</tr>
<tr>
<td>[got under the table, count Kim among our friends]</td>
<td></td>
</tr>
</tbody>
</table>

(92) Raising verbs and adjectives:

<table>
<thead>
<tr>
<th>VP(ing) complements</th>
<th>appear, seem, likely, believe, expect</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP(prp) complements</td>
<td>begin, keep, be</td>
</tr>
<tr>
<td>[kept sleeping late]</td>
<td></td>
</tr>
<tr>
<td>AP [PRD] complements</td>
<td>become, seem, be</td>
</tr>
<tr>
<td>[became sick]</td>
<td></td>
</tr>
<tr>
<td>NP [PRD] complements</td>
<td>become, be</td>
</tr>
<tr>
<td>[were good little housekeepers]</td>
<td></td>
</tr>
<tr>
<td>PP [PRD] complements</td>
<td>regard, strike marked by as</td>
</tr>
<tr>
<td>[strikes them as a disaster]</td>
<td></td>
</tr>
<tr>
<td>PP [PRD] complements</td>
<td>be, seem</td>
</tr>
<tr>
<td>[be in trouble]</td>
<td></td>
</tr>
</tbody>
</table>

The reasons for drawing a careful distinction between these two classes of complement-taking expressions are well-established in the literature. First, equi verbs (and adjectives) systematically assign one more semantic role than their raising counterparts. This is illustrated by the difference in content for the superficially similar examples in (93) and (94): 33

33. Here and throughout, we assume that the semantic content of a VP complement, like that of an S, is a psx; we defend this assumption in section 1 of Chapter 7. We also make various simplifying assumptions here about the nature of the roles that are appropriate for the semantic analysis of control verbs. A more precise proposal, which countenances generalized semantic roles that are appropriate for larger classes of relations, is presented in Chapter 7.
Complement Structures

(93) a. They try to run.
   b. \[
   \begin{array}{l}
   \text{RELATION} \quad \text{try} \\
   \text{TRYER} \quad \text{ref} \\
   \text{PSOA} \\
   \text{SOA-ARG} \\
   \text{RUNNER} \quad \text{ref} \\
   \text{RELATION} \quad \text{run} \\
   \end{array}
   \]

(94) a. They tend to run.
   b. \[
   \begin{array}{l}
   \text{RELATION} \quad \text{tend} \\
   \text{SOA-ARG} \\
   \text{PSOA} \\
   \text{RELATION} \quad \text{run} \\
   \text{RUNNER} \quad \text{ref} \\
   \end{array}
   \]

In short, the referential index associated with the subject of an equi verb (like try) is assigned a role in the psoa that is the verb’s content, but in addition that index is structure-shared with that of the unexpressed subject of the VP complement inside the embedded psoa argument (in this case the psoa corresponding to the circumstance that the tryer is trying to bring about). The subjects of superficially similar subject raising verbs (like tend) are assigned no role in the matrix psoa.

Exactly the same contrast obtains between the objects of object equi verbs like persuade and those of object raising verbs like believe:

(95) a. They persuade him to be happy.
   b. \[
   \begin{array}{l}
   \text{RELATION} \quad \text{persuade} \\
   \text{PERSUADER} \quad \text{ref} \\
   \text{PSOA} \\
   \text{SOA-ARG} \\
   \text{INSTANCED (happy:1)} \\
   \text{RELATION} \quad \text{happy} \\
   \end{array}
   \]

(96) a. They believe him to be happy.
   b. \[
   \begin{array}{l}
   \text{RELATION} \quad \text{believe} \\
   \text{BELIEVER} \quad \text{ref} \\
   \text{PSOA} \\
   \text{SOA-ARG} \\
   \text{INSTANCED (happy:1)} \\
   \text{RELATION} \quad \text{happy} \\
   \end{array}
   \]

This is in fact the essence of the equi/raising distinction: all subcategorized dependents of equi verbs are assigned a semantic role; raising verbs always fail to assign a semantic role to one of the dependents that they subcategorize for.34

34. Correlated with this difference in semantic argument structure is a second difference between equi and raising expressions. Role assignment in the ‘upstairs’ psoa gives rise to existential entailments in equi sentences. Thus (ii) is entailed by (i) (an equi sentence), but (iv) is not entailed by the raising sentence (iii):

(i) Kim persuaded a unicorn to approach.
(ii) There was a unicorn.
(iii) Kim believed a unicorn to be approaching.
(iv) There was a unicorn.

Although this difference in entailment possibilities is often regarded as critical for the semantic analysis of these verbs, it is difficult to know how much significance to attach to the difference in light of the fact that role assignment does not always give rise to existential entailments, as in the well-known examples in (v) and (vi):

(v) They are looking for a unicorn.
(vi) A page is missing from this book.

35. Recall from Chapter 1 that we use NP(3) to abbreviate an NP whose index is 1.
Apart from differing role assignments, there are two other important differences between the equi verbs in (97) and (99) on the one hand, and the raising verbs in (98) and (100) on the other. First, in the signs for equi verbs, the VP complement's unexpressed subject (its SUBCAT member) is coindexed with one of the other syntactic dependents (the subject in (97), the object in (99)). But in the case of raising verbs, the entire SYNSEM value of the subject of the VP complement is structure-shared with (that of) another subcategorized for dependent (the subject in (98), the object in (100)). It follows from this that the SYNSEM value of the raising controller, i.e. the NP standardly considered to have been raised, need not be specified, since that information will be provided by the unexpressed subject of the complement. In addition, the index of the role-assigned subject in (97) is of sort ref (i.e. it is not a dummy), whereas no such restriction appears on the subject of tend in the lexical sign (98). We will discuss each of these differences in turn.

Note first that from the fact that equi controllers are assigned semantic roles, it follows that examples like (101a, b) and (102a, b) will be associated with distinct CONTENT values:

(101)
\begin{align*}
& a. \text{The doctor tried to examine Sandy.} \\
& b. \text{Sandy tried to be examined by the doctor.}
\end{align*}

(102)
\begin{align*}
& a. \text{Kim persuaded the doctor to examine Sandy.} \\
& b. \text{Kim persuaded Sandy to be examined by the doctor.}
\end{align*}

In (101a), the doctor is assigned the role of TRYER; in (101b), this role is assigned to Sandy. And in (102a), the doctor functions as PERSUADER, while in (102b), it is Sandy who is assigned to this role. Analogous examples with raising verbs, however, are assigned the same CONTENT:

(103)
\begin{align*}
& a. \text{Kim believed the doctor to have examined Sandy.} \\
& b. \text{Kim believed Sandy to have been examined by the doctor.}
\end{align*}

This is so because the index of the raising controller in both (103a) and (103b) is assigned no semantic role in the belief situation. Hence, under the assumption that passivization affects CONTENT only insofar as it realigns sub-

36. We follow standard usage in referring to the elements so linked to the unexpressed subjects of unsaturated complements as controllers.
And, as also explained in Chapter 1, the only indices that may bear semantic roles are those of the ref sort. Hence, from the fact that equi controllers are assigned semantic roles, it follows immediately, on essentially semantic grounds, that the indices of equi controllers are referential (i.e. belong to the sort ref), and hence can never be realized as expletives, the only nominals whose indices are not of this sort. Since the referentiality of equi controllers is completely predictable in this way, the ref specifications in the lexical entries given above need not be lexically stipulated.

Raising controllers, on the other hand, are not constrained in this way, as they are assigned no semantic role in the CONTENT of the raising verb. As we will see, it is a consequence of our analysis that raising controllers are expletives just in case the unsaturated complement of the raising verb subcategorizes for an expletive subject and that they will have referential indices (i.e. will be realized as nonexpletives) just in case they are assigned a semantic role within the unsaturated complement.38

There remains one final difference between the lexical signs of raising and equi verbs. As noted above (see (98) and (100)), the SUBCAT list of a raising verb identifies the SYNSEM value of the raising controller with that of the unexpressed subject of the unsaturated complement. In the case of equi verbs, however (see (97) and (99)), only the equi controller's index is identified with that of the unexpressed subject. The analysis of equi in terms of coindexing is well-established, but the issue of how much information is shared between the raising controller and the unsaturated complement's unexpressed subject is more subtle.

In Icelandic, the effects of shared syntactic information in raising constructions are quite robust, as the verbs that assign 'quirky' case to their subject cause these nondefault case values to be inherited by raising controllers, as in examples like the following:

(109) Hana vírðist vanta peninga.
her.ACC seems to lack money
'She seems to lack money.'

38. It is generally assumed within GB that semantic incompatibility guarantees that expletives do not occur in 0-positions, but no explicit account of this incompatibility, to our knowledge, has ever been given.

(110) Barinn vírðist hafa bátanó veikin.
the-child.DAT seems to have recovered from the disease
'The child seems to have recovered from the disease.'

(111) Verkjanna vírðist ekkki geta.
the-pains.GEN seem not to be noticeable
'The pains don't seem to be noticeable.'

(112) Hann telur mig vanta peninga.
he.NOM believes me.ACC to lack money
'He believes that I lack money.'

(113) Hann telur barinn vírðist hafa bátanó veikin.
he believes the-child.DAT to have recovered from the disease
'He believes the child to have recovered from the disease.'

(114) Hann telur verkjanna ekkki geta.
he believes the-pains.GEN not to be noticeable
'He believes the pains to be not noticeable.'

There is ample evidence that the relevant quirky-case NPs in these examples are subjects in (109) -- (111) and primary objects in (112) -- (114), as discussed at length by Andrews (1982), Thróðísén (1979), and Zaenen et al. (1985). These examples thus show, minimally, that raising controllers in Icelandic share CASE values with the unexpressed subjects of unsaturated complements.39

In English, there is somewhat sparser evidence for the sharing of syntactic information in raising constructions. One suggestive piece of evidence, however, is the well-known fact that in English PP objects may be equi controllers, but not raising controllers. That is, there are object equi verbs like appeal, whose infinitive complement's subject is interpreted on the basis of the object of the prepositional phrase, as in (115):

(115) Kim appealed to Sandy to cooperate.

But there are no analogous object raising verbs, that is, no verbs whose PP complement is not assigned a semantic role. We find no verbs otherwise like the raising verb believe that take PP complements whose prepositional object is a raising controller. Thus there are no verbs in English like the hypothetical kekieve in the following examples:

(116) a. Kim kekieved to there to be some misunderstanding about these issues.

b. Lee kekieved from it to bother Kim that they resigned.

39. For a more complete analysis along these lines of quirky-case propagation in Icelandic raising constructions, see Sag et al. 1992.
Under our assumption that raising controllers share SYNSEM values with the unexpressed subjects of unsaturated complements, these facts follow immediately, for verbs in general require nominal, not prepositional, subjects.\footnote{Of course such facts might also follow under the assumption that the information shared in raising constructions is some subset of the SYNSEM information. That is, we have not fully motivated the particular choice of SYNSEM objects cross-linguistically in our analysis (though see the discussion of the Subject Condition in section 5 of Chapter 4). Note further that our theory does not prevent the possibility of SYNSEM sharing in equi constructions. Thus it is not surprising to learn, as Andrews (1982) reports, that some Icelandic speakers allow (optionally) case agreement in equi constructions.}

The structure sharing illustrated above for raising verbs need not be stipulated for individual lexical items—a single generalization may be observed, namely, that unassigned arguments must be raising controllers. This generalization is expressed more precisely as the principle in (117):\footnote{Possible counterexamples to this generalization, e.g. (i)—acceptable to a certain number of speakers—are discussed by Jacobson (1990: 444):}

\begin{equation}
\text{(117) RAISING PRINCIPLE:}
\end{equation}

Let $E$ be a lexical entry whose SUBCAT list $L$ contains an element $X$ not specified as expletive.

Then $X$ is lexically assigned no semantic role in the content of $E$ if and only if $L$ also contains a (nonsubject) $Y$[SUBCAT ($X$)].

The Raising Principle, which should be interpreted as a constraint on lexical entries, ensures that the relevant synsem objects in the lexical entries for tend and believe (as opposed to try and persuade) are exactly as illustrated earlier. It also predicts that unassigned arguments (other than lexically selected expletives) can appear on SUBCAT lists only when an unsaturated phrase is also present.

This last property of the Raising Principle is of particular importance, for it provides an immediate account of a number of observations that Jacobson (1990) uses to motivate a categorial grammar analysis of raising in terms of function composition. In particular, Jacobson (1990: 438ff.) observes that the complement omission phenomenon known as null complement anaphora (Hankamer and Sag 1976; Grimshaw 1977, 1979) applies to the complements of many equi expressions, but never applies to raising complements:\footnote{Under the assumption that null complement anaphora is a lexical process that removes an infinitival complement (inter alia) from the SUBCAT list of verbs or adjectives, the systematic inability of raising complements to undergo that process is an immediate consequence of the Raising Principle: removing the unsaturated complement from a raising verb's SUBCAT list would leave a semantically unassigned SUBCAT element that was not raised.}

\begin{equation}
\text{(118) Pat took out the garbage yesterday and Dana tried/forgot/remembered/refused.}
\end{equation}

\begin{equation}
\text{b. Sandy is eager/willing to go to the movies and I think Chris is also eager/willing.}
\end{equation}

\begin{equation}
\text{(119) They \begin{cases}
\text{persuaded/told asked ordered} \\
\text{but I don't think they've convinced}
\end{cases} \text{Jan to leave,}}
\end{equation}

\begin{equation}
\text{Gerry yet, persuading/told asked ordered}
\end{equation}

\begin{equation}
\text{(120) \begin{cases}
\text{Bo seems happens turns out appears tends} \\
\text{but I don't think that Gerry seems happens turns out appears tends}
\end{cases} to be obnoxious,}
\end{equation}

\begin{equation}
\text{(121) \begin{cases}
\text{They expected/believed imagined reported considered} \\
\text{but I don't think they expected/believed imagined reported considered}
\end{cases} \text{Taylor to be obnoxious,}}
\end{equation}

\begin{equation}
\text{Jean.}
\end{equation}

\begin{equation}
\text{(122) Leslie \begin{cases}
\text{tried attempted} \\
\text{wants}
\end{cases} \text{to win something,}}
\end{equation}

\begin{equation}
\text{it.}
\end{equation}
These contrasts too follow directly from the Raising Principle. Since the raising verbs in (123) assign no semantic role to their subject argument, there must be an unsaturated complement on the same SUBCAT list. But NPs like *something or it are saturated, and hence the SUBCAT list required for examples like those in (123) is systematically excluded.\(^{43}\)

In sum, the Raising Principle is the closest analog to function composition within our framework, and it is capable of explaining the data adduced by Jacobson in favor of the function composition analysis of raising.\(^{44}\) In fact, the claims made by our analysis are somewhat stronger than Jacobson's. Her analysis treats raising in terms of lexically specified function composition with a \(S\) argument, rather than the familiar analysis involving combination with a VP \((S/NP)\) complement via function application. But her system also recognizes 'lexical inheritors,' for example, expressions of category \((S/a)/(A/a)\), that assign no role to their subject, but that combine via function application, rather than function composition. Hence nothing in Jacobson's analysis excludes a verb of this latter kind from undergoing null complement anaphora. Similarly, nothing in her analysis excludes a verb like the raising verbs in (123), that is, a verb that assigns no role to its subject and that combines with an NP or a PP complement via function application, rather than function composition.\(^{45}\) Our own analysis, by contrast, excludes such lexical items on principled grounds.

To complete the picture of the system of infinitival complements in English,

\(^{43}\) Note that verb phrase ellipsis does affect raising verbs, as shown in (i), and hence cannot be collapsed with, or treated in the same lexical fashion as, null complement anaphora:

(i) Sandy will/couldn’t ___

Independent arguments for distinguishing these two phenomena are given by Hankamer and Sag (1976).

\(^{44}\) Jacobson gives a third kind of argument in favor of the function composition analysis. This has to do with the impossibility of extraction of infinitival complements of raising verbs. Although the data here are quite uncertain (as Jacobson notes), it is possible that the contrasts he notes may reduce to the very matter just discussed, i.e. the fact that raising verbs never allow NP complements. To make this point clear, however, would require developing an analysis of topicalized sentences that abandons strong connectivity (i.e. allows an NP gap to be bound by a non-NP filler), an analysis that we suspect may be called for in any case. See Chapter 4, n. 6.

\(^{45}\) Jacobson (1990: 429, n. 10) does note the correlation of feature inheritance and lack of role assignment.

we need only add the lexical sign for the auxiliary element \(to\), which is given in (124):

(124)

\[
\begin{array}{c}
\text{to} \\
\text{HEAD} \\
\text{AUX} \\
\text{SUBCAT} (2), \text{VPI base, SUBCAT (2)) \\
\text{CONTENT} 1
\end{array}
\]

Note that \(to\), like other auxiliaries in English, is in fact a raising verb; that is, it obeys the Raising Principle in (117).

An infinitival phrase like \(to\) run is assigned the structure shown in (125):

(125)

\[
\begin{array}{c}
\text{VPI (NP),:3} \\
\text{} \\
\text{VPI (base, SUBCAT (2)):3} \\
\text{} \\
\text{to run}
\end{array}
\]

And the CONTENT of this phrase, tagged as \([3]\) in (125), is the psoa shown in (126):

(126)

\[
\begin{array}{c}
\text{RELATION run} \\
psoa \cdot \\
\text{RUNNER [1]}
\end{array}
\]

This phrase may appear as the complement of a raising verb, such as tend, in which case the structure in (127) will have the content shown in (128):

(127)

\[
\begin{array}{c}
\text{VPI (NP),:3} \\
\text{} \\
\text{tends} \\
\text{} \\
\text{to run}
\end{array}
\]

(128)

\[
\begin{array}{c}
\text{RELATION tend} \\
\text{psoa} \\
\text{SOA-ARG} \\
\text{psoa} \\
\text{RELATION run, RUNNER [1] [3rd, sing]}
\end{array}
\]

Alternatively, if the infinitival phrase appears as the complement of an equi verb like try, the structure will be as in (129), with the CONTENT value as shown in (130):

(129)

\[
\begin{array}{c}
\text{VPI (NP),:3} \\
\text{} \\
\text{tends} \\
\text{} \\
\text{to run}
\end{array}
\]

(130)

\[
\begin{array}{c}
\text{RELATION tend} \\
\text{psoa} \\
\text{SOA-ARG} \\
\text{psoa} \\
\text{RELATION run, RUNNER [1] [3rd, sing]}
\end{array}
\]
have seen, may sometimes be expletives, it follows that the unsaturated complements of raising verbs cannot be VP[comp].

The matter is less clear in the case of equi verbs, however, since the equi controller’s index and that of the unexpressed subject are always of the ref sort, as we have seen. Many equi expressions allow both for-to clauses and infinitival VP complements (as noted by Koster and May). Hence it may be preferable to formulate their lexical entries in terms of the natural class [inf, comp]. On the other hand, the number of equi verbs that allow only VP complements is quite large, and for these there would be no motivation for positing VP[comp] complements. We will not resolve these issues here, turning instead to a more detailed examination of how the analysis of raising and equi constructions just sketched interacts with other aspects of the grammar of the expletive pronouns it and there.

3.6 Expletive Pronoun Constructions

The expletive pronouns it and there have an extremely restricted distribution, which follows on semantic grounds. Thus whenever a semantic role is assigned to the index of an NP dependent, that index must be of the ref sort. Role-assigned dependents can thus never be expletives:46

(135)  
  a. *There died.
  b. *We like there very much.
  c. *You sent a book to there.

(136)  
  a. *It died.
  b. *We talked to it.

The expletive pronoun there typically occurs as the subject of the copula,47 when an additional postcopular indefinite NP also occurs, as illustrated in (137):

(137)  
  a. There were five students protesting the decision.
  b. There is a Santa Claus.

And expletive it occurs in a number of environments, especially as the subject of ‘weather’ verbs, temporal expressions, or verbs and adjectives that also combine with ‘extraposed’ clauses:

46. Of course the homophonous locative pronoun there may occur in numerous syntactic environments where its spatial interpretation is semantically compatible. And the expletive pronoun it, homophonous with the other expletive pronoun, may also occur in many syntactic environments such as these.

47. However, see Aissen 1975 and McCawley n.d. for a more thorough investigation of the verbs that admit there subjects.
(138)  a. It rained last night.
    b. It is five o'clock.
    c. It bothers me that Sandy snores.

However, as shown by Postal and Pullum (1988), there exists a large class of expressions where expletive it occurs in primary object and even prepositional object position, as illustrated in (139):

(139)  a. I'm going to wing it tonight.
    b. Make it snappy!
    c. You should take it easy.
    d. They were really going at it.
    e. The president seems completely out of it.

And, following a tradition dating back at least to Jespersen (1937: 63), we take it as established (again, see Postal and Pullum 1988) that expletive it may also occur as an object in construction with an extraposed clause:

(140)  a. Take it that you will pay.
    b. He never gave it a thought that Bolsheis are human beings.
    c. I regret it very much that we could not hire Mosconi.
    d. Don't spread it around that I'm giving you this assignment.
    e. You may depend upon it that their paper will expose crooked politicians. (Emonds 1976: 76)

Examples like these constitute part of the evidence presented by Postal and Pullum against the Projection Principle, and hence part of the motivation for allowing verbs to subcategorize for elements that are assigned no semantic role, as noted above. 48

Our analysis of expletives makes use of the following two lexical signs: 49

48. Readers who are in doubt about the expletive status of it in any of the examples cited here should consult Postal and Pullum 1988, which presents a variety of arguments to this effect, based in part on a set of descriptive diagnostics for expletivehood, namely:

1. Expletive NPs do not support emphatic reflexives:
   *It is itself illegal for him to smoke.
2. Expletive NPs do not coordinate:
   *It and there were was respectively proved to be raining and claimed to be floods in the valley.
3. Expletive NPs do not appear in nominalization of-phrases:
   *my observation/description of it falling/raining.
4. Expletive NPs do not appear as tough movement subjects:
   *It was tough to prevent from becoming obvious that things were out of control.

49. The analysis sketched here has an obvious intellectual debt to pay to earlier work by Klein and Sag (see Sag and Klein 1982; and Klein and Sag 1985) and to Bresnan (1982).
the state of affairs of ‘no one being absent’), can combine with nothing other than an expletive there subject, to give the sentence:

(145) There is no one absent.

The lexical treatment of expletive there constructions just sketched posits no ad hoc devices or principles (other than number agreement in there constructions, which must be treated in a parochial fashion in all accounts we are aware of), but leaves certain matters unresolved, for example, the optionality of the XP[+PRD] complement, which entails only a minor modification of the lexical sign we have given.

We take it as established, however, that no modification should be introduced to take into account the so-called definiteness restriction on the object of be, illustrated in (146):

(146) a. *There was every man in the park.
   b. *There is Sandy absent.

Following Milsark (1977), Barwise and Cooper (1981), and Keenan (1987), we assume that some semantic constraint is responsible for whatever deixis inheres in examples such as these, many of which are contextualizable in simple cases:

(147) a. There was every reason to believe him.
   b. There’s Sandy. (in response to: Who is available for this job?)

Our analysis provides a treatment of the basic facts of agreement in the there construction, that is, of the contrasts in (148):

(148) a. There is/are no one absent.
   b. There are/is no students absent.

These agreements are predicted because of the lexically specified structure sharing of the NUM value of the there subject and that of the postcoup NP (as shown in (143)). It is a general property of all is-forms in English that they take subjects whose indices are specified as [PER 3rd] and [NUM sing], and analogously for other finite forms of the copula. Since the value of the there subject’s NUM is structure-shared with that of the postcoup NP complement, the observed agreement follows. Note that only agreement of number (not of person) is involved here—the index of the there subject in (149a) must always be third-person, whatever the person of the postcoup NP, as the deviance of (149b, c) shows:

(149) a. I never heard them at all till there was you slept.
   b. *I never heard them at all till there were you slept.
   c. *Everyone else has left and now there am only I/me.

The analysis of expletive it constructions is quite like the treatment of there constructions just sketched. Certain lexical items subcategorize for a subject whose index is of the it sort and hence may never combine with referential subjects or expletive there. Meteorological expressions, for example rain and snow, fall in this category, as do temporal expressions like late or five o’clock. In the latter case, the selection for an expletive subject is transmitted through the copula, which, in its basic lexical entry, is a special class of subject raising verb. Thus once the predicative adjective late is lexically specified as allowing an expletive it subject, this will be inherited by VPs headed by forms of be, hence allowing for sentences like

(150) It is late.

Of particular interest are the verbs and adjectives that combine with an extraposed clause and an expletive it subject, as illustrated in (151):

(151) a. It bothers Kim that Sandy snores.
   b. It is obvious that Sandy snores.
   c. It seems (to me) that Sandy snores.

The relevant lexical entries for such verbs are as illustrated in (152):

(152) \[
\text{bother} \\
\text{CAT} \mid \text{SUBCAT} \left(\text{NP}_p, \text{NP}_3\right), \text{S}[\text{comp}; 3] \\
\text{CONTENT} \mid \text{RELATION} \\
\text{bothered} \mid 2 \\
\text{SOA-ARG} \mid 3
\]

51. This contrast was first pointed out to us by Tom Wasow. As Georgia Green and Dale Russell (personal communications, 1992) point out, examples like (i) should be grammatical according to our analysis:

(i) . . . until there were you, y’all

Considerations of definiteness aside, we believe this is a correct prediction. We do not explore here the modifications of our analysis necessary to analyze those varieties of English where (ii) or (iii) are acceptable:

(ii) There’s flies in my soup.
(iii) There is flies in my soup.
Lexical entries like this give rise to finite and other inflected forms in virtue of lexical rules. The third-singular finite form of (152) allows for VPs like (153), again in virtue of Schema 2:

(153)  
\[
P(f \text{-fin, SUBCAT \langle NP, \rangle})
\]

\[
\begin{array}{c}
V \\
NP \\
b\text{bothers} \\
Kim \\
S(fin, \text{comp}) \\
\text{that Sandy snores}
\end{array}
\]

And VPs like these can combine only with an expletive it subject, as required. As in the case of there-taking VPs, the CONTENT of the S is determined entirely by elements of the VP; the subject expletive being required only by the nature of lexical specifications and general principles of grammatical theory.

Lexical entries like the one just illustrated are related by lexical rule to ‘basic’ lexical entries like (154):

(154)  
\[
\begin{array}{c}
\text{} \\
\text{bother} \\
\text{CAT \textsc{subcat}} \langle S(\text{comp}):NP;2 \rangle \\
\text{CONTENT \textsc{relation} \text{bother}} \\
\text{\text{S0A-ARG} 1}
\end{array}
\]

But there are a number of verbs whose basic it-taking form must simply be listed, as they have no corresponding entry permitting a sentential subject:

(155)  
\[
a. \text{It seems/appears that Sandy is snoring.}
\]
\[
b. \text{*That Sandy is snoring seems/appears.}
\]

Our analysis thus correctly treats a regularity with lexical exceptions as a lexical matter.

The Extraposition Lexical Rule removes an S[comp] from a SUBCAT list, replacing it by NP, and appends the S[comp] to the end of the SUBCAT list, preserving role assignment. If no further constraints are imposed, a single lexical rule will suffice to account for both subject and object extraposition. That is, in addition to relating lexical entries of the sort just illustrated, extraposition will relate lexical entries with SUBCAT lists like (156a, b) to entries with the corresponding SUBCAT lists (157a, b):

(156)  
\[
a. \text{SUBCAT \langle NP, S[comp], PP[to] \rangle \ (explain, mention, \ldots)}
\]
\[
b. \text{SUBCAT \langle NP, S[comp] \rangle \ (resent, regret, \ldots)}
\]

(157)  
\[
a. \text{SUBCAT \langle NP, NP, PP[to], S[comp] \rangle}
\]
\[
b. \text{SUBCAT \langle NP, NP, S[comp] \rangle}
\]

Entries like (157b) will, again without positing new rules, give us VP structures like (158), where the expletive object is a syntactic placeholder, and the extraposed clause is assigned a semantic role:

(158)  
\[
P(f \text{-fin, SUBCAT \langle NP, \rangle})
\]

\[
\begin{array}{c}
V[f\text{in}] \\
NP \\
\text{resent} \\
it \\
\text{that Sandy snores}
\end{array}
\]

As many have noted, there is a certain variability in judgment about some (but not all) examples of object extraposition, again supporting our decision to treat it lexically.52

### 3.7 Raised Expletives

We are now in a position to illustrate more complex structures involving raised expletives. The examples considered in the previous section all involved finite verbal forms. Nonfinite forms of expletive-subject verbs, however, may appear in embedded structures of various kinds. Base forms of the expletive-subject verbs be and bother, for example, may head the complement of the infinitive marker to:

(159)  
\[
P(f \text{-inf, SUBCAT \langle NP, \rangle})
\]

\[
\begin{array}{c}
V[\text{inf}] \\
V\text{[base, SUBCAT \langle NP, \rangle]} \\
to \\
V\text{[base]} \\
NP \\
\text{be} \\
\text{no one} \\
\text{absent}
\end{array}
\]

52. Certain seemingly exceptional properties of extraposition, e.g. the impossibility of double extraposition (*It proved [that the earth was flat] [that Columbus was never heard from again]), are perhaps best treated in terms of general constraints on SUBCAT lists.
Complement Structures

(160)

\[
\begin{align*}
& \text{VP[inf, SUBCAT [(\text{NP}_{0})]]} \\
& \text{VP[base, SUBCAT [(\text{NP}_{1})]]} \\
& \text{to} \\
& \text{NP} \\
& \text{S[fin, comp]} \\
& \text{bother} \\
& \text{Kim} \\
& \text{that Sandy snores}
\end{align*}
\]

Note that in each of these structures, the expletive-subject requirement of the lower VP has been inherited by the higher VP. This is a result of the interaction of the lexical entry for to and the Subcategorization Principle. In the SUBCAT list of to (as in the case of all subject raising expressions) the subject SYNSEM value is token-identical to the SYNSEM value of the unexpressed subject of the unsaturated complement. This guarantees that the subject of to is there in (159) and it in (160). The Subcategorization Principle guarantees that the expletive subject of to is also the subject of the VP it heads.

The structures in (159) – (160) may appear as complements of raising verbs, as illustrated in (161) – (162):

(161)

\[
\begin{align*}
& \text{VP[fin, SUBCAT (NP_{0})]} \\
& \text{VP[fin, SUBCAT (\text{NP}_{0})]} \\
& \text{believe} \\
& \text{there} \\
& \text{to be no one absent}
\end{align*}
\]

(162)

\[
\begin{align*}
& \text{VP[fin, SUBCAT (\text{NP}_{0})]} \\
& \text{VP[fin, SUBCAT (\text{NP}_{0})]} \\
& \text{tends} \\
& \text{to bother Kim that Sandy snores}
\end{align*}
\]

In each case, because the raising controller on the SUBCAT list of the raising verb shares its SYNSEM value with the unexpressed subject of the unsaturated complement, it is constrained to have an index of the appropriate sort. This has the consequence that the primary object of the object raising verb in (161) must be the expletive there and the subject of the subject raising verb in (162) must be the expletive it. In the latter case, again in virtue of the Subcategorization Principle, the entire VP inherits the requirement for the appropriate expletive subject. Note that this account, which projects grammatical phrases from lexi-

raised Expletives

(163) a. There is [likely to [be a riot in the park]].
   b. There [tended [not to [appear to [be any solutions to that
      problem]]]].
   c. We believe there [to have [been many solutions to that
      problem]]].

(164) a. It [continues [to [appear to [bother Kim that Sandy
      snores]]]].
   b. We believe it [not to [have [been [obvious that Kim was
      upset]]]].
   c. Pat believes it [to have [appeared to [bother Kim that Sandy
      snores]]].

Consider again the lexical entry for an object raising verb like believe:

(165)

\[
\begin{align*}
\text{believe} \\
\text{CAT | SUBCAT (NP_{1}):} \\
\text{RELATION believe} \\
\text{SOA-ARG 1} \\
\end{align*}
\]

Following Pollard 1984 and P&S-87, we treat passivization in terms of a lexical rule that cyclically permutes SUBCAT lists, as illustrated in (166):

(166) \text{read, devour, \ldots:} \\
\text{SUBCAT (NP_{1}, NP_{2}) \rightarrow SUBCAT (NP_{2}, PP[by],)} \\
\text{give, donate, \ldots:} \\
\text{SUBCAT (NP_{1}, NP_{2}, PP[to],) \rightarrow SUBCAT (NP_{2}, PP[to], PP[by],)} \\
\text{give, hand, \ldots:} \\
\text{SUBCAT (NP_{1}, NP_{2}, NP_{3}) \rightarrow SUBCAT (NP_{2}, NP_{3}, PP[by],)} \\
\text{promise, persuade, \ldots:} \\
\text{SUBCAT (NP_{1}, NP_{2}, VP[inf]) \rightarrow SUBCAT (NP_{2}, VP[inf], PP[by],)}

The lexical entry in (165) may thus undergo the Passive Lexical Rule, which will then give rise to the entry in (167):

(167)

\[
\begin{align*}
\text{believe} \\
\text{CAT | SUBCAT (\text{NP}_{1}):} \\
\text{RELATION believe} \\
\text{SOA-ARG 1}
\end{align*}
\]
Passives of SOR verbs are in essence subject raising verbs: the SYNSEM value of the subject is token-identical to the SYNSEM value of the unexpressed subject of the unsaturated complement (as guaranteed by the Raising Principle). Hence, our analysis of passive and the treatment of raising interact, and through this interaction, again without introducing any new rules, principles, or constraints, we have an account of structures like (168):

(168)

\[
\begin{align*}
\vp[\text{fin}, \text{SUBCAT } (\text{I} \text{NP})] & \quad \vp[\text{fin}] \\
\text{is} & \quad \vp[\text{pas}, \text{SUBCAT } (\text{I})] \\
\text{believed} & \quad \vp[\text{inf}, \text{SUBCAT } (\text{I})] \\
& \quad \text{to bother Kim that Sandy snores}
\end{align*}
\]

And this account immediately extends to the full range of examples illustrated in (169):

(169)  

a. It [was [believed [to [be [bothering Kim that Sandy snores]]]]].

b. We expected it [to [have [been [believed [to [be [bothering Kim that Sandy snores]]]]]]].

c. There [was [believed [to [be [likely [to [be [no one absent]]]]]]]].

d. We believed there [to [have [been [believed [to [be [a riot in the park]]]]]]].

It should be observed that the account of raised expletives we have presented also accounts for 'long-distance' number agreement in *there constructions. To see this, reconsider the lexical entry for a *there-subject verb like *be (repeated here as (170)):

(170)  

\[
\begin{align*}
\text{be} & \quad \text{HEAD verb[XUX]} \\
\text{CAT} & \quad \text{SUBCAT } (\text{NP} \text{[there]NP NUM (\text{I})]} [\text{XP} \text{[+PRD, SUBCAT (\text{I})]}] \\
\text{CONTENT} & \quad \text{[I]}
\end{align*}
\]

The NUM value of this verb's subject is token-identical to the NUM value of the second member of its SUBCAT list (corresponding to the postcopular NP). Since raising, on our analysis, involves structure sharing of the entire SYNSEM value of the complement's subject with that of the raising controller, it follows that number agreement with the postcopular NP is propagated over potentially unbounded distances, as illustrated in (171):

(171)

Hence, in complex examples involving subject raising predicates (including passives of SOR verbs), our analysis predicts there will be agreement with the postcopular NP in the most embedded VP, as in (172):  

(172)  

a. There is/*are believed to be a sheep in the park.

b. There *is/are believed to be sheep in the park.

c. There seems/*seem to be no student absent.

d. There is/*are likely to be no student absent.

Finally, our analysis of raising and equi also correctly guarantees that expletive subject VPs never occur as complements of equi verbs, as the following ungrammatical examples illustrate:

(173)  

a. *Sandy tried to be no sheep in the park.

b. *Pat tried to rain.

c. *They wanted to bother Kim that Sandy was a spy.

This follows directly from the general principle that all role-assigned indices are referential (of sort ref).  

53. Again, we do not explore the modifications required to analyze those varieties of English where agreement with plurals is optional.

54. We make no attempt here to provide a syntactic treatment of the syntactic flexibility of idiomatic expressions. For some justification of a fundamentally semantic approach to idioms, see Gazdar et al. (1985:236ff.) and Nunberg et al. in preparation.