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PREDICATION AND PRO

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The comprehensive theory of predication developed by Williams (1980, 1982, 1983) subsumes a wide range of phenomena, but contains some internal problems. An alternative account is presented here which does not postulate a distinct level of Predicate Structure, but assumes that PRO may be governed. This entails new analyses of small clauses and control phenomena, and leads to a revision of the conditions under which empty elements may occur.*

1. A RULE OF PREDICATION. In an important series of papers, Williams (1980, 1982, 1983) has developed a conception of the subject/predicate relationship which seems to constitute a fundamental aspect of grammatical theory. He defines the relationship in a way that allows him to subsume under it many properties of obligatory control, extraposition structures, purpose clauses, and much else. He adopts what he calls a non-structural definition of ‘subject’, and argues that this plays a central role in grammatical theory.

Predicates are things that require subjects, and a rule of predication assigns identical indices to the predicate and its subject. The subject must c-command—and, disregarding some questions that need not concern us here, be c-commanded by—the predicate (or its trace). The predicate can be any maximal projection of a lexical category; or, if obligatory control phenomena are to be subsumed under this process, it can be S or S'. In this way, a subject/predicate relation is established between the italicized items below:

(1) a. John is sad.
   b. John ate the meat naked.
   c. John ate the meat raw.
   d. John made Bill mad.
   e. John loaded the wagon full.
   f. John loaded the hay into the wagon green.
   g. John kept it near him.
   h. John died.

Williams 1980 takes these as his core cases in motivating the predication rule. He then develops the notion of a ‘complex predicate’, treating obligatory control and purpose clauses as instances of predication; and he argues that the rule defines a level of representation—P[predicate] S[tructure]—at which certain general conditions of Universal Grammar hold. Representations at the level of PS are subject to the c-command condition; this, W claims, is not characteristic of L[ogical] F[orm] representations. The rule of predication derives PS from S-structure, and other rules derive LF from PS (the latter class includes

* We are grateful to Joseph Aoun, Peter Coopmans, Lori Davis, Luigi Rizzi, Tim Stowell, and Amy Weinberg for helpful discussions on an earlier version of this paper, as well as to audiences at MIT, the universities of British Columbia, Washington, and Utrecht.
‘Arb’ Rewriting and Reflexive Interpretation):

(2) $DS \rightarrow SS \rightarrow PS \rightarrow LF$

Williams 1982 observes that the core cases of predicates do not occur inside NP's, nor do instances of obligatory control. He explains this by making it impossible for the rule of predication to apply in NP's, or any rule coindexing the 'subject' with something inside the N'. Hence the non-occurrence of structures like those below, where 3b is the familiar NP movement internal to a larger NP:

(3) a. Johni's [arrival dead]$i_{N'}$

b. Saskiai's [portrait ti]$i_{N'}$

He explains the non-application of the predication rule in NP's by claiming that items in a projection are coindexed. Thus in Figure 1 the lower NP cannot receive the index $i$, as the predication rule would require: that would violate the $ii$ restriction, which says that no NP can contain another NP with the same index (see Chomsky 1981:212–13). Furthermore, by the S[trict] O[pacity] C[ondition], structures at the level of PS are barred where anything in the position of X has an index different from that of the node which dominates it. Hence, in Fig. 1, the lower NP cannot be coindexed with anything to its right in PS. Compare Figure 2, where the indexing indicated violates neither the $ii$ restriction nor the SOC.

![Figure 1](image1.png)

![Figure 2](image2.png)

Note, incidentally, that 4 is well-formed because—at the level of PS, where the SOC applies—himself has a different index from John, since reflexives are

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1 The SOC is introduced in Williams 1982, and should not be confused with the P[redicate] O[pacity] C[ondition] of Williams 1980. The POC was designed to replace the Opacity Condition (formerly the Specified Subject Condition) of Chomsky 1980, and it holds at LF; it does not allow anything to be free within its minimal predicate. John, [likes himself], is said to conform to the POC because himself bears the same index as the entire predicate, and therefore is not free. The SOC, by contrast, says that certain items—namely traces of NP movement, predicates, and obligatorily controlled pro's—cannot be free in any Y, where Y may be any node and not necessarily a predicate. The SOC crucially does not apply to reflexives (in English), and it holds at the level of PS. W does not discuss the relationship between these two conditions; however, despite some formal similarity, they are clearly distinct.
not coindexed with their antecedents until LF:\(^2\)

\[(4) \text{[John'si} \text{[destruction]}_{N_i}, \text{of himselfi}]_{N_P}\i]

In his papers, W shows the usefulness of defining 'subject' in terms of indexical relations assigned by the predication rule, instead of through a structural relationship (i.e. defining a subject as the NP dominated directly by S). Williams 1983 exploits these ideas to develop a new view of 'small clauses' in such a way that the structural analysis of John considers Bill sick, John wants Bill dead etc. does not include an internal S (or any other constituent) dominating Bill sick, Bill dead, but rather a predicate A[jective] P[hrase] coindexed with a non-structural subject by the rule of predication, as in 5a–b below. ‘The Predication theory ... takes the subject/predicate relation to be basic and the notion “clause” to be derivative’—simply a phrase that instantiates the subject/predicate relation (Williams 1983:292):

\[(5) \text{a. Johni} \text{[considers Bill}j \text{[sick]}_{AP}, \i]}_{VPi}.
\text{b. Johni} \text{[wants Bill}b \text{[dead]}_{AP}, \i]}_{VPi}.

Thus W’s series of papers pursues three family-related ideas: (a) that there is a rule of predication coindexing subjects and predicates, (b) that PS is a

\(^2\) Furthermore, the POC of Williams 1980 does not apply to structures like 4, because [destruction of X] is not a predicate. Certainly story is not predicated of yesterday in an expression like yesterday's story. But then why does *They published yesterday's stories about each other not occur (cf. the grammatical They published stories about each other)? Williams (1980:234) says: 'it is our hope that these cases can be treated by a condition on definiteness, but we will not pursue this here.' This strikes us as a fundamental shortcoming. So far, appeals to 'definiteness' as a means to explain opacity facts in NP’s have not been convincingly fleshed out, probably because of the problems which have often been noted—e.g. the acceptability for most speakers of The men saw these pictures of each other, which is for all speakers far better than The men saw John's pictures of each other (see Chomsky 1975 for some discussion). Similarly, He published the story about himself which was written by Graham Greene on my typewriter involves as 'define' an expression as one could find, but it is far superior to the no more 'define' *He, published Graham Greene's story about himself{. Whatever notion of definiteness is invoked, it is clear that an anaphor in a complement to an N must be bound within the NP if it has a subject; similarly, a pronoun in such a context must be free of any subject. But the relevant notion of 'subject' here is the structural one (by which yesterday will count as the subject of story in yesterday's story, above)—or at least not one defined in W’s sense, as he himself points out. Consequently, W needs a second definition of 'subject'; his non-structural subject at best complements the structural definition which is independently needed. So anaphors contained in nominals like those of 4 must be treated quite differently from those in VP's, despite being subject to the same conditions (i.e. being necessarily bound by a c-commanding antecedent). This entails redundancy, at least insofar as two notions of subject are required. It also raises questions about the kinds of generalizations that hold at the level of PS, and suggests that parallelisms are being missed—unless, of course, there really is an independent notion of 'definiteness', or something else, that will give the right results.

On the basis of sentences like A picture of himself frightened John, W argued that antecedent/reflexive relationships, unlike antecedent/trace relationships, are not subject to c-command restrictions. Since 'logical form is not subject to the c-command restriction on binding' (Williams 1980:236), it is appropriate to deal with the properties of reflexives at that level. If true, this would lend plausibility to the way W’s theory carves up the phenomena. However, the conclusion is too extravagant: reflexives generally are subject to c-command restrictions. So John's father washed himself is not ambiguous, and himself refers only to the c-commanding NP; and in John's pictures of himself bothered Fred, the coindexing is between himself and John.
distinct level of representation, and (c) that the non-structural notion of a subject provided by the predication rule is primary. Claim (a) is obviously basic, but (b)–(c) are independent of each other; they do not necessarily follow from postulating a rule of predication, although they do provide much of its interest.

Here we shall first develop (in §2) an alternative analysis for expressions like those of 1a–h, which provided the initial impetus for the predication rule, and for small clauses. Our analysis will develop a theory of PRO which incorporates ideas of Bouchard 1982 and Sportiche 1983, and resembles the treatment in Koster 1984. This will in turn allow us to explain the absence of ‘predicate’ structures inside NP’s without invoking W’s predication rule; this will be shown to have some empirical and conceptual advantage (§3).

2. SMALL CLAUSES. Chomsky 1981 treated PRO as a pronominal anaphor—and therefore, by the ‘PRO theorem’, as always un governed. Bouchard and Sportiche have argued that PRO should be treated sometimes as an anaphor, governed but not Case-marked. It differs from the trace of NP movement, which is also governed and not Case-marked, in that the trace is always coindexed with another NP which has no theta-role; PRO, however, is either coindexed with another NP which has an independent θ-role, or receives an ‘arbitrary’ reading. Like Koster, we shall make the further claim that, when PRO is governed, it behaves like an anaphor, bound within its governing category; and that an ungoverned PRO receives the arbitrary interpretation.

We assume the definition of government of Aoun & Sportiche 1981, augmented by the idea that what is governed is a projection. They say that a governs b if all maximal projections above a also dominate b, and vice versa. Aoun & Lightfoot 1984 take b to be a projection. So, if a governs a phrasal category, it also governs its head. The definition of government which we adopt is 6a; and a governing category is defined in 6b, where we assume the definition of accessibility of Aoun & Hornstein 1985 (the details are not crucial for present purposes):

(6) a. a (X⁰) governs b iff a and b share all maximal projections. If a governs XP, then a governs the corresponding X⁰.

b. A governing category for a is the first clause or NP which contains a governor for a and a subject accessible to a.

Adopting this view of PRO, and following Andrews 1982, we can assign lb–c the structures of 7. Andrews argues that so-called sentential adverbs and PP’s, as in John left after the concert, are best analysed as VP-internal. However, they do not have the same structure as so-called VP adverbs and PP’s, which are sisters to V or V’, and cannot be preposed to clause-initial position. We will sometimes refer to items which are sisters to a VP, as in 7a, as sentential, following traditional usage:3

3 Adopting the structures of 7 entails that PRO is always governed by the verb eat. (If, following Saito 1983, we were to adopt the Aoun/Sportiche definition of government and the Reinhart 1981 definition of c-command, then ate in 7b would govern but not c-command the PRO; similarly, the meat would not c-command the PRO. This suggests that the structure of 7b should be revised so that the V’ includes the small clause.) If, however, we do not follow Andrews, but treat the internal S in 7a as dangling from the matrix S, then PRO would be governed not by ate but by INFL. In that case, if the higher clause does not contain a governor for PRO—e.g., if the clause is infinitival—
In each case, PRO is governed in the matrix clause (see fn. 3), and therefore must be coindexed with a c-commanding NP in its governing category—with John in 7a, or with the meat in 7b. No special rule of predication will apply here. Note that, in 7b, both John and the meat c-command PRO; so a tighter restriction is needed. This problem is common to many theories, and several ideas have been put forward; thus Rosenbaum’s (1967) Minimal Distance Principle, which would make the meat the only possible (or at least the ‘unmarked’) antecedent. Alternatively, one might claim that PRO must normally c-command its antecedent—i.e., that there be no maximal node dominating PRO which does not also dominate its antecedent, where S’ but not S is maximal; or one might require a PRO in a structure like 7b to be normally coindexed with a theme. The latter two ideas are adaptations of restrictions that Williams 1980 imposes on his predication rule. Under our approach, whatever device makes John an impossible or marked antecedent for PRO in 7b will also make John an impossible antecedent for PRO in John persuaded Bill [PRO to leave].

Several things should be noted about the analyses of 7. First, we assume that S and S’ are projections of INFL; S’ is the maximal projection, and S is not maximal. INFL may contain [+TENSE], [−TENSE], or nothing at all, just as an NP may contain no lexical material in D-structure; an empty INFL is written as INFLo, and occurs only where there is no S’ node.4 As usual, only an INFL then PRO is governed by whatever governs the higher subject. Thus, in (a) below, PRO is governed by want, and in (c) by for, since there is no intervening maximal projection; in (b), both PRO’s are governed by want, since the S’ node has been deleted as in (a):

   (a) I want [John to eat the meat [PRO INFL naked]S] S.
   (b) I want [PRO to eat the meat [PRO INFL naked]S ]S.
   (c) For [John to eat the meat [PRO INFL naked]S]S would be a scandal.
In (a), although PRO is governed by the matrix verb, it must be coindexed with John and not with I; this will follow from whatever gives us the ‘minimal distance’ facts discussed below in the main text.

If nothing governs the subject of the higher clause, then that subject and the subject of the small clause will be ungoverned; therefore both will receive the arbitrary interpretation (d):

   (d) It is unclear [where PRO [−TENSE] to eat the meat [PRO INFL naked]].
There will be no coindexing as such in this instance; and the fact that the two arbitrary subjects corefer will follow from the semantics of ‘arbitrary’, perhaps interacting with some pragmatic factors. Ex. (e) suggests that this approach is independently needed:

   (e) To prove Fermat’s last theorem is to win fame and glory.
Here again the subjects of prove and win are ‘arbitrary’, and are naturally taken to corefer; but we know of no analysis that would seek to express this ‘coreference’ through a general coindexing rule—certainly not through the same one that coindexes John and PRO in (a), which is subject to a strict c-command restriction.

4 We are neutral on whether the S’ of a small clause is ‘deleted’, or is never present in D-structure; this matter may depend on the formulation of Subjacency, which must presumably limit extraction from a maximal projection. So extractions from within a clause (S’), NP, PP etc. are subject to Subjacency; movement internal to a maximal projection is not. Hence items may be extracted from within a small clause (i.e. a non-maximal projection) without violating Subjacency: How rawi s[did you eat the meat s[PRO e]]? How crazyj s[do you consider s[Bill e]]?
which contains [+TENSE] is a governor. We also assume a base rule S (or INFL') → NP INFL XP, where INFL, like all other heads, can be followed by any phrasal category as a complement. If INFL is [±TENSE], the complement must be a VP; if INFL is empty—as in the constructions under discussion, and in small clauses with a lexical subject (see below)—the complement may be NP, PP, or AP, but not VP.

Second, since there is no intervening S', PRO is governed by the verb ate in both 7a and 7b. The verb assigns its Case to the meat, and therefore cannot assign Case to PRO—on the reasonable assumption that governors can assign Case only once (for motivation, see Rizzi 1982 on the postverbal subject in Italian).

Third, and most important for our purposes, the subordinate S occurs in adverbial positions. The structures need to be as in 7, given the c-command restriction on the interpretability of PRO; and these are also the positions for sentential and VP adverbials. So, by the usual ‘transportability’ conventions, ‘sentential’ adverbs—which, following Andrews, we have analysed as Chomsky-adjoined to the VP—can occur at the front of the sentence, unlike VP adverbials (8–9); and the same holds for the small clause in 7a, but not that in 7b. This can be seen in the following:

(8) a. John ate the meat, apparently.
    b. Apparently, John ate the meat.

(9) a. John ate the meat elegantly.
    b. *Elegantly John ate the meat.

(10) a. Naked, John ate the meat.
    b. *Raw, John ate the meat.

Also, it seems that there is usually only one adverb position at the end of a VP, so one is not surprised now that our small clauses are in complementary distribution with simple VP adverbs in that position:

(11) *John ate the meat quickly elegantly.
    *John ate the meat elegantly quickly.
    *John ate the meat gracefully nervously.

The following are adaptations of those of la–h which we propose to analyse with a PRO subject:

(12) *John ate the meat raw quickly.
    *John loaded the wagon full quickly.
    *John loaded the hay into the wagon green quickly.
    *John kept it near him carefully.

Note that the sentences become quite natural if the adverb is at the front of the VP (John quickly ate the meat raw), or if the small clause which is VP-internal is replaced with one which is Chomsky-adjoined to the VP: John ate the meat quickly naked. The sentences in 11–12 seem equivalent in status: highly anomalous, if not entirely ungrammatical.

Fourth, if these small clauses always occur in adverbial positions, we automatically explain why they never show up inside an NP or PP (exx. 13–14), which never allow an adverb internally (ex. 15):
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(13) *John's arrival dead
  *John's acceptance of the gift happy
(14) *I presented John with it, dead (cf. I presented it, to John dead).  
  *John loaded the wagon with hay green.  
  *John loaded the hay into the wagon full.  
  *John's acceptance of the gift unwrapped
(15) *John's acceptance gracefully  
  *We spoke about John's election overwhelmingly.

This gives us an advantage over W, who attributes the ungrammaticality of 14 to the fact that the predicate (dead, green etc.) is not c-commanded by its subject (it, hay etc.) But this is only half the story, since W also does not explain why the predicates do not occur inside the internal NP where they might be c-commanded by their subjects—i.e. why the structural analysis is not [with [it, dead]NP]PP etc.

Fifth, if it is correct to assume that there is a pro subject in small clauses like those of 7, we shall want to know why that pro never has an arbitrary interpretation. As noted above, we assume that pro may be governed, and that a governed pro acts like an anaphor and is bound in its governing category. So, in 16, pro is governed by tried and ate respectively; and the governing category is the higher clause, which contains an accessible subject. Note that the lower clause is dominated by S and not by S':

     b. John INFL [[ate the meat]V [pro INFL0 naked]S ]VP.  

However, pro is not always governed; and when ungoverned, it receives an arbitrary interpretation. There are three major contexts in which a pro is ungoverned: where the comp is lexically filled (ex. 17), and where the clause containing pro seems to act as a subject (ex. 18), or is in extraposed position (ex. 19):

(17) It is unclear [how [pro to behave oneself in public]].
(18) a. [pro to behave oneself in public] is a social requirement.  
     b. John knows that [pro to behave oneself in public] is a social requirement.
(19) It is a social requirement [pro to behave oneself in public].

In each case, the clause containing pro is dominated by S', which is a barrier to government—and this in turn entails that pro is ungoverned. In the terms of Manzini 1983, pro in 17–19 has no domain-governing category, and therefore must have the arbitrary reading.5

5 'Arbitrary' is in fact somewhat misleading; W's 'non-obligatory control' is more accurate. The relevant distinction is the following. A governed pro is an anaphor, and thus must have a c-commanding antecedent within its governing category. In [John tried/wanted [pro to leave]S ], therefore, pro must be coindexed with a c-commanding antecedent in the matrix clause; hence the ungrammaticality of It was tried/wanted (by John) to leave. An ungoverned pro is not an anaphor, and therefore does not require an antecedent of any kind. If no other NP is available for coindexing, then pro must be understood as arbitrary in reference, as in 17–19. If another NP is available, pro may or may not be coindexed with it; thus It is unclear to John how to behave may be continued.
If we extend Koster's 1978 analysis to 18, the clause indicated is actually in \textsc{topic} position, coindexed with the subject position—presumably via an abstract operator in the intervening \textsc{comp}. But whether the clause is in \textsc{topic} or subject position, it is not governed by a lexical item, and therefore cannot be a bare S. That there can be only a maximal projection in these contexts, i.e. S' for clauses, need not be stipulated: it follows from the facts that (a) a \textsc{topic} must be coindexed with some argument position, and a subject must be coindexed with \textsc{infl}; and (b) that such coindexing affects only maximal projections (see §3). Similarly in 19, the extraposed clause is not governed by a lexical item if we assume that it dangles from S; if, with Baltin 1982, we assume that the extraposed clause is part of the VP, and so is governed by the verb, it must nonetheless be a maximal projection because of being coindexed with it.

Note that another context exists in which a \textsc{pro} is ungoverned—and therefore, by our theory, arbitrary in reference: namely, as subject of an infinitival main clause. Such constructions occur quite freely in many languages and have an exclamatory interpretation; an empty subject must have arbitrary reference, as in 20. Small clauses may occur inside these exclamations; the embedded \textsc{pro} is governed, and therefore anaphoric (cf. 20b):

(20) a. Oh, \textsc{pro} to be in England now that November's here.
b. Oh, \textsc{pro} to live in New York [\textsc{pro} \textsc{infl} \textsc{lo} naked]$_S$.

The subject of a main-clause infinitival can be governed if there is a \textit{for} in \textsc{comp} (21a). A \textsc{pro} in such a context would be governed, hence an anaphor; 21b does not occur because the anaphoric \textsc{pro} has no antecedent:

(21) a. Oh, for us to live in New York.
b. *Oh, for \textsc{pro} to live in New York.

Having partially outlined our treatment of predicative adjectives as involving a small clause with a \textsc{pro} subject, we turn now to small clauses with overt or trace subjects. They are to be analysed similarly:

(22) a. I consider [Susan \textsc{infl} \textsc{lo} smart]$_S$.
b. Susan, was considered [t, \textsc{infl} \textsc{lo} smart]$_S$.
c. I want [Susan \textsc{infl} \textsc{lo} in New York]$_S$.
d. I want [Susan (as) linebacker]$_S$.

The only relevant difference is that, unlike \textit{try} etc., \textit{consider} and \textit{want} may assign Case to an NP that they govern, here \textit{Susan}. Therefore, when these verbs occur with passive morphology, they do not assign Case—and, following

\begin{itemize}
\item with \textit{himself} or \textit{oneself}. Adding \textit{himself} entails that \textsc{pro} has definite reference, hence is coindexed with \textit{John}; but adding \textit{oneself} entails that \textsc{pro} has indefinite reference, i.e. the arbitrary interpretation. In Mary knows that \textsc{pro} to behave would help \textit{John}, similarly, \textsc{pro} may be coindexed with Mary or \textit{John} or nothing; so after behave one may insert \textit{herself}, \textit{himself}, or \textit{oneself}. In other words, the ungoverned, non-obligatory control \textsc{pro} essentially acts like a pronoun.

Our analysis entails that the \textsc{pro} subjects of \textit{meet} in (a) \textit{I want \textsc{pro} to meet at 6 p.m.} and (b) \textit{I'll try \textsc{pro} to meet at 6 p.m.} are each governed, and therefore anaphoric. Thus (a) and (b) will each be as good as (c) \textit{I'll meet at 6 p.m.} Williams 1980 is forced to treat a \textsc{pro} under \textit{want} as an instance of non-obligatory control, inaccurately. This predicts (b)-(c) to be ungrammatical, and (a) to be grammatical.
\end{itemize}
what has come to be known as 'Burzio's generalization' (1981), do not assign a theta-role to the subject: in 22b, the subject of smart is bound by a non-thematic position, and hence shown as 'trace'. Note, incidentally, that want assigns Case directly, not via the complementizer for. Since there is no COMP, there is no position from which for can govern Susan. If a for complementizer is lacking with small clauses, then we predict that passives will occur (Susan is wanted in New York, Susan is wanted as linebacker).  

Expressions like The ice seems/feels/looks cold have sometimes been analysed as involving small clauses, in which the ice is the D-structure subject of cold and the S-structure subject of the higher verb (cf. Stowell 1983). But we agree with Williams 1983 that no reason exists to adopt a movement analysis here; rather, seem etc. are best treated as copula verbs in terms of their syntax and theta-role assignment. So we can adopt W's account for the fact that Someone seems to be sick allows the narrow-scope reading of the quantifier, whereas Someone seems sick allows only wide scope (Williams 1983:294). Furthermore, there is no reason to suppose that there are opacity effects here of a type to suggest a clausal structure for the predicative adjective; apparent opacity effects, as in *Mary seems to John mad at himself, result from the fact that John does not c-command (and therefore cannot bind) himself. The non-availability of a bound-variable reading in Sheila seems to everybody mad at him also suggests that there is no c-command relation between everybody and him: this would lead to a violation of the Bijection Principle, because neither variable c-commands the other (contrast Sheila persuaded everybody that he was crazy, where everybody does c-command he, and a bound-variable reading is possible). Moreover, Someone seems angry at everyone is ambiguous, and allows a wide-scope reading for everyone; this further suggests that angry at everyone is not a clausal structure, on the assumption that a quantifier like everyone cannot be extracted from within a clause (cf. Aoun & Hornstein). 

This is a broad-brush picture of our view of small clauses. Before we extend the picture and fill in some details, let us fend off some criticisms implicit in contrary views. The idea that Susan smart is a constituent in 22a, and that naked has a PRO subject in lb was rejected by Williams; however, Stowell 1983 argues that Susan smart is a constituent in 22a—but an AP, not an S. What distinguishes our position from that opposed by Stowell and Williams is the theory of PRO which we adopt. They assumed PRO to be a pronominal anaphor and therefore ungoverned, as in Chomsky 1981; but if we adopt the essentials of the analyses of Bouchard and Sportiche, treating PRO as an anaphor when governed and as arbitrary when ungoverned, we can steer a course between Stowell's Scylla and Williams' Charybdis.

Stowell (300–301) provides some arguments for treating, say, the Susan in New York of 22c as a constituent. Thus it can occur as the apparent subject of be in 23, and no higher-clause item may occur in the middle of these expres-
sions; cf. 24. To account for 24, one would not want to claim that a subject (in W’s extended sense) must be adjacent to its predicate, because that is not generally so; cf. 25 (see Safir 1983 for more arguments on the constituency of these expressions):

(23) a. Susan in New York is what we must avoid.8
   b. Workers angry about pay is a situation to avoid.

(24) a. *I consider the mayor myself very stupid.
   b. *I want him with all my heart off the ship.

(25) a. John, I’m afraid, is upset again.
   b. John tried with all his might to lift the crate.

However, Stowell claims that the relevant constituents in 23 are PP and AP respectively, and that lexical categories generally can have an NP in the Specifier position—hence a ‘subject’, which is sometimes lexical and sometimes an (ungoverned) PRO. With such assumptions, Stowell commits himself to some complications which range from unnecessary to unacceptable. First, the unnecessary:

(a) The Projection Principle needs to be amended: Susan in New York is a PP at S-structure but is treated as a proposition at LF, and propositions at LF are normally identified as S.

(b) Stowell defines a subject cross-categorially as the category directly dominated by a maximal projection (this need not necessarily be an NP—in 23, a PP and an AP act as subjects); hence S needs to be treated as a maximal projection (of INFL). Since Stowell adopts a directional theory of government, subjects must be governed and so receive their Case from the left in English—thus from COMP. This in turn entails that the maximal projections S, VP, AP, and PP, but not NP (at least not when it is a referring expression; cf. Stowell, 307), are transparent to external government.

(c) The acceptability of I consider [John completely stupid]AP or I want [him all the way off my ship]PP raises questions about the internal structure of the Specifier of the AP and PP—which, under Stowell’s assumptions, now contain two elements.

Then we come to consequences which seem unacceptable to us:

(i) Stowell systematically separates subcategorization from Case-marking, at least for the expressions under discussion. So, in I expect [that man [off my ship]]PP raises questions about the internal structure of the Specifier of the AP and PP—which, under Stowell’s assumptions, now contain two elements.

* Susan in New York may indeed be a constituent here, but it is not clear how sentences like these should be analysed. If Susan in 23a is replaced with a pronoun, then the pronoun must be accusative; but what is the source for the accusative? Note also that these constructions occur only with a copula verb: *Her in New York bothers me; *Workers angry about pay frightens employers.
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(26) a. *I consider [John off my ship].
    b. *I proved [the weapon in his possession].
    c. *I expect [that man very stupid].
    d. *We all feared [John unfriendly].

We find this argument highly questionable. It is not difficult to imagine contexts where 26a,c–d might be said; e.g. As soon as he sets foot on the gangplank, I'll consider John off my ship. Similarly, 26c–d become quite natural if one substitutes the adjectives angry, made-up, drunk, or naked. The unacceptability of 26b seems to reflect, not a subcategorization restriction that prove cannot be followed by a PP, but rather the fact that prove can hardly ever be followed by a small clause of any kind. There are examples of small clauses after prove—one might say He proved the picture a fake—but the unacceptability of the parallel forms *He proved the picture a Gainsborough or *He proved her the murderer strongly suggests that this is not a productive type. Rather than motivating a subcategorization relation, the oddness in 26 seems analogous to the oddness of John tried to {receive the gift / know the answer} etc., which do not entail that try selects the lower verb. Not only is there a highly questionable factual basis for claiming that verbs may subcategorize for the predicate of a following small clause, but the claim also has some odd and expensive consequences. Most linguists would agree that expect subcategorizes for a clause or NP (I expected that result); but Stowell requires the added complication that it cannot allow an NP with a subject if there is no possessive marker: *I expect him president (cf. I consider him president). Whatever the eventual explanation for the ungrammaticality of this sentence (and we have nothing to offer by way of explanation), it is hard to see how it can be made to follow from subcategorization frames.

(ii) This relates to what we see as a second unacceptable consequence. If Stowell is right, a verb like consider, reckon, or deem may subcategorize for an NP whose head is itself a maximal projection. This requires a radical revision of the theory of phrase structure rules:

(27) I consider [[John]NP [a friend]NP]NP.

Furthermore, such a verb assigns Case to the subcategorized NP, to its subject (here John), and to the lowest maximal projection (a friend)—three distinct NP’s.

The assumption that expect is subcategorized for an AP complement in I’m expecting him drunk is quite crucial to Stowell’s claims about the nature of subjects. However, for adjunct clauses like those of 28, where we indicate the structural analyses that Stowell assigns, the subcategorization argument is not relevant to their categorial status:

(28) a. John [cleaned his room]VP [PRO to please his mother]S.
    b. Sally [delivered the package]VP [PRO wearing an old flight jacket]S.
    d. Kevin [came home]VP [PRO in a red shirt]VP.

Stowell is therefore free to adopt a clausal analysis for all these cases, as we
would argue that he should. Given his subcategorization argument, and the fact that he adopts an AP and PP analysis for 28c–d, he divides small clauses into those which are clausal and those which are headed.

For us, holding that S and NP are the only categories that can have lexical subjects entails that only S and NP constitute opaque domains, i.e. can be governing categories (given that a governing category is the minimal domain containing a governor and an accessible subject). Stowell is equally elegant in this regard, because he claims that all maximal categories have subjects and constitute opaque domains. So, in John told a story [about himself]PP, the PP is an opaque domain for Stowell; but himself is bound by the PRO subject of the PP, which in turn is coindexed with John. For us, a PP, having no subject, is not an opaque domain. But elegance is only one of our desiderata; we have seen that there are empirical reasons to suppose that Stowell is right in claiming that a single constituent dominates these small clauses, but that he is wrong to invoke categories other than S in these contexts.

Williams 1983, by contrast, assumes with Chomsky 1981 and Stowell 1983 that PRO must be ungoverned; he therefore criticizes previous treatments of small clauses because they predict [PRO XP] to occur only in unguaranteo positions. Our theory predicts almost the reverse: that such constituents will occur in governed or unguaranteed positions—but that the PRO will be an anaphor if governed, and will receive the arbitrary interpretation if unguaranteed. We have seen how this works in certain central cases; but what about contexts which W identifies in his critique of small clause analyses? He notes the grammaticality of 29 and the ungrammaticality of 30:

(29) [(PRO to leave)]S INFL would be fun.
(30) *[(PRO bashful)]S INFL would be a shame.

Here, as noted earlier, we might treat the clauses as subjects; or we might claim, with Koster 1978, that clauses characteristically do not occur in subject position—where they appear to do so, as in 29, they are in fact in topic position. We further assume that topic can only contain categories which are maximal projections. Therefore To leave would be fun can be analyzed as 31. Here PRO, being in an unguaranteed position, must receive the arbitrary interpretation, which is correct:

(31) [(PRO to leave)]S TOPIC [(e)NP INFL would be fun].

Under our analysis, [PRO bashful]S in 30 must have INFL0 as its head; hence it cannot be part of a maximal projection, and can have no S' node immediately dominating it. Therefore it cannot occur in topic, and Bashful would be a shame will not be generated. Similarly, W's *Sad to surprise Mary would be unfortunate is ungrammatical, not because of a failure to meet requirements of government, but because [PRO sad] is an S, a non-maximal projection, and thus cannot occur either as a topic or as the subject of another clause:9

9 Our analysis commits us to saying that there is no structural difference between a small clause and a purpose clause: in both I ate the meat [PRO happy] and I ate the meat [PRO to be happy], the PRO is governed (hence is not protected by an S'), and is therefore anaphoric. We have no reason to distinguish these clauses in terms of their external distribution, i.e. their constituent
(32) \[[\text{PRO } \text{sad}]_S \text{to surprise } \text{Mary}]_S \text{TOPIC } \[[\text{e}]_\text{NP would be unfortunate}].

Another approach is to claim that $\text{INFL}_0$, the head of a small clause, must—like other empty categories—be properly governed at $\text{P[phonec]} \text{F[orm]}$ (see below; and cf. Weinberg et al. 1987). This would entail that small clauses occur only in properly governed positions, and not as subjects or topics.

W identifies other problems for small-clause analyses which assume that $\text{PRO}$ must always be ungoverned. Thus, if $\text{PRO}$ must be ungoverned, then it cannot occur inside a VP, where it would be governed by the V. This suggests that John ate the meat raw must have the following structural analysis:

(33) John INFL [ate the meat]VP [PRO raw]$S$.

This entails two problems: (i) $\text{PRO}$ is now governed by INFL, which is [+ TENSE]; and (ii) $\text{PRO}$ is not $c$-commanded by the meat, despite the fact that it must be coindexed with it. Since we, by contrast, treat anaphoric $\text{PRO}$ as governed, we analyse $[\text{PRO raw}]_S$ as part of the VP; thus $\text{PRO}$ is governed by the verb, and $c$-commanded by the meat.

Williams (1983, §6) points out that infinitives are unique among predicative phrases in that they may have arbitrary subjects, and are ‘thematically independent’ in argument position (i.e., they assign independent $\theta$-roles to their subjects). Unlike earlier treatments of small clauses, our analysis unifies these properties in ways that are not subject to W’s criticisms. Thus $\text{INFL}_0$—which has no morphological realization, and hence no to—can be followed by any maximal category except VP (disregarding discussion below of perceptual and causative verbs); and $\text{INFL}_0$ occurs only where $\text{S}'$ (i.e. $\text{INFL}''$) is absent. Non-maximal projections do not occur in TOPIC or subject positions; and small clauses with $\text{INFL}_0$ heads occur only in governed positions, hence inside $S$—therefore their subjects never have the arbitrary reading. The governed position in which the small clause occurs may or may not be an argument position. If it is an argument position, the subject of the small clause will be Case-marked; therefore it must be lexical, not $\text{PRO}$ (cf. 34a–b) (see §3). If the small clause is in a (governed) non-argument position, the subject does not receive Case, and is therefore empty. If it is coindexed with an NP in a theta-position, it is $\text{PRO}$ (cf. 34c); if it is not coindexed with any NP, the $\text{PRO}$ (which, being governed, is an anaphor and cannot be arbitrary) fails to be bound, and the structure is

structure. This, of course, does not exhaust the possible difference between the two types. Thus purpose clauses are always headed by $\text{TENSE}$, and therefore (in our account) contain a VP; a VP seems to be a sine qua non for a purposive interpretation. The precise distinction between predicating an adjective directly of a nominal (as in a small clause) and indirectly via an intervening copula (as in a purpose clause) is not clear; for relevant discussion, see Higginbotham 1985, who discusses the subtle semantic differences between the big butterfly and The butterfly is big. This kind of semantic distinction is presumably independent of the constituency structure of the clauses.

10 See above. This suggests that Susan in New York, in Susan in New York is what we want, is either not a subject, or not a small clause dominated by S. Presumably, S is governed by something that assigns accusative case (see fn. 8). This explains why Susan cannot be replaced by $\text{PRO}$: a $\text{PRO}$ would be governed, and therefore anaphoric. But in this position, it could not be bound by a $c$-commanding antecedent in its governing category—presumably the matrix clause. Note also the ungrammaticality of *John to leave is what we want.
ill-formed (cf. 34d):\(^{11}\)

(34) a. I consider [John crazy]s.
   b. *I consider [PR0 crazy]s.
   c. I ate the meati [PR0i raw]s.
   d. *It is a shame [PR0 bashful]s.

It is for this reason that such small clauses, with an INFLo head and a PR0 subject, always occur in non-argument positions. This means that we come very close to deriving our earlier observation that these constituents occur in adverbial positions. We do not quite achieve that derivation, however, because we do not explain why they fail to occur internal to NP's and PP's—unless there are independent reasons why the relevant non-argument positions occur only in S' and VP, but not in NP and PP.

Much the same holds for ordinary infinitival clauses—except that infinitivals, whose INF node is \([-\text{TENSE}]\), may occur inside an S', and hence with an ungoverned PR0 subject which will have the arbitrary interpretation. Thus one finds infinitives in the contexts of 17–21, and as complements to N (the desire [PR0 to win]s'); these are all S' contexts (we shall argue in §3 that an S' node need not be deleted from the complement of an N). So our treatment of PR0 makes the appropriate predictions; we need not invoke W's notion of an Argument Complex, or the associated definition of 'The Restricted 0-Criterion'.

Note here that, as Chomsky 1986 has observed, reciprocals and reflexives require overt antecedents to be acceptable, as in 35a–b. Small clauses also appear to require an overt antecedent, as in 35c–d:

(35) a. They decided to hit {each other / themselves}.
b. *Damaging testimony was given about {themselves / each other}.
c. They left the room angry. 
d. *The room was left angry.
e. The boat was sunk in order [that he could collect the insurance]. f. The boat was sunk [PR0 to collect the insurance].

On our analysis, the indicated phrase is actually a small clause with a PR0 subject, i.e. S[PR0 angry]. It hangs from VP; hence, given our assumption that S is not a maximal projection, the PR0 is governed. Since a governed PR0 is anaphoric, we can now generalize and say that all anaphors require overt antecedents. Pronouns, of course, do not require overt antecedents (35e); nor does an ungoverned PR0 (35f), which is not an anaphor. This explains the parallelism of 35a,c with 35b,d. In short, we predict that small clauses MUST have overt antecedents precisely because they have PR0 subjects which are governed and thus anaphoric.

In adopting analyses like 7, and in treating PR0 as an anaphor when governed and as pronominal when ungoverned, we derive the basic properties of W's 'predication' structures. We also distinguish positions of obligatory and non-obligatory control in terms of government. However, we avoid the redundan-

\(^{11}\) L. Rizzi (p.c.) asks why no verbs occur in structures like 34b, where PR0 is understood as an anaphor. See the Appendix, below.
cies in the notion ‘subject’, and the false generalizations entailed by a PS level (see fn. 2). Furthermore, whereas W subsumes NP movement under his predication relationship—requiring that antecedent/trace relations be subject to the conditions which hold at his PS—we have no independent predication relationship under which cases of NP movement can be subsumed. In §3 we will see that this affords some advantages.

3. Noun Phrases. As observed in our introduction, W's theory of predication implies that it does not take place within NP's—because predicates must be maximal projections and, therefore, N' cannot be a predicate of NP in 36. W supports this conclusion by noting that NP's, unlike sentences, do not require subjects. Since it is a defining feature of his predicates that they obligatorily have subjects of which they are predicated, the fact that subjects are optional in NP's supports the conclusion that the following relation between the NP and the N' is not a predication relation:

\[ \text{NP N'} \]

This view has some interesting consequences. First, the absence of predication in NP's is what, on W's theory, accounts for the unacceptability of 3a (John's arrival dead). Here dead is a predicate; but since the predication rule cannot apply in NP's, it cannot be predicated of anything. In particular, it cannot be predicated of John. Consequently, given that predicates must have subjects, 3a is ungrammatical.

A second consequence of W's theory is that there is no NP movement in NP's. As noted in §1, neither passivization nor raising can take place in NP's, given his analysis of these phenomena as instances of predication. W is led to these conclusions as follows. His reconstrual of NP movement in terms of predication follows from the fact that the NP-trace relation meets all his criteria for predication. In particular, an NP trace must have an antecedent which precedes and c-commands it. These properties follow if one takes passivization and raising to be instances of predication, as W does. The second required assumption is the absence of predication in NP's, which W motivates in terms of phrases such as 3a and the optionality of subjects in NP's. These two assumptions lead to the conclusion that NP movement does not exist in NP's, and therefore that neither raising nor passivization occurs in them.

In this section, we will argue that NP movement does occur in NP’s, in the guise of passivization. We will do this by arguing that W’s Determiner rule is inadequate. Furthermore, we will show that the absence of raising in NP’s or of phrases like 3a can be accounted for on independent grounds, without invoking a predication rule.

Before we proceed, it should be observed that if NP movement does indeed take place in NP’s, then this is a very serious problem for W’s theory. The

12 If so, then predication can explain the existence of empty subjects—and, generally, why sentences appear to require subjects. However, one would have to account for the insertion of it in extraposed clauses, as well as other ‘dummy’ subjects. Such an it does not function as a logical subject of any predicate, as W demonstrates.
reason is that it leads to one of two equally undesirable conclusions: either predication holds in NP’s, or else the properties which W takes as characteristic of predication structures are also instantiated by other linguistic configurations—which, on his own theory, require no rules of predication. The first option leads to the undesirable conclusion that predicates need not have subjects; this would seriously undermine W’s account of obligatory control, a central motivation of the theory of predication. The second option leads to substantial redundancy in the theory of grammar, since we are left with no account as to why two unrelated kinds of structures have the same characteristic properties.

Here we will argue that some NP’s have the following S-structure:

\[(37) [\text{NP} \_ [\text{N}] \_ [\text{t}] \_ [\text{N}].] \]

Here the trace \(t\) transmits its theta role to \(\text{NP}\), and is properly governed by \(\text{N}\). Since these three properties are defining characteristics of NP movement, we will conclude that NP movement takes place in NP’s. The focal point of our argument will be the claim that the full range of interpretations for Determiner NP’s cannot be accommodated by W’s Determiner rule.

As is well known, John in 38 can assume various theta roles, so that any of the phrases in 39 are possible paraphrases:

\[(38) \text{John’s photograph} \]
\[(39) \text{a. photograph of John} \]
\[\text{b. photograph by John} \]
\[\text{c. photograph which John possesses} \]

Hornstein 1977 suggests that one could explain the availability of readings like those for 38 by assuming that NP movement takes place inside NP’s, and that trace theory obtains. The underlying structure of 38, under the interpretation 39a, is 40a; and the derived structure is 40b:

\[(40) \text{a. } [\text{NP}] \_ \text{photograph John.} \]
\[\text{b. Johni photograph t1.} \]

Williams 1982 argues that such an explanation is not necessary if one observes that the NP in Determiner position can quite generally assume any theta role not yet appropriated by any other NP in the theta complex determined by the head \(\text{N}\). Thus \text{photograph}, the head of 38, determines—as part of its particular lexical interpretation—a \(\theta\)-complex that takes thematic, agentive, and possessive arguments. Couple this with W’s Determiner rule and the \(\theta\)-Criterion: what results is a theory which claims that NP’s in Determiner position can assume any theta role not already assumed by another NP in the theta complex. In particular, 38 can be interpreted as in 39; but 41 cannot be interpreted with \(\text{John}\) as Theme because of the \(\theta\)-Criterion, and the fact that \(\text{Bill}\) is already so interpreted:

\[(41) \text{John’s photograph of Bill.} \]

Of course, \(\text{John}\) can be interpreted as either agent or possessor, given that these \(\theta\)-roles have not been taken by any other NP in the \(\theta\)-complex.

These two approaches differ, then, in one crucial respect. In the first, the theme reading is available to an NP in Determiner position only if a trace can
appear in postnominal position. In the second, an NP in Determiner position can assume any theta role not already taken by another NP in the theta complex associated with the head.

The following data show that the second approach is inadequate:

(42) a. each photograph of John
   b. each of John's photographs
   c. each photograph of John's.

Here 42b, but not 42c, can have an interpretation parallel to 42a. In particular, *John* in 42b, but not in 42c, can assume the role of Theme (as noted by Chomsky 1972:45). Furthermore, this is predicted by the movement theory, but is left unexplained by the Determiner rule approach. To see this, consider the derivation of 42c in more detail.

Dresher & Hornstein 1979 argue that 42c has a quasi-quantificational structure analogous to a wagon of hay, where the empty noun is interpreted as *photographs*:

(43) [[each photograph] of [John's e]].

If this is correct, then the movement approach predicts that any trace in postnominal position will not be properly governed by the N, if we assume that non-lexical items do not act as proper governors (see below). In short, the derivation of 42c with the intended interpretation 42a is:

(44) a. [[each photograph] of [NP's e John]]
   b. [[each photograph] of [John's e t]].

Note that, at S-structure (i.e. 44b), t is not properly governed by a lexical head. As such, 44b is ill-formed, because the E[empty] C[ategory] P[rinciple] requires traces to be properly governed. This explains why, in 42c, *John* cannot be interpreted as Theme. In short, given the NP movement analysis, plus the ECP (see below), we predict the facts noted in 42. W's theory has no explanation for this. *John* in 42c is in Determiner position, as is evidenced by its having a possessive marker. Moreover, no other NP in the theta complex has assumed

13 It is clear that 'gapped' verbs also fail to act as proper governors; see below. It is plausible to say that only phonetic and indexed items may act as lexical heads, and thus as proper governors. So, just as indexed empty NP's are subject to the ECP, so indexed empty categories act as proper governors. In each case, presence of an index makes an item visible in PF and thus to the ECP, which holds at PF under our account: empty NP's with an index must be governed by a lexical head, which is a category with lexical (phonetic) content or an index. If e in 44b and the gaps in 57 are 'interpreted' and so receive their index through a rule in LF, then they do not act as proper governors in PF. Likewise, e in (a)–(b) below, which also lack the thematic reading for *John*. Note that there is clearly no movement from the position of e in (a)–(b), and arguably no movement from e in 44b.

(a) This picture is [John's e t]_NP.
(b) The picture which, t, is [John's e t]_NP.

Compare now Dutch, where verb movement yields structures like (c). Since V-Movement is a syntactic rule, t will have its index by S-structure, and thus be able properly to govern t in PF.

(c) Wie, doodde je sje [l e(t, t)]? 'Who did you kill?'

This works out nicely if the requirement that empty categories be properly governed by lexical heads holds at PF. This is argued below, and in more detail by Weinberg et al.
the role of Theme. As such, given the Determiner rule, we should expect John to be interpretable as Theme.  

Let us consider three implications of the above analysis of movement in NP’s. First, this analysis and the well-formedness of 40b require that nouns are proper governors for the purposes of the ECP. How then do we explain the failure of raising in NP’s?  

(45) *John’s appearance to leave.

W accounts for this in terms of his general prohibition against any sort of predication in NP’s, as encapsulated in his SOC. Given his assimilation of NP movement to predication, this leads to the result that no form of NP movement is allowed within NP’s; thus the absence of raising is explained. This option is unavailable to us, given our claim that NP movement must be invoked for examples like 38.

Another approach to 45 would explain its ungrammaticality by claiming that N is not a proper governor. Given that the structure underlying 45 is 46, this will result in an ECP violation:

(46) [John’si [appearance [t, to leave]]].

However, this approach is also unavailable under our analysis. To explain the acceptability of 42b with the interpretation 42a, we must suppose that, in the S-structure of 42b, the noun properly governs the trace left by the movement of John to Determiner position. Hence, nouns are proper governors.

Aside from the analysis of the phrases in 42, there is independent evidence that N can properly govern. Consider the rule which deletes complementizers. If one assumes that a complementizer can be deleted only if it is properly governed (Stowell 1981), then virtually the full distribution of data follows. Thus one cannot delete a complementizer in an extraposed that phrase, as in:

14 We have shown that we can explain the restricted range of readings in sentences like 42c if NP’s with the role of Theme move to Determiner position. This also predicts that an NP in Determiner position will be interpreted as a Theme only via movement. If such movement is prohibited, then the Theme reading of the Determiner NP will be prohibited as well.

As is well known, NP preposing in NP’s is a proper subclass of the cases where an N can take a Theme complement:

(a) discussion of Mary ≠ Mary’s discussion
(b) pursuit of Mary ≠ Mary’s pursuit
(c) avoidance of Bill ≠ Bill’s avoidance.

In such cases, analysed extensively by Anderson 1984, an NP in Determiner position cannot receive the Theme interpretation, even though it can be so interpreted in object position. If of is obligatory in these constructions, as Anderson proposes, then movement of the object NP is impossible; the lack of a Theme interpretation for the Determiner NP then follows. Since N’s cannot undergo reanalysis, as is argued in our text, movement of the object NP will yield structures where the preposition assigns Case to the following trace; this results in the impossibility of preposition stranding in NP’s.

15 We say ‘virtually’ because we still need some principle of recoverability to distinguish wh-elements in relative clauses from those in questions. The latter are generally supposed to have real semantic content, while the former are semantically null (Chomsky 1973). We also assume the existence of something like the NP-TNS-VP filter to explain the unacceptability of deletion in relative clauses such as a man *(who) t saw Harry.
47; or a that in presentential position, as in 48; or a complementizer governed by a non-bridge verb (i.e. one that does not properly govern the COMP, cf. Stowell 1981), as in 49. If COMP can be deleted only when it is properly governed, then these data follow:16

(47) a. It was apparent yesterday *(that) Harry left.
   b. A book arrived *(that) Fred wrote.
(48) *(That) Harry left was obvious.
(49) John quipped *(that) Harry left.

This can be extended to complex NP’s—on the assumption that N is a proper governor, and that restrictive and appositive relatives have structures like 50a–b respectively:

(50) a. [DET [N S’]]
   b. [[NP] S’].

As is well known, there is some intonational difference between these two kinds of relative clauses. Appositives have a pause between the head NP and the complement S’. Moreover, appositives can have heads which are proper names (i.e. NP’s), while restrictive relatives cannot:17

(51) a. Sam saw John, who I admire.
   b. *Sam saw John who I admire.
   c. Sam saw a man who I admire.

If we assume that the facts of intonation and of head selection reflect a difference in structure of the kind noted in 50, then we predict that 50a, but not 50b, will allow deletion of items in COMP:

(52) a. Sam saw a man (who) I admire.
   b. John, *(who) I admire, likes ice cream.

In restrictive relatives, which have the structure 50a, N properly governs the lower clause and thus the COMP, which acts as a secondary head (see Weinberg et al.). In non-restrictive or appositive relatives, however, the COMP is not properly governed. Thus the claim that N’s are proper governors allows us to explain when items in COMP are deletable.18

16 It is suggested by Aoun 1985 that bridge verbs govern the complementizer positions of their embedded complements. Only if the complementizer position is properly governed can one get COMP to COMP movement. As argued in our text, proper government is also required for free deletion in COMP.

17 Note that prohibition on proper names in restricted relatives is not semantic. As Burge 1973 points out, names are contextually ambiguous. Therefore it is unclear why a sentential complement could not be used to restrict the relevant range of the name in the way that context implicitly does. In such a case, John who I like would mean ‘the John that I like’. For further discussion of this, see Thompson 1971. For the structures of 50, see Stockwell et al. 1973, ch. 7.

18 This analysis of free deletion of elements in COMP is essentially an ECP account extended to elements in COMP position. Null elements are permitted only if identified. One way to identify an element is via a relation to a head. Note too that, if this is correct, it amounts to the claim that the ECP holds in PF, since elements in COMP position are needed in LF. If this is correct, it suggests in turn that the ECP should not be reduced to the Binding theory, which does not hold in PF. For more on this, see Weinberg et al.
We are, however, still left with the task of explaining the failure of raising in NP’s. The structure underlying 45 is:

(53) [John’s, [appearance [[t, to leave]s ]s ] ].

We adopt a proposal of Bouchard 1982 and Chomsky 1986 concerning Case assignment, whereby nouns do not assign structural Case in these constructions. The idea is that nouns assign inherent Case, which is spelled out in English as either the dummy preposition of or the possessive ’s. Inherent Case assignment, unlike structural Case assignment, parallels θ-marking strictly: an item may assign inherent Case to a category only if it also assigns it a θ-role. Chomsky expresses this condition as follows:

(54) For a, an inherent Case-marker, a Case-marks b iff b is θ-marked by a, where a is a θ-marker.

Thus, in 53, the subject of appearance could not receive genitive Case from the head noun because it receives no θ-role from it.

W observes that the PRO of an infinitival complement to a noun is not a position of obligatory control. This follows naturally from our assumption that obligatory control results from a governed PRO’s requiring an antecedent because it is an anaphor. Consider these examples:

(55) a. John’s attempt s[PRO to leave] will be stopped.
   b. Any attempt s[PRO to leave] will be stopped.
   c. Any attempt by John s[PRO to leave] will be stopped.

In 55a, S’ deletion has taken place; PRO is governed and anaphoric, and hence requires a c-commanding antecedent. Exx. 55b–c seem to indicate that PRO in such cases need not have a c-commanding antecedent, and does not fall under Principle A of the Binding theory (Chomsky 1981:188). This is to be expected if S’ deletion does not apply in these NP’s; thus PRO is ungoverned. Consequently, it need not have a binder (55b), and it can be controlled by a non-c-commanding antecedent (55c). In short, given our analysis of obligatory control

19 How non-obligatory control PRO is to be interpreted is unclear. Manzini presents a theory in terms of Domain Governing Categories; but this account ends up assimilating all cases of anaphora together with PRO. For her, cases of subject sentences with PRO subjects should be on par with ones like these:

(a) *Pictures of himself excited general comment.
   *Pictures of each other caused Harry to criticize the men.

This strikes us as incorrect: the sentences seem simply unacceptable, as we would expect if these fell under Principle A of the Binding theory. But the following sentences are different:

(b) [PRO to escape] is impossible.
   [PRO to be elected] bothered the men.

The PRO here is not governed, so we do not expect it to behave like an anaphor. For a good description of the interpretation of non-obligatory PRO, see Williams 1980. His ‘Arb’ Rewriting rules seem to us pretty accurate. However, these rules describe rather than explain the relevant cases, as he notes.

For an alternative approach which distinguishes thematic from pragmatic control, see Nishigauchi 1984, who claims that thematic control requires a ‘Primary Location’ within its local ‘thematic domain’. As observed in fn. 5, the un governed PRO (i.e. non-obligatory control) behaves like a pronoun, which may or may not be coindexed with an antecedent; this corresponds roughly to Nishigauchi’s ‘pragmatic control’.
control—plus condition 54, and the assumption that S' deletion may or may not take place in NP—we predict that the PRO in an embedded nominal complement is not necessarily a position of obligatory control, and that structures like 53 do not occur. Consequently we may continue to claim that nouns are proper governors.

A second consequence of our analysis of movement within NP's is that it leads us to amend the ECP in directions similar to those suggested by Koopman 1984 and Stowell 1981. In particular, the analysis of phrases like 42 requires that we adopt a rather local configurational definition—in contrast to the standard disjunctive definition of proper government, by which an empty category is properly governed if it is either governed by a lexical head or locally co-indexed with a c-commanding antecedent (Chomsky 1981). It is too permissive to allow an empty category to be licensed by a local c-commanding coindexed NP. Consider again 44b, repeated here:

\[(56) \text{[each photograph] of [Johni's e ti]}\].

On the disjunctive definition, ti would be properly governed, since it is co-indexed with a local c-commanding NP, John. However, as noted, each photograph of John's does not have the required interpretation. This follows from a non-disjunctive definition which requires that a trace be governed by a lexical head.

Further support for this version of the ECP comes from instances of gapping:

\[(57) \text{a. Sam introduced Bill to Mary, and Frank introduced Sheila to Harry.}\]

20 Similarly, adjectives may delete S', as in (a) below; therefore the subject of an infinitival may be governed, and thus anaphoric (in a–b). But if the S' is not deleted, as in (c), PRO will not be anaphoric:

(a) John, is likely s[t, to lose].
(b) John is too stubborn s[PRO to visit New York].
(c) John, is too stubborn s[(WH) PRO to talk to ti].

Whether the lower subject is a trace, as in (a), or PRO, as in (b), will depend on whether the antecedent has an independent theta-role, and that may be unclear; John was crazy to leave. Under this analysis, there is no real structural difference between (a) and (b); and one can talk about so-called syntactic ‘blends’ in terms of whether or not the adjective assigns a theta-role to its subject (cf. Lightfoot 1974).

21 Two observations on 57. First, 57c becomes grammatical if there is only one wh-word, which moves in the ‘across-the-board’ mode of rule application: Who did Jay introduce to Ray, and Jim to Tim? Several interesting questions arise about the proper analysis of across-the-board movement, but here we are dealing only with structures which must have a locally bound trace that is adjacent to a GAP. See Goodall 1984 and Williams 1978 for relevant discussion; and cf. Weinberg et al. for elaboration.

Second, we resist the temptation to discuss all known gapping phenomena, analyses, and problems. We note, however, that NP-traces behave somewhat differently from wh-traces: while there is an elliptical process affecting verbs, it may sometimes affect a verb and an adjacent NP-trace. If the NP-trace is not adjacent, ungrammaticality results, as in (c) below:

(a) Jay, seems t, to like Ray, and Jim, GAP t, to like Tim.
(b) Jay, was arrested t, in NY, and Jim, GAP t, in Seattle.
(c) *Jay, seems to Kay t, to like Ray, and Jim, GAP to Kim t, to like Tim.
b. Sam introduced Bill to Mary, and Frank GAP Sheila to Harry.
c. *Which mani did Sam introduce t, to Mary, and which woman, (did) Frank GAP t, to Harry?
d. *John wondered what, Frank gave t, Bill, and what, Sheila GAP t, Sally.
e. *John admired t, very greatly [his uncle from NYC], but Susan GAP t, only moderately [her aunt from Paramus].
f. *John gave t, to Gil [his favorite tennis racket], and Sheila GAP t, to Sam [her most beloved potted plant].
g. John gave his favorite tennis racket to Bill, and Sheila GAP her most beloved potted plant to Sam.

In the starred sentences, there is a trace after the gapped element resulting from movement. Under the disjunctive definition of proper government, the starred sentences should not be ungrammatical, since the traces have local c-commanding coindexed antecedents. On the version of the ECP adopted here, however, the trace must be locally governed by a lexical category. The antecedent is irrelevant for the purpose of the ECP. As there is a marked difference in the acceptability of the gapped structures, this supports the version of the ECP adopted here, i.e. the one necessary to explain the data cited in 42. This version is explored in detail by Weinberg et al.

A third consequence of our analysis of movement inside NP’s is that it requires that we abandon the PRO theorem. Recall that we accounted for the existence of obligatory control in small clauses by adopting the position that PRO can be governed, and that governed PRO is an anaphor; hence it falls under Principle A, and requires a binder. We have also adopted the position that PRO cannot be Case-marked. The question thus arises of how we account for the distribution of PRO. In particular, why can PRO appear only in the subject position of an infinitival or small clause? Or, to put this another way, why can PRO not appear in complement positions?

We cannot claim that this is because these are obligatory Case-marking positions. For us, Case-marking is optional; so, in some instances, of insertion need not apply in NP’s; this is necessary if we are to allow NP movement in NP’s at all. (Manzini and Sportiche, by contrast, both deny that there is NP movement in NP’s precisely because they make Case assignment an obligatory process.) It is also preferable conceptually to make Case-marking optional, at least in the unmarked instance, as it allows a simpler theory of complement structure. In effect, the fact that adjectives and nouns do not have NP complements at S-structure follows from the Case Filter on the assumption that these are not Case-assigning elements. We have no explanation for this if Case assignment is obligatory in NP’s.

There is a second reason for treating Case assignment as optional. As noted, we have adopted a theory of PRO which assumes that governed PRO is an anaphor. Since anaphors must have antecedents, we account for obligatory control in terms of governed PRO. However, such a theory of PRO requires that Case-marking be optional. To see this, consider sentences like these:

(58) a. John expects PRO to leave.
    b. John expects Harry to leave.
If Case assignment is mandatory, in the sense that it must apply when it can, then these examples indicate that we must say one of two things. One option is to claim that *expects* does not govern the *pro* in 58a. But if so, why can it Case-mark *Harry* in 58b, on the standard assumption that Case is assigned under government? Alternatively, we might say that *expects* governs *Harry* in 58b, but not *pro* in 58a. This would be tantamount to making S' deletion optional. The problem, however, is that 58a is a canonical instance of obligatory control. As such, given the approach adopted here, the *pro* must be governed, and therefore S' deletion must have applied. However, if S' deletion has applied, why does *expect* not Case-mark *pro*?

There are three ways of answering this question. First, one might claim that *pro* can be Case-marked. This option is not accepted by any theory of *pro* currently considered as reasonable, and falls outside our assumptions.

Second, one can claim lexical redundancy. In 58a–b, *expects* governs the embedded subject. However, one might claim that there are two *expects*, only one of which assigns Case. Otherwise, the two are identical lexical items. This, clearly, is undesirable; it comes close to reducing the claim that *pro* can be governed, but not Case-marked, to vacuity.

Third, one can claim that Case assignment is optional. This solves the problem posed by 58. In 58a, *pro* is governed, but Case assignment does not apply. If Case is assigned to *pro* in 58a, the sentence would be ungrammatical: it would contain a Case-marked empty element, i.e., a variable, but no operator. In 58b, Case-marking does apply—an option which we permit. If Case-marking fails to apply, the Case Filter rules the sentence ungrammatical. Consequently, all the acceptable sentences can be generated, and the unacceptable ones are filtered out. In sum, our theory of *pro* entails that Case-marking is optional.22

A problem, however, emerges from these assumptions. Why do we not get structures like these?

\[(59) \begin{align*}
&\text{a. NP's N} \text{ pro} \\
&\text{b. NP V pro.}
\end{align*}\]

*pro* will not receive Case from *N* in 59a; and it might not in 59b, if Case assignment is optional. If, as we assume, *pro* can be governed, we should expect structures like 59 to be realized in phrases like 60a, with the interpretation 60b:23

22 That Case-marking is optional seems required if we are to explain the distribution of acc-ing structures:

(a) John liked him/his finding the reward.
(b) John hated him/his cooking supper.
The accusative is possible only if the NP is governed by an Exceptional Case-marking (ECM) verb:
(c) John likes *Frank/Frank's cooking supper to be controversial.
The distribution of acc-ings will follow on the assumption that genitive assignment is optional. If there is an ECM verb to Case-mark the NP, all is well; otherwise, unacceptability results. Note, incidentally, that sentences (a)–(b) seem to be semantically identical: this would be expected if the only difference between them was where the subject NP got its Case.

23 It was to explain cases like these that both Manzini and Sportiche made Case assignment obligatory.
(60) a. John’s picture; John washed.
b. John’s picture of himself; John washed himself.

One way to account for the distribution of PRO in these instances is to
generalize the visibility hypothesis for LF and PF elements, along the lines sug-
gested by Aoun 1985 and Chomsky 1981. To be visible in PF, an element must
be Case-marked. If we generalize this to LF, we could explain why PRO cannot
appear in complement positions. To be visible, it would have to be Case-
marked, which is not possible for PRO. As it stands, however, this cannot be
the correct explanation, since we do get PRO in non-Case-marked subject po-
sitions. The general intuition, however, can be maintained.

Let us say that, to be visible in LF, an element must be identified either by
being Case-marked or by appearing in an OBLIGATORY POSITION. The Extended
Projection Principle (Chomsky 1981, Ch. 6) entails that all sentences have sub-
jects—i.e., that S \rightarrow NP INFL VP is a universal.24 In effect, if it were not for
the existence of the universal requirement that clauses have subjects, PRO would
never appear in natural languages.25

24 On this view, we must assume that gerunds are clauses, given that they require subjects:
(a) John’s finding the reward
(b) PRO finding the reward
(c) *the/every finding the reward.

25 Our theory predicts that variables will be obligatorily Case-marked unless they occur in subject
position. They will require Case to be visible according to our version of the visibility requirement.
As noted in our text, this will hold except for an element occurring in subject position. In short,
the account elaborated above predicts that the generalization observed by Chomsky 1981 will fail
for variables in subject position, which need not transmit Case to the operators that bind them.
We know of three such instances.

First, there are phrases such as this:
(a) a man to fix the sink.
Here we have a variable in a non-Case-marked position. However, it resides in subject position.
Hence Case is not required, so long as the wh-operator is deleted from COMP:
(b) *a man who to fix the sink.
This is unacceptable because the wh-element is not Case-marked. But (a) is fine, because who has
been deleted; and the variable is visible because it is in subject position. Note that the [NP TNS
VP]\_NP filter is still required to explain the unacceptability of this:
(c) *[a man fixed the sink]\_NP

The second instance is noted by May, who observes that sentences like the following can have
a narrow-scope reading:
(d) Someone appeared to attend every rally.
Here someone receives a Case from the matrix TENSE, but locally binds the embedded subject
variable. Once again this variable is not Case-marked—and need not be, according to our theory.

A third instance where one can get a variable in a non-Case-marked position, so long as the wh-
operator moves to a position from which it can get Case, is extensively discussed by Kayne 1981.
He observes that (f) is acceptable, though (e) is not:
(e) *Je crois Jean être le plus intelligent de tous.
(f) Quel garçon crois-tu être le plus intelligent de tous?

Kayne explains this difference by suggesting that the wh-element quel garçon receives Case from
the trace of the COMP position. In short, the embedded subject receives no Case; but the wh-operator
is Case-marked by the matrix verb through the COMP position. Once again, our theory predicts that
such variables, not Case-marked, should occur in subject position.
This condition on the identification of optionally generated NP elements yields the correct distribution of PRO without invoking the PRO theorem, and without requiring that Case assignment be obligatory. Since the PRO theorem is suspect, and since obligatory Case assignment all but prohibits NP movement within NP’s (a necessary operation, we have argued)—leaving us with no account of the complement structure of N’s and A’s—this seems a reasonable position to adopt.

The above account links the distribution of PRO to the existence of certain positions that are obligatorily generated by the base rules. Because S’s MUST have subjects, PRO can appear in subject position without being Case-marked. This approach to the distribution of PRO predicts that, if some NP position is mandatorily generated, then it can be filled by a PRO. Cinque 1980 argues that

26 As Aoun 1986 points out, the PRO theorem runs into considerable empirical difficulty in languages like Chinese—in which, he argues, the G[overning] Cатегори for pronouns and for anaphors is not the same. In effect, the GC for the latter is a subset of the former, because anaphors (but not pronouns) have their GC’s determined by whether an accessible subject is present. Pronouns, in contrast, appear to treat the minimal NP or clause which contains them as their GC. This difference results in the underderivability of the PRO theorem for languages like Chinese. The reason is that a contradiction no longer exists in the conjunction of Principles A and B of the Binding theory; thus it does not follow that PRO has no GC. In particular, a sentence like (a) in Chinese should allow a PRO in the embedded position:

(a) NP, V [PRO, V₁ + TENSE]

Here PRO is bound in the matrix clause—which is the GC for PRO as an anaphor; NP, is the accessible subject. Similarly, it is free in the embedded clause, which is its GC when it is viewed as a pronominal. Thus both Principles A and B are satisfied in Chinese, and the PRO should be generable in this position. However, it is not. This strongly suggests that there is something wrong with the PRO theorem.

Note that there is no such problem in our theory, by which PRO can appear in any position that does not get Case. However, PRO in (a) is in a Case-marked position; as such, it is ill-formed.

This account of (a) requires saying that the subject position is obligatorily Case-marked—although, as we have argued, Case-marking is in general optional. Saito argues that nominative Case assignment in Japanese (and, we assume, also in Chinese) is quite different from that of the other cases: it is assigned structurally, rather than by a Case assigner which governs the subject. It seems natural to exploit Saito’s analysis to refine our theory of optional Case assignment, and to say that it applies to instances of Case assignment by a lexical Case assigner under government. In short, it excludes structural Case assignment which is obligatory and subject to its own sort of conditions. With this refinement, our approach yields all the data concerning the distribution of PRO.

Corroboration of the distinction between the two kinds of Case assignment noted above comes from Italian data. Hyams 1983, discussing work by Suñer 1982, notes that Italian has a class of what she calls ‘V_p verbs’, which appear to have pro subjects even though they are in tensed clauses:

(b) Ho visto Luisella che ballava come una matta.

‘I saw Luisella who was dancing like a crazy person.’

Ho conosciuto Massimo che era molto neurotico.

‘I knew (met) Massimo who was very neurotic.’

If nominative Case is assigned in Italian by a governing INFL, then it should be possible to generate a PRO subject in a tensed clause. Suñer argues that sentences like (b) indeed have a PRO subject.

This analysis of these constructions differs from the one proposed by Hyams—who argues that the subject in such cases is a phonetically null expletive, and that there is a PRO in the INFL position. Part of the motivation for this analysis of these cases lies in Hyams’ desire to conform to the PRO theorem, which we have argued is both unnecessary and undesirable. Her other reasons revolve around an argument that a PRO indeed exists in INFL position in Italian.
Italian NP's must have subjects; he also argues that \textit{pro} can appear in this subject position. This coincidence of facts is predictable, given the analysis above.

The optionality of Case-marking accounts naturally for alternations as in 61. In both structures, the lower subject is governed by \textit{expect}, but only in 61b is it Case-marked:

\begin{enumerate}
\item[(61) a.] I expect [\textit{pro} to be happy]$_s$.
\item[(61) b.] I expect [Max to be happy]$_s$.
\end{enumerate}

However, alongside verbs like \textit{expect}, one also finds those like \textit{believe}, which do not permit an empty subject in the lower clause, whether it is an anaphor or a pronoun:

\begin{enumerate}
\item[(62) a.] *I believe [\textit{pro} to be happy]$_s$.
\item[(62) b.] I believe [Max to be happy]$_s$.
\end{enumerate}

Several linguists have described such facts through a claim that \textit{believe} deletes a lower S' obligatorily; presumably they assume that Case assignment is also obligatory. Such an account might be observationally adequate; however, we have never seen an explanation for why \textit{believe} should have this property, nor have we seen any genuinely adequate account of how a child could learn that \textit{believe} deletes S' obligatorily without appealing to negative data, or to some ad-hoc markedness convention (pace Lasnik 1982). Such an account is not available in our theory since, for us, S' is deleted subject to government; therefore 61a and 62a are parallel in lacking a subordinate S'. This is probably no bad thing: the \textit{believe} paradigm of 62 is quite common, which suggests that an ad-hoc lexical treatment is inappropriate. We list here verbs which behave like \textit{believe} in disallowing a \textit{pro} subject in a lower infinitival clause:

\begin{enumerate}
\item[(63)] acknowledge, admit, affirm, allege, announce, assume, certify, concede, consider, declare, deduce, demonstrate, determine, discern, disclose, discover, establish, feel, figure, guess, hold, imagine, judge, know, note, posit, proclaim, reckon, recognize, remember, report, reveal, rule, specify, state, stipulate, suppose, surmise, take, trust, understand, verify.
\end{enumerate}

These verbs, to which one might add those of perception and causation, all take direct objects. Furthermore, there is a distinct non-propositional semantic relationship between the verb and its direct object. Contrast this with verbs like \textit{expect} and \textit{intend}, which have the distribution of 61. These verbs either allow no direct object (\textit{intend}), or else allow a direct object with an elliptical propositional reading; hence \textit{I expect John} means 'I expect John to come or to be here.' By contrast, \textit{I believe John} is not elliptical; \textit{John} is not understood propositionally in any analogous sense, but derives a theta-role directly from \textit{believe}. We might attempt to correlate the distinction of 61–62 with the semantic properties of the direct objects—arguing, e.g., that \textit{expect} and \textit{intend} subcategorize a proposition at LF, while the verbs in 63 take direct objects and assign distinct non-propositional semantic properties to any NP they govern. It has been noted by Quine 1960, Postal 1974, and others that an infinitival subject is often transparent in reference. This is also true of many direct objects.
Hence 64a–c are statements about unicorns, which in some sense presuppose the existence of unicorns. By contrast, 64d carries no such presupposition; it could be tagged ‘Crazy Jill; unicorns don’t exist.’ Here unicorns is opaque; the belief that unicorns exist can be attributed only to Jill, not to the speaker of the sentence:

(64) a. Jill believed unicorns.
    b. Jill believed unicorns to be absurd gifts.
    c. Jill believed unicorns absurd gifts.
    d. Jill believed unicorns would be absurd gifts.

This suggests that some kind of secondary semantic relationship exists between believe and the following NP in 64a–c. This is not a property of expect or want, and therefore is not reducible to the mere fact that the NP’s in 64a–c are properly governed. None of the sentences of 65 presuppose that unicorns exist. That is, there are verbs whose direct objects are opaque in reference, unlike believe; cf. 65a. If these verbs take infinitival complement clauses, the subject has exactly the same properties and is also opaque:

(65) a. Jill expected/wanted/worshipped/hunted unicorns.
    b. Jill expected/wanted unicorns to graze in her yard.
    c. Jill expected/wanted unicorns in her yard.

Hence verbs whose direct objects are semantically opaque allow empty infinitival subjects. The fact that the verbs of 63 do not allow empty infinitival subjects can be plausibly related to these semantic properties, rather than to their having some ad-hoc lexical feature which makes them delete an S’ node. For us, such an account is unavailable; and necessity being the mother of invention, we offer the above observations as suggestive for further investigation. Believe and the verbs of 63 assign a secondary semantic relationship to an NP which they govern. This is not true of expect, want, or of French croire ‘believe’ (*Je crois Marie, *Je crois l’histoire); these are free to take an infinitival complement with a PRO subject.

In sum, and less tentatively, the analysis of this section leads us to conclude the following: (a) N’s are proper governors; (b) Case assignment is optional, and the Case Filter obtains; (c) the disjunctive definition of the ECP should be replaced by one cast in terms of local head government; (d) PRO can be governed, but not Case-marked; and (e) to be visible in LF, an NP must either be in an obligatorily generated position, i.e. subject position of a clause—or, if in an optionally generated position, must be Case-marked. W’s predication theory faces major problems with the internal properties of NP’s, since his Determiner rule fails to do the necessary work. We have provided an independent account of these properties in terms of the same theory of PRO which permitted an alternative account of small clauses. This theory avoids the problems of the predication rule, and has better empirical coverage. However, our theory also opens some new questions, which are followed up by Weinberg et al.

4. **Conclusion.** We have found significant internal problems with Williams’ predication theory—which subsumes all NP movement, obligatory control, and
small clause phenomena. We have developed an alternative treatment which avoids the problems identified, involves a new analysis of small clauses, and assumes that PRO may be governed. When governed, a PRO is anaphoric; when ungoverned, it is pronominal. This constitutes an alternative to existing theories of control. W's most minimal claim about a predication process is that an indexical relation exists between a predicate and its subject. We remain agnostic on whether this notion may prove to play a role in natural language; but we have examined a stronger theory, which postulates a distinct level of PS, and a non-structural basis for the relationship between a subject and its predicate. This is the most fully worked-out theory of predication in the linguistic literature, and is interesting in that it subsumes a wide range of phenomena. We have shown that these phenomena are best not subsumed under a theory of predication—which, of course, leaves it open whether a weaker theory is appropriate.

APPENDIX

In the main text, we have argued that the structure of small clauses is as in 66, and that Case-marking is optional:

(66) I consider [Jill crazy].

We have also argued that most verbs with infinitival complements must, in effect, assign Case to the lower subject; in §3 we sought, albeit somewhat inconclusively, to derive this fact from the semantic properties of the verbs in question. However, there is a further issue: Why does one not find sentences like 67 alongside 68?

(67) *I expect/want [PRO angry].
(68) I expect/want [PRO to be angry].

That is, 68 shows that want and expect do not have to assign Case. In 67, PRO is governed by the higher verb and does not receive Case; one would therefore expect it to behave like an anaphor. But we have not explained the non-occurrence of 67. L. Rizzi (p.c.) has conjectured that not only do no such English verbs occur in environments like 67, but that such structures may be inconceivable. We are not so sure about this; we note expressions like 69, which presumably should be analysed as indicated—these are somewhat idiomatic and non-productive in English, but they could conceivably become productive in future forms of English:

(69) I want [PRO out of this room].

We might account for the impossibility of 67 by taking a slightly different tack, treating I consider Jill crazy as analogous to I ate the meat raw, and assigning it the 'persuade' structure:

(70) I consider Jilli [PROi INFLO crazy].

Now we would say that all small clauses, i.e. clauses with INFLO heads, occur in adverbial positions. Since the subordinate clause in 68 does not have INFLO as its head, it occurs in the argument position; the non-occurrence of 67 would now result from the absence of a direct object. The semantics of structures like 70 would be handled compositionally: consider crazy would be treated as a complex verb, which has Jill as a direct object. In other words, the small clause which occurs in adverbial position would modify the meaning of consider, in much the same way that the following adverbs radically modify the import of their verb:

(71) allegedly, almost, apparently, approximately, barely, hardly, hopefully, nearly, ostensibly, possibly, probably, purportedly, reportedly, seemingly

The fact that Jill must be coindexed with PRO (which is governed and therefore must be an anaphor) entails that Jill crazy must be construed as a proposition, equivalent to Jill to be crazy. This idea entails that small, i.e. INFLO, clauses occur in different positions from clauses with a [±INFLO] head: clauses with INFLO heads occur only in adverbial or 'adjunct' positions. This seems quite natural if one assumes that positions which enter into selectional and subcategorization re-
lations must be headed; phrasal categories with empty heads therefore could occur only in non-selected (i.e. non-argument) positions. This would also entail that INFLO clauses could not occur as subjects. In any case, the fact that small clauses do not occur in the same positions as complement clauses predicts the existence of verbs which do not take complement clauses, but do occur with small clauses. Such verbs exist, e.g. call, regard, and strike:

(72) I called Jill crazy.
    *I called [Jill to be crazy].
    *I called [that Jill was crazy].

A further point is that a clause is typically questioned by what:

(73) What did John believe?

Now one is not surprised to find that Jill called Bill Harry is questioned as What did Jill call Bill? and not as HowlWho did Jill call Bill? Under this analysis, Harry represents a small clause: Jill called Bill, [PRO INFLO Harry]s.

As far as we can see, the advantages which we claim for our treatment of small clauses in the main body of this paper are preserved in this analysis—which offers some further advantages, as indicated. It also raises some further questions, notably concerning the analysis of perceptual and causative verbs. We might consider two alternative structures for I made/saw John leave:

(74) I saw John [PRO INFLO leave]s.
(75) I saw [John ?INFL leave]s.

If 74 is the correct structure, we would need to explain how INFLO can be followed by a VP in these constructions, and why John cannot be passivized if the S is headed by INFLO; i.e., John was seen leave seems less than grammatical. If 75 is the correct structure, we would want to know the properties of INFL which preclude its being lexicalized as to in the active, but require to if the lower subject is passivized (John was seen to leave). To is never required in analogous constructions without VP’s: John was considered crazy. Of course, this is an old problem to which there has been no satisfactory solution; our analysis is no worse than any other in this regard. However, we would like to refine our treatment so that it explains these facts, which seem tantalizingly close to being understood.

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[Received 11 September 1985; revision received 29 April 1986; accepted 25 May 1986.]