NULL OPERATOR CONSTRUCTIONS

by

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ABSTRACT

This dissertation defends the hypothesis that certain con-
structions involve covert A'-movement resulting in the crea-
tion of A'-chains headed by null categories commonly referred
to as "null operators." The constructions which have been
widely analyzed as involving null operators fall into two
categories. In the first category, designated "OWM ("On WH-
movement") constructions", are relative clauses (tensed and
infinitival), purpose clauses, degree clauses, adjectival com-
plements, clefts and comparatives, all of which are treated as
covert wh-movement structures in Chomsky (1977). More recent-
ly, the null operator hypothesis has been extended to parasi-
tic gap constructions, which constitute the second category.
The goal of this dissertation is to develop an analysis of the
nature of null operator chains and the conditions which apply
to them which will account for the similarities and differen-
ces between the two categories of constructions in a unified
manner. Three types of constraints are discussed and proposed:
constraints governing the licensing of the null operator
itself, the licensing of the variable created by null operator
movement and the licensing of the null operator chain as a
whole. Chapter one contains a history of the development of
the null operator analysis, reviews the basic phenomena to be
examined and sets out the framework, essentially that of
Chomsky (1986a, 1986b), within which the research has been
carried out.

Chapter two examines the relation between predication and the
operators, both overt and null, which allow clausal categories
to function as predicates in OWM constructions. It is proposed
that predication relations which are not licensed by θ-role
assignment must be licensed by the existence of an "agreement
chain" between the subject of predication and a predicate in-
ternal category. An agreement chain exists when two categories
are connected by an unbroken sequence of independently motiva-
ted instances of agreement, e.g. subject-predicate agreement,
SPEC-HEAD agreement, etc. It is further argued that null ope-
rators are pure pronominals, i.e. _pro_, and that the agreement
chain which licenses predication is sufficient to identify A'-
pro.

Since A′-pro in OWM constructions receives phi-features via the agreement chain, it is licensed as the head of an A′-chain. In chapter three it is shown that the fundamental difference between OWM constructions and parasitic gap constructions is that A′-pro in the latter does not participate in an agreement chain and, therefore, does not receive phi-features. The result is that A′-pro in parasitic gap constructions is not licensed to head a chain; however, under the appropriate assumptions about the constraints governing A′-chains, unidentified A′-pro may act as an intermediate empty category. This position is embedded in an analysis of parasitic gap constructions which treats the parasitic chain and the "real" chain as a single "complex chain" derived by chain formation, a non-exceptional, non-construction specific process. The Subjacency Condition is interpreted as a condition on chain links which applies at SS to the output of all chain formation operations and which, therefore, governs the formation of complex chains. Conditions on the identification of variables are also shown to affect the distribution of parasitic gaps. At LF A′-pro in these constructions, like other intermediate empty categories in argument chains, deletes via Affect α, yielding representations identical to those resulting from the Chomsky (1982) analysis, in which the matrix operator directly binds two variables. The anti-c-command constraint is once again analyzed as a Binding Condition C violation. The chapter ends with some speculative remarks concerning the typology of empty categories and the nature of chains.

Other aspects of A′-chains involving both null and overt operators are explored in chapter four, in particular, the greater sensitivity of extracted subjects in a variety of contexts to the presence of intervening barriers. It is shown that this sensitivity is not a unified phenomenon and that it does not motivate certain revisions of the ECP which have been proposed in recent work. The marginality of subject gaps in OWM constructions, parasitic gap constructions and within certain types of islands in English is attributed to the Subjacency Condition, in a revised relativized form which imposes a stricter SS bounding constraint on non-complement chains than on complement chains. Another group of constructions which exhibit stronger violations and which share the property that extraction of an argument requires the obligatory presence of an intermediate empty category in an A′-position at LF, are brought within the scope of the ECP by means of a condition on LF argument chains involving A′-positions. A discussion of several other topics, including the appropriate formulation of the Minimality Condition, the nature of antecedent government and head government, the proper definition of "barrier", ends the chapter.

Thesis Supervisor: Noam Chomsky
            Title: Institute Professor

ACKNOWLEDGEMENTS

A Note to the Reader:

As is often the case, this dissertation will undergo signifi-
cant revision before being informally distributed to the
linguistics community. Please refer to the later revised
version, available from the author, for the most developed
statement of the analyses herein.

This thesis is dedicated to my family.

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CHAPTER ONE

INTRODUCTION

1.1   The Origin of Null Operators

A'-chains headed by empty categories first appear in Chomsky (1980; hereafter OB), where it is argued that, in certain constructions, base-generated PRO moves to COMP, creating an operator-variable chain analogous to that created by overt wh-operator movement. The impetus for positing the existence of empty category-headed A'-chains originates in the proposal in Chomsky (1973) that relative clauses such as (1) are derived by deletion of an overt wh-operator which has previously been moved to COMP, as shown in (2).

1)   the person Bill saw

2)   a.   [ₙₚ the person [ₛ' [ᴄₒₘₚ who] [ₛ Bill saw]]]
       b.   [ₙₚ the person [ₒ' [ᴄₒₘₚ] [ₛ Bill saw]]]

Ross (1967) had pointed out that the rules forming infinitival relatives, purpose clauses, clefts, pseudoclefts, topicalizations and comparatives show the same island effects as wh-movement.[1] Chomsky (1977; hereafter OWM) develops this observation into the hypothesis that the characteristics associated with canonical wh-movement in questions are a diagnostic for

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1. Chomsky (1973) discusses briefly the proposal (attributed to D. Vetter, fn. 32) that, since comparative deletion obeys the Complex NP Constraint, it should also be derived via wh-movement and deletion.

the occurrence of covert wh-movement (i.e. wh-movement +
deletion of the overt operator) in a wide range of other
contexts. The relevant characteristics of canonical wh-
movement appear in (3) in the terminology associated with the
OWM framework.

3)   The rule of wh-movement has the following general
      characteristics:[a]

      a.   it leaves a gap
      b.   where there is a bridge, there is an apparent
            violation of subjacency, the Propositional Island
            Constraint (PIC) and the Specified Subject
            Condition (SSC)
      c.   it observes the Complex NP Constraint (CNPC)

---

2. The Subjacency Condition is defined in (i). The PIC is the
Tensed S Condition of earlier work. (ii) combines the Speci-
fied Subject Condition (a), the Tensed S Condition (d) and the
Subject Condition (b) with a special proviso (c) allowing for
COMP-to-COMP movement. In (iii) "major category" means "maxi-
mal projection". All definitions are from Chomsky (1973).

      i)   The Subjacency Condition: a cyclic rule cannot
            move a phrase from position Y to position X (or
            conversely) in the structure

            ...X...[α...[β...Y...]...]...X...

            where α and β are cyclic nodes, i.e. S', NP.

      ii)   No rule can involve X, Y (X superior to Y) in the
            structure

            ... X ... [$_\bullet$ ... Z ... -WYV ...] ...

            where a)   Z is the subject of WYV and is not
                        controlled by a category containing X
                  b) α is a subject phrase properly
                        containing MMC(Y) and Y is subjacent
                        to X
               or c)   Y is in COMP and X is not in COMP
               or d)   Y is not in COMP and α is a tensed S.

      iii) MMC(X) is the minimal major category dominating X
            (X itself, if X is a major category).

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d.   it observes wh-island constraints

The status of the statements in (3) will be discussed further below.

This hypothesis takes on great significance in light of the "bounded vs. unbounded transformations" debate, which was especially lively at that time (see especially Bresnan (1976, 1977); also, Ross (1967), Postal (1972)). Briefly, the two positions differed as follows: Chomsky proposed that the Subjacency Condition constrained movement transformations, thereby forcing movement to proceed in bounded increments.[3] The PIC and SSC applied both to movement transformations and "rules of construal", which governed coreference and anaphoric dependence[4], applying as conditions on representations whether the representations were base-generated or derived via movement.

The alternative position held that both deletion and movement transformations were unbounded, that is, variable terms could intervene between the constant terms of a structural description.[5] "Constraints on variables", i.e. condi-

---

3. Strictly speaking, the Subjacency Condition applied to only cyclic movement transformations: "a postcyclic rule such as the major case of French clitic movement (cf. Kayne (1975)) need not, on these assumptions, meet the condition of subjacency." (p.73)

4. Within the OWM framework these were the rules concerned with the assignment of the feature [±anaphoric to i] to some element in a structure containing NP_i, that is, the equivalent of the Chomsky (1981) Binding Conditions.

5. As an example, a version of the Relativization transformation is given below, with the structural description (SD) in (i) and the structural change (SC) in (ii). "rel" is a dummy relative marker deleted by the relativization transformation.

tions on the manner in which the structural description of a transformation could apply to a phrase marker, limited the power of transformations. As an example, consider the constraint in (4), which is proposed in Bresnan (1977). (See fn. 5 for relevant definitions.)

```
                    NP [ₛ'  COMP  X  rel  Y ]

    i)    SD:    1         2     3  4    5    =>

   ii)    SC:    1         2     3  0    5    or
                 1         4     3  0    5
```

1, 2, and 4 are "constant terms" and 3 and 5 are "variable terms." Bresnan (1977) gives the following succinct definition of "proper analysis" in fn. 4:

   iii)   "A proper analysis of a structure s with respect to a transformation T is a factorization $(p_1, \ldots, p_n)$ of s which satisfies the structural [description] of T and on which the transformational mapping (structural change) of T is defined."

A proper analysis of (iv) with respect to the Relativization transformation, which would give either the sentence in (v) or in (vi), is shown in (vii).

```
    iv)    the man COMP John liked rel
     v)    the man that John liked
    vi)    the man who John liked
```

vii)
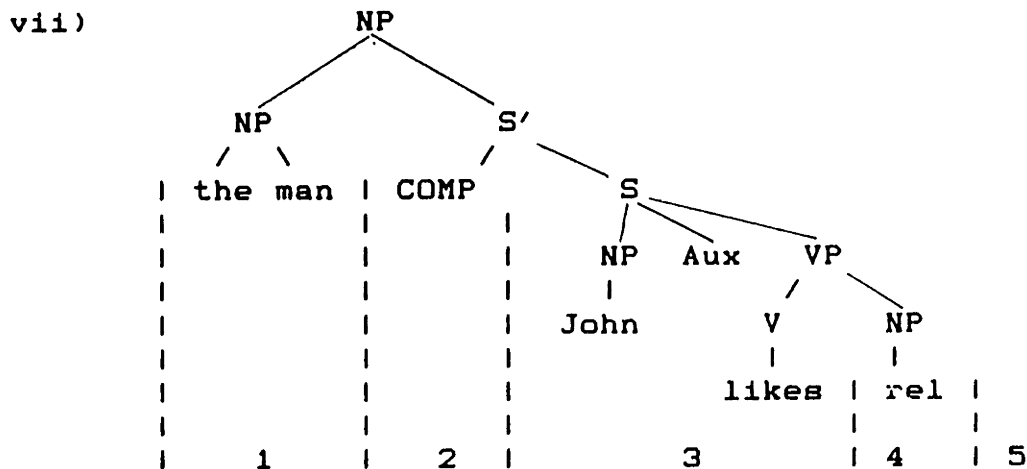
4)   The Complementizer Constraint on Variables: For any
       proper analysis (...,X,A,Y...) such that X and Y are
       variable factors and A is a constant factor to be
       deleted, if X = ...COMP, then .... must be empty (of
       terminals).

The generalization which (4) is intended to express is "that

variable factors cannot split off complementizers from the

clauses they mark and lump them together with arbitrary

material" (p.173). This constraint rules out the factorization

of (5a) shown in (5c), correctly predicting that (5b) will be

ungrammatical. (Recall that "rel" is a dummy relative marker

deleted by the relativization transformation.)

5)   a.   the woman COMP I think COMP rel will win the race
       b.   * the woman that I think that will win the race

       c.   the woman COMP I think COMP rel will win the race
              | | | | |
              | 1 | 2 | 3 | 4 | 5

Notice that this approach does not imply that there is no

movement or that there are no generalizable characteristics of

movement; it argues instead that sensitivity to island con-

straints is not a diagnostic for movement.⁶ This position

received support if it could be shown that there are construc-

tions which are demonstrably not derived by movement, but

which nevertheless exhibit what are for Chomsky bounding

effects.

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6. See, for example, Bresnan (1977) where the failure of pied-
piping in comparatives is argued to be an indication that wh-
movement (which allows pied-piping) is not involved; that is,
pied-piping is taken as a diagnostic for movement.

Although the question of whether transformations were bounded or unbounded was a central topic of this debate, there is a core distinction between the two approaches which has been somewhat neglected in the brief summary above. In Chomsky (1975) it had already been suggested that the terms of a structural description of a transformation be limited to the terms affected by the structural change and variables. The structural description of Passive could therefore only be as shown in (6b), not as in (6a).

6) a.   (vbl, NP, Aux, V, NP, by, #, vbl)
    b.   (vbl, NP, vbl, NP, vbl)

Adopting Emonds (1976) structure-preserving hypothesis allows the further reduction of (6b) to "Move NP", a transformation with only one constant term. This move represented a radical departure from construction-specific transformations, such as that in fn. 4, in the direction of a generalized transformation "Move α" constrained by general conditions. For a constraint on variables to have meaningful content, the structural descriptions of transformations must contain at least two constant terms, that is, no constraint on variables can be formulated to apply to a structural description of the form (vbl, α, vbl). The Subjacency Condition could be considered a constraint on the content of a variable in the structural description of a movement transformation so long as the transformation was formalized as in (6b). Once movement becomes "Move α" the Subjacency Condition must be regarded as a

constraint on the mapping from one level to another; the no-
tion "constraint on variables" loses significance altogether
within this new theoretical context. The importance of the OWM
programme, to demonstrate that constructions which do not
involve overt wh-operators but which exhibit bounding effects
could be convincingly derived via covert wh-movement, becomes
clear within the framework of this debate.

The increasing articulation of the theory of empty cate-
gories made possible the final step from movement of overt
operator + deletion to null operator movement. In OB Chomsky
proposes that the object in a purpose clause is base-generated
as PRO, as shown in (7a).

7) a.   John bought it $[_a'$ $[_a$ PRO_i to play with PRO_a]
    b. $John_j$ bought it_i $[_a'$ PRO_a $[_a$ PRO_i to play with t_a]

PRO, even in COMP, was subject to the OB rule of Control
((95), p.33), which was constrained by the Opacity Condition
((27), p.13). In its DS position PRO_a is in an opaque domain
and cannot receive an index; these considerations force the
movement shown in (7b). Once in COMP, PRO_a will be accessible
to the rule of Control and will be assigned the index of it by
the Minimal Distance Principle (95), p.33). The position of
null operators within a more current typology of empty catego-
ries will be discussed in chapters two and three.

1.2 Properties of OWM Constructions

1.2.1 The Status of (3)

Within the OWM framework (3c,d) derive from the SSC, PIC and the Subjacency Condition. It was shown in later work, that the SSC and, less straightforwardly, the PIC did not apply to the trace of wh-movement. Evidence that the SSC does not apply to variables comes from both Italian and English. ((8a) is from Rizzi (1978/82); (8b) is from OB.)

8) a. tuo fratello, a cui mi domando [che storie abbiano
         raccontato t, era molto preoccupato
         'your brother, to whom I wonder [which stories
         they told t] was very troubled'
    b. What$_i$ do you know how$_j$ [PRO to do t$_i$ t$_j$]

In both cases, grammatical wh-extraction takes places from within the domain of a subject. (Any marginality associated with (8b) is attributable to other factors.)

There is conflicting evidence as to the applicability of the Nominative Island Constraint (NIC), the OB reformulation of the PIC, to variables.[7] Freidin & Lasnik (1979) suggest that the ungrammaticality of sentences such as (9) indicates that the NIC does not apply to variables.

9) * who$_i$ did he$_i$ say [t$_i$' [t$_i$ knew John]]

---

7. In OB the NIC is defined as in (i); the case assignment condition in (ii) is a necessary concomitant of this reformulation of the PIC.

    i)   A nominative anaphor cannot be free in S'.
    ii) The subject of a tensed clause is assigned nominative case.

If t_i were an anaphor subject to the NIC, then, since it is bound in S' by t_i', the sentence would be grammatical. Freidin & Lasnik conclude that the ungrammaticality of (9) indicates that variables behave like names rather than anaphors. On the other hand, the far more serious ungrammaticality of (10b), as compared to that of (10a), suggests that the NIC does apply to variables.

10) a. ?? what$_i$ did John wonder how well$_j$ Bill did t_i t_j
     b. * who did John wonder how well$_j$ t_i did his work t_j

In Chomsky (1981; hereafter LGB) these asymmetries and apparent contradictions motivate a major reorganization of the theory, with the following results, among others: (i) Binding Conditions A and C respectively account for the phenomena which formerly motivated the application of the SSC to anaphors and for the cases of apparent non-application of the NIC to variables, such as (9). (ii) The Empty Category Principle

11) [$_e$ e] must be properly governed

is proposed to account for the phenomena which formerly motivated the application of the NIC to variables, i.e. (10).[a]

While there have been many developments in the theory since LGB, the basic outlines of the GB framework have

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a. For discussion of this principle as it was first proposed see LGB, chapter 4 and chapter 5. A more recent formulation of the ECP and the notions government and proper government appears below.

remained more or less the same. Therefore, I will restate the

properties in (3) in more current terms rather than as they

would be stated within the _LGB_ framework.

12)   Wh-movement has the following general characteristics:

    a.   it leaves a gap
    b.   it obeys the Subjacency Condition[9]
    c.   the trace left by wh-movement is subject to the
          ECP and Binding Condition C

The Subjacency Condition, the ECP and Binding Condition C are

defined as follows.

13)   a.   The Subjacency Condition: If (α_i, α_{i+1}) is a link
             of a chain, then α_{i+1} is 1-subjacent to α_i.
       b. β is n-subjacent to α iff there are fewer than n+1
             barriers for β that exclude α.[10]

---

9. If Huang (1982) is correct then (12b) does not hold of LF
Wh-movement. See Longobardi (forthcoming), Fukui (1987), and
Pesetsky (1982) for arguments that the Subjacency Condition
does apply to LF Wh-movement.

10. The following definitions are essentially those which
appear in _Barriers_.

    i) α **excludes** β if no segment of α dominates β.

In the structure in (ii), the category α (which is made up of
the two segments α and $\alpha*$) excludes τ, fails to exclude β and
includes δ.

    ii) σ
                    / \
                 α τ
                / \
             α β
            / \
        ... δ
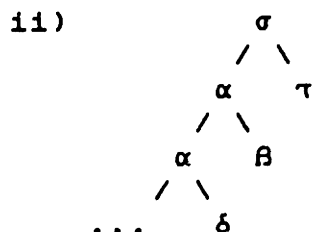
    iii)   Where α is a lexical category, α L-marks β iff β
           agrees with the head of τ that is θ-governed by α.

    iv) α θ-governs β iff α is a zero-level category that
           θ-marks β and α, β are sisters.

14)   The ECP: Non-pronominal empty categories must be
       properly governed at LF.[11]

15)   Binding Condition C: An R-expression must be A-free
       (within the domain of the head of its maximal chain).

(13) and (14) are taken from Chomsky (1986b; hereafter <u>Bar-</u>

<u>riers</u>) and (15) is from Chomsky (1986a; hereafter <u>KoL</u>).

Null operator constructions are still of great theoreti-

cal importance as given the controversy concerning the status

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        v) τ is a BC for β iff τ is not L-marked and τ
               dominates β.

        vi) τ is a **barrier** for β iff (a) or (b):
               a) τ immediately dominates δ, δ a BC for β;
               b) τ is a BC for β, $\tau \neq$ IP.

11. The <u>Barriers</u> adaptation of the Lasnik & Saito (1984)
reformulation of the ECP is essentially as given below; some
modifications have been made based on Chomsky (1986, class
lectures).

        i) α **governs** β iff α m-commands β and every barrier
               for β includes α.

        ii) α **m-commands** β iff every category which fails to
               exclude α includes β.

        iii) α **antecedent governs** β iff α is coindexed with β
               and α governs β.

The ECP consists of two parts: the assignment of a τ-feature
as shown in (iv) and the LF filter in (v).

        iv)   t -> [+τ] when antecedent governed
               t -> [-τ] otherwise

        v)   *t
               [-τ]

The point in the derivation when τ-assignment occurs is
extremely important, as is the ordering of Affect α and τ-
assignment. Chomsky assumptions about these issues differ from
those made by Lasnik & Saito in several ways; see chapter four
for discussion.

of the Subjacency Condition (as a condition on movement vs. a condition on representation) and the status of the ECP (as a local vs. non-local condition on empty categories). Kayne (1981, 1983) subsumes some of the phenomena traditionally dealt with by the Subjacency Condition under a revised version of the ECP which is non-local, i.e. one which imposes conditions not only on the empty category but also on the structure or "path", in the graph-theoretic sense, which intervenes between the empty category and its antecedent. These path conditions apply to both movement and non-movement derived structures. Such an approach (adopted and expanded on by Cinque (1986a, 1986b), Longobardi (1984, 1986), Pesetsky (1982) and others) does not presuppose that there is no movement. However, by generalizing what are essentially bounding conditions so that they apply to non-movement representations, this approach removes an indirect argument for the existence of the movement transformation. With respect to this debate, the OWM constructions become once again significant, since they exhibit some of the characteristics of A'-movement derived constructions without the overt A'-operator.

1.2.2 Evidence for (3) and (12)

The constructions analyzed in OWM as involving wh-movement on the basis of the characteristics in (3) included comparatives, topicalizations, clefts, finite and infinitival indirect questions, finite and infinitival relatives, infini-

tival complements[14] of the degree specifiers <u>too</u> and <u>enough</u>,
and infinitival complements of adjectives of the <u>easy</u> class.[13]
In this and subsequent subsections I will review some of the
data and arguments found in OWM and discuss their continuing
validity given the reformulation of (3) as (12).

Finite relative clauses and indirect questions, the con-
structions which most closely resemble canonical wh-movement,
receive little discussion in OWM. Data which illustrate the
properties (3b,c,d) for relative clauses and indirect ques-
tions appear in (16) and (17). (18) - (23) illustrate that the
properties in (3) hold of the other target constructions.
((18) - (23) are taken from OWM.)

Indirect Questions:

16) a.   I wonder who Bill met t
     b.   I wonder who Mary thinks that Bill met t
     c. * I wonder what Bill discussed the claim that John
           had mishandled t
     d. * I wonder what Bill knew how John had fixed t

Tensed Relatives:

17) a.   the man who Bill met t
     b.   the man who Mary thinks that Bill met t
     c. * the case that Bill discussed the claim that John
           had mishandled t

---

12. While Chomsky refers to the clauses associated to adjecti-
val qualifiers such as <u>too</u> and <u>enough</u> as complements, it is
not clear that they have the status of, for example, verbal
complements. In particular, it is unlikely that <u>too</u> assigns a
θ-role to the CP in (i).

    i) John is too angry [CP to talk to]

13. Purposives are not discussed in OWM, though they are
analyzed as involving movement in OB. Purposives do exhibit
the characteristics in (3)/(12). See section 1.2.3 for discus-
sion.

d. * the car that Bill knew how John had fixed t

Comparatives:

18) a.   Mary isn't the same as [she was five years ago]
     b.   Mary isn't the same as [John believes [that Bill
          claimed [that she was five years ago]
     c. * Mary isn't the same as [John believes [Bill's
          claim [that she was five years ago]
     d. * Mary isn't the same as [I wonder [whether she
          was five years ago]

Topicalization:

19) a.   this book, I really like t
     b.   this book I asked Bill to get his students to
          read t
     c. * this book, I accept the argument that John should
          read t
     d. * this book, I wonder who read t

Clefts:

20) a.   it is this book that I really like t
     b.   it is this book that I asked Bill to get his
          students to read t
     c. * it is this book that I accept the argument that
          John should read t
     d. * it is this book that I wonder who read t

Infinitival Relatives:

21) a.   I found a book for you to read t
     b.   I found a book for you to arrange for Mary to tell
          Bill to give t to Tom
     c. * I found a book for you to insist on the principle
          that Tom should read t
     d. * who did he find a book t to read t¹⁴

---

14. In the discussion of infinitival relatives, adjectival
qualifier complement clauses and tough complements, Chomsky
gives examples which indicate that these constructions create
wh-islands rather than examples which indicate that the
presence of a wh-island within the construction results in
ungrammaticality, cf. (17d), (18d), (19d) and (20d) in the
text. Examples for (21), (22) and (23) which are comparable to
the (d) examples in (17) - (19) are given below.

    i) * a book to wonder whether to read t
    ii) * the job was dangerous enough (for us) to wonder
          whether to offer t to John
    iii) ? John is fun for us to find out how to annoy t

Degree Clauses:

22) a.   John is tall enough for you to see t
     b.   John is tall enough for us to arrange for Bill to
           see t
     c. * the job is important enough for us to insist on
           the principle that the committee should
           advertise t
     d. * who, was the job, good enough for us to offer t,
           to t,¹*

Easy Complements:

23) a.   John is easy for us to please t
     b.   John is easy for us to convince Bill to do
           business with t
     c. * John is easy for us to describe to Bill a plan to
           assassinate t
     d. * what, is John, fun for us to give t, to t,¹*

It is easy to see that the constructions under consideration

do exhibit the properties characterized in (3).

    Additional data are needed to determine whether these

constructions have the properties in (12). The (d) examples in

(16) - (23) indicate that the process by which these construc-

tions are derived is subject to the Subjacency Condition. (24)

illustrates what is a variant of this same point within the

Barriers framework, namely, that these constructions obey the

Subject Condition (Huang's (1982) CED). (25) indicates that

the empty categories in these constructions are subject to the

ECP.

24)   a. * I wonder who Mary thought [friends of t] left

_____

While (i) and (ii) are pretty seriously ungrammatical, (iii)
seems to me to be less deviant. This might have to do with the
generally weak (perhaps nonexistent) subjacency violation
created by an infinitival how wh-island.

b. * the man who I think that [friends of t] left
    c. * I interviewed more students than [friends of t]
         signed up
    d. * John, I think that [pictures of t] will be on sale
    e. * It was John that [pictures of t] were on sale
    f. * a man (for us) to convince Mary that [pictures
         of t] should appear on the front page
    g. * John is too well-liked for us to think that
         [friends of t] would betray him
    h. * John would be difficult to convince Mary that
         [pictures of t] should appear on the front page

25)   a. * I wonder who Mary thought that t left
      b. * the man who I think that t left
      c. * I interviewed more students than Bill said that t
           signed up
      d. * John, I think that t left
      e. * It was John that Bill thought that t left
      f. * a man (for us) to convince Mary that t should get
           the job
           (cf. ? man (for us) to convince Mary that she
           should hire t)
      g. * John is too incompetent for us to convince Mary
           that t should get the job
      h. * John would be difficult to convince Mary that t
           should get the job

The question of whether and how Binding Condition C is rele-

vant to these constructions will be taken up in §3.3.

1.2.3 Purposives

    Although purposives are not discussed in OWM, they

exhibit the properties in (3)/(12) and appear in OB as the

canonical example of "PRO movement", the original null opera-

tor hypothesis, as mentioned above. The following examples

illustrate the existence of a gap (26a); the possibility of

embedding (26b); the relevance of the subjacency condition

(26c), (26d) and, as a special case of this condition, the CED

(26e); and the relevance of the ECP (26f).[13]

26) a.   John bought Bill a new toy/it [Op [PRO to play
            with e]][16]
     b. ?   John bought it [Op [PRO to (try to) convince
            Bill to play with e]]
     c. *   John bought it [Op [PRO to devise a plan to play
            with e]]
     d. ?? John bought it [Op [PRO to try to figure out [
            how to play with e]]]
     e. *   Mary brought him, in [Op, for [[friends of e] to
            give him a birthday present]]
     f. *   John brought him, in [Op, [PRO to convince Mary
            that e, should get the job]]

From now on any discussion of "OWM constructions" will be

taken to refer to purposives as well.

1.2.4 Tensedness

The data in the preceding section offer convincing evi-

dence in favor of the hypothesis that wh-movement occurs in

all the OWM constructions. Nevertheless, there are points

where the analogy between canonical wh-movement constructions

and the OWM constructions breaks down. Chomsky discusses one

such point in OWM having to do with the marginality of embed-

ded finite clauses in infinitival indirect questions, infini-

tival relatives, degree clauses, and _easy_ complements.

---

15. For clarity, I will represent the trace of an overt A'-
operator as t and the trace of a null operator as e.

16. In constructions where there might be confusion between an
infinitival relative and a purpose clause, I will give both a
full NP and a pronoun to help disambiguate the sentence in
favor of the purposive reading.

27)　a.　?'　I wonder who to persuade Mary that I took t to the
　　　　　party
　　　b.　?　I found [a book for you to convince Bill that I
　　　　　wrote e]
　　　c.　?*　John is incompetent enough for Bill to think that
　　　　　we fired e for a good reason
　　　d.　??　John is too arrogant for me to believe that Mary
　　　　　likes e
　　　e.　?'　John was easy for us to convince Bill that we
　　　　　liked e
　　　f.　?*　John bought this book/it for us to convince Mary
　　　　　that he wrote e

The judgements on the above sentences are my own. I found that
while speakers vary widely in their assessment of these sen-
tences, it is generally agreed that they do not exhibit the
total grammaticality of wh-extraction from within tensed
complements in direct questions, e.g. (28).

28)　Who did you persuade Mary to tell John that we visited t

There are two possible explanations for the unexpected
deviance of the sentences in (27): (i) wh-movement in the OWM
constructions either possesses or lacks some property which
differentiates it from canonical wh-movement or (ii) some
other property of these constructions interacts with wh-
movement to produce the ungrammaticality. Naturally, a third
possible explanation exists: both (i) and (ii) may be true. I
will leave this question unanswered for the moment since it
calls for an investigation of the precise articulation of
bounding theory and the idiosyncratic properties of the con-

structions in question, issues which will be taken up in detail in chapter four.[17]

1.3 Parasitic Gaps

1.3.1 Extending the OWM Diagnostic

Many current accounts of parasitic gap constructions (e.g. Chomsky 1986a, hereafter, Barriers; Contreras 1984; Stowell 1985a and others) posit the existence of a null operator binding the so-called "parasitic" gap, as illustrated in (29). (I assume the standard judgement for parasitic gaps, namely, a mild marginality indicated by a single question mark.)

29) a. ? Which paper$_i$ did you read t$_i$ before [Op$_i$ [PRO
              filing e$_i$]]
      b. ? an artist that [Op$_i$ close friends of e$_i$]
              admire t$_i$

In chapter three I will argue for a variant of the null operator hypothesis which holds that null operators in sentences such as those in (29) differ functionally from the operators in the constructions discussed in previous sections. The functional difference is that the null operator in parasitic gap constructions acts as an intermediate link in an A'-chain, while the null operator in OWM constructions heads a chain. This approach is developed and motivated in the next two chap-

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17. Given that the topic of this dissertation is null operator
constructions and that indirect questions never appear with
null operators (presumably for selectional reasons), I will
hereafter exclude them from the discussion.

ters and I will not elaborate on it now. The point that is relevant for this introductory overview is that any version of the null operator hypothesis predicts that parasitic gap constructions will exhibit all the properties associated with the OWM constructions discussed in §1.2, in particular, the properties in (3)/(12). The following examples illustrate the possibility of embedding (30a); the relevance of the Subjacency Condition (30b), (30c) and, as a special case of this condition, the CED (30d); and the relevance of the ECP (30e).

30) a. which package did you measure t [before trying to wrap e]
    b. * this is the man John interviewed t [before asking you which job to give to e][a]
    c. * this is the man John interviewed t [before hearing about the plan you proposed to e]
    d. * this is the candidate John hired t [because [close friends of e] threatened him
    e. * who did you invite t [without believing [that t liked Mary]]

The data in (30) is consistent with the presence of a null operator in the "parasitic domain."

Depending on which sub-group of the OWM constructions parasitic gap constructions pattern with, we might also expect that they will decrease in grammaticality when the parasitic gap is embedded in a tensed clause.

31) ? which book did you review t [without even telling the author that you had read e]

---

18. I will depart from the notational convention established in fn. 15 somewhat when dealing with parasitic gaps by using t for the "real" gap and e for the parasitic gap even when the real gap is derive by null operator movement, as in (30b).

The contrast between (31) and sentences such as (30a) seems to me to be minimal, perhaps not even as strong as the contrast between the sentences in (27) and their infinitival counter-parts, but some speakers find it rather strong, so I will assume that the tensedness constraint applies to parasitic gap constructions as well.

1.3.2 Some Differences

There are two well-known properties[19] of parasitic gap constructions which the OWM constructions do not share:

32)   Parasitic gaps --

    a.   are licensed only in the context of SS A'-movement
    b.   are ruled out if the "real" gap c-commands the
          parasitic gap at SS

Data illustrating the first property appear in (33); the second property, which has been called the "anti-c-command" constraint, is illustrated in (34).

33)   a. * Mary filed every paper$_i$ without reading e$_i$
       b. * Who filed which paper$_i$ without reading e$_i$

34) * Which paper$_i$ t$_i$ fell off the desk before John read e$_i$

It is obvious from the data presented in previous sections that (32a) does not hold of the OWM constructions; the gramma-tical sentences in (17) - (23) do not involve A'-movement other than the movement of the operator native to the con-

_____

19. These properties were originally noted by Taraldsen (1979); see also, Engdahl (1981a, 1981b) and Chomsky (1982).

struction. To see that the presence of a coindexed NP in a c-commanding A-position does not affect the grammaticality of OWM constructions, it is necessary to examine the (a) examples of (17) - (23) and (26), repeated below as (35).

35)   a.   the man who/that Bill met e
         b.   Mary isn't the same as she was five years ago
         c.   this book, I really like e
         d.   it is this book that I really like e
         e.   I found a book for you to read e
         f.   John is tall enough for you to see e
         g.   John is easy for us to please e
         h.   John bought a new toy to play with e

In (35a,b,c,e) the NP which is coindexed with the gap is not in an A-position; the examples are, therefore, irrelevant to the discussion. However, the NPs coindexed with the gaps in (35f,g,h) are in A-positions. Therefore, if the anti-c-command constraint applied to OWM constructions, we would expect (35f,g,h) to be as ungrammatical as (34). As illustrated by the grammaticality of (36), we can also rule out the possibility that OWM constructions do not exhibit anti-c-command effects because these effects are somehow crucially linked to matrix wh-movement.

36)   a.   Which professor$_i$ t$_i$ is easy to talk to e$_i$
         b.   Who$_i$ t$_i$ is too angry to talk to e$_i$
         c.   Which toys$_i$ did you give the kids t$_i$ to play with e$_i$

It could be argued that the anti-c-command effect is obviated in (35f,g,h) and (36) by extraposing the infinitival clause containing the gap outside the c-command domain of the coin-dexed NP in an A-position. Evidence that the clauses in these

constructions are not extraposed outside the domain of the

coindexed NP is found in (36).

37)　　a.　* 　He$_i$ is easy to convince John$_i$'s friends to visit
　　　　　　　　e$_i$
　　　　b.　* 　He$_i$ is too drunk PRO$_{*i}$ to give John$_i$ the keys
　　　　c.　* 　Mary gave the toy to him$_i$ [to play with e while
　　　　　　　　John$_i$ was in school]
　　　　d.　?? 　We interviewed him$_i$ before we hired John$_i$

For many speakers, the violations in (36a,b,c) are signifi-

cantly worse than that in (36d), indicating that the coindexed

NP c-commands, rather than "weakly c-commands" the clause

containing the gap.[20]

　　　Not only do the sentences in (36) fail to exhibit anti-

c-command effects, SS movement of the matrix antecedent of the

null operator does not even result in the customary mild mar-

ginality associated with parasitic gap constructions. The

grammaticality difference between (29) and (36) cannot simply

be attributed to varying degrees of complexity as both, by

hypothesis, contain the same number of gaps and operators in

virtually the same configuration. This, then, is another point

of dissimilarity between parasitic gaps and OWM constructions:

in their canonical forms the latter are fully grammatical,

while the former are somewhat marginal.

　　　To summarize briefly: in addition to accounting for the

shared properties of null operator constructions any analysis

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20. See Contreras (1984), and Hudson (1984) for arguments that
c-command holds in sentences such as (29a) and Barriers for
the proposal that it holds only "weakly."

of parasitic gap constructions based on the null operator

hypothesis must answer the following questions:

38)   a.   What is the anti-c-command constraint and why does
           it affect only parasitic gap constructions?
      b.   Why do parasitic gaps require an SS A'-antecedent
           while the gaps in OWM constructions do not?
      c.   Why are canonical parasitic gap constructions
           marginal while canonical OWM constructions are
           not?

These questions, and others which will arise during the

examination of particular constructions and theoretical

issues, motivate the inquiry into the nature of null operator

constructions which appears in the chapters to come. Before

beginning the investigation proper, I will discuss briefly

some null operators which differ from those we have seen thus

far.

1.4 Null Operators and PRO_arb

In recent work several authors have proposed analyses

involving null operators which do not resemble overt wh-opera-

tors as straightforwardly as those previously discussed. In

this section I will review proposals made by Epstein (1984),

Lebeaux (1984) and Borer (1986), which involve null operators

that determine various properties of PRO_arb interpretation.

All three authors bring to light interesting aspects of arbi-

trary null subjects and, in the case of Lebeaux and Borer,

their proposals are embedded in more comprehensive analyses of

control phenomena. My argument in the remaining sections of

this chapter is not that, _a priori_, null operators should not

play a role in an account of PRO₄ᵣₑ, but that the null opera-
tor accounts of PRO₄ᵣₑ which have been proposed fail to
provide interesting alternatives to default arb assignment and
complicate the "theory" of null operators to an extent which
is not justified by the explanatory gains of the analyses.

1.4.1 Benefactive Null Operators

Epstein (1984) argues that PRO₄ᵣₑ in English is, at LF,
a variable bound by a universal quantifier. His argument turns
on the interpretation assigned to the sentence in (39).

39) it is fun [PRO to play baseball]

He points out that (39) has the interpretation in (40b),
rather than that in (40a), a surprising fact if the LF and SS
representations of (39) are isomorphic.

40) a. it is fun [(∀x) [x to play baseball]]
     b. (∀x) [it is fun [x to play baseball]]

(40a) may be paraphrased as "if everyone plays baseball, it is
fun," which is not equivalent in meaning to (39). While (39)
seems to indicate that the subject of the complement clause
takes scope over the predicate, (41) shows that this scope may
not be extended any further.

41) a. Josh said it is fun to play baseball.
     b. Josh said [(∀x) [it is fun [x to play baseball
         ]]]
     c. (∀x) [Josh said [it is fun [x to play
         baseball]]]

The interpretation of (41a) corresponds to the representation in (41b) rather than in (41c). Epstein rejects one possible approach, namely, that PRO.ᵣ. is a quantifier which is subject to a marked (i.e. non-clause-bound) form of QR, and offers instead an analysis which takes into account the actual argument structure of _easy_ predicates. His proposal is that the benefactive argument of these predicates (whether adjectival or nominal) is an obligatory argument subject to the Projection Principle, i.e., structurally represented at every level. Familiar sentences such as (42) show that this argument may be lexically, and therefore structurally, represented.

42)   It is easy for the rich for the poor to do the hard work.

Epstein argues that the argument must be structurally represented even when it is not lexically represented.[21] He goes on to argue that the base-generated empty category in this argument position at SS is pro, which receives universal quantifier interpretation only when it is antecedentless and which controls the PRO subject of the complement clause.[22] The scope

21. For analyses of these constructions within earlier frameworks, see Grinder (1970, 1971), Kimball (1971), Lasnik & Fiengo (1974), and _LGB_, among others.

22. Epstein suggests (fn. 8) that pro in these constructions is licensed by benefactive θ-role assignment, possibly the only means of licensing pro in English. See Epstein (1984) fn. 8 and Epstein (1983) for discussion of some problems that arise for this analysis.

of pro is given by unmarked, clause-bounded application of
QR.[23]

This approach allows two different representations for
(43a), namely, those in (43b) and (43c).

43)   a.   it's fun for everyone to join in the game
       b.   it's fun for everyone [PRO to join in the game]
       c.   it's fun pro [for everyone to join in the game]

As we would expect the two representations correspond to two
different interpretations. (43b) means something like (40b),
which is expected given the assumption that the benefactive
argument controls the complement subject. (43c) may also mean
(40b); this would presumably correspond to "accidental" coin-
dexation of pro and everyone. However, (43c) may also mean
something like (44), where X, Y are (possibly overlapping)
sets.

44) $(\forall x : x \in X)$ [it is fun for x $(\forall y : y \in Y)$ [y to join in
       the game]]

A rougher, but perhaps more cogent, paraphrase of (44) is "for
everyone (the spectators and the team), it is fun for everyone
(on the team) to join in the game." In this case, pro and
everyone are not coindexed. Note that the sets X, Y may be
coextensive, but even in this case the relation between the
variables x and y is not one of control or variable binding.

_____

23. As Epstein notes in fn. 5, this approach predicts that
arbitrary PRO will only be possible in contexts where there
exists an "implicit" argument, i.e. quantificational pro, to
act as a controller for PRO.... This leaves the sentences in
(73) below unaccounted for.

An alternative analysis of the PRO.,., scope facts

discussed by Epstein derives from Rizzi's (1986) analysis of

null objects in Italian and English. Rizzi explores the possi-

bility that null object sentences such as (45b) are instances

of universal quantification which, by analogy with the "rough-

ly synonymous" (45a), have a logical representation of approx-

imately the form shown in (45c). ((45)=Rizzi's (33))

45)   a.   Questa decisione rende [tutti felici]
                'This decision makes [everyone happy]'
        b.   Questa decisione rende [___ felici]
                'This decision makes [___ happy]'
        c.   For all x, this decision makes [x happy]

Rizzi shows, however, that the scopal properties of overt

quantifiers, like tutti, and the alleged null quantifier of

(45b) diverge in certain contexts. In particular, overt quan-

tifiers in the subject position of small clauses may not take

scope over matrix negation. Consider the sentences in (46),

Rizzi's (34) and (35a).

46)   a.   Questa decisione non rende [molti cittadini
                felici]
                'This decision doesn't make [many citizens
                happy]'
        b.   Questa decisione non rende [solo Gianni felice]
                'This decision doesn't make [only Gianni happy]'
        c.   Questa decisione non rende [tutti felici]
                'This decision doesn't make [everyone happy]'

According to Rizzi, the only interpretations available for

these sentences are those in which negation takes scope over

the quantifier. That is, (46c) corresponds to (47a) rather

than (47b).

47) a.   it is not the case that (∀x) this decision makes x
           happy
     b.   (∀x) this decision does not make x happy

In contrast, null subjects of small clauses take scope over

matrix negation; the interpretation of (48) corresponds to

(47b), rather than (47a).

48) Questa decisione non rende [___ felici]

Rizzi suggests that these empty categories are analogous to

generic NPs rather than lexical quantifiers, since generic NPs

also take scope over matrix negation; that is, (49a) corre-

sponds to (49c), not (49b).

49) a.   Questa decisione non rende [la gente felice]
           'This decision doesn't make [people happy]'
     b.   it is not the case that this decision makes people
           happy
     c.   people are such that this decision does not make
           them happy

The "flavor of universal quantification" in (45b) and (48) is

present also in (49a), suggesting that the null object in

Italian should be represented as a generic pronoun rather than

an operator-variable chain.[24]

    These observations hold of the benefactive arguments of

easy predicates in English as well. Compare the sentences in

(50).

50) a.   it isn't fun for everyone to play baseball

---

24. This approach is, naturally, inconsistent with one which
deals with generics as wide-scope quantifiers subject to QR.

      b.   it isn't fun to play baseball

51)   a.   it's not the case that (∀x) [it's fun for x [for
            x to play baseball]]
      b.   (∀x) [it isn't fun for x [for x to play
            baseball]]

The wide scope reading, (51b), is the reading assigned to

(50b). As noted in the discussion of (43) above, sentences

with only one lexical _for + NP_ sequence are ambiguous. This

should mean that, even given the presence of negation, (50a)

could have the two SS representations in (52).

52)   a.   it isn't fun for everyone [PRO to play baseball]
      b.   it isn't fun pro [for everyone to play baseball]

Structural ambiguity should result in interpretational ambigu-

ity; this seems to be the case in (52), although the judge-

ments are difficult. (50a), on the basis of (52a), should have

the reading associated with (51a). (50b) is also a possible

representation for (50a) and, since pro appears in the bene-

factive position in (52b), we would expect it to be able to

take wide scope and have the reading in (51b); that is, it

should be possible to get the wide scope reading for the quan-

tifier in (50a) by accidental coindexation of the quantifier

and pro. I think that this "accidental coreference" reading is

possible, e.g. "for all of us, it won't be fun if all of us

play baseball (because the batting lineup will be too long)."

This should not be taken as evidence that the quantifier takes

wide scope in (52b), since another reading is also available:

"for everyone (the spectators), it isn't fun for everyone (on

the team) to play baseball."[25] This reading corresponds to the
representation (53).

53)   ($\forall$x:x $\in$ X) [it isn't fun for x ($\forall$y:y $\in$ Y) [y to play
       baseball]]

The accidental coreference reading of (52b) occurs when X=Y,
just as in (43c).

In order to have an argument (analogous to Rizzi's for
Italian null objects) that benefactives are interpreted as
generics rather than quantifiers, it must be shown that overt
quantifiers which are undeniably in the benefactive position
may not take wide scope. This task is complicated by the
structural ambiguities which arise when only one for-phrase is
present, as discussed in the preceding paragraphs. Neverthe-
less, sentences such as those in (54) seem to make this final
point.[26]

54)   a.   It isn't fun for everyone for the kids to play
             baseball in the living room.
       b.   It isn't fun for everyone for John to sing songs.

---

25. I believe that the "overlapping sets" reading is also
available as well, e.g. "for everyone (spectators and play-
ers), it isn't fun for everyone (players) to be on the court
at the same time."

26. Epstein (p.c.) suggests that while the scope of the null
benefactive differs from that of everyone, it matches the
scope of non-negative polarity anyone in the same structures,
e.g.

    iii)   It's fun for anyone to play baseball
    iv)   It isn't fun for anyone to play baseball

However, several authors have argued that anyone is not
subject to QR, but rather behaves like a name. See LGB, Aoun,
Hornstein, & Sportiche (1981), Hornstein (1984).

As far as I can tell, the wide-scope reading is unavailable

for the quantifiers in (54). It could be argued that overt

quantifier scope is limited by the presence of a PP node,

whereas the scope of the null benefactive is not so limited.

The sentences below suggest, however, that benefactive PPs do

not inherently limit quantifier scope.

55)   a.   (Sooner or later,) someone causes problems/makes
              life difficult for everyone.
      b.   (Sooner or later,) something is difficult for
              everyone.

Both of the sentences in (55) allow the wide-scope reading for

the quantifiers.

If Rizzi's observations about the generic interpretation

of null object pro in Italian extend to the interpretation of

null benefactives in English, as I believe the foregoing dis-

cussion demonstrates, the question then arises as to whether

the English null benefactive is structurally represented on a

par with the Italian null object. Within Rizzi's theory of

pro, generic objects in English are not structurally represen-

ted, in contrast to Italian null objects. This distinction is

supported by several empirical arguments, most of which focus

on the ability of the Italian null object to be syntactically

"active" in situations where the English null object is syn-

tactically "inert". The argument which is relevant for this

discussion is the ability of Italian null objects to control

PRO and the inability of English null objects to do so. The
relevant paradigms appears in (56) and (57).

56) a.   This leads people to the following conclusion.
    b.   This leads to the following conclusion.
    c.   This leads people [PRO to conclude what follows]
    d. * This leads [PRO to conclude what follows]

57) a.   Questo conduce la gente alla seguente conclusione.
    b.   Questo conduce ____ alla seguente conclusione.
    c.   Questo conduce la gente a [PRO concludere quanto
          segue]
    d.   Questo conduce ____ a [PRO concludere quanto
          segue]

From this we might conclude that the benefactive argument is,
as Epstein argues, structurally represented at all levels,
since it is able to control.

    The facts concerning control by dative arguments make it
unclear whether we can actually come to this conclusion of the
preceding paragraph. Null dative arguments may control PRO in
both English and Italian. (See Bresnan (1982) and Roeper
(1985) for discussion.)

58) a.   John gave the order to Bill PRO to leave
    b.   John gave the order PRO to leave

Null dative arguments differ from Italian null objects (which,
by Rizzi's hypothesis, are structurally represented) in one
crucial respect: while they may control, they may not serve as
anaphor binders. As Rizzi notes, the distinction between null
and overt dative arguments is not as strong as that between
null and overt non-dative objects since even the overt dative

arguments bind anaphors only marginally. Nevertheless, there

is a clear contrast, as illustrated in (59).

59)   a. *   John said something about themselves/each
                other/oneself
        b. ?   John said something to them about themselves/each
                other

In a very simplified form, Rizzi's analysis of these facts is

as follows: control is a syntactic process which consists in

the SS coindexation of PRO with a lexically unsaturated θ-

role. A θ-role saturated in the lexicon (the process by which

(56b) is derived) is not visible for control. If direct object

θ-roles are not saturated in the lexicon they must be projec-

ted, i.e. structurally represented. Indirect object θ-roles

need not be structurally represented even if they are not

saturated in the lexicon. Therefore, at SS, an indirect object

θ-role which has been neither saturated in the lexicon nor

structurally projected is available for control. Binding,

however, always requires a structurally present binder.

Although it is difficult to construct a binding test for

the benefactive arguments of _easy_ predicates, null benefac-

tives do not seem to be able to bind an anaphor.[27]

60)   a. ?' Such problems are easy for John in spite of
                himself.

---

27. There is, of course, the question of whether there is an
appropriate command relation between the null benefactive and
the anaphor. The anaphor is contained in an adjunct and might,
therefore, be in a VP-adjoined position. The relative gramma-
ticality of (60a) suggests that, whatever the structural rela-
tion between the position of the benefactive and the anaphor,
it is enough like c-command to permit marginal binding.

b. * Such problems are easy in spite of oneself.

If Rizzi's criteria for determining whether null arguments are structurally represented are correct, then we need not assume that benefactive arguments of _easy_ predicates are structurally represented when they are not lexical.

The evidence against structurally representing benefactives is admittedly shaky, but the question of how to represent these arguments is distinct from the question of how their scopal properties are to be dealt with, although naturally the two are related. Concerning the latter question, the preceding discussion has presented strong evidence that the scopal properties of the null benefactive of _easy_ predicates may be explained without recourse to LF movement of the argument, i.e. without positing the existence of an LF null operator.

1.4.2 PRO$_{arb}$ Operators: An LF Approach

Lebeaux (1984) argues that null operators are always involved in PRO$_{arb}$ interpretation, even when benefactive or other sorts of "implicit" arguments are not present.[*] His account of PRO$_{arb}$ is embedded in a unified binding theory for PRO based on (61)-(63).

61) Binding category: β is the binding category for PRO if β

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28. The proposals in Sportiche (1983) are similar to Lebeaux's and, therefore, the comments in this section apply to them as well.

is the minimal NP, S dominating τ, where τ is the minimal S' dominating PRO.

62)   Closure: If PRO is unbound in its binding category, adjoin e₁ coindexed with PRO₁ to the binding category.

    62)   Closure: If PRO is unbound in its binding category, adjoin e_i coindexed with PRO_i to the binding category.

63)   Operator interpretation: An e in an A'-position, not bound by an A'-antecedent, is construed as an operator O. If O_i is coindexed with an antecedent NP_i, interpret it with the reference of that NP. Otherwise, interpret it as free (i.e. arbitrary), or, in marked cases, with a pragmatically picked out referent.

This approach accounts for the obligatory linked reference of

the two PROs in sentences such as those in (64).[29] It also

predicts that, if the binding categories of two PROs are

distinct, disjoint reference will be possible. The contrast

between a single binding category for two PROs and distinct

binding categories is illustrated in (65).

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29. Lebeaux notes that the subjects in double gerund constructions need not be identical if they are lexical and gives (i) as an example.

    i)   His getting up on time will require her setting the alarm clock.

However, consider the same sentence with identical pronouns in the subject positions.

    ii) His_i getting up on time will require his_j setting the alarm clock.

The strongly preferred reading is one which sets i=j. The i≠j reading is available only with a strongly deictic interpretation of the pronouns, a possibility not available for PRO. (N. Chomsky (p.c.) suggests that the i≠j reading is easily available if (ii) is properly contextualized.

    iii) $John_i$ told $Bill_j$ that his_i getting up on time would require his_j setting the alarm clock.

I do not find that this is the case, but the existence of dialects in which this is so strengthens Lebeaux's point.

64)   a.   [PRO making a large profit] requires [PRO
             exploiting the tenants]
        b.   [PRO to know him] is [PRO to love him]

65)   a.   [PRO winning the trust of the populace] requires
             [PRO having to serve in the army]
        b.   [PRO winning the trust of the populace] requires
             that [PRO having to serve in the army] be
             abolished

The (simplified) LF representations that Lebeaux's system

assigns to the sentences in (65) are given in (66) and (67).

66) $[_{IP}$ $(\forall x)$ $[_{IP}$ $[_{CP}$ PRO$_x$ ...] requires $[_{CP}$ PRO$_x$ ...]]]

67) $[_{IP}$ $(\forall x)$ $[_{IP}$ $[_{CP}$ PRO$_x$ ...] requires $[_{CP}$ that $[_{IP}$ $(\forall y)$
      $[_{IP}$ $[_{CP}$ PRO$_y$ ...] be abolished]]]]]

The universal quantifiers which appear in (66) and (67) are

inserted at LF, rather than derived by movement of PRO. If PRO

itself were subject to QR, such movement would presumably

leave a variable in the position of PRO, a non-case-marked

position.

      Lebeaux argues that the null operator which he proposes

to insert at LF creates a representation which is subject to

"crossing constraints" and that it is interpreted in a manner

similar to relative clauses and tough-movement constructions.

The crossing constraints portion of Lebeaux's argument turns

on contrast between (68a) and (68b).

68)   a.   John$_i$ wondered if Mary$_j$ thought O$_j$ that [PRO$_j$
            telling him about the dangers] would make real [O$_i$
            the difficulty of PRO$_i$ climbing by himself]

        b. * John$_i$ wondered if Mary$_j$ thought O$_i$ that [PRO$_i$
            telling her about the dangers] would demonstrate
            [O$_j$ the difficulty of PRO$_j$ climbing by herself]

However, (68b) markedly improves with the changes in (69).

69)   John$_i$ wondered if Mary$_j$ knew that [PRO$_i$ telling her
        about the dangers] was supposed to demonstrate [the
        difficulty of PRO$_j$ climbing by herself]

Lebeaux assumes a path theoretic approach to crossing; see

Pesetsky (1982). In order to maintain that crossing is rele-

vant for control, he must (as he notes on p. 270) examine only

the NP$_i$...O$_i$ segment of the "control chain". Including the PRO

tail of such a chain in (68a), for example, creates a segment

(O$_j$...PRO$_j$) which is not contained in the larger chain

(John$_i$...O$_i$...PRO$_i$). This diverges from the account of cross-

ing in Pesetsky (1982) and casts doubt on the applicability of

a crossing constraint to control structures.

        Lebeaux's null operator also differs from the null ope-

rator in OWM constructions in that the latter is never subject

to the operator interpretation algorithm in (63); null opera-

tors binding gaps in governed positions never receive arbi-

trary interpretation, as shown in (70).

70)   a. *   John$_i$ is too angry [Op$_{arb}$ [PRO$_i$ to talk
                to t$_{arb}$]]
        b. *   John$_i$ went to Paris [Op$_{arb}$ [PRO$_i$ to talk to t$_{arb}$
                ]]
        c. *   John bought a dog$_i$ [Op$_{arb}$ [PRO$_i$ to guard t$_{arb}$]]

71)   a.   John$_i$ is too angry [[PRO$_i$ to talk to anyone]]
        b.   John$_i$ went to Paris [[PRO$_i$ to talk to Bill]]
        c.   John bought a dog$_i$ [[PRO$_i$ to guard his kids]]

(71) illustrates that, unlike infinitival relatives and tough-

movement constructions, the embedded clauses in (70) do not

require the presence of a null operator chain coindexed with a matrix NP in order to be licensed.

At this point in our understanding of control theory, PRO_{arb} is as an anomaly. An explanation of the arbitrary interpretation of PRO is an analysis which either demonstrates that PRO_{arb}, in spite of appearances to the contrary, behaves like controlled PRO or one which derives PRO_{arb}'s anomalous behavior from other, independently motivated aspects of the grammar. Lebeaux attempts the former strategy, but his analysis involves positing the existence of an anomalous null operator, i.e. one which itself requires an explanatory analysis. In effect, we could replace (62) and (63) above with (72)

72)   a.   If PRO is unbound within its binding category,
             assign arb_i.
       b.   If arb_i and arb_j are minimally contained within
             the same binding category, then i=j.

and obtain a simpler, equally adequate analysis.

1.4.3 PRO_{arb} Operators: An SS Approach

Borer (1986) also proposes an account of PRO_{arb} which involves a null operator. This account differs substantially from those discussed above in being formulated within an innovative approach to control which assumes (i) that all null subjects are pro and (ii) that AGR can be anaphoric and, as such, requires a binder which can transmit i(nflectional)-features (e.g. person, number, gender). Like Epstein, Borer argues that the null operator responsible for arb interpreta-

tion is base-generated in a VP-internal argument position.
This is, of course, problematic given the sentences in (64)
and (65). Her analysis differs from Epstein's in two important
respects: the null operator is not base-generated as pro and
it moves to an IP-adjoined position at SS.

The proposal that quantifier movement is at SS is
intended to explain the scopal properties of PRO_{arb} discussed
with respect to (41), since SS movement is generally con-
strained by the Subjacency Condition. (Recall that Epstein
ascribes these scopal properties to the allegedly clause-
bounded nature of QR.) This proposal has two problems. The
first is that, while SS adjunction is subject to the Subja-
cency Condition, this does not bar successive cyclic adjunc-
tion creating "long-distance dependencies" of the sort
illustrated in (73).

73)   This book$_i$, Mary thinks that John would like t_i

Therefore, in a sentence such as (41a), repeated as (74a),
there should be no problem in obtaining a wide scope inter-
pretation with a representation as in (74b).

74)   a.   Josh said it is fun to play baseball.

       b.   [($\forall$x) [Josh said [t_x' [it is fun t_x [pro_x to
             play baseball]]]]]

       c.   This game$_i$, Mary thinks it's fun to play t_i

(74c) indicates that extraction via adjunction is possible
from within the complements of _easy_ predicates.

In addition, if this null operator is a quantifier, it is unclear why it should be forced to take scope, i.e. move to an adjoined position, at SS. No other quantificational operator in English exhibits such behavior. If this operator is not a quantifier, but rather should be compared to the operators in OWM constructions, its behavior is even more puzzling given that, in English, other SS null operators do not (i) receive arbitrary interpretation in the absence of a "close enough" antecedent, (ii) allow split antecedents[30], or (iii) allow long distance antecedents. (70) illustrates (i); (75) and (76) illustrate (ii) and (iii), respectively.

75) a. * Mary$_i$ knew that Bill$_j$ was too angry [Op$_{i+j}$ for [John to photograph t$_{i+j}$]]
     b. * John$_k$ bought the dog$_i$ a ball$_j$ [Op$_{i+j}$ [PRO$_k$ to play with t$_{i+j}$]]
     c. * Mary sent John$_i$ [a student$_j$ [Op$_{i+j}$ that [she had introduced t$_{i+j}$ to each other]]]

76) a. * Mary$_i$ knew that Bill$_j$ was too angry [Op$_i$ [PRO$_j$ to talk to t$_i$]]

---

30. Kirkpatrick (1982) has argued that null operators in OPCs do take split antecedents, giving (i) as an example of this.

   i)   He gave a gold ring$_i$ to Sue and a silver one$_j$ to Harry to exchange e$_{i+j}$ at their wedding anniversary.

Notice, however, that the split antecedent reading is unavailable when a conjoined structure is not involved.

   ii) *   He gave a gold ring$_i$ to Sue after giving a silver one$_j$ to Harry to exchange e$_{i+j}$ at their wedding anniversary.

This is not the case for PRO subjects. (Example from KoL.)

   iii)   Bill$_i$ wanted Tom$_j$ to agree that it was time PRO$_{i+j}$ to swim across the pond together.

b. * Mary warned Bill$_i$ [that John$_j$ had bought a dog
[Op$_i$ [PRO$_j$ to irritate t$_i$]]]

c. * the dog$_i$ bit [the man$_j$ [Op$_i$ that Mary wondered
whether he$_j$ owned t$_i$]]

As noted at the end of the previous subsection, proposing the
existence of a null operator with the properties of PRO$_{arb}$
does not offer a real solution to the problem of arbitrary
interpretation of null subjects.

Chapter Two

OWM Constructions

2.1 Introduction

This chapter will focus on a set of constructions which
includes relatives (tensed and infinitival), adjectival com-
plements, degree clauses, clefts and purposives. All but the
latter are first analyzed as covert movement constructions in
"On Wh-Movement" (Chomsky (1977)); hence, the name given to
this set in chapter one: "OWM constructions". (Purpose clauses
are added to the set in OB.) As mentioned in chapter one, cer-
tain of the constructions discussed in OWM will be left aside
here, specifically embedded wh-questions, topicalization con-
structions and comparatives. Embedded wh-questions will not be
discussed because they always involve an overt operator. As
for topicalization, I will follow Lasnik & Saito (forthcoming)
who argue that sentences such as (1a) involve adjunction to IP
and no null operator, as shown in (1b).

1)   a.   John, I like.
      b.   [ɪₚ John₁ [ɪₚ I like t₁]]

Finally, although I believe that comparatives involve null
operators, a coherent analysis of the various types of compa-
rative constructions, which display a complex array of syntac-
tic and semantic properties, is beyond the scope of this dis-
sertation. Nevertheless, at some points I will include exam-

ples of comparatives in the discussion when their behavior is transparently related to that of other OWM constructions.

In OWM and OB, Chomsky takes the clause minimally containing the null operator chain to function as a predicate by virtue of the "open position" created by null operator movement. The interpretation of OWM constructions is then given by a rule of predication which relates this predicate and the NP antecedent of the null operator chain. One might, therefore, regard the null operator as the syntactic equivalent of a lambda operator; the same is naturally true for overt operators which appear in these constructions. I will have little (in some cases nothing) to say about the semantics of OWM constructions, though the topic is one which, especially in a discussion of syntactic predication, always lurks nearby.

The conditions under which null operator chains are licensed to appear in OWM constructions cannot simply be stated in terms of predicates: not all predicates support null operator chains and many predicates exist as such without a null operator chain to "create an open sentence." Therefore, the first task of this chapter will be to clarify what I mean in using the terms "predicate" and "predication" in the discussion of null operator constructions and to determine the nature of the relation between clausal predicates and their operators, whether overt or null. This introductory discussion constitutes §2.2. In §2.3 I will show how the general licensing mechanism for clausal predicates plays a role in licensing null operators, which I take to be the null pronominal, pro.

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The argument in §2.3 is developed in the course of a detailed analysis of purpose clauses which begins by sorting out several properties which are not contingent on the null operator. The conclusion of §2.3 is that operator pro, like subject pro, is identified via agreement; in the case of operator pro the agreement relation is set up by means of an "agreement chain". In §2.4 I extend this analysis to relative clauses, showing that it is this relation which is responsible for the phenomena attributed in Safir (1986) to "R-binding". In §2.4 I will also sketch an possible analysis of degree clauses with implications for the analysis of adjectival complement constructions.

2.2 Predicates and Operators

Natural languages are full of examples of predicates which are fully licensed without the intervention of null operators. In §2.2.1 I will try to clarify what, if anything, such predicates have in common with predicates which require the presence of a null operator. In addition, if null operator chains do "create open sentences", it is necessary to define what this means syntactically and in a manner which is consistent with the other options for creating open sentences which exist. This is the subject of §2.2.2, which contains a survey of the predicate-creating options available in various OWM constructions. Finally, in §2.2.3, some examples are discussed which indicate that certain predicates are incompatible with

null operators under any circumstances; two possible explanations for this incompatibility are discussed.

2.2.1 What is Predication?

In Williams (1980), predication is the relation which holds between the bold constituents in the examples below, which are predicates, and the underlined NPs, which are subjects of the predicates. (Examples from Williams (1980).)

2)   <u>John</u> **died.**

3)   a.   John made <u>Bill</u> **sick.**
        b.   John made <u>Bill</u> **a doctor.**
        c.   John kept <u>it</u> **near him.**

4)   a.   It was <u>John</u> **that I saw.**
        b.   <u>a man</u> **to do the job**
        c.   I bought <u>it</u> **to read**

5)   a.   <u>John</u> **promised Bill to leave.**
        b.   John persuaded <u>Bill</u> **to leave.**
        c.   <u>John</u> **tried to leave.**
        d.   <u>John</u> **died waiting for a bus.**
        e.   It is clear <u>that he is here.</u>

According to Williams, any of the categories AP, PP, NP, VP, S and S' may be predicates. (2) and (3) show the first four of these acting as what Williams calls "simple, or headed, predicates". In the case of simple predication, the subject is the external argument of the head of the predicate. As proposed in Williams (1980) and developed in subsequent work (Williams (1981, 1983, 1984, 1986) an "external argument" is one which appears outside of the maximal projection of a head and which receives its θ-role by virtue of the predication relation holding between it and the maximal projection of the head, not

by being a sister to (or governed by) the head, as is the case with complements.

In contrast, the clausal categories S and S' are "complex predicates" and are able to function as such only when they contain a "predicate variable", that is, when they take the following forms:

6)   a.   [$_s$ PRO VP]
        b.   [$_s$' (PRO/WH) S]

In (6a), PRO is the predicate variable and in (6b), either PRO (Williams' null operator) or WH (an overt wh-operator) is the predicate variable. PRO cannot be replaced by a lexical NP in (6a) since, by definition, there would no longer be a predicate variable to create a predicate from S. VP may also be a complex predicate when it contains an NP-trace. That is, in (7a) <u>Bill</u> is not the subject of <u>seen t</u> by virtue of the θ-role it receives from the verb. The structure assigned to (7a) by Williams (1981, 1986) is shown in (7b).

7)   a.   Bill$_i$ was seen t$_i$
        b.   Bill$_i$ was [seen t$_i$]$_{VP_i}$

Williams (1981) argues that the VP in (7b) becomes a complex predicate because it contains a predicate variable, t$_i$. A similar analysis is given of constructions with raising verbs. (For a summary of the Williams (1986) analysis of these constructions see fn. 3.)

According to Williams' (1980) predication theory, all predicates must be XPs. Subjects and predicates share the same

referential index and the index on the predicate functions as an abstraction operator. Subjects and predicates must also meet a locality constraint which is adequately characterized as mutual c-command for the purposes of this discussion.[1] Since no XP, whether subject or predicate, can have more than one referential index, Williams is able to derive the fact that no lexical head has more than one externalized argument and no predicate has more than one subject. (The cases covered by the first assertion are a proper subset of those covered by the second assertion, since the second includes complex predicates; the subject of a complex predicate is not the externalized argument of any lexical head.)

Leaving aside the examples in (5) and examples such as (7) which involve complex VP predicates, the remaining cases of predication, in (2) - (4), can be divided into two groups: those which involve the assignment of a θ-role by the predicate to the subject and those which do not. In order to illustrate how these two types of predication are related, I will summarize the predication-based theory of θ-role assignment

---

1. In Williams (1980) this constraint is related to a c-command requirement on antecedents and their traces by the following filter:

    i)   In [Predicate Structure], NP must c-command any predicate or trace coindexed with it.

This generalization is licensed by the assumption that all indices involved are referential indices (in the sense of Chomsky (1980)).

found in Williams (1986)[a], but first the following point

should be noted: the thematic/non-thematic distinction just

mentioned has nothing to do with Williams' (1980) "thema-

tically governed" and "grammatically governed" cases of predi-

cation. Thematically governed cases of predication involve

predicates in the VP and require the subject of predication to

be a theme of the verb. Some examples are in (8), where again

the predicate is bold and the subject underlined.

8)   a.   John gave Bill <u>the dog</u> **dead**.
        b.   <u>John</u> became **sick**.
        c.   John made <u>Bill</u> **sick**.

Grammatically governed cases of predication are those which

meet the structural descriptions in (9).

9)   a.   <u>NP</u> **VP**   (e.g., John died.)
        b.   <u>NP</u> **VP** X   (e.g., John left angry.)
        c.   <u>NP</u> **be** X   (e.g., John is sick.)

All of the cases in (8) and (9) involve the assignment of a θ-

role by the predicate to the subject. Since I am interested

primarily in the distinction between θ-related predication and

non-θ-related predication, I will ignore Williams' proposed

distinction between thematically and grammatically governed

environments of predication.

Three sorts of θ-role assignment are discussed in

Williams (1986): (i) internal θ-role assignment, (ii) external

θ-role assignment (vertical binding), and (iii) predication.

---

2. Thanks to Tova Rapoport for bringing this article to my
attention and for helpful discussion of these issues.

The subject NP in (9a) receives its θ-role as a result of both (ii) and (iii). The external θ-role of a verb is "vertically bound" by the VP. Vertical binding, according to Williams, is a kind of lambda abstraction which allows the external θ-role to be assigned by the VP to the subject NP by predication. These relations are shown in (10b).

10) a. John gave it to him.

```
                    ┌─────┐ predication
                    v     │
     b.    John₁  [ give ... ]ᵥₚ₁ ──┐
                      :┌──────────────┘ vertical bind'ng
                      :v
                  (agent₁, ...)
```
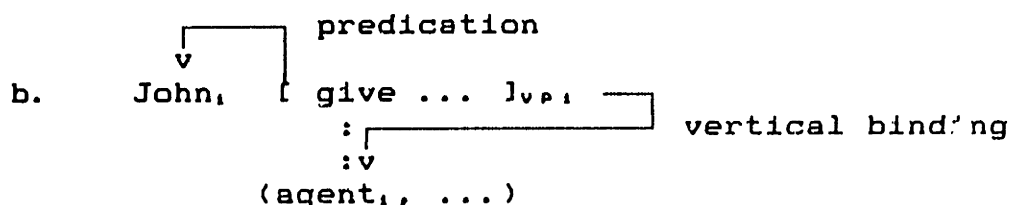
The relation between θ-role assigners and assignees is governed by the θ-Role Assignment Constraint (TRAC).

11)   TRAC: No phrase at all can intervene between an assigner
      and an assignee.

In general, the TRAC prevents a VP from vertically binding an external θ-role in the θ-grid of a category which is not its head, e.g. the verb of a complement clause. Only in cases such as (12a) (and in the case of raising and passives[3]) does the

---

3. Williams (1986) argues in favor of a predication theory approach to NP-trace which eliminates the need for A-chains, NP-movement and small clauses. He also argues against a mixed approach, e.g. a theory involving both A-chains and predication such as that adopted in this dissertation. I will not argue against the "pure predication" analysis of raising and passive but will continue to assume the mixed approach. I include a summary of Williams' (1986) analysis of NP-trace (which constitutes the rest of this footnote) to further clarify the role of predication in his theory.

Williams' θ-criterion differentiates between "assign-

VP vertically bind something that is not the external argument of its head.

12) a. John seems sad.
     b. John$_i$ [seems AP$_i$]$_{VP_i}$
                      :
                      A'$_i$
                      :
                      sad
                      :
                      (θ_i)

In (12a), as illustrated in (12b), the VP may bind the external argument of the AP, since _seems_ has no external argument. Notice that the TRAC subsumes the mutual c-command requirement on predication (see fn. 1).

In the normal case of θ-role assignment to a non-derived subject, the TRAC imposes a locality constraint on two relations: the relation between the subject and predicate and the relation between the predicate and the element within the predicate which allows it to act as such. In the case of non-thematic predication, e.g. (4) above, the subject of the pre-

---

ment" of θ-roles and "satisfaction" of θ-roles. NP-trace may be assigned a θ-role but it does not satisfy a θ-role. In (i), killed assigns a θ-role to t$_i$, but since t$_i$ can't satisfy this θ-role, it reassigns the θ-role to the VP. The θ-role is then reassigned via predication to the subject NP. Therefore, in (i), all three means of θ-role assignment participate in the assignment of a θ-role to _John_, as illustrated in (ii).

    i)   John$_i$ was killed t$_i$

         predication
    ii) ┌─────────┐ ┌──────┐ internal θ-role ass't
         v   │ │   v
         John$_i$ [killed t$_i$]$_{VP_i}$
                            └──┘↑
                               vertical binding

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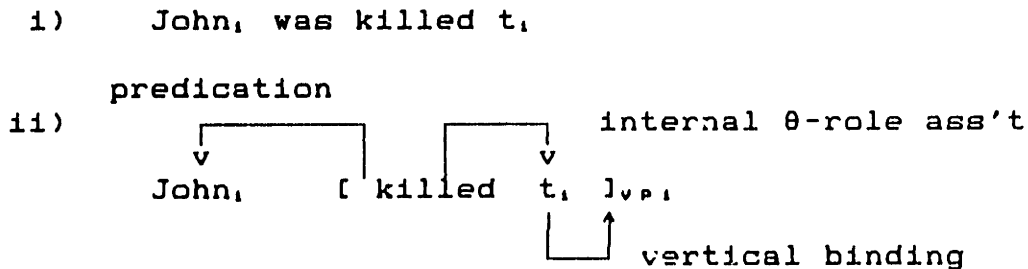
dicate does not receive a θ-role from any head within the predicate, nevertheless, similar locality constraints seem to be at work.

Consider the case of relative clauses: it is well-known that overt relative clause operators must be in the SPEC of the relative clause, i.e. they cannot appear in the SPEC of a lower CP contained in the relative clause, as illustrated in (13a). The same is presumably true for null relative operators; like (13a), (13b) is generally assumed not to be a possible representation.

13) a. * the man $[_{CP}$ $[_{IP}$ I know who$_i$ Bill likes t$_i$]]
     b. * the man $[_{CP}$ $[_{IP}$ I know O$_i$ Bill likes t$_i$]]

Similarly, in the case of infinitival relatives, such as (14), only the "topmost" subject in the relative clause can be the licensing gap, the "predicate variable" in the terms of Williams (1980). This is illustrated in (15).

14) a man$_i$ $[_{CP}$ $[_{IP}$ PRO$_i$ to fix the sink]]

15) a. * the people$_i$ $[_{CP}$ $[_{IP}$ it is illegal PRO$_i$ to cross this border]]
     b. * the woman$_i$ $[_{CP}$ $[_{IP}$ John$_j$ is too stubborn PRO$_i$ to bother herself$_i$ about e$_j$]]

Note that the problem with (15) cannot be the status of the head of the relative clause as an antecedent for PRO, since the relative head in (14) is perfectly able to antecede PRO under the appropriate conditions. It might be argued that (15a) is out because PRO is in a position of obligatory arb interpretation and the "reference" for PRO, as for any ele-

ment, cannot be fixed in more than one manner. This argument, while plausible for (15a), does not go through for (15b). Although PRO in (16a) may be given an <u>arb</u> interpretation, (16b) shows that it may also be controlled by an NP outside the domain of CP~.

16)   a.   John$_j$ is too stubborn PRO$_{arb}$ to bother about e$_j$
        b.   Mary$_i$ thinks [$_{CP}$~ John$_j$ is too stubborn PRO$_i$ to bother herself about e$_j$]

What is it that rules out (15b) in spite of the grammaticality of (16b)?

       Williams (1980) accounts for the facts in (13) - (15) by the stipulation that clauses are licensed to act as predicates only when they take the forms in (6), repeated below.

6)   a.   [$_s$ PRO VP]
       b.   [$_s$' (PRO/WH) S]

(He analyzes (14) as a bare S (=IP) rather than an S' (=CP).) It should be obvious that whatever locality constraint is responsible for (13) - (15) bears a striking resemblance to the TRAC. Consider the following predication structure:

17)   NP$_i$ [$_{CP i}$ wh$_i$ ...]

If vertical binding is a structural relation involved in, but distinct from, θ-role assignment, then we can say that CP$_i$ vertically binds wh$_i$, a non-interrogative wh-operator in the SPEC of CP$_i$. If no phrasal boundaries (maximal projections) may intervene between a vertical binder and bindee, then the

impermissibility of (13) and (15) follows. The relation of vertical binding and a version of the TRAC could be imported into the modified **Barriers** framework I have adopted, but this is not necessary since the means for building an account of (13) - (15) already exist within the theory.

I take the relation which holds between a subject and predicate to be characterized by (or to entail) agreement. In languages with richer systems of agreement than English, the effects of the agreement relation are visible on categories other than V. Extending the approach generally taken with regard to Case, I assume that relations which are overtly manifest in some languages (or some subset of a language) hold covertly even when morphological evidence for them is lacking. Thus, agreement holds between all subjects and predicates, not just those which exhibit morphological agreement features. In the predication structure in (18) NP and CP agree by virtue of being subject and predicate; by convention, C agrees with its maximal projection CP and C agrees with wh (SPEC-HEAD agreement) as well.

```
18)      NP <——> CP <——————————┐
              /  \                │
             wh   C'              │
             ↑   /  \             │
             └─> C <———\──────────┘
                        \
                        IP
                       /..\
```
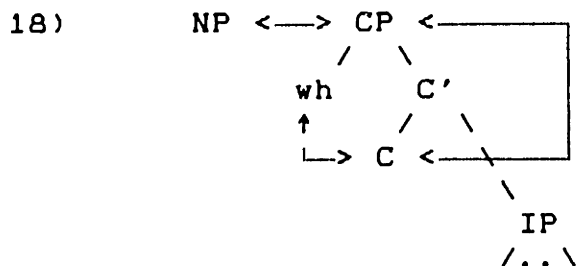
I propose that predicates which are not licensed as such by virtue of a θ-relation between the head of the predicate and

the subject[4], must be linked to their subjects by an "agree-
ment chain" such as that which holds between the NP subject of
predication in (18) and the category in the SPEC of the predi-
cate. The proposal is summarized in (19).

19)   A subject-predicate relation is licensed if[5]

       a.   the subject discharges the external θ-role of the
             predicate or
       b.   the subject agrees with a chain contained in the
             predicate.

(19b) need not be given a more specific formulation as long as
"agree" is understood to exclude the possibility of accidental
coreference. Notice that, with (19b) in the grammar, there is
no need to assume that relative COMPs are marked [+wh] in
order to motivate movement of an overt relative operator;
movement of any relative operator, overt or null, will be
necessary to set up the agreement chain which satisfies (19b).
The infinitival relative case in (14) (and other cases to be

---

4. I use the vague locution "a θ-relation which holds between
the head of the predicate and the subject" (rather than
"assigning an external θ-role to its subject") so as to
encompass the various types of θ-relations discussed in
Higginbotham (1985), only one of which corresponds to the
relation generally termed "external θ-role assignment".

5. I do not use the stronger "if and only if" here since I
wish to leave open the possibility that there are other means
of licensing the subject-predicate relation. For example, if
the relation between the underlined and bold constituents in
(i) is a subject-predicate relation, it would not fall under
either clause of (19). The same is true of (ii) if there is no
covert operator in English left-dislocation structures.

       i)   As for the party, I think we should make about 3
             gallons of chili.
       ii)   This book, I think that every student should buy it.

discussed in §2.2.2) falls under (19b) if, like Williams
(1980), we assume that infinitival relative clauses such as
those in (14) are bare IPs, as illustrated in (20).

20)   [$_{NP}$ a man [$_{IP}$ PRO to fix the sink]]

In order to ensure that PRO is ungoverned, it is only necessa-
ry, within the Barriers framework, that IP in (20) fail to be
L-marked. Since it seems very likely that a relative clause is
not L-marked, the status of PRO is not a problem for this ana-
lysis. For ease of reference, I will adopt Williams' term
"predicate variable" to refer to the PRO subject in predica-
tion IPs such as that in (20) and to the operators in predi-
cate CPs.

2.2.2 Predicate Variables and OWM Constructions

Two basic forms of predicates with predicate variables
have been discussed so far: IPs with PRO subjects and CPs with
operator SPECs (either overt or null). Thus far, the examples
of the latter we have seen have all shown the operators bind-
ing a null variable. The operators in clausal predicates (in
certain constructions) may also bind resumptive pronouns, as
illustrated in (21).

21)   the man$_i$ that/who$_i$ I can't remember whether he$_i$ likes
       Bill or not

The acceptability of resumptive pronouns varies depending on
the language examined, the construction in which they appear

and a multitude of other factors governing their distribution.
I will have almost nothing to say about resumptive pronouns
and will certainly not offer anything like a complete analysis
of the phenomenon, if indeed there is a unified "resumptive
pronoun phenomenon". (See Sells (1984) for an extensive treat-
ment of resumptive pronouns which differs substantially from
the approach sketched here.) (19b) forces an analysis of con-
structions with resumptive pronouns which obligatorily
involves an operator, a type of analysis argued against by
Chao & Sells (1983) and Sells (1984). Some consequences of
this position will be discussed in §2.4. For now I will simply
assume it and go on to the main question to be answered in
this subsection: are all OWM constructions licensed equally
well with each of the options for creating a predicate vari-
able? OWM constructions will be tested for grammaticality
under the following predicate variable options: a PRO subject,
an operator (null or overt) binding a gap, an operator (overt
or null) binding a resumptive pronoun, and no predicate
variable. The distribution of null and overt operators will be
discussed in chapter four.

[A terminological note: in discussing OWM constructions
I will, when necessary, refer to the CP which hosts the null
operator (and which sometimes hosts overt operators, depending
on the particular construction) as the "OWM clause". This is
intended to avoid confusion in the cases where there is more
than one predicate or more than one operator in a construc-
tion.]

Consider first the case where there is no predicate variable in the OWM clause. Only degree word clauses are completely well-formed in this case.

22)   a.   The coach is too incompetent for the team to win the championship.
         b.   The guard is corrupt enough for us to take anything we want out of this bank.

23)   a. * This weather is difficult for John to arrive on time.
         b. ?? Mary bought a new car for Susan to impress her friends.
         c. * I have fewer apples than Mary has too many oranges.
         d. * It was baseball that they discussed the Red Sox for hours.[6]
         e. * A book for Mary to cheer up arrived by mail today.

By (19) the OWM clauses in (22) cannot be predicates. This is, I believe, a correct result: the clauses in (22) are negative result clauses, comparable to the result clause in (24).

24)   John was so sick that we had to take him to the hospital.

The proper analysis of (22) will be taken up in §2.4.

Only infinitival OWM constructions could host a predicate variable which is a PRO subject. Of the infinitival OWM constructions, only degree word clauses, infinitival relatives and some kinds of purpose clauses are grammatical with this option, as illustrated in (25) - (27). Tough-constructions, the remaining type of infinitival OWM construction, are

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6. I have tried to create as an example a sentence which would be plausible as a focus construction of a sort which did not require a gap, e.g. "as for baseball, they discussed the Red Sox for hours."

ungrammatical with the PRO subject predicate variable, as

shown in (28).

25) a.   The union hired guards to protect the members on
          the picket line.
    b.   John bought a Porsche to impress his friends.
    c.   Mary built a shed to house the John Deere.

26) a.   The coach is too shrewd to let McHale play with an
          injured foot.
    b.   This guy is gullible enough to believe Ted Koppel
          is sincere.

27) a.   a man to fix the sink
    b.   the war to end all wars

28) * John is difficult to solve these problems.

The ungrammaticality of (28) is no doubt related to the

exceptional θ-properties of this construction.

As is well-known, English relative clauses host resump-

tive pronouns at a certain marked level of acceptability given

the essentially non-resumptive character of English. It is to

be expected that resumptive pronouns in any construction in

English would display the same degree of markedness. This

prediction is true for clefts, as illustrated by (29).

29)?' It was John that I couldn't remember whether he was a
      good athlete or not.

However, among the OWM constructions there are several (mild)

exceptions to this prediction. One of these exceptions is the

complete grammaticality of sentences such as those in (30).

30) a.   John is too angry for anyone to try to talk to him
          now.
    b.   The pie is cool enough for us to eat it now.

The apparently exceptional grammaticality of (30) obviously follows from the grammaticality of (22), that is, the sentences in (30) are not true resumptive pronoun constructions but rather are result clauses like the clauses in (22). The link between the matrix NP antecedent in the sentences in (30) and the pronouns contained in the result clauses is accidental co-reference. No operator is involved, as is the case in true resumptive pronoun constructions. Thus, the sentences in (30) do not display the marginality associated with resumptive pronoun constructions in English.

Purpose clauses and infinitival relatives are also exceptions to the prediction that OWM constructions with resumptive pronouns will be only as marginal as relative clauses with resumptive pronouns. One would expect that infinitival relatives, in particular, would pattern with tensed relatives, but this the contrast between (31) and (32) indicates that this is not the case.

31) ? the guy that I wonder whether we should invite him or not ...

32) I was assigned --
     a. * a problem to figure out how to solve it[7]
     b. * a problem to solve it
     c. * a candidate to find out how to interview him
     d. * a candidate to interview him

33)?? John gave his kid a new toy to play with it

---

7. (32a) and (32c) become acceptable if the clause is interpreted as a RatC-type purposive (see below), i.e. "I was assigned a problem (in order to) figure out how to solve it." This reading is irrelevant for the discussion, however.

N. Chomsky (p.c.) suggests that the ungrammaticality of (32) indicates that the clauses in (32) are not actual relatives. As evidence for this position he proposes that the sentences in (34) are not as grammatical as they should be if they are relative clauses.

34) a. a man to fix the sink arrived
     b. I met a man to fix the sink
     c. A problem to solve appears on page 15.
     d. I read about a interesting problem to solve in
         this journal.

While I agree that these are not as acceptable as their tensed counterparts, I find that the comparable sentences below are fully grammatical.

35) a. A man to fix the sink came by this afternoon.
     b. I bought [some cards to play poker with] to give
         to Mary.
     c. So many people to interview came to the meeting
         that we had to schedule another session.

Chomsky points out that many examples of infinitival relatives given in the literature appear with the matrix verb _find_; it is possible that the clause in such examples may be related to the verb rather than to the NP. This would explain both the ungrammaticality of examples which do not appear with verbs such as _find,_ e.g. the sentences of (34), and the unexpected grammaticality of (36).

36) Which sink did you find someone to fix?

(36) should not be grammatical under current assumptions about extraction from within relative clauses. However, I find (37) approximately as acceptable as (36).

37)   Which movie star did you meet someone who knew t

The slightly greater marginality of (37) is to be expected given the tensedness of the relative clause; see chapter four for further discussion of the role of tensed IP in creating bounding violations.

It might be that the incompatibility of infinitival relatives and purpose clauses with resumptive pronouns has to do with the interaction of the following two unrelated factors: (i) infinitival relatives and purpose clauses generally resist embedding; (ii) resumptive pronouns are generally only possible within islands (i.e. in embedded positions).

Contrary to the point just made, the relative acceptability of (38) might be taken as evidence that resumptive pronouns appear rather freely with purpose clauses.

38)   John brought Bill along to introduce him to the class.

However, such a conclusion is incorrect since the adjunct clauses in (33) and (38) are of two different types. I will adopt for the moment the typology of purposives laid out in Jones (1985).* According to Jones, there are three basic types

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8. Some modifications of this typology will be offered in
§2.3, as well as an analysis which differs from Jones's in
many crucial respects.

of purposives, which differ in their interpretations and syn-

tactic properties. These three types he calls rationale

clauses (RatCs), subject-gap purpose clauses (SPCs) and

object-gap purpose clauses (OPCs). Examples are given below.

39)   a.   They brought John along [$_{RatC}$ (in order) to talk
              to him]
       b.   They brought John along [$_{SPC}$ to talk about himself
              to the students]
       c.   They brought John along [$_{OPC}$ to talk to]

RatCs may, as indicated, appear with the optional in order

phrase as well as an optional lexical subject, e.g. "They

brought John along in order for us to talk to him." RatCs

without lexical subjects differ from SPCs in that a RatC sub-

ject is controlled by the matrix agent, while an SPC subject

is controlled by a non-agent NP.[9] OPCs are characterized by

the presence of an object gap; control of an OPC subject is by

either the matrix subject or indirect object.[10] RatCs do not

require a predicate variable, as illustrated by (40).

40)   John worked hard on his presentation (in order) to
       impress the owners of the company.

As with too-result clauses, a pronoun which occurs in a RatC

need not be interpreted as a resumptive pronoun because RatCs

---

9. That the appropriate distinction is thematic rather than
structural is shown by the control facts below.

       i)   The boat was sunk in order to win a prize.
       ii)   John was sent to the store to buy some groceries.

10. Control of OPC subjects is not free, however. See §2.3 for
discussion.

do not require a predicate variable; pronouns such as those in (38) and (39a) are simply accidentally coreferential with a matrix antecedent. Looking back at the sentence in (33), repeated as (41), it is possible to interpret the bracketed clause either as a RatC or as an OPC with a resumptive pronoun.

41)   John$_i$ bought his son$_j$ a train set [PRO$_{i/j}$ to play with it]

The construction is markedly more acceptable when interpreted as a RatC, i.e. with matrix subject control, and becomes completely acceptable (in my dialect, at least) with an emphatic reflexive: "PRO$_i$ to play with it himself$_i$". When interpreted as an OPC with dative object control the construction is noticeably more marginal. Additional differences between the various types of purpose clauses will be discussed in the next section.

       The array of possibilities just discussed is summarized in the chart below. I have not differentiated between null and overt operators as their function is essentially the same in OWM constructions and their distribution is governed by factors (to be discussed in chapter four) which are unrelated to this function. "Purpose" refers only to OPCs, as defined above. "No PV" refers to the case where the OWM clause contains no predicate variable.

42)

	no PV	res pro	PRO	gap
tough	*	*	*	ok
purpose	*	??	ok	ok
inf. rels	*	??	ok	ok
clefts	*	??	*	ok
tns. rels	*	??	*	ok
too	ok	ok	ok	ok

The purpose of this subsection has been to get the facts
straight about the distribution of the various sorts of predi-
cate variables among the OWM constructions. The general con-
clusion to be drawn from the discussion is essentially that of
Williams (1980): clauses require predicate variables in order
to function as predicates. All the available options are made
use of within the general constraints imposed by the grammar.
This suggests that it is somewhat misleading to characterize
the OWM constructions under study in this dissertation as
"null operator constructions". Their defining characteristic
is not that they host null operators, but that they require
predicate variables, the null operator option being but one
choice among several for fulfilling this requirement.

2.2.3 Incompatible Predicates and Predicate Variables

In an earlier paper (Browning (1986)) I claimed that
null operators obligatorily created predicates; that is, any
category with a null operator in its SPEC would be interpreted

as a predicate at LF. This forced the deletion of the null

operator in a parasitic gap construction in the mapping from

SS to LF. If the null operator were to remain in the SPEC of

CP at LF a violation would arise in a sentence such as (43)

since CP~ must be interpreted as a predicate, which would

presumably be ruled out for several reasons (e.g., no subject

in an appropriate structural relation, no possible inter-

pretation, etc.).

43)   the book that I read t [$_{PP}$ without [$_{CP}$~ O [PRO
       understanding e]]

This argument fails to account for the ungrammaticality of the

sentences in (44), however.[1]

44)   a. * I consider John$_i$ [O$_i$ [a great admirer of e$_i$]]
       b. * John$_i$ is/has become [O$_i$ [proud of e$_i$]]
       c. * I consider John$_i$ [O$_i$ [proud of these pictures
             of e$_i$]]

In these sentences the null operator resides in a category-

internal position within an NP or AP which is a predicate

independently of the presence of a null operator chain. By

hypothesis, APs and NPs are structurally able to host null

operators; this assumption is crucial to my analysis of para-

sitic gaps (see chapter three) given the existence of gram-

matical sentences such as those in (45).

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45)   a.   Who$_i$ was John too proud of t$_i$ to criticize t$_i$.[12]
       b.   the man who$_i$ close friends of e$_i$ admire t$_i$

Given that the categories containing null operator chains in (44) are predicates and that there is a "landing site" for null operators within those categories, what prevents the sentences in (44) from being well-formed? Any structural locality condition (e.g. government, subjacency, or mutual c-command) satisfied in the licensing of grammatical null operator constructions, is surely met in the sentences in (44).

Notice that the ungrammaticality of (44c) indicates that these sentences cannot be ruled out by assuming that <John, O, e> is a "composed chain" and that there is a special condition which prevents the internal and external θ-roles of a head from being assigned to members of the same composed chain. I mention a hypothetical "special condition" to rule out these sentences rather than simply the θ-criterion since, if we allow the existence of this sort of "composed chain" at all, the θ-criterion cannot be interpreted as applying to the chain as a whole. Each such chain would contain two arguments and two θ-positions, thereby standing in violation of the θ- criterion (at least in its current formulation). Since the θ-

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12. Both empty categories occupy positions which are possible launching sites for movement, as shown by the grammaticality of (i) and (ii). Therefore, both are designated t$_i$.

    i)   the person that John was too infatuated with t to
          concentrate on his work
    ii)   the homework that John was too tired to complete t

criterion could not apply to such a composed chain, it could

not be the source of the ungrammaticality of (44).

An obvious difference between the OWM constructions

which host predicational null operators and the sentences in

(44) is that in the former the host category for the null ope-

rator chain is a CP, while in the latter it is either an NP or

AP. If the distribution of null operators in predicational

structures corresponds more or less to the distribution of

overt operators in such structures, then we would not expect

the null operators in (44) to be licensed. This aspect of the

distribution of null operators could be expressed in the

following condition, which is essentially a contextual

definition of a null operator.

46)   An empty category is an operator only if it is in the
        SPEC of CP.

To rule out (44), this condition must be combined with a re-

quirement that variables be operator-bound. For the moment I

will leave open the question of whether the latter requirement

is incorporated into the definition of variable or imposed as

an independent constraint; see chapter three for further

discussion. The sentences in (44) are therefore ruled out

because the variables fail to be operator-bound at any

level.[13]

---

13. Notice that the condition on variables need not be
"locally operator-bound" so long as variables are subject to
Condition C of the Binding Theory (or an equivalent condi-
tion).

The ungrammatical sentence in (47a) offers further

evidence for (46) and for the position of the null operator in

less complex sentences, such as (47b).

47)   a. * John$_i$ is too proud of e_i' for us to criticize e_i
              effectively
       b.   John$_i$ is too angry to talk to e_i

The interpretation "John is too proud of himself for us to

criticize him effectively" is perfectly coherent and a version

of (47a) with only one gap, as below, is grammatical.

48)   John is too proud of himself for us to criticize e
       effectively'[14]

Therefore, the ungrammaticality of (47a) must have something

to do with the null operator chain including e_i'. Keeping in

mind that the null operators of predicational constructions

such as these do license parasitic gaps when the gap is within

the CP hosting the null operator chain, (49a), and that para-

sitic gaps may occur within the complement of an adjective,

(49b), consider the (simplified) structure for (47a) in (50).

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14. (48) isn't perfect to my ear, though some speakers find it
so. The presence of the adjectival complement may have some-
thing to do with this awkwardness, as I find (i) much than
(ii).

       i)   John is too arrogant for us to criticize e
              effectively
       ii)   John is too proud of his kids for us to criticize
              e effectively

Note that construing the gap with the adjectival complement is
completely impossible in (ii).

49) a.   This spinach is too dirty to eat e without
           washing e
     b.   Who$_i$ was John too proud of t$_i$ to criticize t$_i$

50) John$_i$ is [$_{AP}$ O$_i$' too [$_{A'}$ proud of e$_i$'] [$_{CP}$ O$_i$ for us to
     criticize e$_i$]]^{15}

It may be that copular constructions such as these are base-
generated with a small clause structure and derived by raising
the subject to [NP,IP] position. This is not relevant for the
discussion and so I will keep to the simplified structure in
(50). In this structure O$_i$' is the parasitic operator and e$_i$'
the parasitic gap. (50) does not seem to violate any of the
constraints which are known to rule out parasitic gaps: nei-
ther gap c-commands the other; an operator c-commands both
gaps; neither of the gaps is a subject or adjunct; neither gap
is "too far" from the other or an operator to be licensed.^{16}

It might be argued that (50) is not allowed because the
parasitic operator O$_i$' c-commands the operator O$_i$. Taking

---

15. I have not yet made any proposals regarding the internal
structure of APs with <u>too</u>. This will be taken up in §2.4. If
the CP associated with <u>too</u> is adjoined to AP, the relevant
portion of the structure in (50) would be as in (i).

i)   John$_i$ is [$_{AP}$ [$_{AP}$ O$_i$' too [$_{A'}$ proud of e$_i$']] [$_{CP}$ O$_i$ for
     us to criticize e$_i$]]

The discussion in the text applies equally to this structure.

16. (47a) presents similar problems for the path theoretic ap-
proaches of both Kayne (1983) and Longobardi (1984). The
Connectedness Condition is not able to rule out (47a) because
in (50) the g-projection sets of the two empty categories
connect. (47a) could be taken as support for the Scope
Condition of Longobardi (1985), which essentially requires
that the DS position of the parasitic gap be within the scope
of the SS position of the licensing operator. This would
require adopting a condition such as (46), however.

(51a) as an example, (51b) and (51c) illustrate two possible

structures in which the operator O_i does c-command the para-

sitic operator O_i'.[17]

51)   a. *   John$_i$ is too proud of pictures of e$_i$ for us to
                criticize e$_i$

        b.   John$_i$ is [$_{AP}$ O$_i$ too [$_{A'}$ proud of [$_{NP}$ O$_i'$ pictures
                of e$_i'$]] [$_{CP}$ t$_i$ for us to criticize e$_i$]][18]

        c.   John$_i$ is [$_{AP}$ O$_i$ [$_{AP}$ too [$_{A'}$ proud of [$_{NP}$ O$_i'$
                pictures of e$_i'$]] [$_{CP}$ t$_i$ for us to criticize
                e$_i$]]]

Once again, if (51b,c) are possible structures, it is diffi-

cult to understand what would rule out the sentence (51a). The

obvious problem with (47a) is that, since O_i' fails to meet

the requirement of condition (46), e$_i'$ is not bound by an

operator. (47a) and (51a) also offer evidence that the

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17. Or if the structure is as in (i) of footnote 15, the
modification looks as follows:

i)   John$_i$ is [$_{AP}$ O$_i$ [$_{AP}$ [$_{AP}$ O$_i'$ too [$_{A'}$ proud of e$_i'$]]
        [$_{CP}$ t$_i$ for us to criticize e$_i$]]]

Again, the text discussion applies to this structure as well
as to that in (51).

18. The configuration

        i)   Op$_i$ ... Op$_i'$ ... e$_i'$ ... e$_i$ ...

where no member of the chain <Op$_i'$,e$_i'$> c-commands e$_i$, cannot
be to blame for the ungrammaticality of (1) since this is
exactly the configuration which arises with subject parasitic
gaps, such as (ii).

        ii)   a man that [close friends of e] admire e

predicational null operator, O_i, may not reside in an AP-adjoined or VP-adjoined position at SS.[19]

(46) cannot be interpreted as a condition on overt categories since Topicalization and Heavy NP Shift license parasitic gaps, as in (52).

52) a.   I insulted t, by not recognizing e, my great uncle from Cleveland.
     b.   John, I insulted t by not recognizing e

NPs which have undergone Heavy NP Shift are not in SPEC of CP; nevertheless, they are able to bind and license variables.[20] The same is true for topics if they are adjoined to IP. In English, then, the following seems to be the minimal necessary characterization of "operator."

53)   If α is an operator then (a) or (b).

     a. α is overt and α is in an A′-position.
     b. α is non-overt and α is in [SPEC,CP].

There are two things to point out about (53). Clause (53a) may be open to cross-linguistic variation if Cinque (1984) is right about Italian Clitic-Left Dislocation constructions; according to Cinque, only a (lexically determined) subset of lexical A′-elements are true operators. Secondly, it is important that (53) not be a biconditional since we must allow for

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19. This need not be a constraint against adjunction to these categories; even if null operators are allowed to reside in adjoined positions they will not function as operators by (46). Thus, no further constraint is needed.

20. However, Larson (in progress) and Lasnik (p.c.) propose analyses of HNPS which do not involve A′-movement.

the existence of empty categories in SPEC of CP which are not operators, i.e. intermediate traces.

While (46) may not be a condition on overt operators for the reasons just discussed, something must said to rule out (54), the equivalent of (44) with overt operators in place of the null operators.

54)   a. * I consider John$_i$ [who$_i$ [a great admirer of e$_i$]]
      b. * John$_i$ is/has become [who$_i$ [proud of e$_i$]]
      c. * I consider John$_i$ [who$_i$ [proud of these pictures of e$_i$]]

In §2.2.1 I pointed out that (19b) obviated the role of the [+wh] feature in the derivation of relative clauses with overt operators. With (19b) in the grammar it is no longer necessary to motivate the movement of an overt relative operator to SPEC of CP by means of such a feature since the necessity of set-ting up an agreement chain to license the subject-predicate relation will serve this function. In (54), (19b) is satis-fied, (46) does not apply and nevertheless the sentences are ungrammatical. One possibility for solving this problem is to differentiate between lexical operators and lexical A'-antecedents. The latter category includes topics and shifted heavy NPs and the former includes both interrogative and rela-tive overt wh-operators. It would then be necessary to refor-mulate (46) as a condition on operators, as in (55).

55)   α is an operator at level L iff α is in SPEC of CP at L.

The reformulation of (46) given in (55) requires a reformulation of the condition on variables briefly mentioned above (near (46)) along the lines of (56).

56)   A variable must be bound by an A'-antecedent.

I assume that (56) holds for a variable at every level at which the variable occurs. In chapter three I will argue that (56) is (approximately) the correct formulation to of an identification condition on variables, but it should be clear that (55) and (56) are independent, i.e., in particular, that the validity of (56) does not hinge on that of (55).

There is another possible unified account of (44) and (54) which is not based on the proper definition of "operator".[21] The small clauses in (44) and (54) are of the form in (57), where X is either N or A.

57)   ... NP_i $[_{XP}$ O_i $[$ X ... e_i $]]$ ...

The subject-predicate relation between NP_i and XP is licensed because NP_i receives the external θ-role of the head X. However, it is also licensed because NP_i agrees with the chain (O_i, e_i). It might be that such structures are ruled out precisely because both options in (19) are realized in one instance of predication; (55) could then be replaced by (58).

58)   A subject-predicate relation may not simultaneously satisfy both clauses of (19).

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21. I am grateful to both N. Chomsky and T. Stowell for pointing out this possibility.

At the moment I know of no empirical basis for choosing

between the two possibilities.**

2.3 Licensing Null Operators

In this section I will show how (19), the subject-

predicate constraint of §2.2, accounts for the distribution of

null operators in particular. Taking purpose clauses as the

first case study, it will be demonstrated that null operators

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22. There is an interesting account of the ungrammaticality of
(44) and (54) available to a Williams-style analysis if the
revisions I proposed in §2.2.1 are adopted. Recall that I sug-
gested that vertical binding be considered to hold between the
XP in (i) and the operator in the SPEC of XP as well as
between the XP in (ii) and the θ-role it binds.

i)   [$_{XP}$ Op [...]]

ii)   [$_{XP}$ ... X ...]
            :
            :
          (θ,...)
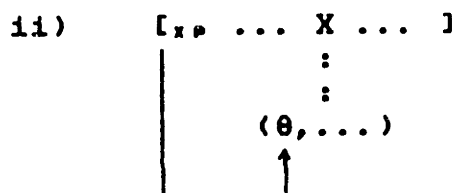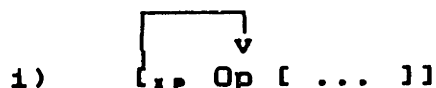
The configuration in (57) would, under this analysis, involve
both sorts of vertical binding, as illustrated in (iii).

iii)   [$_{XP}$ Op [... X ...]
            :
            :
          (θ,...)
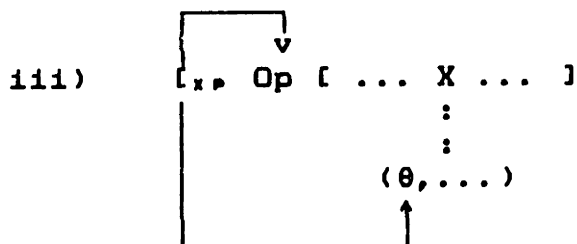
Extending "binding" to take into account the relation of ver-
tical binding, a configuration such as (iii) could be ruled
out by a slightly reformulated version of Safir's (1984)
Parallelism Constraint on Binding.

are not responsible for the distribution, θ-properties or pre-
dicational properties of these clauses. Drawing mainly on
Faraci (1974), and to a lesser extent on Jones (1985), I will
show that PPs with non-clausal complements share the distribu-
tion and many of the properties of purpose clauses. An analy-
sis of PPs similar to that in Rothstein (1983) is proposed
which captures these similarities. Finally, I show how the
condition on the subject-predicate relation, (19), interacts
with the pro identification requirement to license null
operators.

2.3.1 Types of Purpose Clauses

There are at least three clausal constructions which are
often referred to as purposives or purpose clauses. In §2.2 I
introduced a typology of purposives taken from Jones (1985)
and exemplified in (59).

59)   a.   They brought John along [$_{RatC}$ (in order) to talk
            to him]
      b.   They brought John along [$_{SPC}$ to talk about himself
            to the students]
      c.   They brought John along [$_{OPC}$ to talk to]

These three constructions fall into two basic groups: ratio-
nale clauses (RatCs) and purpose clauses (PCs). RatCs appear
with an optional subject gap. The two PCs are distinguished on
the basis of where they have gaps: SPCs (Subject-gap PCs)
obligatorily appear with only subject gaps, while OPCs
(Object-gap PCs) obligatorily appear with object gaps and

optionally appear with subject gaps.[23] RatCs never appear with object gaps. A note on terminology: when I use the term "purposive clauses" I will be referring to all three types of clauses in (59). I will use "purpose clauses" or, more often, PCs to refer to the SPC/OPC pair.

Faraci (1974), in the first detailed study of these constructions, argues that RatC are VP-external while PCs are VP-internal. I will review briefly some of his arguments, along with some others from Jones (1985).

A)   RatCs prepose freely, while PCs may not. Following Chomsky (1965), Faraci assumes that only phrases outside VP are preposable without topicalization intonation. (Examples in (A), (B), and (C) are from Faraci (1974).)

60)   a.   To protect herself, Mary hired a guard.
       b. * To spend some time by himself, Ann sent Ned to NY.
       c. * To practice on, John bought the piano.

Although Faraci stars preposed PCs, (60b) and (60c) are grammatical with topicalization intonation, i.e. stress on the PC.

B)   PCs are more "dependent" semantically on the verb than RatCs. Faraci gives the following characterization of the conditions under which RatCs and PCs are licensed.

61)   a.   RatCs: volitional predicates, conditional predicates, and "some of the modals"; if a modal or conditional predicate is present, the volitionality of the matrix verb doesn't matter.

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23. Faraci (1974) calls (59a,b,c) respectively, rationale clauses, objective clauses and purpose clauses. I will adopt Jones's more perspicuous terminology.

b. OPCs: predicates of transaction (give, buy, sell, steal, take, borrow, lend); transitive verbs of motion (send, bring, take); verbs of creation (build, construct, devise, make); and the verb use.

c. SPCs: verbs of motion like send, bring and take.

The assumption is that the less dependent an element is on a head the farther from that head it will be base-generated; see Williams (1971, 1975).

C) When RatCs and PCs co-occur, (non-preposed) RatCs must follow PCs.

62) a. Marc bought Fido [$_{OPC}$ to play witn] [$_{RatC}$ (in order) to please Anita]
     b. * Marc bought Fido [$_{RatC}$ (in order) to please Anita] [$_{OPC}$ to play with]

63) a. Ben took Alice to Boston [$_{SPC}$ to amuse herself] [$_{RatC}$ to please himself]
     b. * Ben took Alice to Boston [$_{RatC}$ to please himself] [$_{SPC}$ to amuse herself]

This is straightforwardly explained if RatCs are VP-external and PCs are VP-internal.

Jones (1985) points out the following additional differences between RatCs and PCs in support of the VP-external/VP-internal distinction.

D) PCs cannot be stranded by VP-deletion, VP-preposing or in though constructions.

64) a. ? John bought Moby Dick to read and Fred did, too, to keep on his shelf
     b. ? His mother sent John to pick up the laundry and then his father did, too, to buy some pizza
     c. John dove from the cliff in order to impress Mary and then Fred did, too, in order to get away from her.

65)   a. * John said he'd buy it to read and buy it he did,
           to read.
      b. * John's mother said she'd send him out to pick up
           the laundry and send him out she did, to pick up
           the laundry.
      c. ? John said he'd jump off the cliff in order to
           impress Mary and jump off the cliff he did, in
           order to impress Mary.

66)   a. * Buy it though John may to read, he'll never get
           past the first chapter.
      b. * Send John out though Mom may to pick up the
           laundry, he'll never make it past the corner bar.
      c.   Dive off the cliff though John may in order to
           impress Mary, he'll still never be as handsome as
           Bob.

(Judgements are given as they appear in Jones (1985). For me,
(64a) and (64b) are as bad as the (a) and (b) sentences of
(65) and (66). This does not weaken the point made by these
examples, but rather strengthens it.)

        E)   PC cannot be stranded (or dependent on do) in
pseudoclefts, while RatC can.

67)   a. * What John did to read was buy it.
      b. * What Mom did to pick up the laundry was send John.
      c.   What John did in order to impress Mary was dive
           off the cliff.

The data in (A) - (E) offer rather convincing support for

regarding PCs as VP-internal adjuncts. Faraci and Jones also

conclude from their evidence that RatCs are VP-external. If

"VP-external" can be taken to include "VP-adjoined", then the

evidence above does not distinguish between the three posi-

tions α, β, and τ as attachment sites for RatCs.

68)
```
                IP*
               /   \
            IP       α
           /  \
               I'
              /  \
           I'      β
          /  \
        I     VP*
             /   \
          VP       τ
         /___\
```
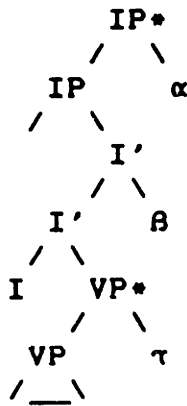
The conclusion that RatCs are VP-external is based on their
ability to be stranded by VP-preposing, _though_-movement and
pseudoclefting, but, as shown in (69), RatCs may also be
included with VP-internal material in these constructions.

69) a.   John said he'd jump off the cliff in order to
           impress Mary and jump off the cliff in order to
           impress Mary he did.
     b.   Dive off the cliff in order to impress Mary though
           John may, he'll still never be as handsome as Bob.
     c.   What John did was dive off the cliff in order to
           impress Mary.

The grammaticality of (69) apparently contradicts the evidence
presented above, which was taken to suggest that RatCs were
VP-external constituents. There are, no doubt, several possi-
ble solutions to this paradox; I will adopt the position that
τ, the VP-adjoined position in (68), is the correct attachment
site for RatCs and that the processes forming the construc-
tions in (69) may affect either VP or VP* given a structure
such as that in (68).

I have been assuming, as did Faraci, that all three
types of purposives are full clauses. Jones, in contrast,
argues that, while SPCs and RatCs are clausal, OPCs are bare

VPs. His argument for the bare-VP hypothesis is based in part on his assertion that OPCs never appear with overt subjects. The next section offers arguments against this assumption.

2.3.2 OPC Subjects

Jones offers three pieces of evidence for the position that _for + NP_ in (70)

70)   John bought it _for Mary_ to read e[a][+]

must be analysed as a PP, rather than a complementizer + subject sequence. First, a PP may appear independently of the purpose clause, as illustrated in (71a). Secondly, it is preposable, as in (71b). Finally, the NP which is interpreted as the subject of the embedded verb may appear in PPs which are not headed by _for,_ as illustrated in (72). (All examples are from Jones (1985), ch. 2.)

71)   a.   I bought it [for John]
       b.   [For John], I bought it to look at himself in e

72)   a.   I pushed it over to John [to use e on his
                hamburger]
       b.   We gave it to John [to put e on his trophy shelf]
       c.   I left it with John [to use e as he pleases]
       d.   We sent it rolling toward John [to train his gun-
                sights on e]

Jones notes that there is a problem with his position that all _for + NP_ sequences which appear with purpose clauses are inde-

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24. Hereafter, I will sometimes omit the null operator in order to simplify representations; this is for aesthetic rather than theoretical reasons.

pendent PPs, namely, that in certain cases the alleged PP and the purpose clause act as a constituent. For example, _for + NP_ and the purpose clause can appear as the focus of a cleft.

73) a. He bought the piano for Jane to practice on e
     b. It was for Jane to practice on that he bought the piano.

74) * It was with John to use as he pleases that we left it.

When the preposition/complementizer ambiguity does not arise and the PP in question clearly does not form a constituent with the purpose clause, the PP + purpose clause string may not be clefted, as shown in (74).

Purpose clauses present us with contradictory evidence as to the nature of the _for + NP_ sequence with which they are sometimes introduced. Jones resolves the contradiction by arguing that OPCs are bare VPs which never have lexical subjects. He must then resort to a special rule which creates a constituent of a PP and VP under just the above circumstances in order to explain the constituency of the alleged PP and bare VP in (73). A less ad hoc approach is available if we assume that the _for + NP_ sequence in (70) has properties of both an independent PP and a complementizer + subject sequence precisely because it may be analysed as either one.

Naturally, there are structures involving purpose clauses in which _for + NP_ is clearly not a complementizer + subject sequence, e.g. (71b). The Extended Projection Principle requires that (71b) have the SS representation in (75). (Note that the presence of the null operator binding the

object gap has no bearing on the question of whether the

purpose clause has a subject.)

75)   [for John] I bought it [Op [PRO to look at himself
       in e]

The data in (71) do not show that that clausal constructions

which appear with separable PPs and no lexical subject are

bare VPs. (71b) is consistent with both the bare VP and the

full clause approach. Moreover, there are other cases which

exhibit the alternation shown by purpose clauses. Consider the

case of sentential subjects, as shown in (76).

76)   a.   [for John to lose the race] would be awful
       b.   [for John₁ to lose the race] would be awful [for
             him₁]
       c.   [to lose the race] would be awful [for John₁]

       d. * [for John₁] I bought it [for him₁]

That (76b) is not simply a preposed PP preceding a sentential

subject can be seen by comparing (76c) and (76d).[25] The lesson

to be drawn from (76) is that the alternation between (76a)

and (76c), comparable to that between (70) and (71b), does not

entail that all clauses which appear with separable for + NP

sequences must be analysed as bare VPs.

_____

25. There is a left-dislocated reading of (76o) which probably
has the structure a PP preceding a sentential subject, as
shown in (i).

       i)   [ₚₚ for John] [꜀ₚ PRO to lose the race] would be
             awful

The reading is something like "as for John, ..." and is
completely distinct from the natural reading of (76b).

Now consider the following sentences, where α marks the
original position of the preposed PP.**

77)   a.   John bought it for Mary for the kids to play with
      b.   For Mary, John bought it α for the kids to play
              with
      c. *   For the kids, John bought it for Mary α to play
              with

(77c) is ungrammatical with the kids as subject of play. Appa-
rently, when two for + NP sequences are present, only the
first may be preposed. Similarly, only the first may be wh-
moved.

78)   [For whom]ⱼ did John buy a dogᵢ tⱼ for the kids to play
      with eᵢ

79) * [For whom]ⱼ did John buy a dogᵢ for Mary tⱼ to play
      with eᵢ

Note also that for + NP may co-occur with any of the indepen-
dent PPs noted in (72).

80)   a.   I pushed it over to John for him to use e on his
              hamburger
      b.   We gave it to John for him to put e on his trophy
              shelf
      c.   I left it with John for him to use e as he pleases
      d.   We sent it rolling toward John for him to train
              his gunsights on e

In some cases as many as three for + NP sequences may occur in
a sentence.

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26. I have resorted to the use of α to indicate the original
position of the preposed PP as I do not wish to take a
position at this time on whether preposing leaves a trace in
all cases.

81)   For Mary, I bought it for John for his kids to play
       with e

The movable PP in (77), (78) and (81), and in general, is the

benefactive, i.e. the interpretation of the preposed PP in

(81) is "to please Mary/for Mary's sake..." The next PP (for

John) is the goal and in the final for + NP sequence the kids

is, apparently, the agent of play. Oddly enough, three for +

NP sequences can appear even without the purposive clause.

82)   a. I bought it for John for Mary.
       b. For Mary, I bought it for John.
       c. ? For Mary, I bought it for John for his kids.

While (82c) seems less than felicitous, it is not totally

ungrammatical.[27] Note however, that the semantic role of the

kids is different in (81) and (82c). In (81) the kids is

pretty clearly the agent of play. In (82c) there is no verb

for it to be the agent of. Rather, it seems to function as a

sort of secondary goal, giving the sentence the interpretation

in (83), where the parenthesized material roughly paraphrases

the semantic content of each for in (82c).

83)   (To please) Mary, I bought it (to give to) John (to give
       to) the kids.

If my hypothesis that for + NP in a purpose clause may some-

times be a complementizer + subject sequence is true, then we

_____

27. I find that (82c) improves with a slight pause before the
final PP, indicating that it may be a kind of afterthought
addition. This pause is not apparent when the third for + NP
is part of a purpose clause. This provides further support for
my hypothesis.

should be able to get one more _for + NP_ in a sentence with a

purpose clause than we can in a sentence without such a

clause. Since three _for + NPs_ are marginally grammatical in

(82c), we should be able to get four such sequences by adding

a purpose clause and not cause any further decline in gramma-

ticality. While (84a) is not perfect, it is certainly better

than (84b) and, I believe, on a par with (82c).

84)   a. ?   For Mary, I bought it for John for the kids for
              their friends to play with e
      b. *   For Mary, I bought it for John for the kids for
              their friends.

Finally, the relative grammaticality of (85a) as compared with

(85b)

85)   a.   It was for the kids to play with e that I bought
              it for John.
      b. *   It was to play with e that I bought it for John
              for the kids.

supports the hypothesis that in some cases the _for + NP_

sequence which immediately precedes the purpose clause verb is

actually a complementizer + subject sequence, rather than a

PP.

2.3.3   Control in RatCs and PCs

     It has often been noted that the links between matrix

NPs and the various gaps in RatCs and PCs appear to be thema-

tically governed. When RatCs do not have lexical subjects

their PRO subjects must be controlled by the matrix agent.

86)   a.   John gave Mary a car in order to ingratiate
              himself with her friends.
       b. * John gave Mary a car in order to ingratiate
              herself with her friends.

The sentences in (87) indicate that the operative notion is
indeed agency and not structural subject.

87)   a.   The bridge was blown up (by the guerillas) in
              order to demonstrate the power of the resistance.
       b. * The ship sank in order to demonstrate the power of
              the resistance.

(87a) is grammatical even without the by-phrase, indicating
that "implicit" arguments (see Roeper (1987) and references
for discussion) may control the subject of RatCs. As was noted
above, RatCs never appear with object gaps, i.e. host null
operator chains.

88) * John₁ bought a new car₁ [in order PRO₁ to drive e₁ all
       over town]

Though both Jones and Faraci treat RatCs with lexical subjects
as fully grammatical, they seem quite marginal to me. The
deviance is particularly noticeable when the clause is not
introduced by in order.

89)   a.?? John stuffed the ballot box in order for his son
             to win the election.
       b.?* John stuffed the ballot box for his son to win the
             election.

It is important for Jones that RatCs be regarded as having a
free alternation between overt and null subjects as he does
not wish to characterize them as structures of obligatory

control.[**] This distinction does not play a role in my analy-

sis so, in light of the differences in judgement, I will gene-

rally ignore this potentially significant fact.

There are two thematic or semantic requirements govern-

ing the choice of NP which may control the SPC subject or

antecede the OPC object gap. In both cases the NP must be a

THEME, in the sense of Gruber (1965) and Jackendoff (1972,

1974, 1976).

90) a. * John told Mary$_i$ a joke [PRO$_i$ to repeat it to Bill]
     b. * Mary$_i$ bought a new car [for us to envy e_i]
     c. * I sent Mary$_i$ a student$_j$ [PRO$_j$ to annoy e_i]

     a.'   John told Mary a joke$_i$ [PRO$_j$ to repeat e_i to
           Bill]
     b.'   Mary bought a new car$_i$ [for us to admire e_i]
     c.'   I sent him$_i$ to Mary$_j$ [PRO$_j$ to advise e_i]

Moreover, as Faraci noticed, not all THEMEs are appropriate

controllers or antecedents.

91) a. * John$_i$ burned the evidence$_j$ [PRO$_i$ to get rid of e_j]
     b. * John buried some jewels$_j$ for Mary$_i$ [PRO$_i$ to
           hide e_j]
     c. * John$_i$ displayed it$_j$/a pan$_j$ [PRO$_i$ to fry eggs
           in e_j]

92) a. * John burned the evidence$_i$ [PRO$_i$ to disappear]
     b. * John buried some jewels$_i$ [PRO$_i$ to come in handy on
           a rainy day]
     c. * John displayed it$_i$/a car$_i$ [PRO$_i$ to impress the
           undergraduates]

Jones and Faraci characterize the class of appropriate THEMEs

as those which are somehow "available" to participate in

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28. For Jones S', the category which he assumes RatCs to be,
is opaque to obligatory control. See his chapter 2, sec. 3.1.1
for discussion.

further action. This notion of availability is rather deli-
cate, illustrated by the contrast in (93).

93)   a. *   John took apart a chair$_i$ [to get rid of e$_i$]
      b. ?   John took apart a chair$_i$ [to build a fire with e$_i$]

After being taken apart, surely the chair no longer exists as
such, yet (93b) is only slightly marginal. Consider also the
examples in (94), from Faraci.

94)   a.   Harold painted the stove [to cook his meals in]
      b.   Harold cleaned the stove [to cook his meals in]

Unlike the verbs in (92), paint and clean denote activities
which leave their objects apparent and in existence. However,
Faraci stars both of these sentences. While they are admit-
tedly not perfect, they seem to me rather acceptable. The
versions in (95) are even better than those in (94).

95)   a.   He painted a chair$_i$/it$_i$ [to sit on e$_i$ at his desk]
      b.   He cleaned this pot$_i$/it$_i$ out [to cook his soup
           in e$_i$]

I have no insight into the proper characterization of this
"availability" at this time.

        The possibilities for control of OPC subjects are also
affected by the availability condition. In (96a) the matrix
subject controls the OPC subject, while in (96b) and (96c) the
matrix goal controls the OPC subject.

96)   a.   John$_i$ bought a piano$_j$/it$_j$ [PRO$_i$ to practice on e$_j$]
      b.   John bought a piano$_j$/it$_j$ for Mary$_i$ [PRO$_i$ to
           practice on e$_j$]

c.   John bought Mary₁ a piano₁ [PRO₁ to practice
                  on e₁]

In (96) the controller of the OPC subject is also, in a diffe-

rent sense, the "controller" of the piano, i.e. the person for

whom it is available by virtue of the action denoted by the

matrix verb. When the indirect object is SOURCE, the matrix

subject (which is now GOAL) controls the OPC subject.

97)   John₁ bought a piano₁ from Mary₄ [PRO₁/₄ to practice
       on e₁]

If we call control of the subject of the SPC and antecedence

of the object gap in OPC the "primary links" for each of these

PCs, then the generalization can be roughly stated as follows:

the primary link for a PC is to THEME; any secondary link

(e.g. control of OPC subject) is to GOAL. Jones encodes this

generalization as a thematic hierarchy, such as that proposed

by Chierchia (1984) and Nishigauchi (1984), which derives from

that proposed by Jackendoff (1972).[29]

98)   Thematic Hierarchy: THEME > GOAL > SOURCE/LOCATION ...

Structural, rather than thematic, analyses of this phenomenon

are possible. It could, for example, be argued that *from*, but

not *to* or *for*, prevents its object from c-commanding into the

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29. The relevance for PCs of the SOURCE/LOCATION level in the
hierarchy is not obvious to me, as those θ-roles never control
empty categories in PCs. For the analysis of purpose clauses,
the Thematic Hierarchy is simply a stipulation that the sub-
ject of SPCs and the object of OPCs link to THEMEs, while the
subject of OPCs links to GOAL.

OPC (under the assumption that c-command is the necessary con-
dition for control in these cases). This is particularly plau-
sible given that _to_ and _for_ are two of the prepositions which
were co-opted as case-markers in the transition to Middle
English (see Lumsden (in progress)). They might therefore be
regarded as realizations of oblique case in NP rather than
heads of independent maximal projections, as proposed by K.
Hale. If the mapping from thematic relations to structural
relations is fixed, as argued by Baker (1985) and Belletti &
Rizzi (1986), then the structural argument is probably
reducible to a thematic argument.

The above characterization of OPCs and SPCs (essentially
that of both Faraci and Jones) implies that the two are dis-
tinct entities. This, I think, is not so obvious. While the
lack of an object gap in SPCs strongly differentiates them
from OPCs, there are reasons to think the two are more closely
related than SPCs and RatCs are. Notice that the verbs which
support SPCs are a subset of those which support OPCs. The
relevant portions of (61) are repeated below.

61)   b.   OPCs: predicates of transaction (give, buy, sell,
              steal, take, borrow, lend); transitive verbs of
              motion (send, bring, take); verbs of creation
              (build, construct, devise, make); and the verb
              use.

       c.   SPCs: verbs of motion like send, bring and take.

However, the list of verbs in (61c) appears to be incomplete.
If the defining characteristics of SPCs are (i) they appear
with only a subject gap and not an object gap and (ii) the

subject gap is controlled by a matrix THEME, then the PCs in

(99) are surely SPCs.

99) a.   Mary bought a dog$_i$/it$_i$ [PRO$_i$ to guard her house]
     b.   I gave a dog$_i$/it$_i$ to Mary [PRO$_i$ to guard her
           house]
     c.   Mary stole a pine$_i$ from his forest [PRO$_i$ to serve
           as our Christmas tree]
     d.   Mary lent her spats$_i$ to John [PRO$_i$ to liven up his
           wardrobe]
     e.   Mary borrowed some spats$_i$ from John [PRO$_i$ to liven
           up her wardrobe]
     f.   Mary built a birdhouse$_i$/it$_i$ [PRO$_i$ to hang in the
           oak tree]
     g.   Mary constructed a gate$_i$/it$_i$ [PRO$_i$ to fit the gap
           in the fence]

Furthermore, while RatCs may coocur with either OPCs or SPCs

(see (62) and (63) above), the latter two never appear toge-

ther.

100) a. * Mary sent her son to the nuns [to educate e] [to
             improve himself]
      b. * Mary sent her son to the nuns [to improve himself]
             [to educate e]

There does seem to be a difference between SPCs and OPCs which

deserves attention: some SPCs are not compatible with dative

shift structures. It has been suggested that this is a defi-

ning characteristic of SPCs (one which distinguishes them from

OPCs in particular) and that the phenomenon derives from a

requirement that the THEME controller of an SPC be invested

with a kind of secondary agency by the matrix predicate.[30] The

effects of this phenomenon can be easily seen with the verb

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30. Faraci discusses this at length; Barbara Partee is also
credited with having pointed this out by both Jones and
Nishigauchi (1984).

send which allows its to-phrase to be either a dative or directional phrase. SPCs can appear with send, but not freely: when the to-phrase is a dative, SPCs are incompatible.

101) a.   John sent his son$_i$ to the librarian PRO$_i$ to get some help.
      b.   J sent his son$_i$ to the librarian PRO$_i$ to be properly trained.

102) a. * John sent the librarian his son$_i$ PRO$_i$ to get some help.
      b. * J sent the librarian his son$_i$ PRO$_i$ to be properly trained.

Dative shift makes it impossible to interpret the librarian as a directional phrase and ungrammaticality results. The grammaticality of dative shift structures with OPCs, (103), indicates that the ungrammaticality of (102) is not due to some problem with the availability of the THEME.

103) a.   John sent the librarian$_i$ his son$_j$ PRO$_i$ to train e$_j$
      b.   John sent the librarian$_i$ these books$_j$ PRO$_i$ to catalog e$_j$

This difference between SPCs and OPCs could be accounted for as follows: in the non-dative shifted structure send assigns the direct object (THEME) the additional role of secondary agent.[31] This secondary θ-role is not assigned to the THEME in the dative-shifted structure.[32] Assume finally that only an

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31. This is not implausible if, as suggested in Kegl (1984) and elsewhere, roles like AGENT and PATIENT are part of a system distinct from that comprised of THEME, GOAL, SOURCE, etc.

32. These proposals have interesting consequences for the structure of double object verbs given Baker's (1985) Uniform Theta-Assignment Hypothesis (UTAH). According to UTAH, one and only one DS representation is associated with a particular set

argument that is itself agentive may control a fully agentive
PRO. This account doesn't really hold up given the grammati-
cality of (104) and the examples in (99a,b,d), most of which
involve non-animate controllers and an embedded agentive
subject.

104)   I sent my spats₁ to John PRO₁ to liven up his wardrobe

In fact, there are even some dative shifted sentences with
send which seem to allow SPCs. (The direct object in (105b) is
given as an infinitival relative to force the PC reading for
the final clause; the usual tactic of substituting a pronoun
for the full NP will not work in this context for familiar
reasons.)

105)   a.   I sent the librarian my son₁ [PRO₁ to serve as her
            assistant]
       b.   I sent John [a rack to hang coats on]₁ [PRO₁ to
            stand in the front hallway]

I would like to suggest that the trichotomy SPC-OPC-RatC does
not sufficiently characterize the types of purposives that
exist. A more complete typology includes, besides RatCs, the
following three clausal purposives: AGENT-oriented subject-gap
PC, THEME-oriented subject-gap PC, and THEME-oriented object-
gap PC. Examples of each type from the discussion above are
repeated below.

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of θ-relations. If the θ-relations which exist in the dative
shifted and non-dative shifted versions of _send_ VPs are
distinct, then we would expect the DS representations for
these structures to be distinct.

101) a. John sent his son, to the librarian PRO, to get
          some help.
          (cf. "John, sent the librarian his son, in order
          PRO,/., to get some help")

105) b. I sent John [a rack to hang coats on], [PRO, to
          stand in the front hallway]

103) b. John sent the librarian, these books, PRO, to
          catalog e,

Notice that the AGENT-oriented subject-gap PC is not a RatC,

as evidenced by its ungrammaticality with <u>in order to</u>. For

typographical ease I will use the subscripted acronyms SPC$_A$

and SPC$_T$ to refer to AGENT and THEME-oriented subject-gap PCs,

respectively. It should now be apparent that the analysis

sketched in the paragraph after example (103) is relevant to

SPC$_A$s but not SPC$_T$s. Before attempting a more complete

analysis of the four purposive clauses, it is necessary to

compare the behavior of purposive PPs.

2.3.4 PPs: Distribution and Control

    There is an important, but little discussed, fact about

purposive clauses which was first pointed out by Faraci: the

distribution of these clauses and the control facts just out-

lined (including "control" of the object gap in OPCs) are

mirrored by the distribution and interpretation of purposive

PPs. Except where noted, the arguments and data which appear

in this section to illustrate this correspondence are based on

Faraci (1974); my final analysis of the correspondence differs

from his significantly. There are three points to be made: (1)

there are non-clausal <u>for</u>-PPs which have the same interpreta-
tions as purposive clauses; (2) these PPs have the same dis-
tribution as their clausal counterparts (cf. §2.3.1); (3) they
have the same "control" properties as their clausal counter-
parts (cf. §2.3.3).

Consider first the pair of sentences in (106).

106) a. Mort$_i$ sent his robot$_j$ to us [PRO$_i$/$_j$ to get the
         prize]
     b. Mort$_i$ sent his robot$_j$ to us [for the prize]

The clause in (106a) may be interpreted as either a RatC (with
matrix subject control) or an SPC$_A$ (with matrix object con-
trol). Both readings are available for the PP in (106b) as
well.[33] The same similarities are perhaps more clearly visible
in pseudoclefted constructions. Recall that RatCs alone may be
stranded in pseudoclefts. In the paradigm in (107) we can then
identify (107c) as a RatC and (107b) as an SPC$_T$.[34]

107) a. John built a robot to entertain his guests.

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33. In fact, a third possible reading: "Mort sent us his robot
as a prize" is also available for (106b). The difference
between this reading and the one which corresponds to the SPC
reading of the infinitive is the same as the difference
between (i) and (ii).

    i)   John brought Mary home for dinner.
    ii) John brought pizza home for dinner.

I assume that the difference may be adequately characterized
in terms of the θ-role which the PP assigns to the NP which
is, essentially, its external argument: <u>Mary</u> in (i) and <u>pizza</u>
in (ii).

34. Optionally, the infinitive in (107c) and the PP in (108c)
may both be interpreted as rationale phrases.

b. What John built to entertain his guests was a robot.

c. What John did to entertain his guests was build a robot.

When the infinitives are replaced with purposive PPs, pseudo-clefting disambiguates the sentence in exactly the same manner.

108) a. John built a robot for entertainment.
      b. What John built for entertainment was a robot.
      c. What John did for entertainment was build a robot.

In both (107b) and (108b) the source of the entertainment (for either John or his guests) is the robot itself. In (107c) and (108c) the source of entertainment is the act (or event) of building the robot. Many more such examples may be constructed; see Faraci's chapter 2 for extensive discussion.

Other parallels exist between purposive clauses and PPs; for example, when a PP is preposed, only the rationale reading is available without topicalization intonation (see the discussion of (60) above).

109) a. To entertain his guests, John built a robot.
      b. For entertainment, John built a robot.

More importantly, purposive PPs occur with just those verbs which support their clausal counterparts. Faraci's examples are below.

110) a. John (*accidentally) let the cat out of the room for some peace and quiet.
      b. * Bill was short for maximal effectiveness.
      c. Bill must be short for maximal effectiveness.
      d. Bill needs to be short for maximal effectiveness.

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e.   It is sufficient for Bill to be short for maximal
                effectiveness.

In (110a) the adverb renders the action non-volitional and

therefore incompatible with a rationale PP. The volitionality

which is missing in (110b) is supplied by the modal and

conditional predicates in (110c,d,e). The verbs which support

PCs also support their non-clausal counterparts, as illustra-

ted by the paradigms below.

111)   a.   Mary built/bought the board for her chess game.
        b.   Mary built/bought the board for Spassky to play
                on.

112)   a.   Harold made/used the stove for his gourmet
                cooking.
        b.   Harold made/used the stove (for his chef) to cook
                on.

113)   a. ?? Mary destroyed the board for the bonfire she was
                making.
        b. ?? Mary destroyed the board for the scouts to burn.

114)   a. ?? Mary repaired the board for her chess games.
        b. ?? Mary repaired the board for Spassky to play on..

115)   a. ?? Harold painted/cleaned the stove for his gourmet
                cooking.
        b. ?? Harold painted/cleaned the stove (for his chef) to
                cook on.

116)   a.   John's parents sent him to Stanford for an
                education.
        b.   John's parents sent him to Stanford to get an
                education.

Faraci notes that the (a) examples in (113) - (115) are

acceptable under a non-purposive reading which might be

translated as "in preparation for".

        Like RatCs and PCs, rationale PPs and purpose PPs are

ordered with respect to each other. ((117) is from Faraci.)

117) a.   Harold used his stove for his gourmet cooking for
            the thrill of it.
     b. *   Harold used his stove for the thrill of it for his
            gourmet cooking.

118) a.   John sent his kids to the grocery store for potato
            chips and ice cream for a little peace and quiet.
     b. *   John sent his kids to the grocery store for a
            little peace and quiet for potato chips and ice
            cream.

The control facts discussed in §2.2.3 also have their

analog in the interpretation of purposive PPs. Recall that a

matrix subject could control the subject of an OPC only in

case there was no goal argument within the VP. This was

illustrated in (96), repeated below.

96) a.   John_i bought a piano_j/it_j [PRO_i to practice on e_j]
    b.   John bought a piano_j/it_j for Mary_i [PRO_i to
           practice on e_j]
    c.   John bought Mary_i a piano_j [PRO_i to practice
           on e_j]

In (96b,c) it is impossible to interpret the PRO as controlled

by John. Now consider the sentences in (119).

119) a.   Mary bought her daughter a set of rosary beads for
            penance.
     b.   Mary bought a set of rosary beads for penance.

In both (119a) and (119b) the PP can be interpreted as a

rationale phrase: the purpose of the act of buying was

penance. On this interpretation the penitent is Mary in both

sentences. The PP in both cases may also be interpreted as a

purpose phrase (analog of OPC): the rosary beads are to be

used during the act of penance. With this reading of the PP,

the penitent in (119a) is the daughter, while in (119b) it is

Mary. That is, the same "control" facts hold in purposive PPs

and in purposive clauses. The same fact is illustrated in a

slightly different manner by the sentences in (120), which

should be compared with those in (121).

120) a.   John borrowed a tent from Max for camping trips.
      b.   John loaned a tent to Max for camping trips.

121) a.   John$_i$ borrowed a tent from Max [PRO$_i$ to take e to
            Montana]
      b.   John loaned a tent to Max$_i$ [PRO$_i$ to take e to
            Montana]

As noted above, a SOURCE argument does not preempt matrix

subject control as a GOAL argument does.

Finally, the well-known example in (122) indicates that

with a verb which is ambiguously transitive and intransitive

the PC is ambiguous between an OPC and SPC$_T$.

122) John brought the chicken home to eat.

In this sentence the chicken may have been brought home as

either the guest of honor or the main dish. The two readings

correspond, respectively, to (123a) and (123b).

123) a.   ... the chicken$_i$ ... [[PRO$_i$ to eat]]
      b.   ... the chicken$_i$ ... [Op$_i$ [PRO$_j$ to eat e$_i$]]

124) John brought the chicken home for dinner.

The same ambiguity is present in (124), where the infinitive

is replaced by a purposive PP.

2.3.5 Predication, Purposives and PPs

The correspondence between purposive clauses and purposive PPs, in distribution, interpretation and "control", seems evident. Faraci's approach to accounting for this correspondence is to propose that all purposives are in fact prepositional phrases with clausal complements of a prepositional head. This seems reasonable for in order to RatCs where the possibility of the sequence in order for NP indicates the need for a prepositional head as well as a complementizer. Faraci's evidence for extending this analysis to PCs, besides the similarities between PCs and PPs reviewed in the preceding section, comes from pseudocleft and cleft constructions. When PCs are pseudoclefted, they may appear with a stranded preposition, (125a). Notice that the stranded for also appears when there is a complementizer with the clause in focus position, (125b).

125)   a.   What Carol bought a rack for was to hang coats on.
       b.   What Carol bought a rack for was for John to hang his clothes on.

Unlike Faraci, I take this data as further evidence for the interpretational similarity between PPs and PCs rather than evidence that PCs are PPs. What in a pseudocleft corresponds only to focus constituents which are NP arguments, clausal arguments and adjectival predicates.

126)   a.   What I saw was a dog.
       b.   What I heard was that you were leaving.
       c.   What I consider John is foolish.

127) a. * What I live is in Somerville.
      b. * What I put it was there.
      c. * What I left was Tuesday.
      d. * What I fixed the car was with a hammer.

(127b,c) indicate that <u>what</u> may not even correspond to bare-NP

adverbs (Larson (1985)). The relative acceptability of (128)

indicates that adjuncts may be clefted, regardless of cate-

gory, when the appropriate wh-phrase appears in the non-focus

clause.

128) a. ? Where I live is in Somerville.
      b. ? Where I put it was there.
      c. ? When I left was Tuesday.
      d. ? How I fixed the car was with a hammer.

(The marginality of (128) is probably due to the general devi-

ance of pseudoclefts with wh-phrases other than <u>what</u>.) Follow-

ing Larson, the sentences in (128) are grammatical because the

wh-phrases have the case-marking properties necessary to

license their variables. <u>What</u> arguably does not have these

properties and, when it is base-generated in an adjunct posi-

tion, will leave a non-case-marked variable. Thus when the

focus constituent is an adjunct <u>what</u> may only appear as the

object of a stranded prepostion, a case-marked position. The

correspondence between purposive PPs and PCs allows a catego-

rial mismatch, along the lines of that in (126b).[35]

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35. The same point is made regarding sentential complements of
the verb <u>hope</u> in Brame (1980), where examples from Stockwell,
Schachter & Partee (1968/73), Akmajian (1970) and Kajita
(1972) which illustrate the categorial mismatch allowed in
pseudoclefts are repeated.

Faraci also points out that sentential complements do not cleft, while purpose clauses may.

129) a.   John intended for Mary to leave late.
     b. * It was for Mary to leave late that John intended.

130) a.   Sally bought the piano (for Todd) to practice on.
     b.   It was (for Todd) to practice on that Sally bought the piano.

This he also attributes to the categorial status of the purpose clause as a PP. As additional evidence he gives sentences such as those in (131), which contrast with those in (129) in their relative grammaticality as clefts.

131) a.   I was hoping/waiting for Mary to arrive.
     b.   It was for Mary to arrive that I was hoping for.

132) I was hoping/waiting for a solution to the problem.

He attributes the grammaticality of (131b) to the status of the complement as a PP with a clausal object. As shown in (132), these verbs do take PP complements. The status of for in clausal constituents has long been debated in the literature.[36] The crucial question for this discussion is whether the for which appears with infinitival clauses is a complementizer (i.e., head of CP) or a preposition (i.e., head of PP). At this point I will restrict the discussion to purpose

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36. See Bresnan (1970), Chomsky & Lasnik (1977), Chomsky (1980), Brame (1980) and the references in the previous footnote.

clauses leaving aside the questions raised by the data in

(129) - (132).[37]

If we assume that purpose clauses are PPs, as Faraci

argues, there are two structures that could be assigned to

them depending on whether one assumes that the prepositional

head takes an IP complement or a CP complement. The two op-

tions are in (133); α marks the position of a null operator in

the case of OPCs.

```
133)   a.      PP                    b.        PP
            /  \                            /  \
        α      P′                              P′
              / \                            / \
            P    IP                        P    CP
            |                            /    /  \
           for                        for   α    C′
                                                / \
                                             for   IP
```
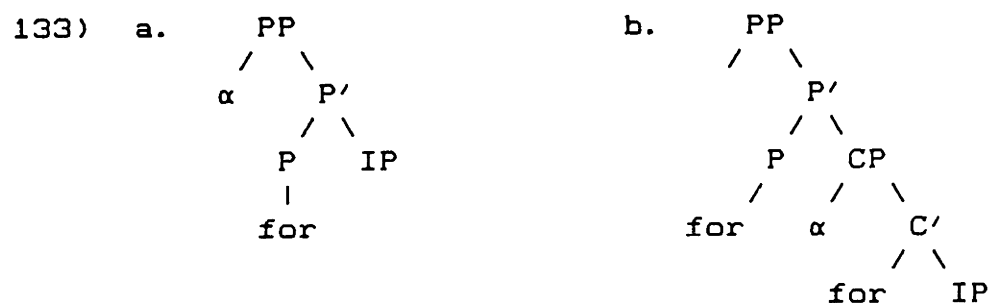
Consider (133a) first. In §2.2 two proposals were discussed

which would have the effect of ruling out sentences such as

(134a) with the configuration in (134b).

134)   a. *   I consider John$_i$ [proud of e$_i$]
       b.   ... NP$_i$ [XP$_i$ O$_i$ [X ... e$_i$]] ...

The two proposals, given in (46) and (58) in §2.2, are

repeated below.

46)   An empty category is an operator only if it is in the
       SPEC of CP.

58)   A subject-predicate relation may not simultaneously
       satisfy both clauses of (19).

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37.   See Heggie (1986) for a different analysis of clefts.

19)   A subject-predicate relation is licensed if

    a.   the subject discharges the external θ-role of the
          predicate or

    b.   the subject agrees with a chain contained in the
          predicate.

(46) rules out (133a) as a possible representation for OPCs
since the empty category in the position of α would not, by
definition, be an operator and the variable within IP would
not be operator-bound.[38] Is (133a) a possible representation
for OPCs if (46) is rejected in favor of (58)? Answering this
question requires a brief discussion of the predicational and
thematic properties of PPs in general.

    I adopt essentially Rothstein's (1983) view of PPs as
predicates. A preposition names a two-place relation, the
second position of which is filled by the prepositional ob-
ject. The external argument or subject of the preposition is
designated as participating in the relation so defined. Roth-
stein assumes that the relation between the preposition and
its external argument is weaker than external θ-role assign-
ment, the relation which holds between a verb and its exrter-
nal argument.

    The subject of a preposition can be either an NP, as in
"John gave a book to Mary", or the E(vent)-position of a pre-
dicate. Developing and extending an idea of Davidson's (1966),

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38. If the SPECs of NP (DP) and AP are A-positions then the
constraint on where empty categories can be null operators
would reduce to the A/A' distinction. This would allow the
adoption of (133a) if it could be shown that the SPEC of PP is
not an A-position.

Higginbotham (1983, 1985, 1986) proposes that both active and stative predicates contain E-positions in their θ-grids (see Stowell (1981)) which are available for predication. According to Higginbotham, the lexical entry of a verb like <u>walk</u> is as in (135a); the E-position is discharged via existential gene- ralization giving giving the interpretation (135c) for (135b).

135)   a.   'walk', (+V,-N), <1,E>, Actor(1)
           b.   John walks.
           c.   ($\exists$e) [walk (John,e)]

Finally, PPs which are predicated of E-positions are interpre- ted as in (136). All examples are from Higginbotham (1986); for definitions and discussion of the execution and ramifica- tions of these proposals, see the references above. In all examples the contribution of tense to the interpretation is ignored.)

136)   a.   **John fell down after Bill hit him.**
           b.   ($\exists$e) [fell down(John,e) & after(e, (the e')
                 hit(Bill,John,e'))]

Higginbotham assumes that the PP in (136a) is predicated of the E-position in the verb. Rothstein, however, regards the event, which she places in INFL, as an argument of the verb on a par with its lexical arguments. PPs such as that in (136) are, for her, predicated of INFL. Evidence for choosing be- tween the two might come from syntactic tests which determine the location of the PP, i.e. VP-external vs. VP-internal. The tests performed on RatCs, which I take to be predicated of events, in §2.3.1 indicate that they are not VP-internal ele-

ments. The sentences in (137) and (138) indicate that prepo-
sitions such as after and without are also not VP-internal.

137)   a.   ... and complain he did after I had criticized
                 him.
        b.   ... and shoot you he would without even blinking.

138)   a.   Bill complains after I criticize him and John does
                 after I compliment him.
        b.   Bill flies without a copilot but John does without
                 a parachute.

However, as noted in §2.3.1, there are reasons to believe that

RatCs are base-generated in a VP-adjoined position; the sen-

tences in (139) indicate that the same is true for PP adjuncts

such as those in (137) and (138).

139)   a.   ... and complain after I had criticized him he
                 did.
        b.   What John did was fly to Boston without a copilot.
        c.   Fly to Boston without a copilot though you may, it
                 will not mean that you are a competent pilot.

Depending on how one formulates the locality condition on the

subject-predicate relation, assuming that predicates of the E-

position are VP-adjoined seems to be compatible with both

Rothstein's approach and Higginbotham's. The position of the

adjunct gives no evidence for choosing between the two, but

the choice is not crucial for this discussion.

     Having summarized my approach to PPs, I return now to

the question of whether (133a) and (58) are compatible. If, as

I assume, the NP subject of the purpose clause in (133a) is

related to the preposition via some form of θ-role assignment

as well as being related to the null operator in the SPEC of

PP, (58) will be violated. Therefore, I reject (133a) as a possible structure for purpose clauses.

Turning now to (133b), if this structure is adopted clearly one of the fors must go. If it is the complementizer which deletes, or fails to be generated as a lexical item, then the subject position of IP will not be case-marked. An alternative would be to allow the preposition for to case-mark the subject of IP in the absence of the complementizer. However, if case-marking across both CP and IP is allowed in this instance, it would be very difficult to explain the ungrammaticality of sentences such as those in (140).

140) a. * I assure you John to be intelligent.
      b. * Je crois Jean être intelligent.

Another possibility would be to base-generate a null preposition with the case-marking properties of for as the head of CP in this construction. However, the ungrammaticality of (141)

141) * I was hoping John to win

becomes inexplicable if null infinitival complementizers possess the case-marking abilities of overt infinitival complementizers.

There is evidence which suggests that these problematic proposals should be rejected in favor of the generally accepted view that PCs are bare CPs. Adriana Bellettti has pointed

out that extraction of PPs from adjunct PPs is much worse than extraction of NPs from adjunct PPs.

142) a. *   the man to whom you left London without speaking
     b. ?   the man who you left London without speaking to

Extraction of PPs from within SPCs does not appear to be any more ungrammatical than the extraction of NPs.

143) a.   the children to whom you hired him to give French lessons
     b.   the children who you hired him to give French lessons to

144) a.   the children to whom you persuaded him to give French lessons
     b.   the children who you persuaded him to give French lessons

I believe that (143a) is slightly marginal in comparison with (144a), but that the same degree of marginality distinguishes (143b) from (144b). This marginality is predicted given the status of the purpose clause as an adjunct. Interestingly, extraction of PPs from RatCs, with or without in order, is more deviant than (143a), although slightly less so than (142a).

145) a. ?? the friend for whom you fired Bill (in order) to make room
     b. ?   the friend who you fired Bill (in order) to make room for[39]

This suggests that PCs are bare CPs and RatCs are PPs.

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39. I find (145b) improves noticeably without the relative pronoun. I have no explanation for this.

Some additional evidence that PCs in English are bare CPs comes from the distribution of gaps and resumptive pronouns in certain OWM constructions in Italian. In Italian degree word clauses (146a,b) and purpose clauses (146c) are ungrammatical with object gaps, but fully grammatical with resumptive pronouns in place of the gaps. The following data is from Cinque (1986)).

146) a.   Questo libro è troppo di parte per addoter *(lo) noi
'this book is too biased for us to adopt (it)'
b.   Questo lavoro non è abbastanza remunerativo per accettar *(lo) subito
'this job isn't remunerative enough to accept (it) straightaway'
c.   Me lo hanno comprato per indossar *(lo) stasera alla festa
'they brought it for me to wear (it) tonight at the party'

Notice that in all three constructions in (146) the preposition per introduces the infinitival clause. There is another kind of purpose clause in Italian which supports null objects as well as resumptive pronouns; it appears with the complementizer da instead of per.

147)   Me lo hanno dato da recensir(lo) per domani
'they gave it to me to review (it) by tomorrow'

These facts are easily accounted for if we assume that per is a true preposition, i.e. one which heads a PP and which retains its θ-related properties, while da is, in constructions such as (147), a complementizer on a par with the English for complementizer.

An additional comment, and a bit of speculation, on the correspondence between PCs and purposive PPs: given that complementizer for is historically derived from prepositional for I see no reason that the complementizer might not optionally retain some of the interpretational attributes of its historical antecedent. Assume for the moment that we can, with impunity, characterize the θ-relation which holds between a preposition and its external argument as θ-role assignment. (As mentioned above, Rothstein differentiates between this relation and "real" external θ-role assignment such as that accomplished by a verb.) If (58) is correct, the ability of for to appear as a complementizer in CPs which are predicates by virtue of an operator in their SPEC suggests that the preposition does not assign an external θ-role when it is a complementizer. The transformation from preposition to complementizer may then be characterized as precisely this loss of θ-role assigning capability.

The distributional, interpretational and control properties of the four types of purposive clauses and their PP counterparts derive, in part, from the nature of the subjects they take. RatCs/PPs are event predicates ascribing a particular purpose to an event. OPCs and SPC_Ts take THEME NPs as subjects and SPC_As take agentive NPs as subjects. The difference between being predicated of an event (RatCs) and predicated of an agentive NP (SPC_As) can be difficult to distinguish when the agentive NP is in subject position. However, it is

just this difference which I believe accounts for the two

interpretations of (148).

148)   I went to Boston to amuse myself.

The two interpretations associated with this sentence[40] differ

in what the source of amusement is taken to be. While the sen-

tences in (149) are not "interpretations" of (148), they bring

out the relevant difference in interpretation which I am

referring to.

149)   a.   I went to Boston because the trip itself is so
              amusing.
        b.   I went to Boston because there are so many amusing
              things to do there.

A similar contrast, and one which offers easier insight into

the problem at hand, is found between the sentences in (150).

150)   a.   I sent my son to Boston to amuse him.
        b.   I sent my son to Boston to amuse himself.

(150a) corresponds to (149a)[41] and (150b) corresponds to

(149b). Moreover, the reading similar to (149b) is unavailable

with a pronominal object of amuse (as opposed to the reflexive

object) and the reading similar to (149a) is impossible with a

reflexive object. This suggests that control of the embedded

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40. This sentence is given a different analysis than the one I
shall propose in Barss (1984); Faraci also noticed and dis-
cussed this phenomenon.

41. There is a slight difference interpretation which will be
discussed below.

subject is fixed: the matrix subject controls PRO in (150a) and the matrix object controls it in (150b).

As should be obvious from the preceding discussion of purposive clauses, the adjunct clause in (150a) is a RatC and that in (150b) is an SPC$_A$. This can be tested by inserting <u>in order</u>, which is compatible only with RatCs.

151) a.   I sent my son to Boston in order to amuse him.
      b. ?? I sent my son to Boston in order to amuse himself.

The ability to be stranded in pseudoclefts also distinguishes RatCs from other purposive clauses and, as expected, only the PC in (150a) may appear in that context.

152) What I did to amuse him/*himself was send my son to Boston.

The purposive in (148) behaves as expected with respect to the pseudoclefting test as well: (153) has only the interpretation corresponding to (149a).[42]

153) What I did to amuse myself was go to Boston.

To reiterate, the correlation is as follows: the "trip = amusing" reading, (149a) and (150a), arises when a purposive is predicated of the event; the "activities in Boston = amusing" reading, (149b) and (150b), arises when a purposive

_____

42. The <u>in order</u> test does not distinguish so clearly between the two readings when the SPC$_A$ is predicated of the subject.

    i)   I went to Boston in order to amuse myself.

I have no explanation for this.

is predicated of an agentive NP, subject or non-subject. The former purposive we have identified as a RatC and the latter as an SPC$_A$.

Faraci discusses another similar sort of phenomenon concerning the following sentences (from Faraci, ch. 2, exx. 15-17). (I have altered (154b) slightly from Faraci's original to make the exposition below a little more plausible.)

154) a.   The usher is there to receive the tickets.
        b.   The police are here to screen out undesirables.
        c.   The accountant is here to look over the books.

He distinguishes two readings for each of these: one which he calls the "function" reading and another which he calls the "intention" reading. With respect to (154b), the intention reading entails that the police are aware of their purpose in being here and intend to engage in it actively. The function reading, on the other hand, could be true if the police think that they are here to guard the ticket money but it is their visible presence which we are counting on to screen out undesirables. Faraci attributes this ambiguity to the status of the subjects in (154) as both THEME and AGENT. The function reading is somehow more closely linked to the THEME role of the subject, while the intention reading is linked to the AGENT role. Within the typology I have proposed, the clause which results in the function reading should be an SPC$_T$. It is not clear whether the intention reading should correspond to a RatC or SPC$_A$. In fact, given the discussion above about (148), the clause should be ambiguous between the two and there

should be two distinct readings in addition to the function

reading. Moreover, only one of these two readings should be

available when _in order_ is inserted.

155)   a.   The usher is there in order to receive the
               tickets.
       b.   The police are here in order to screen out
               undesirables.
       c.   The accountant is here in order to look over the
               books.

My intuition, though not a strong one, is that what surfaces

with the addition of _in order_ is the function reading. There

is an aspect of these sentences which may be responsible for

this unexpected result (if, in fact, it is a result): the

examples in (154) all involve _be_. Consider the three possible

interpretations which my analysis predicts should be available

for (154a) given the existence of RatCs, SPC_As and SPC_Ts. (1)

RatC: the clause denotes the purpose of the event "the usher

is there"; (2) SPC_A: the clause denotes the intent of the

usher in being there; (3) SPC_T: the clauses denotes the pur-

pose of the usher in being there. It may be that with the verb

_be_ it is difficult to distinguish interpretation (1) from

interpretation (3), which would lead to exactly the problema-

tic situation described: insertion of _in order_ seems to force

a reading more like the function reading and less like the

intention reading.

2.3.6 Predication and Null Operators

In §2.2 I proposed that the subject-predicate relation may be licensed either by θ-role assignment or by means of an agreement chain between the subject and a predicate variable contained in the predicate; I also offered evidence that these two means of licensing the subject-predicate relation are mutually exclusive. In the preceding subsections of §2.3 I further demonstrated that many of the control and distributional properties of PCs are not related to the null operator. In this subsection I will argue that null operators are null pronominals, that is, a null operator is base-generated as pro in an A-position at DS and moved to SPEC of CP in the mapping from DS to SS. I assume that pro in an A'-position, like pro in the subject position of tensed sentences, must be identified by agreement. Movement of pro to SPEC of CP brings it into a position where this requirement may be satisfied by means of the agreement chain discussed in §2.2. (157) indicates the agreement relations related to the OPC which hold in the sentence in (156); agreement relations are indicated with arrows.

156)   I bought it [PRO to read e]

157)   NP <—> CP <————————┐
           /   / \ |
          it   pro   C' |
                     ↑   / \ |
                     └—> C <————————┘
                              \
                               IP
                              /..\

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The phi-features of pro are licensed by means of this "chain" of agreement and pro is thereby licensed to head a chain, an A'-chain in this case.

Given a typology of empty categories such as that proposed in CC, there are essentially two options for null operators: PRO and pro. Most discussions of null operator constructions since (and including) OB have chosen PRO as the category-type of null operators. There are two problems with this. First, null operators may coexist with lexical complementizers, as is demonstrated in many examples throughout this dissertation. If null operators are PRO, then we must assume that government is directional, i.e. that a head governs only its complements and not its SPEC. This position is probably untenable for Case reasons; see, in particular, the discussion of the Uniformity Condition in KoL. It is also inconsistent with the approach to ruling out clauses such as that in (158) which takes tensed INFL as a governor of the subject position of IP.

158) ... PRO wrote a bestseller.

Secondly, as pointed out in chapter one (§1.4) null operators share almost none of the "referential" properties of subject PRO. While these differences might be accounted for on the basis of the A/A' distinction between null operators and subject PRO, such an analysis would require a major revision in control theory. If, on the other hand, we take null operators

to be the null pronominal, pro, no complication of the identi-
fication mechanism for that empty category is required. The
extension of the agreement relation proposed in §2.2, by means
of which operator pro is identified, is independently motiva-
ted by the analysis of syntactic predication offered in that
section.

The analysis of null operators just proposed has been
formulated on the basis of the typology of empty categories
found in Chomsky (1982), a typology based on the features
[±pronominal, ±anaphor], which I will refer to as "binding
features" following Barss (1986). It should be obvious that
this analysis is compatible with any typology of empty catego-
ries which includes an element with the following properties
(all of which are properties of pro): it may be governed, must
be an argument, may head an A'-chain, and must be identified
via agreement. There is nothing in the analysis which requires
the null operator to be a pronominal; the binding features are
relevant only to the extent that they differentiate between
ungoverned PRO and governed pro. Brody (1985) and Barss (1986)
have proposed that the distribution and behavior of empty
categories may be accounted for without assigning them binding
features. Barss, in particular, points out several problems
for the analysis of certain OWM constructions and parasitic
gap constructions which a binding feature-based typology of
empty categories does not seem to be able to handle. A de-
tailed reformulation of the theory of empty categories is

beyond the scope of this dissertation, but some further discussion of these issues appears in §3.4

Finally, Rizzi (1986) proposes a very interesting account of generic null objects in Italian which takes these elements to be pro. Although an in-depth examination of the data and proposals contained in that article are beyond the scope of this work, I would like to suggest that the phenomena Rizzi analyzes might be equally well accounted for if we assume that Italian has non-overt object agreement and that object pro, like subject and operator pro, is identified via agreement. Such an approach would link Italian with languages such as Hindi which have overt object agreement capable of licensing null objects; see Cole (1985).

2.4 Relative Clauses and Others

2.4.1 The Structure of Relative Clauses

The structure of simple relative clauses such as those in (159) has been, and continues to be, the topic of much debate.

159) a.   the man$_i$ that I met e$_i$
       b.   the man$_i$ who$_i$ I met e$_i$

Without going into detail, this section will present some of the proposals which have been made regarding relative clause structure and offer some evidence in favor of the structure I wish to assume. Stockwell, Schachter & Partee (1973) and Partee (1975) argue for an analysis of relative clauses which

gave the determiner scope over both the head noun and the clause, a structure analogous to that in (160), with N* = N' or Nom.

160)
```
              NP
             /  \
          Det    N*
                /  \
               N    CP
```
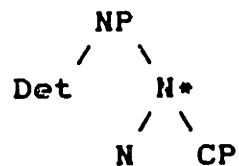
A similar structure is adopted by Vergnaud (1974), where it is argued that the head noun is base-generated within CP and raised into it SS position. Yet another approach is found in Chomsky (1965) where the base-generated structure of a relative clause is as in (161).

161)
```
              NP
             /  \
          Det    N
         /  \    |
       the   CP  man
```
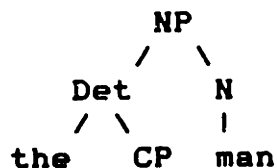
The clause in (161) reaches its SS position by a movement transformation akin to other instances of sentential extraposition. (See also Lees (1961) and Bowers (1970).) The discussion of (161) in Chomsky (1965) is not explicit as to the location of CP after the application of the extraposition transformation; two options available within that framework are shown in (162).

162) a.
```
          NP
         /  \
       NP    CP
      /  \
    Det    N
```
      b.
```
          NP
         / | \
      Det  N  CP
```
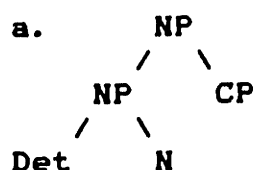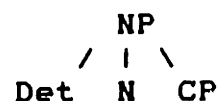
Chomsky (1973) adopts the structure in (162a) without refe-
rence to its derivational history; this structure appears
widely in much later work as well. More recently, Speas
(1986), Speas & Fukui (1986) and Abney (1987) propose variants
of an analysis of NPs which regards the determiner as the head
of a category DP, as illustrated in (163a) where N* = N' (for
Speas & Fukui) or NP (for Abney).

```
163)  a.     DP              b.       DP
           /  \                     /  \
        (DP)   D'                  D'    CP
             /  \                 /  \
            D    N*              D    NP
```
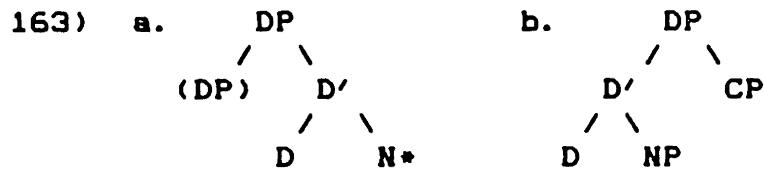
Abney then argues that the structure shown in (163b) is the
correct structure for relative clauses. Within the DP frame-
work, the determiner selects NP as a complement, although the
head-complement raltion here does not involve θ-role assign-
ment. According to Higginbotham (1985), the relation between a
determiner and noun is one of "θ-binding": the determiner
binds, and thus discharges, the θ-role which Higginbotham
argues is part of the θ-grid of every noun. Given a structure
such as (161) the relation between the clause and the determi-
ner is relatively clear; the determiner selects the clause.
The nature of relation between them in (163b) is less obvious;
Abney suggests that the clause selects the determiner. This
seems rather odd since surely the clause is modifying what is
traditionally called the NP head of the relative rather than
the determiner. (To avoid confusion I will refer to this nomi-
nal element as the "relative NP".) I will present only one

argument for the structure in (163b) and refer the reader to the references cited for further discussion of the DP analysis in general as well as for additional arguments in support of the structure in (163b).

There is an interesting contrast between relative clauses and clefts which, I believe, offers evidence in favor of the structure in (163b). Gaps in relative clauses appear to be indefinite even when the relative heads are definite. (164) gives three contexts from which a definite NP is excluded. The grammaticality of the relative clauses in (165) indicates that the gap is treated as an indefinite. (The (c) examples were discussed in Schachter (1973); The (b) examples were pointed out to me by N. Chomsky.)

164) a. * There were the men in the garden.
     b. * John had the question for the teacher.
     c. * We made the headway on that problem.

165) a. The men that there were in the garden were all
        diplomats.
     b. The question that John had for the teacher was a
        difficult one.
     c. The headway that we made on that problem was not
        sufficient.

In contrast, the gap in a cleft is not treated as an indefinite when the antecedent is definite.

166) a. * It was the men that there were in the garden.
     b. * It was the question that John had for the teacher.
     c. * It was the headway that we made on that problem.

The contrast between (165) and (166) might be explained by arguing that traces of relative clause operator movement are

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inherently indefinite, but this could not be generalized to all traces of A'-movement, as shown by the ungrammaticality of (166) and (167).

167)   There are t in the garden, *the people who want to see
       you.

Alternatively, if we adopt the structure for relative clauses in (163b) the antecedent of the relative operator could be NP (in fact, no other option exists within the DP analysis), a category which is unspecified for definiteness.[43] In the case of (166a), with the structure in (168),

168)   It was [$_{CP}$ [$_{NP}$ the men]$_i$ [$_{CP}$ Op$_i$ that [there were t$_i$ in
       the garden]]]

the only possible antecedent for the operator is DP, a category fully specified as definite. In the next section I will assume that the structure of relative clauses is as in (163b), although the proposals to be made are compatible with other structures as well; for further discussion of issues related to relative clause structure, see Saddy (in progress) and the references contained therein.

2.4.2   R-Binding vs. Predication

An interesting question concerning the proper analysis of relative clauses is whether the relative NP (if it is a

---

43. In principle, this is also possible if we adopt the NP-analysis, the drawback being that there is no maximal projection to serve as the antecedent of the null operator chain.

constituent) is in an A-position or an A'-position.[44] Safir
(1986) offers convincing evidence that binding by a relative
NP, which he refers to as "R-binding", is not A'-binding, i.e.
that the relative NP is not in an A'-position. (Safir assumes
the relative clause structure in (162a) and, therefore, re-
gards the determiner + noun sequence as a constituent.) The
main argument against regarding R-binding as a species of A'-
binding comes from the data in (169), which indicate that R-
binding does not license parasitic gaps.[45]

169) a. * the report$_i$ [the author of which$_i$]$_j$ Mary married
             t$_j$ without filing e$_i$
      b. * the report$_i$ [the author of which$_i$]$_j$ Mary filed t$_i$
             without reading e$_i$

(169b) is an example of the well-known constraint against

vacuous A'-binding. Safir notes, crediting Woolford (1981)

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44. In the DP structure in (163b) the determiner and noun (NP)
for a constituent, but not a maximal projection. Nevertheless,
the question of whether the relative NP is in an A-position or
an A'-position can still be formulated with respect to the NP
alone, i.e. is man in (i) in an A-position or an A'-position?

```
i)              DP
              /  \
          D'      CP
         /  \
        D    NP
        |    |
       the   man
```
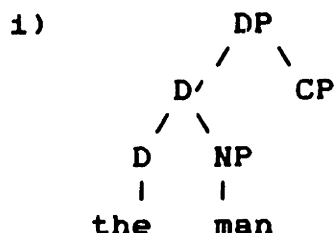
It is not so clear that the same question could be formulated
within the framework of Speas & Fukui (1986) and Speas (1986)
since they regard the NP in (i) as an N', a non-maximal pro-
jection. Thus, for man to be a binder of any sort, it would be
necessary to include X' categories in the set of potential
binders.

45. The data in (169) - (176) and in fn. 49 are from Safir
(1986).

with the observation, that R-binding may be vacuous within IP
but not within CP. More specifically, he argues that the
relative NP must bind something within Comp (= the SPEC of the
relative CP; I will retain Safir's terminology during this
summary of his article).

170)   John$_i$, [a picture of whom$_i$]$_j$ Mary tore up t$_j$, ...

Safir expresses the obligatoriness of R-binding in his Locali-
ty Condition on R-Binding (LCR).

171)   If X is locally R-bound, then X is the structurally
       highest element in Comp.

It follows that R-binding of a gap in a relative will always
be mediated by A'-binding.

       Relative clauses with heavy pied-piping, such as (172),
appear to be counterexamples to the LCR.

172)   Those reports, the height of the lettering on which the
       government prescribes, are tedious.

However, such structures cease to be counterexamples if there
is wh-movement within Comp at LF, as Safir argues.

       His first argument for this proposal is that there
appears to be an overt counterpart to the proposed operation
of LF movement within Comp. This counterpart is at work in

deriving sentences such as (173), which are relatively grammatical for some speakers.[46]

173) Those reports, which the height of the lettering on the government prescribes, are tedious.

The inability of the pied-piped NP to license a parasitic gap, as shown in (174),

174) a. * these reports, [which, the height of the lettering on e_i], John changed e_j without filing e_i, ...
    b. these reports, [which, the height of the lettering on e_i], John changed e_j without measuring e_j, ...

is taken as evidence that (173) cannot be a topicalization + wh-movement structure.

Additional evidence for the wh-movement-in-Comp hypothesis comes from some facts, noted by Kayne (1983), concerning the distribution of wh-phrases in-situ within pied-piped constituents. Kayne noticed that if one wh-phrase in Comp c-commands another coreferential wh-phrase in Comp, the resulting sentence is ungrammatical.

175) a. * $John_i$, $whose_i$ picture of $whom_i$ Mary liked, is late.
    b. $John_i$, $whose_i$ brother's picture of $whom_i$ Mary liked, is late.

As illustrated by (175b), if neither of the two wh-phrases c-commands the other, the sentence is grammatical. Safir links

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46. What Safir actually says about the grammaticality of (173) is that "some speakers do not distinguish its acceptability from that of" (172).

this phenomenon with the ungrammaticality of such sentences as those in (176).[47]

176) a. * Any man, his, portrait of whom, Mary sees, she despises.
      b. *? Any man, his, brother's portrait of whom, Mary sees, she despises.

Presumably (176a) would be ruled out for the same reasons as (175a), but the ungrammaticality of (176b) is unexpected, given the grammaticality of (176b). Given Safir's proposals that there is wh-movement in Comp at LF and that the PCOB applies to the output of this operation as well as to more traditional instances of Move wh, the data in (175) and (176) is accounted for as follows: (175a) is, as Kayne argued, ruled out by Binding Condition C, since LF movement of whom, leaves a variable c-commanded by a coindexed NP in an A-position. (175b) is grammatical because whose, fails to c-command the variable left by LF movement of whom,. (176a) is ruled out both by Binding Condition C and by the PCOB; (176b) is ruled

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47. In spite of the awkwardness of heavy pied-piping with restrictive relatives, the phenomenon in question must be tested with structures such as those in (176). As will be discussed in the text immediately below, the ungrammaticality of these relatives results from a weak crossover violation (a PCOB violation in Safir's terms) and weak crossover violations do not arise in nonrestrictive relatives. We therefore expect the nonrestrictive relative in (i) should be as grammatical as (ii), abstracting from marginality induced by complexity.

   i)   John,, his, brother's portrait of whom, Mary
        liked, moved to Canada.
   ii) John, who his mother loves, moved to Canada.

(i) should also be more grammatical than (176b), which seems to be the case.

out only by the PCOB, hence the weaker nature of the violation
in (176b).[48] To sum up Safir's proposals, the data above may
be accounted for by an analysis incorporating the PCOB and
obligatory LF wh-movement in Comp. The latter operation is
obligatory because of the requirements of the LCR, a con-
straint which can only be formulated on the basis of R-
binding, the relation holding between the relative NP and a
wh-phrase in Comp.[49]

Although Safir suggests that R-binding may play a role
in licensing resumptive pronouns in English, the primary moti-
vation for introducing this relation into the grammar is to
allow the formulation of the LCR, which in turn forces LF wh-
movement in Comp. However, the licensing constraint on the
subject-predicate relation proposed in §2.2, (19), indepen-
dently requires the wh-phrase in a pied-piped constituent to
be the "highest element in Comp", in Safir's terms. To see
that this is so it is necessary to examine the structure of a

---

48. The examples below show that the same effects cannot be
captured by a reconstruction analysis of the facts.

    i) *? John$_i$, [whose$_i$ sister]$_j$ her$_j$ child loved, doesn't
           usually like kids.
    ii)   John$_i$, [whose$_i$ sister]$_j$ loved her$_j$ child, doesn't
           usually like kids.

If **whose sister** is reconstructed to its DS position and **whose**
is subsequently extracted, no weak crossover effects are
expected, since there is no pronoun in the relative clause
which is coreferential with **whose**.

49. Safir (1986) contains some other interesting proposals,
which are not relevant for this discussion, relating to the
existence of the level LF' and the appropriate analysis of
nonrestrictive relatives.

relative clause with heavy pied-piping, such as that in (172),

which is repeated as (177a) with the relevant portions of the

relative clause structure given in (177b).

177) a. Those reports, the height of the lettering on
         which the government prescribes, are tedious.

     b. [ɒ.ı [ɒ' those [ɴ. reports]ı] [c. [ɒ.ı the height
         of the lettering on which,], IP]]

To be licensed in accordance with (19b), an agreement chain

must be formed linking the NP reports with which in the rela-

tive clause. However, in (177b) the SPEC of CP is the DP the

height of the lettering on which, not which. Therefore, no

agreement chain may be formed and the structure will be ruled

out. If there is LF wh-movement within SPEC of CP then which

might be able to reach a position from which it could be

regarded as the element in agreement with the head of CP,

thereby allowing an agreement chain to form.

        Two assumptions are necessary to make this approach

work: the first is that SPEC-HEAD agreement in CP need not

hold at SS. If, in (177b), DP2 agrees with the head of CP the

configuration in (178) will result and predication will not be

licensed.

178)   [ɒ.ı ... NPı [c.ı DP2ı [c' Cı IP]]]

The second necessary assumption is that (19) must be regarded

as a post-SS constraint, since, in the heavy pied-piping

cases, the appropriate agreement relations will not hold until

LF. In addition, if Safir (1986) is correct in saying that

nonrestrictive relatives are not attached until LF' then the subject-predicate relation which (19) governs in (172)/(177a) will not even exist until LF'.

While the second assumption is unproblematic, the first raises questions which are not easy to answer. Safir gives as the output of LF wh-movement in SPEC of CP (= Comp) a structure which (given the clausal structure I have adopted) translates into that in (179).[30]

179)   ... [$_{CP}$ [$_{XP*}$ wh$_i$ [$_{XP}$ ...t$_i$...]] [$_{C'}$ C IP]] ...

As indicated, wh$_i$ is adjoined to the pied-piped category; see fn. 50. To permit agreement between wh$_i$ and C, the SPEC and head of CP respectively, one of two options must be adopted: (i) the index and features of wh$_i$ may percolate to XP* or (ii) C may agree with an element in its SPEC which it governs. If the i-within-i condition exists, then option (i) would probably be untenable. Notice that whichever option is adopted, SPEC-HEAD agreement must be regarded as the result of an operation, in contrast with structural relations such as "c-

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50. Safir gives only the structures in (i) and (ii), which correspond to ungrammatical relative clauses.

    i) $_{e'_C}$ $_{COMP}$ [whom$_i$ [his$_i$ portrait of e$_i$]] $_{e}$ [...
    ii) $_{e'_C}$ $_{COMP}$ [whom$_i$ [his$_i$ mother's portrait of e$_i$]]
            $_{e}$ [...

These structures are not ruled out because of some problem with the execution of wh-movement in COMP and, therefore, I assume that the structure given is that which would arise in a grammatical relative clause as well. Although the brackets I have given in bold are not labelled, I assume that (i) and (ii) represent adjunction structures, i.e. that the wh-phrase adjoins to the COMP which contains it.

commands" or "governs". Resolving these technical issues also
requires a more precise understanding of specifiers and the
nature of the relation which holds between specifiers and
heads in general and between C and the SPEC of C, in particu-
lar. I take up the problem of SPEC-HEAD agreement in CP in
more detail in work in progress.

As a final note, although the data in this section indi-
cate that (19) needs to be satisfied at a post-SS level, it is
necessary that the agreement chain form at SS when operator
pro is involved, since pro must (like all other empty catego-
ries) be identified at SS if it is present at SS. This cor-
rectly predicts that pied-piping will be impossible with null
operators.

180)   a. * Those reports, the height of the lettering on pro
               the government prescribes, are tedious.

        b.   [ₚₚᵢ [ₚ' those [ₙₚ reports]ᵢ] [ₒₚ [ₒₚₑ the height
                  of the lettering on proᵢ]ⱼ IP]]

At SS pro remains in an A-position where it cannot form an
agreement chain with an NP capable of identifying it. Although
(180a) does not violate (19b), under the assumption that pro
could adjoin to DP2 at LF giving a structure comparable to
that in (179), the sentence is ruled out because pro fails to
be identified. This approach also predicts that, if Safir's
analysis of nonrestrictive relatives is correct, null opera-
tors will not be able to appear in nonrestrictives. At SS (and
LF) the relative clause is not attached to the structure con-
taining the NP which it will eventually be predicated of at

LF'. At SS there is no NP which operator pro in the SPEC of the relative clause agrees with; therefore, sentences such as (181) will be ruled out.

181) * John, Mary likes e$_i$, lives in Maine.

While this prediction is fine for English, it is problematic for languages such as Italian and French which allow nonre-strictive relatives to appear without overt wh-phrases. (Examples from Cinque (1982).)

182) a. Elaine, che abbiamo visto proprio ieri, ...
      b. Elaine, que nous avons vu justement hier, ...
          'Elaine, that we saw just yesterday,...'

I have no account of these cross-linguistic differences at the moment.

2.4.3 Notes on Some Other OWM Constructions

The analysis of null operators in purpose clauses given in the preceding sections extends naturally to other OWM con-structions, although, of course, each construction has its own idiosyncrasies which interact with various aspects of the principles governing null operator distribution to produce different behaviors. Time constraints prevent the kind of in-depth analysis of each of these constructions which I hope to develop in future work. In this section I will sketch some ideas for dealing with degree clauses which also indicate possible directions to take in accounting for adjectival complement constructions.

A serious analysis of degree clauses is contingent on thorough analyses of NP/DP-internal structure, AP-internal structure and determiners of all sorts. In the absence of these, it is still possible to get an idea of what a reasonable analysis of degree clauses might look like, or, at least, what such an analysis would have to account for. First of all, the degree specifier too can appear with both adjectives and certain quantifiers.

183) a.   John is too angry to talk to.
      b.   John likes eating too much to diet.

Too can appear prenominally, but only when it modifies a quantifier.

184) a. * John is a too angry man to talk to
      b. * John is a too angry man to try to reason with him.
      c. * John is a too angry to talk to man.
      d. * John is a too angry try to reason with him man.

165) a.   Too many people to dance with them all came to the party.
      b. ?? Too many people to dance with came to the party.
      c.   I brought home too many books to read them all in one night.
      d. ?? I brought home too many books to read in one night.

As shown by (185b,d), even when too appears with a quantifier prenominally, the presence of an object gap, i.e. a null operator, decreases the grammaticality of the structure. Sometimes sentences such as (185b,d) sound rather acceptable, but this may be because the clauses are being interpreted as infinitival relatives rather than as degree clauses. A way to factor out the infinitival relative clause reading is to add a

real relative clause to the NPs in (185). Since infinitival

relatives don't stack, the second clause in a structure like

(186) must be a degree clause.

186) a. * [Too many [people to interview] [to talk to before
          noon]] arrived at nine.
     b. * I brought home [too many papers [to grade] [to
          write comments on]]

The ungrammaticality of (186) shows that, indeed, degree

clauses associated with prenominal toos are ungrammatical.

A related phenomenon is the inability of a null operator

to appear in a degree clause when too modifies an adverb or a

quantifier used adverbially. (Keep in mind that pro$_i$ is the

null operator.)[51]

187) a. ?? John likes Bill$_i$ [too much [pro$_i$ to fire e$_i$]
     b. ?? John$_i$ works [too little [pro$_i$ to promote e$_i$]
     c. ?? Mary$_i$ intimidates John [too much [pro$_i$ for him to
          hire e$_i$]

188) a. ?? John$_i$ arrived [too recently [pro$_i$ for me to have
          met e$_i$]
     b. ?? Mary sees John$_i$ [too infrequently [pro$_i$ to
          recognize e$_i$]

---

51. For reasons which I do not understand, some speakers find
the in (187) and (188) acceptable. Even speakers like myself,
who find (187) and (188) very bad, accept some of the senten-
ces below.

     i)   John ran too quickly for us to catch e
    ii)   John spoke too softly to hear e
   iii) ?   John spoke too softly to listen to e
    iv)   John threw the ball to far to catch e
     v) ?   John threw the ball too far to retrieve e
    vi) ?? The vase fell off the table too quickly for me to
            catch e
   vii) ?? John fell down the stairs too quickly for me to
            save e

I have no explanation for this behavior.

c. ?? John types [too poorly [pro, to hire e,]
        d. ?? Mary left the party [too early [pro, for me to
           talk to e,]

The data in (185) - (188) support the hypothesis that null

operators can be coreferential only with the subject of the

predicate containing the operator. In (187) and (188) the

adverbs containing the null operator clause are not predicated

of the NPs with which the null operator is coindexed. By the

analysis in the preceding sections, the pro, cannot receive

phi-features and cannot in turn identify the variable.

        Accounting for the ungrammaticality of (185b,d) and

(186) is trickier. Assume for the moment that the structure of

the NPs in these examples is something like that in (189),

which follows Bresnan (1973).

189)   NP
            / \
         QP   N'
        / \ |
     Deg   Q N
     / \
   too   CP
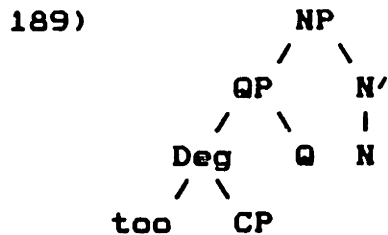
SS word order is achieved by extraposing the degree clause to

the right of N, either "Chomsky-adjoining" or "daughter-

adjoining" it to NP, as shown in (190a,b).

190) a.   NP   b.   NP
                / \   / | \
             NP   CP   QP N' CP
            / \   / \ |
         QP   N'   Deg   Q N
        / \ | / \
     Deg   Q N   too   t..
     / \
   too   t..

                        - 142 -
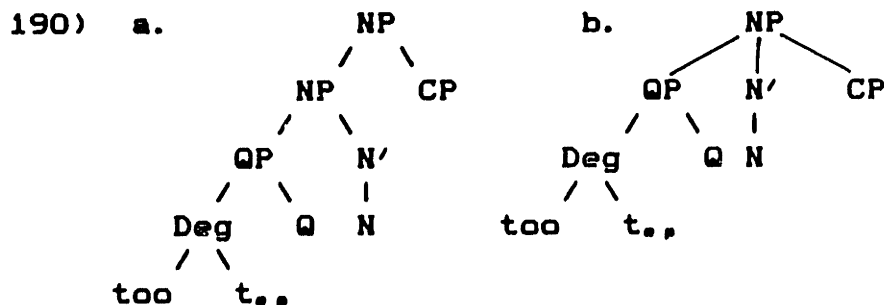
If the degree clause itself is a predicate, then in both
(190a) and (190b) it could agree with N and A'-pro could be
licensed. Two ways of ruling this out come to mind: first,
only XPs are generally regarded as potential subjects of
predicates and there is no XP in (190b) which could fulfill
that function. However, if an adjunction structure like that
in (190a) is assumed to be the proper analysis of relative
clauses, then the adjoined-to NP is a potential subject and
(190a) should be fine. An alternative is that the clause which
appears with degree specifiers isn't an independent predicate
but, when it hosts a null operator, must combine with an inde-
pendent predicate for the purpose of licensing the null opera-
tor. In fact, the clauses which appear with degree specifiers
are generally referred to as "result clauses", although a more
appropriate term in the case of *too* clauses would be "negative
result clauses." Consider the two sentences in (191).

191) a.   John is too angry for us to borrow the car now.
      b.   John is too angry to talk to.

(191a,b) differ in interpretation with respect to whether the
result clause is part of the property being predicated of *John*
or not. In (191a) John has the property [is angry] to such a
degree that we cannot borrow the car (presumably, from him).
In (191b) John has the property [is angry to such a degree
that one cannot talk to him]. It seems correct to say that the
clauses which appear with *too* are not independent predicates;

given the constraints on licensing A'-pro, this would mean
that (190a,b) are not possible structures and (187) - (188)
are ruled out.

Abney (1987) assigns a structure like that in (192) to
the NPs in (187) - (188).

192)   DegP
              /   \
           Deg'   CP
           / \
        Deg   QP
              / \
             Q   NP
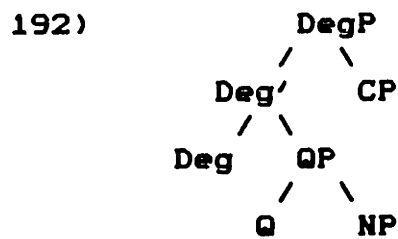
While CP might be taken as a predicate of QP, QP does not
agree with NP and no licit agreement chain exists to license
the A'-pro in the SPEC of CP. This structure is compatible
with the position that degree clauses are not independent
predicates as well.

It remains to show how the grammatical instances of
degree clauses are licensed, for example, (191b). Taking the
DegP analysis as a starting point, along with the Stowell/Cou-
quaux analysis of copular sentences, the DS representation of
(191b) is (partially) as in (193).

193)   ... DegP*
               /   \
             NP   DegP
                    /
                 Deg'   CP
                 / \   / \
              Deg   AP pro   C'
                     | / \
                     A   C   IP

- 144 -
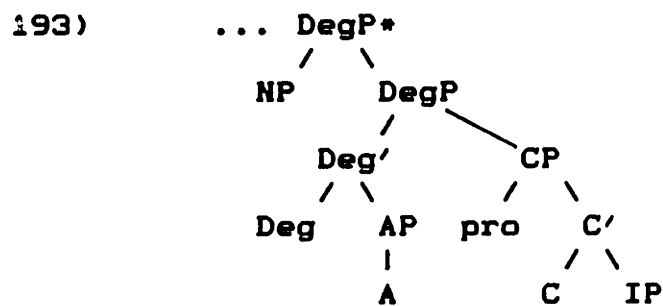
Abney assumes that phi-features reside in the determiner of NPs; the analog for APs is that phi-features (i.e. agreement features) reside in Deg, when it appears. This seems a bit counter-intuitive, but suppose for the moment that it is correct. Then NP and DegP agree and Deg agrees with DegP, by convention. The clause is in the SPEC position of Deg; therefore, if SPECs and HEADs agree in this case as well as in the other cases I have assumed (CP and IP), then CP agrees with Deg. CP agrees with its head C, which agrees in turn with pro in the SPEC of CP. An agreement chain exists between the subject NP and the A'-pro.

Although the analysis just sketched does not really capture the "non-independent predicate" status of the clause (there is no link at all between the clause and the AP) it is both plausible and empirically adequate over the initial range of data examined. It is also easy to see how this approach could be extended to adjectival complement constructions such as those in (194).

194) a.   John is easy to please.
      b.   This view is pretty to look at.

Further development of the analysis sketched in this section will be undertaken in work in progress.

CHAPTER THREE

PARASITIC GAP CONSTRUCTIONS

3.1 Null Operators and Parasitic Gaps

In chapter one parasitic gap constructions were shown to
have several properties in common with OWM null operator con-
structions. In this first section I will review these proper-
ties in greater detail, arguing that the null operator hypo-
thesis offers the most parsimonious account of parasitic gap
constructions. In §1.3.2 I introduced three differences be-
tween parasitic gap constructions and OWM constructions which
were phrased in the form of three questions which any null
operator-based analysis of parasitic gaps must answer. These
questions are repeated in (1).

1)   a.   What is the anti-c-command constraint and why does
          it affect only parasitic gap constructions?
     b.   Why do parasitic gaps require an SS A'-antecedent
          while the gaps in OWM constructions do not?
     c.   Why are canonical parasitic gap constructions
          marginal while canonical OWM constructions are
          not?

Questions (1b) and (1c) will be dealt with in §3.2, while §3.3
will focus on the anti-c-command effect and effects of moving
the category containing the parasitic gap. In the remainder of
this section I will lay out the basic elements of my analysis
of parasitic gap constructions and demonstrate its compatibi-

lity with the analysis of null operators given in the preceding chapter.

3.1.1 The Null Operator Hypothesis

Early analyses of parasitic gap constructions carried out within a GB framework, e.g. Taraldsen (1981), Huang (1982) and CC, argued that parasitic gaps were base-generated empty categories, not empty categories derived by movement. Part of the motivation for this position came from their apparent immunity to the Subjacency Condition (or the Condition on Extraction Domain[1] (CED) of Huang (1982)). For example, Huang offers the following pair of sentences with judgements as indicated.

2)   a.   *   Which book$_i$ did you go to college without reading t$_i$
       b.   Which book$_i$ did you buy t$_i$ without reading e$_i$

If parasitic gaps were movement derived, so the argument goes, they should exhibit a degree of ungrammaticality as strong as that assigned to the single gap construction, e.g. (2a). They do not; therefore, parasitic gaps are not derived by movement. Both Chomsky (1982; CC) and Huang take the contrast in (2) as evidence that the relevant bounding constraint (Subjacency or

---

1. Huang defines the CED as in (i) and cites similar ideas in Belletti & Rizzi (1981), Marantz (1979), Cattell (1976).

    i)   A phrase α may be extracted out of a domain B only if B is properly governed.

the CED) is a condition on movement rather than on represen-

tation.*

Kayne (1983) pointed out that the parasitic gap is not

completely immune to island constraints, as illustrated by the

contrast in grammaticality between the prime and non-prime

sentences of (3) - (5).

3)   (Where α = NP or CP)
        a.   ? wh- ... t [$_{PP}$ P [NP V [$_\alpha$ ... e] ...
        a'. * wh- ... t [$_{PP}$ P [[$_\alpha$ ... e] V ...] ...

        b.   ? the person that J described t without examining
             any pictures of e
        b'. * the person that J described t without any pictures
             of e being on file

        c.   ? The books you should read t before it becomes
             difficult to talk about e
        c'. * The books you should read t before talking about e
             becomes difficult

4)   (Where α = IP or a small clause)
        a.   ? wh- ... t [$_{PP}$ P ... V [$_{NP}$ N P e]]
        a'. * wh- ... t [$_{PP}$ P ... V [$_\alpha$ [$_{NP}$ N P e] ...]

        b.   ? a book that he reviewed t without believing the
             first chapter of e
        b'. * a book that he reviewed t without believing the
             first chapter of e to be full of lies

        c.   ? a man that he recognized t after seeing a picture
             of e
        c'. * a book that he threw t away after finding a
             chapter of e missing

5)   a.   ? wh- [$_{IP}$ [$_{NP}$ ... N P e] V t]
        a'. * wh- [$_{IP}$ NP V t [$_{PP}$ P [$_{CP}$ [$_{IP}$ [$_{NP}$ N P e] VP]]...

        b.   ? a person who close friends of e admire e
        b'. * a person who you admire e because close friends of
             e become famous

---

2. See Saito (1984) for additional arguments that the CED is a
condition on rule application.

There are two major paths which have been pursued in resolving

the contradiction represented by (2) and (3) - (5).[3] One is

that taken by Kayne (1983) (adopted and developed by Longo-

bardi (1984), Cinque (1986a, 1986b) and Pesetsky (1982), among

others), who argues that the parasitic gap phenomenon indi-

cates that (some) island constraints apply both to movement-

derived and non-movement derived structures and, therefore,

must be formulated as conditions on representation. The alter-

native position, put forth by Chomsky (1986), Stowell (1985)

and others, claims that the phenomenon indicates that para-

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3. Huang's solution was to argue that the CED was both a con-
dition on representations and a condition on movement. The
contradiction was resolved by adopting different definitions
of government for the two CEDs. Given a structure such as that
in (i),

i)   XP*
                       / \
                   XP   β
                  / \
                 X   α
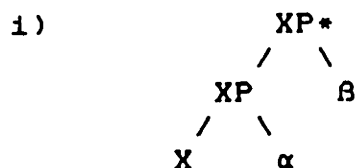
the Aoun-Sportiche (1981) definition of government allows X to
govern both α and β. A stricter definition of government would
allow X to govern only α. Huang proposes that, when the CED is
a condition on movement, the stricter definition of government
is relevant. This would allow extraction only from within com-
plements, as desired. When the CED is a condition on represen-
tations, the Aoun-Sportiche (AS) definition is relevant; that
is, a verb AS-governs a PP adjunct in the position of β. This
approach correctly rules out (2a) and the ungrammatical sen-
tences of (3) - (5) and rules in (2b). However, this incor-
rectly predicts that (ii) will be grammatical.

    ii) * Which book$_i$ did you read t$_i$ [$_{PP}$ without consulting
           Mary [$_{PP}$ before buying e$_i$]]

Since both adjunct PPs are AS-governed by their respective
verbs, no CED effect is expected. See §3.2 for further
discussion of sentences such as (ii).

sitic gaps are, after all, movement-derived.[4] The contrast

between (2a) and (2b) is explained since, in these and all

variants of the hypothesis that I am aware of, it is assumed

that the null operator does not move to the position of the

licensing operator at SS, but only to an A′-position within

the adjunct. Therefore, in a parasitic gap construction with

the structure shown schematically in (6), where XP is an

adjunct,

6) wh_i ... t_i ... $[_{XP}$ ... O_i ... e_i ...]
        _____/   _____/
            α   \   / β
                   _____/
                          τ
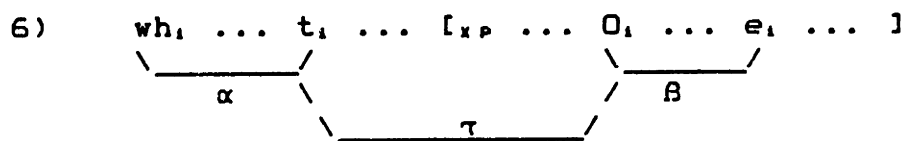
XP will not induce an adjunct condition violation since there

is no instance of movement which crosses that boundary. All

island effects will be expected to hold within α and β. The

conditions responsible for island effects remain conditions on

movement. There are constraints which govern τ, the portion of

the structure in (6) between t_i and O_i, however. Consider the

sentence in (7a), discussed briefly in fn. 3, and the struc-

ture in (7b) which might be assigned to it.

7)   a. *   Which $book_i$ did you read t_i without consulting
               Mary before buying e_i
        b. $[_{CP2}$ wh_i [... t_i ... $[_{PP2}$ without $[_{CP2}$ ... $[_{PP1}$
               before $[_{CP1}$ O_i ... e_i ...]]]]]

---

4. Contreras (1986) Aoun & Clark (1984), working within
versions of the Generalized Binding framework of Aoun (1981,
1985, 1986), also adopt a null operator analysis of parasitic
gaps. Generalized Binding subsumes some of the the island
effects being discussed in the text under an extension of the
LGB binding theory. I will postpone discussion of their
proposals until §3.2.5.

The sentence is ungrammatical, yet no there are no Subjacency Condition violations within the portions of the structure corresponding to α and β. As long as there is nothing in the analysis to force movement of the null operator to the SPEC of CP2 the Subjacency Condition or the CED as conditions on movement will be incapable of ruling out (7a). Various means of expressing the locality condition governing the relation between the α and β portions of (6) have been proposed and there are important differences in the proposals regarding which element(s) in (6) the locality constraint should apply to. Aoun & Clark (1984) and Contreras (1986) propose that the Generalized Binding Theory of Aoun (1981, 1985) governs the relation between the null operator and the licensing operator; Chomsky (1986a) proposes that 0-Subjacency is required between t_i and O_i in order for chain composition, the means of licensing parasitic gap constructions, to apply to the two chains.

   Before looking more closely at the bounding properties of and locality constraints governing parasitic gap constructions, I will discuss the manner in which the null operator of these constructions differs from that in OWM constructions. In particular, §3.1.2 will address question (1b): Why do parasitic gaps require an SS A'-antecedent while the gaps in OWM constructions do not?

3.1.2 Licensing pro in Parasitic Gap Constructions

In chapter two I argued that null operators in OWM con-
structions are pro, base-generated in argument position and
moved in the mapping from DS to SS to the SPEC of CP. In
§2.2.3 two means of constraining the distribution of null ope-
rators were suggested: condition (46), repeated as (8) below,
and condition (58), given as (9a) ((9b) is (19) of §2.2.1).

8)   An empty category is an operator only if it is in the
       SPEC of CP.

9)   a.   A subject-predicate relation may not simultaneous-
              ly satisfy both clauses of (9b).

       b.   A subject-predicate relation is licensed if
              (i)   the subject discharges the external argument
                     of the predicate or
              (ii)   the subject agrees with a chain contained in
                     the predicate.

Operator pro is identified by an "agreement chain" which links
it to the subject of the predicate; see §2.3.6 for discussion.
The possible antecedent of the operator is, therefore, limited
to the subject of the predicate which contains it.

Consider now the sentences in (10), which I regard as
canonical examples of the parasitic gap phenomenon.

10)   a. ? Which article$_i$ did you review t$_i$ without
              reading e$_i$
       b. ? an artist$_i$ who$_i$/that close friends of e$_i$ admire t$_i$

Assuming for the moment that the structure of the adjunct PP
in (10a) is as in (11)

11)   ...[$_{PP}$ α' [$_P$' without [$_{CP}$ α [$_{IP}$ ... e$_i$ ...]]]]

a null operator might conceivably come to rest at SS in either the SPEC of CP (α) or the SPEC of PP (α'). Because the clausal object of a preposition is not a predicate, no agreement chain exists which could identify pro in the position of α. PP, as I have argued in chapter two, is a predicate; a pro in the position of α' would be in position to agree with an antecedent. However, the PP in (10) and, in fact, most PPs which host parasitic gaps, are predicated of the sentential E(vent)-position, not an NP.[5] Since operator pro in the SPEC of a predicate may only be identified by the subject of the predicate within which it resides, the E-position is the only candidate antecedent for pro in (10a). I have already shown in chapter two that the E-position cannot identify pro, as we would naturally expect.

Turning to (10b), a pro in the SPEC of NP might be in position to participate in an agreement chain, depending on

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5. This is not true of the PP hosting a parasitic gap in (i). (Actually, it's not at all obvious which is the "real" gap and which is the parasitic gap in these sentences, but for the sake of discussion, I will assume that the PP-internal gap is parasitic.)

i)   who did you give pictures of t_i to e_i

A pro in the SPEC of the PP above would be in position to agree with an NP antecedent, but this potential antecedent is the NP containing the "real" gap, i.e. "picture of t", not the "real" gap itself. This would create a situation at SS where the immediate A'-binder of the parasitic gap is in agreement with an NP bearing a different index from the parasitic gap. Sentences such as (i) are noticeably worse than canonical parasitic gap constructions; a phenomenon which is not explained by anyone's analysis, as far as I know.

the structure of NP. Assume for the moment that something like
(12) is a possible structure for the relevant portion of
(10b).

12)   ... $[_{IP}$ $[_{NP}$ pro_i ...N_j... $]_j$ AGR_j ... $]$ ...

The j indices indicate the standard agreement relations: the
subject of IP agrees with AGR and the head N agrees with its
maximal projection. The NP containing pro in (10b)/(12) is not
a predicate but no stipulation has been made to the effect
that pro may be identified by an agreement chain only when it
resides in the SPEC of a predicate. If i = j then pro would
participate in an agreement chain and might be considered to
be licensed. However, notice that this configuration (with i =
j) will not yield an appropriate interpretation for (10b)
since the null operator (and the variable it binds) will be
coreferential with the subject NP close friends of e rather
than with the head of the relative an artist. The configura-
tion which results in (12) if i = j is a classic i-within-i
violation and will be ruled out accordingly.

For both cases in (10), the proposals governing null
operator licensing proposed in chapter two fail to assign A'-
pro in parasitic gap constructions the phi-features needed to
be a licensed head of a chain.

The analysis I will propose for parasitic gap construc-
tions is in the spirit of Chomsky (1982) in that it seeks to
account for their existence and properties without the addi-
tion of any construction-specific process or constraint. The

central proposal of this analysis is that A'-pro, when it
fails to be licensed via agreement may be licensed as an in-
termediate link in an A'-chain, as long as other conditions on
A'-chains are satisfied. The plausibility of this analysis
naturally depends on the approach to empty category licensing
which is adopted. Up to now, when discussing empty categories,
I have used the term "licensing" fairly loosely, often refer-
ring to very different sorts of constraints or operations
under this rubric. Therefore, as a first step in developing
the analysis of parasitic gaps suggested above, I will try to
clarify what is included under the heading "licensing con-
straints" and which of these constraints are relevant for the
analysis.

As in chapter two, I continue to adopt the typology of
empty categories based on the features [±anaphor, ±pronominal]
as proposed in CC and given in (13).

13)   -anaphor, -pronominal = variable
       -anaphor, +pronominal = pro
       +anaphor, -pronominal = NP-trace
       +anaphor, +pronominal = PRO

In the category of constraints which apply to empty categories
in particular are those which govern their "identification".
In LGB and CC where the identity of an empty category is de-
termined functionally, along the lines of the informal state-
ments in (14), "identification" had a rather literal interpre-
tation.

14)   "...an EC is a variable if it is in an A-position and is
        locally A'-bound. An EC in an A-position that is not a
        variable is an anaphor. ...a pronoun is either free or
        locally A-bound by an antecedent with an independent θ-
        role..." (CC, p. 35)

I depart from the functional determination approach by assu-

ming that features are assigned freely to empty categories

when they enter the derivation*, that features may not change

during the course of a derivation, and that the distribution

of the feature matrices in (13) is determined by a variety of

constraints, only some of which are particular to categories

without lexical content. Some elements of the functional

definitions given informally in (14) must be retained, e.g.

(15).[7]

15)   A variable must be locally A'-bound.

---

6. See Brody (1984) for a theory of ECs based on the random
assignment of features.

7. The definition of "variable" given in (i) is from LGB and
that in (ii) is from Borer (1981).

        i)   α is a variable iff α is locally A'-bound.
        ii)   [e] is a variable iff it is bound by an operator.

The biconditional in both definitions is too strong, as shown
by sentences such as (iii) (=(2541), KoL).

        iii)   Who₁ does [PRO₁ getting his teeth filled] general-
                ly upset t₁

PRO in (iii) is locally bound by an operator and, by (i) and
(ii), should be a variable. The same point is made in Brody
(1984) where it is argued that "variable" should be disassoci-
ated from the features [-anaphor, -pronominal], with (i) being
adopted as an interpretive principle. Thus, for Brody PRO in
(iii) is interpreted as a variable, as is t₁ in (iv), the
trace of NP movement.

        iv)   Who₁ t₁' was seen t₁

I leave open for now whether this and other such statements are derivable from other aspects of the theory. See §3.2 for further discussion of (15).

In addition to these considerations, it is necessary to specify the means of determining the phi-feature content of an empty category. The phi-feature content of a variable or NP-trace is determined by its antecedent, i.e. the head of its maximal A'-chain or A-chain, respectively. Since the ECP governs the relation between an antecedent and its trace, it is implicated in the identification of non-pronominal empty categories. (For discussion of the ECP as an identification constraint, see LGB, KoL, Jaeggli (1980), and Stowell (1985) among others.) The pure pronominal pro is identified by agreement, either under government by "rich" AGR in null subject languages and, if the proposals ofthe preceding chapter are correct, by an agreement chain when pro is in the SPEC of a predicate.[8] The identification of PRO is the subject of control theory, about which I will have nothing to say.

There is another type of empty category which has come to play an increasingly important role with respect to the ECP. This is the intermediate trace, t_i' in (16b).

16) a. Who do you think that Bill likes?
     b. who$_i$ [you think [$_{CP}$ t_i' that [Bill likes t]]]

---

8. The option of licensing pro as an A'-bound variable a la Cinque (1986) and Obenauer (1984) is inconsistent with the analysis I propose.

Little is usually said about these empty categories (which I will hereafter refer to as "intermediate ECs") and I will keep to this tradition, discussing only those aspects of their distribution which are relevant to the parasitic gap analysis I wish to propose. Consider the properties which intermediate ECs are required to exhibit: given the L&S/_Barriers_ approach to the ECP, they must be subject to the ECP at least when they are members of an adjunct chain. They must not be arguments since arguments, by definition, do not appear in A'-positions.[9] Finally, they must not be operators on the basis of the principle of Full Interpretation (FI).[10] This follows if, in a structure such as (17) where α_i is an intermediate EC with operator status,

---

9. Without this assumption it is not clear to me that a representation such as that in (i) could be ruled out.

    i) $wh_i \ldots [_{CP} t_i' [_{IP} \ldots t_i \ldots]]$
               [+arg]   [-arg]

Assuming that the position of t_i is case-marked, the argument EC receives case by virtue of being in a case-marked chain, presumably a necessary loosening of the case-marking requirement on variables given the _croire/ ritenere_ facts. For further discussion of the _croire/ritenère_ facts, see §4.4; see also Kayne (1978/80), Rizzi (1978/82), Pollock (1984), Shlonsky (1987) and Epstein (in progress) for discussion.

10. But see Contreras (1986) for a detailed analysis of sentences such as (i) which posits a structure exactly like that in (17), i.e. (ii).

    i)   Who did you leave London without visiting?
    ii) $[_{CP} who_i [_{IP} \ldots [_{PP} O_i \ldots e_i]]]$

This analysis is also mentioned in _Barriers_ and attributed to L. Rizzi.

17) $wh_i ... [\alpha_i ... t_i ...]$

wh_i does not bind a variable and thus is not licensed, since
the only variable is bound by α_i.[11]

Returning now to what I have previously called the null
operator in parasitic gap constructions, the following ques-
tion arises: given that this pro is not licensed to head a
chain by the pro licensing mechanism of chapter two, is there
anything to prevent it from being licensed as an intermediate
EC? Even in OWM constructions operator pro must not be an
argument and there is no reason to assume that it is one in
parasitic gap constructions. As for its status as an operator,
the hypothesis under investigation is that A'-pro may have
operator status only when licensed by agreement. The require-
ment that intermediate ECs must be subject to the ECP would
seem to be problematic, since pronominals are not subject to
the ECP. However, the problem is only apparent: consider the
SS representation of (18a), given in (18b) in a simplified
form but with all the intermediate ECs required and allowed.[12]

18)   a.   Who did you leave London without visiting?

       b. $[_{CP}$ who$_i$ $[_{IP}$ you INFL $[_{VP}$ t_i^5 $[_{VP}$ $[_{VP}$ left London
             $[_{PP}$ t_i^4 without $[_{CP}$ t_i^3 $[_{IP}$ PRO $[$ t_i^2 $[$ visiting
             t_i^1 $]]$...

---

11. This interpretation of the principle of FI corresponds to
half of the Bijection Principle of Koopman & Sportiche (1982),
the requirement that no more than one operator may bind a
single variable.

12. Notice that there is an intermediate EC in the SPEC of PP;
I argue that there is no adjunction to PP but that the SPEC of
PP may be a landing site for movement in §4.5.

The trace in argument position, $t_i{}^1$, is τ-marked prior to the point in the derivation when the ECP is checked. Since $t_i{}^1$ is an argument, the intermediate ECs $t_i{}^2 - t_i{}^5$ are not required to be present throughout derivation and may delete[13] prior to the application of the ECP filter. As far as arguments are concerned, it is of no importance whether intermediate ECs are subject to the ECP or not, so long as they are not present at LF. We might therefore assume that A'-pro in a parasitic gap construction deletes in the mapping from SS to LF.

(A digression on terminology: to avoid confusion I will hereafter refer to the pro in SPEC of CP in OWM constructions as "operator pro" and to the pro in parasitic gap constructions as "A'-pro". I will use the term "null operator" only to refer to comparable entities in analyses other than my own and to refer to the general approach within which my analysis falls, e.g. "the null operator hypothesis".)

Two questions concerning the deletion hypothesis immediately arise: <u>must</u> A'-pro delete prior to LF and are there independent constraints which would <u>prevent</u> its deletion? To answer the first question, we must look at the LF representations (given schematically in (19)) which the grammar would assign to parasitic gap constructions such as those in (10) if the pro did not delete.

19)   a. Wh_i ... $[_{VP} [_{VP} ... t_i [_{PP} ... pro_i ... e_i]]]$

---

13. <u>Must</u> delete if they are not marked [+τ] at some point.

b.   an artist $[_{CP}$ wh$_i$ $[_{IP}$ $[_{NP}$ pro$_i$ ... e$_i$] ... t$_i$]]

Since the ECP does not apply to pronominal empty categories
the structures could not be ruled out for ECP reasons. Because
pro in these structures is not identified by agreement, it
might be that its presence at LF will be ruled out by the
principle of FI. Let's consider this last point more closely:
if the principle of FI were interpreted as a filter on LF re-
presentations which ruled out those containing elements which
had not been licensed at any level in the derivation prior to
the application of the filter, then the pros in (19) would be
allowed, as they are licensed as intermediate ECs at SS. How-
ever, the discussion of FI in KoL suggests that it should be
interpreted as ruling out representations containing elements
which receive no interpretation; thus, expletives are not
allowed at LF and expletive replacement is motivated. (See
KoL, p. 179.) Similarly, pro in (19) would receive no inter-
pretation and would necessarily be deleted; the same would be
true for all intermediate traces of wh-movement of arguments.
I will adopt this latter interpretation of FI with the conse-
quence that A'-pro in parasitic gap constructions must delete
in the mapping from SS to LF.

As for the second question, are there independent con-
straints which would prevent the deletion of A'-pro?, the
answer is probably not. Neither the θ-Criterion nor the Pro-
jection Principle (nor even the Extended Projection Principle)
apply to intermediate ECs. The remaining constraint which

might apply is that governing recoverability of deletion. The

pros in (19) are not licensed to bear phi-features but they do

bear (at least) the feature [+pronominal] and it could be

argued that this would be sufficient to prevent deletion. I

will assume that this is not the case and that there is no bar

to deleting the A'-pros in (19). Under the proposed analysis,

the grammar assigns SS representations as in (20) and LF

representations as in (21) to parasitic gap constructions such

as those in (10).

20)   a.   Which article$_i$ did you [$_{VP}$, [$_{VP}$ review t$_i$ [$_{PP}$
             without [$_{CP}$ pro$_i$ [PRO reading e$_i$]]]]]

       b.   an artist [$_{CP}$ who$_i$ [$_{IP}$ [$_{NP}$ pro$_i$ [close friends
             of e$_i$]] admire t$_i$]]

21)   a.   Which article$_i$ did you [$_{VP}$, [$_{VP}$ review t$_i$ [$_{PP}$
             without [$_{CP}$ [PRO reading e$_i$]]]]]

       b.   an artist [$_{CP}$ who$_i$ [$_{IP}$ [$_{NP}$ [close friends
             of e$_i$]] admire t$_i$]]

The LF representations in (21) are equivalent to those pro-

posed for parasitic gap constructions in CC; however, the two

analyses differ significantly, as should be obvious from the

explication above.

3.1.3 Anaphor Reconstruction

At LF the licensing operator in a parasitic gap con-

struction directly binds both the trace of licensing operator

movement and the trace of null operator movement. Evidence

from Kearney (1983), given in (22), suggests that the relation

between the pair (wh, t) and that between (wh, e) are not sym-
metrical in some important respect.

22)   a.   Which books about himself did John file t before
              Mary read e
      b. *   Which books about herself did John file t before
              Mary read e

It is suggested in <u>Barriers</u> that null operators block recon-
struction. In order to adapt such an account of (22) to the
framework of this paper, it is necessary to argue (i) that
pronominal categories block reconstruction and (ii) that re-
construction is an SS phenomenon (as is argued by Barss
(1986), for example). The data concerning anaphor reconstruc-
tion and null operator constructions are not as clear-cut as
the data in (22) suggest, however. For some speakers (23a) is
worse than (23b) and as bad as (22b).

23)   a. *   Which picture of herself did John leave before
              Mary saw t
      b. ?   Which picture of Susan did John leave before Mary
              saw t

If these judgements are correct, then it seems that recon-
struction into adjunct clauses is blocked even when extraction
of arguments from within such clauses is permitted, as in
(23b). This could be explained by assuming that such adjunct
extractions are actually derived by base-generating an overt
operator in the matrix [SPEC, CP] and moving a pro into the
embedded [SPEC, CP].[14] However, there are reasons to doubt

---

14. A version of this proposal, involving a null operator
which is not pro, is credited to L. Rizzi in <u>Barriers</u>.

that this is the correct approach. First, this derivation of

(23) does not account for the relative grammaticality of (24).

24) ? Which picture of himself did John leave London before
destroying t

Secondly, note that null operator constructions do not

uniformly prohibit reconstruction.[15]

25)   a.   Pictures of himself are difficult for John to look
at.
b.   Those pictures of himself are too embarrassing for
John to show us.
c.   The pictures of himself that John likes will go on
sale tomorrow.
d.   The pictures of himself for John to take home are
on the desk.

26)   a. * Mary gave Susan some pictures of himself for her
son to hang in his room.

Finally, it is not obvious why null operators should prohibit

reconstruction when overt operators do not, as illustrated

below.

27)   a.   What John found in the package was an
incriminating picture of himself.
b.   The pictures of himself which your son has picked
out will be sent to you next week.

---

15. Topicalization allows reconstruction, as shown in (i), but
it is not obvious that topicalization involves null operator
movement.

i)   Pictures of himself, John likes t

Comparatives allow reconstruction in some cases.

ii)   More pictures of himself than John cared to think
about were handed out to his friends.
iii) * I sold more pictures of himself than John sold.

The data in (23) - (27) indicate that (22) cannot be taken as direct evidence that A'-pro has the property of blocking anaphor reconstruction. The topic remains open for further investigation.

3.2 Conditions on Parasitic Chains

3.2.1 Conditions on Variables

Preceding sections have focussed on licensing the A'-pro in a parasitic gap construction, but there are significant issues to be resolved concerning the licensing of the parasitic gap itself. In §3.1.2 it was noted that certain aspects of the LGB/CC contextual definition of "variable" needed to be retained for this analysis, in particular, the requirement in (15) that a variable be locally A'-bound. Something like (15) is necessary whatever one's analysis of empty categories and parasitic gap constructions simply to rule out non-sentences such as (28). The constraint in (15) also seems to be sufficient to rule out (29).

28) * John likes e

29) * I_i knew [which paper$_j$ John had written t$_j$] [without even PRO$_i$ reading e$_j$]

(29) exemplifies the well-known fact that a parasitic gap construction will be ungrammatical if the adjuncts containing the parasitic gap is base-generated in a position outside the SS c-domain of the overt operator. According to the analysis I have proposed, the variable e$_i$ will be locally A'-bound at SS

by the A'-pro in the adjunct (or an intermediate trace left by movement of the pro to SPEC). By LF, however, the A'-pro (and any other intermediate ECs in the parasitic domain) will have been deleted and the variable will no longer be locally A'-bound. (15) seems a sufficient constraint on the distribution of variables so long as it applies at both SS and LF. But (15) does not account for the inability of LF A'-movement to license parasitic gaps, a property mentioned in §1.3 and illustrated by the following examples. The SS and LF representations for (30b) are given in (31).

30)   a. * Mary filed every paper$_i$ without reading e$_i$
        b. * Who filed which paper$_i$ without reading e$_i$

31)   a.   who$_j$ t$_j$ [$_{VP}$ [$_{VP}$ filed which paper$_i$ [$_{PP}$ without [$_{CP}$ pro$_i$ [$_{IP}$ NP V e$_i$]]]]]

        b.   which paper$_i$/who$_j$ t$_j$ [$_{VP}$ [$_{VP}$ filed t$_i$ [$_{PP}$ without [$_{CP}$ [$_{IP}$ NP V e$_i$]]]]]

The parasitic gaps in (30) are locally A'-bound at SS by the A'-pro, and both locally A'-bound and operator-bound at LF by the matrix operator. (15) alone is not sufficient to rule out the sentences in (30).

Although the parasitic gaps in (30) are locally A'-bound at SS, they are not bound by an operator at SS. (Recall that in parasitic gap constructions A'-pro does not have the status of an operator.) The parasitic gap in (29) is not bound by an operator at SS or at LF. This suggests that the relevant constraint, which necessarily applies at both SS and LF, should be phrased in terms of operator-binding rather than A'-

binding, as has been argued by Cinque (1985) and Kayne (1984).
(32) reformulates (15) along these lines.

32)   A variable must be operator-bound at both SS and LF.

Taking this route requires that "locally" be dropped from the
requirement since the local binder will generally, at least at
SS, be a non-operator. Intervention of an A-binder, whether
local or non-local, will be ruled out by Binding Condition C.

A feature of (32) is that it requires that the notion
"operator" be relevant at the level of SS. It also requires
that the shifted NP in (33) be regarded as an operator.

33)   I insulted at the party yesterday, your oldest and
       dearest friend.

Engdahl (1981) pointed out that Heavy NP Shift (HNPS) licenses
parasitic gaps, a fact which has been widely taken as evidence
that the trace left by HNPS is a variable, a position tacitly
incorporated into my analysis. In the discussion of conditions
on null operators in §2.1 I explicitly included HNPS NPs in
the category of operator. Intuitively, this does not seem to
be correct, as there is surely a difference between NPs such
as "your oldest and dearest friend" in (33) and quantifiers
such as "everyone" and "who". The distinction that needs to be
made is similar to that between "syntactic" and "semantic"
variables.[16] A syntactic variable is, in general usage, an A′-

---

16. This distinction is made explicit in Safir (1984), which
the remarks immediately below follow.

bound empty category. A semantic variable need not be an empty category, though syntactic variables are usually semantic variables as well; resumptive pronouns and other pronouns bound by quantifiers are also thought of as semantic varia- bles.[17] Similarly, we might distinguish between "syntactic" operators and "semantic" operators, the first category encom- passing all A'-antecedents and the second only those which have range-setting properties. The category relevant for the proper formulation of a constraint on variables is syntactic operator.[18] (32) is now reformulated as:

34)   A variable must be bound by an A'-antecedent at both SS
        and LF.[19]

(34) may be taken as the identification condition for vari- ables, the means by which their feature content is determined, on a par with identification of pro via agreement. As far as the A'-pro analysis of parasitic gap constructions is con- cerned, (34) is sufficient to rule out (29) and (30). It is also the second half of the answer to the question, why do parasitic gaps require an SS A'-antecedent while the gaps in

17. A slightly different, but related, approach is found in Brody (1984).

18. Cinque (1985) argues differently on the basis of some interesting data concerning Clitic Left Dislocation in Italian.

19. Longobardi (1985) argues that the relation between an operator and variable is best characterized as "the variable is in the scope of the operator" rather than "the operator c- commands the variable"; "c-command" is naturally incorporated into the definition of "binds". This point, and some of Longo- bardi's data are discussed in chapter four.

OWM constructions do not? Operator pro in OWM constructions is identified by agreement with an overt NP; the variable bound by operator pro in these constructions therefore satisifes (34) by being in the scope of an A'-antecedent capable of identifying it in turn. A'-pro in parasitic gap constructions is not identified and may not identify a variable; SS A'-movement is thus required to provide a suitable A'-antecedent for the parasitic gap.

3.2.2 Subjacency

One of the most interesting and problematic aspects of parasitic gap constructions is what was at first taken to be their immunity to island conditions, discussed briefly in §3.1. The canonical examples of parasitic gap constructions from §3.1 are repeated in (35) and given schematically, with A'-pro represented as "pro_i", in (36).

35) a. ? Which $article_i$ did you review t_i without reading e_i
     b. ? an $artist_i$ who_i/that close friends of e_i admire t_i

36) a. wh_i ... t_i ... $[_{PP}$ ... pro_i ... e_i ... $]$
         ↑_____↑

     b. wh_i $[_{IP}$ $[_{NP}$ ... pro_i ... e_i ...$]$ ... t_i ... $]$ ...
         ↑_____↑

The relation between the operator and parasitic gap (indicated with arrows) violates the Adjunct Condition in (36a) and the Subject Condition in (36b), both sub-cases of the CED. Some versions of the null operator hypothesis account for these facts by arguing that, since the CED is a condition on move-

ment, it applies only to the chains α and β in (37).

37)   wh$_i$ ... t$_i$ ... [$_{XP}$ ... O$_i$ ... e$_i$ ...]
       _____/   _____/
          α   β

Extraction may not be allowed out of XP, but since no instance of movement crosses that barrier[20] no violation is incurred. Nevertheless, there are locality constraints which govern the relation between the "real" chain and parasitic gap chain, for example, the constraint governing the relation between variables and antecedents proposed in the preceding section. While this constraint accounts for the failure of LF A′-movement to license parasitic gaps and the ungrammaticality of (38), it has nothing to say about the ungrammaticality of (39).

38) * I$_j$ knew [which article$_i$ John had written t$_i$] [without even PRO$_j$ reading e$_i$]

39)?* the man who$_i$ I decided to interview t$_i$ [without calling you [before I spoke to e$_i$]]

In (39) the adjunct hosting the parasitic gap is embedded in another adjunct. If the SS representation is as in (40a), then the sentence can be ruled out as a Subjacency Condition violation. However, if the representation is as in (40b), there is nothing yet in my analysis to explain its ungrammaticality.

40)   a.   ...who$_i$...t$_i$ [$_{PP}$a...pro$_i$...[$_{PP}$i...e$_i$...]]...
      b.   ...who$_i$...t$_i$ [$_{PP}$a...[$_{PP}$i...pro$_i$...e$_i$...]]...

_____

20. Or "barriers" -- a Subject Condition violation in the _Barriers_ framework involves crossing two barriers, NP and IP.

In <u>Barriers</u> this problem is dealt with by requiring that the

null operator be 1-subjacent to the "real" gap. This locality

constraint is formulated as a necessary condition on "chain

composition", the process by which the parasitic chain is

licensed. According to the <u>Barriers</u> analysis, a parasitic gap

construction has the structure in (41)

41)   a. wh_i ... t_i ... [$_{XP}$ ... O_i ... e_i ...]

and contains three identifiable A'-chains: the two movement-

derived A'-chains <wh,t> and <O,e> and the "composed" chain

<wh,t,O,e> (intermediate ECs omitted). The <u>Barriers</u> analysis

is discussed in more detail in §3.2.4.

Instead of adopting a construction-specific process of

chain composition[21] linking two distinct A'-chains, I propose

to regard a parasitic gap construction as one which contains a

single A'-chain with a single head; I will refer to these as

"complex chains". Like any other SS A'-chain, a complex chain

must meet the Subjacency Condition. No parasitic gap-specific

condition or process applies. Naturally this approach requires

adjustments in various aspects of the theory, only some of

which will I argue for explicitly. One point in particular

deserves attention that it will not receive here, that is the

---

21. Although there is another instance of a non-movement-
derived chain in <u>Barriers</u>, i.e. the "extended" chain which
allows proper government of the NP-trace in passive and
raising constructions, the Subjacency Condition is not one of
the conditions which govern the formation of that chain.
Therefore, the two process must be regarded as distinct and
construction-specific.

necessary assumption that A'-chains (at least) may be derived

by a process of chain formation distinct from movement. It is

sufficient for the complex chain analysis that this be a pos-

sible means of deriving chains, but it is not necessary that

it be the only means available; the analysis is consistent

with the position that both movement and chain formation are

options in the grammar. This position is unfortunately rather

redundant, but I will have little else to say in its defense

at this time.**

The ungrammaticality of (39) arises as a result of a

Subjacency Condition violation, but there is an aspect of the

Barriers (p.30) version of the Subjacency Condition, as given

in (42), which makes it unclear that the condition applies

straightforwardly to the complex chain in a parasitic gap

construction.

42)   If (α_i, α_{i+1}) is a link of a chain, then α_{i+1} is
       (1-)subjacent to α_i.

43) β is n-subjacent to α if there are fewer than n+1
       barriers for β which exclude α.

The problem lies in the explicit characterization of a chain

as a sequence which surfaces in (42) in the reference to a

chain link as $(\alpha, \alpha+1)$. Forming a sequence from a complex

_____

22. As discussed in chapter two, I analyze resumptive pronoun
structures as involving an operator which binds the variable
at LF. These structures differ from cases of movement in that
the former do not involve SS A'-chains. If the operator-
variable relation is dependent on chain formation at LF, then
this is another instance of chains being formed without
movement.

chain is not difficult in the cases where there is only one

parasitic gap, but in a sentence such as (44a), it is more

difficult to think of the complex chain as a sequence.

44) a. a man that [everyone who meets e_i] admires t_i
          [after visiting e_i even once]
      b. a man that everyone admires t_i [after visiting e_i
          even once]
      c. a man that [everyone who meets e_i] admires t_i
          [after visiting his home even once]

(44a) is admittedly worse than the two possible variants with

only one parasitic gap instead of two shown in (44b) and

(44c), but I would attribute this to the fact that the complex

chain in (44c) is broken at two different points by a single

barrier, rather than at one point, as is the case in (44b) and

(44c).[23] Increased complexity arising from the greater number

---

23. The question of whether barriers intervening at different
points in a chain cause the grammaticality of the construction
to decrease cumulatively is a difficult one to answer. In
Barriers Chomsky proposes that violations are cumulative on
the basis of Italian bounding facts discussed in Rizzi (1982).
Double wh-island violations, such as (i), are more degraded
than the crossing of a single wh-island, which in Italian is
acceptable in most cases.

i)   what$_i$ did you wonder [$_{CP}$ who knew [$_{CP}$ who
      saw t_i]]

There seems to be no accumulation effect in (ii), but the
weak, perhaps non-existent, barrierhood of infinitivals may be
responsible for its unexpected grammaticality.

ii)   a problem that I didn't know who to ask how to
      solve

Note that the VMH of Barriers cannot be responsible for the
acceptability of (ii) as no subject wh-phrases are involved.
See chapter four for more on this point and also the discus-
sion of (67d) in §3.2.4.

of gaps is also likely to be a factor. In any case, I do not think (44a) should be strongly ruled out.

The A'-pro in the subject NP of (44a) will be 1-subjacent to t_i, the A'-pro in the adjunct and the parasitic gap in the adjunct; in fact, it will be 1-subjacent to every member of the chain which is c-commanded by the subject. Therefore, if a sequence can be formed from the complex chain which creates a link between the A'-pro in the subject NP and one of the chain members to which it is 1-subjacent, the complex chain will be licensed. While it seems somewhat counter-intuitive, it is possible to consider the complex chain in (45a), which is the structure of (44a), as the sequence in (45b).

45) a. $wh_i...[pro_i{}'...e_i{}']...t_i...[pro_i{}^\bullet...e_i{}^\bullet]$

b. $<wh, t, pro', e', pro^\bullet, e^\bullet>$

The Subjacency Condition in (42) applies to the chain link $<e', pro^\bullet>$. An alternative, suggested by N. Chomsky, is that there are two complex chains in (44a), one corresponding to the complex chain in (44b) and one to the complex chain in (44c). In either case, I assume that the process of chain formation which produces such chains is free and that cases of overgeneration can be ruled out by independent constraints.

This approach to A'-chain formation does not permit local binding to be a condition on A'-chain links. While local binding is explicitly a condition on A-chains in KoL, it is

clearly meant to apply to A'-chains in the following excerpt from LGB:

> We may think of the rule Move α a bit more abstractly as expressing the configuration [(i)]:
>
> i)   α locally binds β and is not in a θ-position
>
> To say that α locally binds β is to say that α and β are coindexed, α c-commands β, and there is no τ coindexed with α that is c-commanded by α and c-commands β. (p.59)

See Epstein (1985) and Rizzi (1982) for discussion of local binding in A-chains; the question of whether it is also a necessary condition on A-chains, as well as other questions which arise, I leave open for future research.

An advantage of the barriers approach to bounding effects is that it permits the adoption of a one barrier vs. two barriers distinction to quantify levels of deviance. Since Barriers, Browning (1986) and Belletti & Rizzi (1986) have exploited the one barrier/two barrier distinction to account for the relative well-formedness of extraction from some adjuncts, such as those in (46), as compared with extraction from subjects which is a clear case of a two barrier violation.

46)   a.   Which car is it time [for John to wash t]
       b.   Who did John buy a suit [to impress t]
       c.   What did John wonder [how to fix t]

In Browning (1986) I suggested that the sentences in (48) all represent 1-barrier subjacency violations. While judgements differ somewhat among speakers, it seems generally to be true

that (46b) is worse than (46a,c), which are perfectly grammatical to many speakers. All the sentences in (46) are clearly better than (47).

47)   who did pictures of t fall on Bill?

Another reason for favoring a Subjacency Condition which allows the one vs. two barrier distinction comes from the contrast between direct extraction from adjunct prepositional phrases, as in (48a,b), and parasitic gaps, as in (48c). (In general, (48a,b) are thought to be more marginal than (48c).)

48)   a.   Which paper did John leave London [before
                reading t]
       b.   Which paper did John call Mary [before
                reading t]
       c.   Which paper did John read t [before filing e]

Under the definition of n-subjacency in (43), the A'-pro in (48c) is 1-subjacent to t. But consider (49), which represents a segment of the SS representation of (48a,b).

49)   ... VP•• ...
                              / \
                           VP•   t"
                          / \
                        VP   PP
                       /__\   / \
                      ...   P   CP
                              / \
                            t'   IP
                                 / \
                                /   \
                             ... t ...
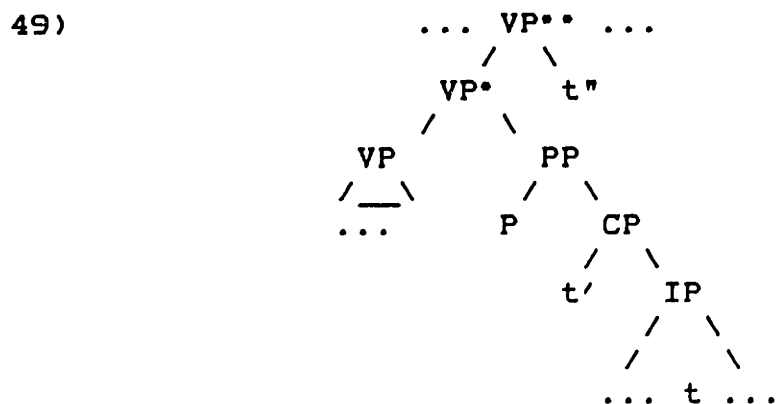
t' is included by a barrier, PP, and by a segment of a category (VP•) which dominates a BC. t" is excluded by both PP and

the segment VP*. If the Belletti & Rizzi (1986) proposal that

lower segments of a category may inherit barrierhood is true

for all segments of a category (or at least, all segments

other than the topmost) rather than the lowest segment only,

we could argue that VP* becomes an additional, albeit weak,

barrier for t'.[24] Sentences involving direct extraction from

adjunct PPs, such as (48a,b) are correctly predicted to be

less grammatical than parasitic gap constructions. But notice

that, in order to capture the contrast in (48) it is necessary

to introduce the concept of a "weak" barrier.[25]

Alternatively, we might reject the Belletti & Rizzi

hypothesis in favor of the assumption that adjunction to cate-

gories is allowed only when movement originates from a source

included by the category; in (49), adjunction to the category

VP (= VP+VP*) is ruled out for extraction from within PP.[26]

---

24. This is consistent with B&R who assume that crossing a
barrier created by a segment results in a weaker violation
than crossing a full category barrier.

25. A slight variation of this approach would be to argue that
only two barriers induce subjacency violations. Then (46c) is
well-formed as only one barrier is crossed. The VP* segment in
(49) counts as a second barrier, but a weak one, suggesting
that extraction from PP adjuncts will incur a weaker violation
than extraction from subjects. It is still necessary to spe-
cify weak vs. strong barriers. Finally, the marginality of
parasitic gaps would not be due to their status as a 1-
barrier subjacency condition violation, since single barriers
do not induce violations. Their marginality might be attribu-
ted to markedness of the chain formation operation, if
movement is taken as the unmarked form of chain derivation.

26. Another approach is to say that PP adjuncts are sisters of
I', in which case there is no possible adjunction site for
extraction; see chapter three for arguments that the PPs in
the text examples are VP-adjuncts.

Movement from within the adjunct crosses PP and IP yielding a two barrier violation in the case of (48a,b).[27] Parasitic gap constructions, (48c), are less marginal by virtue of being a one barrier violation. For further discussion of these issues, see chapter two.

3.2.3 SS Indexing of A'-positions

The question of whether free indexing of elements in A'-positions should be allowed, and if so, at which level(s), arises for almost every recent analysis of parasitic gap constructions.[28] For now, I will restrict the discussion to the question of whether wh-operators in A'-positions can be freely indexed at SS, leaving aside the question of whether phrases base-generated in left-dislocated or topicalized positions are indexed.

In CC, Chomsky argues that wh-operators base-generated in A'-positions must not receive an index at SS: there is no indexing at DS and free indexing at SS applies only to A-positions. Within the CC framework if wh-operators base-generated in A'-positions were indexed at SS two undesirable

27. The issue then is to decide whether extraction from within PP adjuncts is a violation comparable to extraction from within subjects. This is the assumption which underlies the CED and Longobardi's (1984) version of the connectedness condition. However, some speakers find some adjunct condition violations weaker than subject condition violations.

28. This section owes its existence to a discussion with Sam Epstein and Juan Uriagereka. See Epstein (in progress) for further discussion of the issue of SS indexing of A'-positions.

results would follow: resumptive pronoun constructions would

license parasitic gaps and island violations would be deriva-

ble with only the degree of marginality associated with re-

sumptive pronoun constructions (i.e littl. or no marginality

in resumptive pronoun languages, a more significant degree in

non-resumptive pronoun languages). The formulation of the

Subjacency Condition which I have proposed removes the argu-

ment against free A'-indexing at SS based on island viola-

tions. Let's consider the evidence bearing on the remaining

argument.

The following sentences, from E. Torrego, are offered in

CC as evidence that resumptive pronouns do not license parasi-

tic gaps.

50)   a.   el reloj de que me hablaste, el cual han
               conseguido arreglar t [sin mover e], ha quedado
               muy bien

       b. *   el reloj de que me hablaste, que _lo_ han conseguido
               arreglar [sin mover e], ha quedado muy bien

               'the clock you spoke to me about, which they got
               to fix (it) without moving e, now works very well'

These sentences differ in that (50b) has a resumptive pronoun

in the position of the gap in (50a). From the ungrammaticality

of (50b), Chomsky argues that the operator associated with

resumptive pronouns is not indexed at SS and therefore is not

able to bind a parasitic gap.** Torrego points out (p.c.) that

_____

29. Recall that within the CC framework, a parasitic gap is
base-generated as pro and becomes a variable under local A'-
binding by a coindexed operator at SS.

the star on (50b) should be taken as indicating contrast, not

an absolute degree of deviance, since (50b) is not as ungram-

matical as, for example, an ECP violation.[30] This is signi-

ficant since, by the CC analysis, (50b) should be a rather

severe violation.

There is another possible derivation of sentences such

as (50b) involving movement of the operator from the adjunct-

internal position. This derivation is illustrated schemati-

cally in (51).

51)   a.   DS: $[_{CP}$ $[_{IP}$...pronoun...$[_{PP}$...wh_i...$]]]$

      b.   SS: $[_{CP}$ wh_i $[_{IP}$...pronoun...$[_{PP}$...t_i...$]]]$

This derivation is suggested by the grammaticality of senten-

ces such as (52a), although the ungrammaticality of (52b) is a

complicating factor.

52)   a.   the article that I went to England without
           reading e
      b. * the man to whom I went to England without
           speaking e

In CC the ungrammaticality of (52b) is taken as evidence that

adjuncts are absolute islands and that (52a) is derived, not

by movement, but by a null resumptive pronoun strategy. This

approach fails to account for the island effects observable

within the adjunct clause, as illustrated in (53).

53)   a.   the man that I went to England without knowing who
           had spoken to e

---

30. Torrego suggests that (50b) be given ??.

b.   the man that I went to England without knowing
       what to bring to e
c.   the article that I went to England before hearing
       about a plan to publish e

It is also not obvious, within the CC framework, how to make

the assumptions needed to license (52a) as a null resumptive

pronoun compatible with the assumptions necessary to rule out

(50b).[31]

In _Barriers_ these considerations lead to the proposal

that (52a) is derived via movement (along the lines of (51)).

(52b) is ruled out by a constraint on possible adjunction

sites for PPs. Once movement from within adjuncts is permitted

for sentences such as (52), it cannot be ruled out as a possi-

bility for (50). Thus, within the _Barriers_ framework, the un-

grammaticality of (50b) is not an argument against the free

indexing at SS of wh-operators base-generated in A'-positions.

Cinque (1986) reaches this same conclusion (i.e. that

(50b) does not constitute an argument against indexing of wh-

operators in A'-positions at SS) by arguing that what rules

out (50b) is a constraint on "backwards pronominalization,"

which is also responsible for the ungrammaticality of (54b).

54)   a.   They managed to fix the wall without moving the
              clock.
       b. *   They managed to fix it, without moving the clock,.

The existence of an alternative explanation for the ungram-

maticality of (50b) makes the data in (50) essentially irrele-

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31. But see Cinque (1986), (1987) for a detailed working out
of these issues.

vant to the question of indexing A'-operators. If the only
thing ruling out (50b) is the "backwards pronominalization"
constraint and if A'-operators may be freely indexed at SS,
then resumptive pronouns should license parasitic gaps in
constructions where backwards pronominalization is allowed.
This seems to be the case, as illustrated below.

55)   a.   Dovranno convocare anche il poliziotto che lo ha
arrestato prima di poter interrogare Gianni
'they will also have to summon the policeman who
arrested him before they will be able to inter-
rogate Gianni'

         b.   Gianni$_i$, che dovranno convocare anche il polizi-
otto che lo$_i$ ha arrestato prima di poter inter-
rogare e$_i$, ...
'G., who they will also have to summon the police-
man who arrest d him before they will be able to
interrogate e, ...'

The grammaticality of (55a) indicates that backwards pronomi-
nalization is allowed and, as predicted, the gap is also
licensed. Within Cinque's framework it isn't really correct to
say that, in (55b), the resumptive pronoun licenses the para-
sitic gap. It i, rather the operator itself which licenses the
gap by virtue of an SS A'-chain-formation algorithm. It is
therefore crucial to Cinque's analysis that such operators,
base-generated in A·-positions, bear an index at SS.

    The grammaticality of (55b) does not "prove" that wh-
operators base-generated in A'-positions are indexed at SS.
While (55b) is consistent with an analysis such as Cinque's
which depends on that assumption, (55b) is also consistent
with the derivation in (51) within the Barriers framework.

Neither approach can handle the contrast between (55b) and (50b) without some additional proviso regarding backwards pronominalization. The data which have been discussed so far can give insight into the question of whether or not wh-operators base-generated in A'-positions are indexed at SS only insofar as the competing hypotheses are embedded in theories and the question can be answered only by comparing theories, or fragments of theories, which differ on this point. The extent to which an analysis succeeds in offering interesting explanations for a wide range of phenomena related to the question is the extent to which we have a basis for answering it in the negative or the affirmative.

Cinque's approach will be weakened if there is a construction such that the following hold of it: (i) a gap is bound by an operator base-generated in an A'-position; (ii) the structural relationship between the operator and gap fulfills all the conditions which Cinque's analysis imposes; (iii) the construction is ungrammatical. Before discussing a construction which, I believe, has these characteristics, I will briefly summarize Cinque's analysis of parasitic gaps.

Cinque (1986) argues that in certain contexts where A'-movement is impossible, A'-c ains may nevertheless be formed by means of a "null resumptive pronoun" strategy. Two assumptions are crucial to this approach: (i) wh-operators may be base-generated in SPEC of CP and indexed by SS and (ii) pro is identified (i.e. receives phi-features) under local binding by an operator (as well as by being in an appropriate relation-

ship with a "rich" AGR). Unlike overt resumptive pronouns, pro

must form an A'-chain with its binder at SS in order to be

properly identified. Finally, the following conditions must be

met for A'-bound pro to be licensed.

56) a.   pro is governed by an X° (≠ P in non-P-stranding
            languages)
      b.   every maximal projection which dominates pro but
            does not dominate the operator A'-binding pro must
            be selected in the canonical direction by an X°
            category

(56) is essentially a constraint on g-projection formation

which incorporates both the directional aspect of Kayne (1983)

and the proper government constraint of Longobardi (1984).

Cinque analyzes not only parasitic gap constructions, but also

constructions of "apparent NP extraction" (extraction from

adjuncts) and COD constructions (tough-constructions, purpose

clauses, degree clauses, etc.) as involving the A'-bound pro

strategy.

Consider now the constructions in (57). (57a) contains a

gap within the post-verbal relative clause subject of an erga-

tive verb; in (57b,c) gaps are contained within NPs which have

undergone Heavy NP Shift and in (57d,e) the gaps are within

relative clauses in object position.

57) a. * L'uomo che arrivano [tutti quelli che conoscono e]
           the man that arrived everyone who knows e
           'the man that everyone who knows arrived '
      b. * the candidate that Mary interviewed before the
           election, everyone who knew e
      c. * the crime that Mary interviewed at headquarters,
           everyone who witnessed e
      d. ?* L'uomo che ammiri [tutti quelli che conoscono e]
      e. ?* the man that you admire [everyone who knows e]

It cannot be backwards pronominalization which rules out the sentences in (57) as there is no resumptive pronoun to trigger a violation. All of these constructions involve gaps inside relative clauses. Cinque assumes the [NP NP CP] analysis of relatives which, in concert with (56b) predicts that the sentences in (57) should be ruled out: CP is not selected (in any direction) by an X° category. This result is fine for the constructions in (57) and (58), but problematic for grammatical parasitic gaps constructions such as (58).

58) * a present that [everyone who John gives e to] admires t

59)   a man that [everyone who meets e] admires t

For Cinque, it is necessary to find a way to allow the g-projection of the parasitic gap (his A'-bound pro) in (59) to extend past the CP to the topmost NP node of the relative clause. Adopting the Vacuous Movement Hypothesis of Barriers, based on proposals in George (1980), Cinque suggests that "selected in the canonical direction by an X° category" in (56) be replaced by "properly governed", where the latter relation includes the former plus antecedent government. He then proposes to account for the facts in (57) -- (59) by means of the following additional assumptions: (a) the NP and CP in a relative clause share an index only when the head of CP agrees with the NP; (b) an element in SPEC of CP may be interpreted as the head of CP, as long as C is null; (c) if the NP is co-indexed with the CP it antecedent governs the CP; (d) if C is

not the head of CP then IP is not selected by any X^o category.
Note that the agreement relation required by (a) may not be
facilitated by freely assigned indices or by accidental core-
ference. As is described in the discussion of (60a) below, the
account of (59) requires a series of instances of agreement
very much like the agreement chain of chapter two.

I will now demonstrate how this analysis accounts for
the relevant facts, beginning with the contrast between (58)
and (59). Consider the two relative clause structures given
below; (60a) corresponds to (58) and (60b) to (59). (In both
structures the g-projection of the parsitic gap e^i is indica-
ted by superscript.)

```
60)    a.      NP                      b.      NP'
             /  \                            /   \
         NP¡      CP¡                    NP¡      CP¡'
                 /  \                            /   \
             wh¡    C'                          C''
                   /  \                         /  \
                  C    IP'                     C    IP'
                      /  \                    /    /  \
                    NP    I''                wh¡    I''
                         /  \                      /  \
                        I    VP'                  I    VP'
                            /  \                      /  \
                           /    \                    V    e¡
                      ...e'...t¡....
```
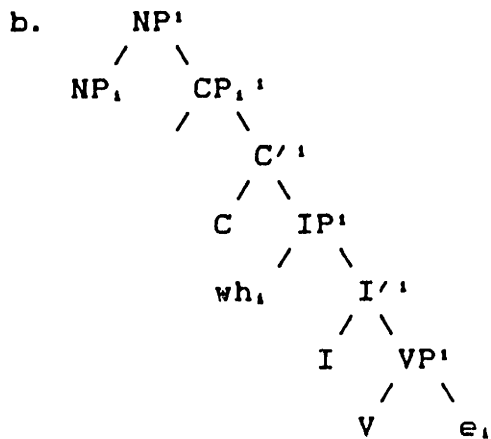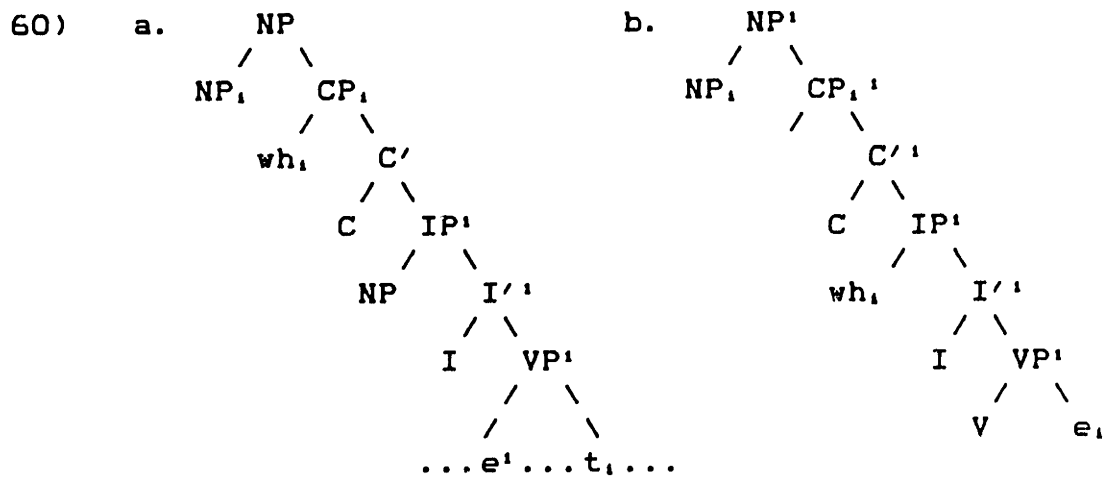
In (60a) the head of CP is wh¡, not C. Therefore, IP is not
selected by an X^o category and the g-projection of e^i, the
parasitic gap, may not project beyond IP. (60a) is correctly
ruled out because the g-projection of the parasitic gap cannot
project to a node which will allow it to connect with the g-
projection of the "real" gap. In (60b) the VMH allows the sub-

ject wh-phrase to remain in situ. This means that the head of CP is C and IP is selected by C. But this only allows the g-projection of e' to project to IP. In order for it to project to NP, CP must be antecedent governed by NP. Cinque proposes that this agreement is accomplished by the following chain of agreement: the subject wh-phrase agrees with INFL, INFL agrees with C, C agrees with CP.

A problem remaining with this set of proposals is that (57d,e) are predicted to be grammatical; just as in (59) the g-projection of the gap will project to the NP dominating the relative clause. This node is selected in the canonical direction by V and, therefore, the g-projection of the gap is licensed to continue up the tree to the antecedent. Cinque notes this problem and suggests that the two means of building g-projections are incompatible when they occur in a certain order. Specifically, a g-projection which has been built on the basis of antecedent government may not be extended to additional nodes on the basis of selection by an X^0 category.

Cinque's basic proposal, that parasitic gaps are A'-bound pro, is interesting and offers a potentially elegant solution to many of the most problematic aspects of these, and other, constructions. However, the auxiliary assumptions needed to account for the data in (57) - (59) are ad hoc and complex. Let's consider now how the proposals made in this chapter to account for parasitic gap constructions deal with the same range of data.

The problem, as above, is to rule out sentences such as (57) and (58) while allowing (59). I will begin with (57d,e). There are two possible derivations which must be ruled out for sentences such as these: one involving movement from within the relative clause and the other involving an overt operator base-generated in SPEC of CP and a null operator (A'-pro) moved to a relative clause internal position. The latter option gives an SS representation as in (61) for sentences like (57d,e).

61) $[_{CP}$ wh $[_{IP}$ ... $[_{VP}$ ... $[_{NP}$...pro$_i$...e$_i$...] ...]]]

If we assume that there is no SS indexing of operators base-generated in A'-positions, then (61) will be ruled out because the variable will not be identified in accordance with our earlier assumptions. If the wh-operator may be coindexed with the variable at SS, the structure will still be ruled out by the Subjacency Condition: between the link (wh,pro) at least two barriers intervene, VP and IP. It seems that, given the approach to chains and operators developed thus far in this dissertation, we may assume that elements base-generated in A'-positions bear indices at SS with no fear of overgenerating and no need for auxiliary stipulations.

One important point needs to be clarified before we accept this conclusion: I stated immediately above that if the wh-operator in (61) bears an index at SS the structure will nevertheless be ruled out by the Subjacency Condition. As formulated in the previous section, the Subjacency Condition

is a condition on chain links. The condition on variables

proposed in §3.2.1, (32), requires only that a variable be

bound by an A'-antecedent at SS and LF; it specifies nothing

about whether the antecedent and the variable need to be co-

members of a chain at SS. The question that we are now faced

with is where to locate the responsibility for ruling out

(61). There are two options: (i) we may stipulate that ele-

ments base-generated in A'-positions cannot be indexed at SS

or (ii) we may add the requirement to (34) of §3.2.1 that the

"antecedent" of a variable must be the head of the chain to

which the variable belongs. It has often been argued that the

null hypothesis with respect to indexing is that it be allowed

to apply freely at DS and SS with other constraints ruling out

improper configurations. Moreover, alternative (ii) makes ex-

plicit some of the assumptions behind the general use of the

term "antecedent of a variable." Only in the case of those OWM

constructions involving null operators is "antecedent" some-

times used to refer to something other than the head of the

A'-chain to which the variable belongs. Therefore, it seems

reasonable to opt for option (ii) and reformulate (34) of

§3.2.1 as (62).

62)   A variable must be a member of a chain C such that the
       head of C bears phi-features.

Other reformulations are possible and additional constraints

governing the relationship between variables and their ante-

cedents may be necessary to account for other phenomena, but

(62) allows us to assume free indexing and still rule out the
configuration in (61) via the Subjacency Condition.

Returning to the data in (57) - (59), it must now be
shown that my analysis blocks direct movement from within
relative clauses, while still allowing the grammatical rela-
tive clause parasitic gap construction in (59). Cinque (1986)
rules out all kinds of direct movement from within (non-wh)
islands by means discussed in chapter four. Since the Barriers
framework, which I have adopted, does not take an "absolute
island" approach to bounding effects, the task is somewhat
trickier and requires a reformulation of the definition of
"barrier" as well as the adoption of the VMH. Recall that in
chapter two I adopted a DP analysis of relative clauses as
shown in (63) with some additional clause-internal structure
given.

63)
```
                    DP
                  /    \
              D'          CP
            /  \        /   \
          D    NP     α      C'
                            /  \
                           C    IP
                               /  \
                              ß     I'
                                   /  \
                                  /...\
                                    τ
```
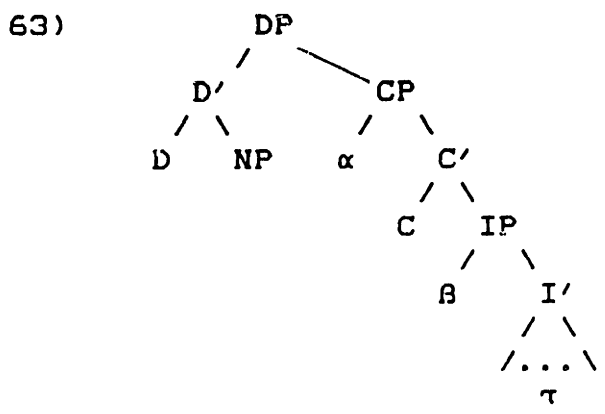
Take first the case of (58): α is the wh-phrase who, ß is the
lexical subject John, τ is the DS position of pro. Assume that
no SPEC of DP is available when a relative clause is present;
this is consistent with the Fukui & Speas (1986) idea that

functional categories have one and only one SPEC position if the relative clause can be regarded as a specifier. If pro moves from its base-generated position it may adjoin to the relative clause VP, but there is no other possible landing site available for it within the CP or DP. As long as it remains adjoined to VP, at least two barriers will separate the pro from the "real" gap. The complex chain in (58) will strongly violate the Subjacency Condition.

Consider (59) now: β is the wh-phrase in situ, α is A'-pro and τ is the trace of pro-movement. As long as CP is not an inherent barrier[32], only one barrier (DP) will separate A'-pro from the real gap. (DP will be a barrier in (59) since it is a subject and, therefore, not L-marked according to the definitions in fn. 10 of chapter one.) However, if relative clause CPs are exempt from inherent barrierhood, e.g. if they are L-marked, then it will not be possible to rule out extraction from within relative clauses. This is exactly the same point which led to the complications of Cinque's theory discussed above. Rather than developing a comparable set of stipulations to account for the exceptional nature of relative clause parasitic gap construcitons, I will leave the topic aside with a few final comments. In this section I have discussed two alternatives to the Barriers analysis of parasitic gap constructions, one which is compatible with free indexing

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32. "Inherent barrier" is used here to mean a barrier by virtue of being a BC, in contrast to the possibility of inheriting barrierhood from a BC.

of bare-generated A'-elements and another which requires free

indexing. Both approaches are empirically more adequate than

the <u>Barriers</u> analysis, but both are unable to account for

relative clause parasitic gaps without significant complica-

tions. (The latter point is true of the <u>Barriers</u> analysis as

well.) Further development and comparison of these analyses is

needed to determine which is ultimately preferable, but in any

case, there seems to be little reason to retain the stipula-

tion barring indexing of base-generated A'-elements at SS.

3.2.4 Chain Composition

A question that arises is whether the analysis outlined

in the preceding sections differs substantively from the <u>Bar-</u>

<u>riers</u> process of chain composition. The definition of "com-

posed chain" and the subjacency restriction given in <u>Barriers</u>

are as follows.

64) If $C = (\alpha_1,...,\alpha_n)$ is the chain of the real gap, and C'
= $(\beta_1,...,\beta_m)$ is the chain of the parasitic gap, then
the "composed chain" (C,C') = $(\alpha_1,...,\alpha_n,\beta_1,...,\beta_m)$ is
the chain associated with the parasitic gap construction
and yields its interpretation. ((130);p. 56)

65) The operator of the parasitic gap must be 0-subjacent to
the head of the A-chain of the real gap. ((154);p. 67)

In order to satisfy the 0-subjacency requirement, the null

operator is allowed to adjoin to the adjunct PP and remain in

this adjoined position at SS in parasitic gap constructions. A

null operator adjoined to an adjunct PP, as shown in (66),

will be 0-subjacent to a gap within the VP, e.g. in the posi-

tion of α, but not to a subject gap in the position of β. Note that this approach requires that adjunct PPs be included by VP rather than adjoined to VP or daughter to IP.

66)   ... [$_{IP}$ β [$_{VP}$ V α [$_{PP}$ Op [$_{PP}$ ... e ...]]]] ...

There are several problems with this approach. First, as Chomsky notes, if null operators are involved in the derivation of parasitic gaps in subjects (e.g. "the man who close friends of e admire t") 0-subjacency could never be satisfied unless the null operator adjoined to or moved out of the subject NP. Both possibilities are ruled out for independent reasons within the <u>Barriers</u> system. Secondly, if the null operator can adjoin to PP, there is nothing to prevent it from moving on to a VP-adjoined position, as illustrated in (67).

67) a. * Which paper$_i$ t$_i$ fell off the desk before John
              read e$_i$

     b.   ...[$_{IP}$ t$_i$ [$_{VP}$ Op$_i$ [$_{VP}$ V [$_{PP}$ e$_i$' [$_{PP}$...e$_i$...]]]]

In this position the null operator is 0-subjacent to the subject gap, t$_i$. Thus, the 0-subjacency proposal would fail at the task for which it was specifically formulated: explaining why c-commanding traces do not license parasitic gaps. Finally, given the rest of the <u>Barriers</u> framework, adjunction to PP allows extraction from non-arguments without any subjacency violation whatever; this point will be discussed in more detail in chapter four.

It should also be noted that the O-subjacency condition of (65) must be regarded as a new constraint within the grammar. In _Barriers_ Chomsky remarks that O-subjacency is essentially government without c-command. However, there is no other instance in the grammar where "government without c-command" is relevant, nor is it obvious that a constraint which does not include c-command or m-command as a necessary requirement has any conceptual relation to government. (65) is intended to account for sentences such as (67); assuming that the relevant part of the SS representation of (67) is as in (66), with ß = t, only one barrier (VP) includes the null operator and excludes ß. The intervention of a single barrier results, in this case, in severe ungrammaticality as compared with the sentences in (46), in which the chain is also broken by one barrier. If (65) is to be taken as a variant of subjacency, it is not clear why this difference in grammaticality exists.[33] The Subjacency Condition which applies to members of complex chains under the analysis I am proposing is the same Subjacency Condition which applies to all members of A'-chains and, in this respect, it differs significantly from the O-subjacency requirement of (65).

Aoun & Clark (1984) correctly point out that, given the grammaticality of (68a-c), the chain composition approach

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33. However, H. Lasnik (p.c.) points out that the O-subjacency requirement on chain composition is a condition on the applicability of an operation other than Move α, something rather different than the Subjacency Condition. Thus, it might be expected to yield a different degree of ungrammaticality than a Subjacency Condition violation.

cannot account for the ungrammaticality of (68d).

68) a.   quel livre₁ Jean a offert t₁ à Pierre [sans avoir
            mis e₁ sur la table]
     b.   quel livre₁ Jean sait [que tu as offert t₁ à
            Pierre [sans avoir mis e₁ sur la table]]
     c.   quel livre₁ Jean sait [à qui, offrir t₁ t,]
     d. * quel livre₁ Jean a su [à qui, offrir t₁ t, [sans
            avoir mis e₁ sur la table]

The <u>Barriers</u> approach predicts that both (68a) and (68d) will

be grammatical since the null operator in the adjunct clause

bears exactly the same relation to the real gap, t₁, in both.

Consider now (69b), in which extraction over two barriers (in

this case, an adjunct PP and a wh-island) induces ungrammati-

cality.

69) a.   quelle personne₁ Jean a essayer [de quitter Paris
            [sans rencontrer t₁]]
     b. * quelle personne₁ Jean se demande [comment quitter
            Paris [sans rencontrer t₁]]

The complex chain analysis of parasitic gap constructions cor-

rectly predicts that (68d), in which the chain is broken by

(approximately) the same barriers³⁴ which rule out (69b), is

also ungrammatical.

The judgements in (68) and (69) are those given by Aoun

& Clark. My French informants rate the sentences of (68) and

(69), relative to each other, as follows: (68c) = OK; (68a) =

?; (68b), (69a) = ?'; (68d), (69b) = *. Extraction out of PP

adjuncts seems to degrade slightly under embedding even when a

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34. See §3.2.2 for a discussion of the difference between
direct extraction from adjuncts and parasitic gap construc-
tions.

wh-island is not involved, e.g. (69a). Judgements are delicate

since extraction out of PP adjuncts in French, as in English,

is sensitive to the transitivity of the adjacent verb and

other, possibly lexical, factors which are not well under-

stood. As in English, there exist parastic gap constructions

with structures parallel to that in (68d) which are much more

acceptable, especially when they involve wh-islands created by

adjunct movement, as in (70).

70)   La boucle d'oreille que tu sais comment reparer sans
      abîmer ...
      'the earring that you know how to repair without
      damaging ...'

For further discussion of constructions like (70), see §4.5.

Aspects of the Aoun & Clark analysis of parasitic gap con-

structions are discussed in the next section.

3.2.6 Conditions on Null Operators

In the complex chain analysis of parasitic gap con-

structions the A'-pro fails to be identified by agreement, the

only means of identification available for a null pronominal;

it is licensed, therefore, only as an intermediate ec in an

A'-chain. There is no condition which applies specifically to

the A'-pro in a parasitic gap construction; it must be 1-

subjacent to the real gap, but this is an unexceptional sub-

case of the Subjacency Condition, which applies to all members

of A'-chains at SS. This approach is very different from one

which imposes conditions on the null operator itself, e.g.

Stowell (1985b) or Aoun & Clark (1984; hereafter, A&C). While there is no _a priori_ reason to prefer one of these two types of approaches to the other, in this section I will discuss some evidence which suggests the conditions on null operators imposed by the analyses of Stowell and A&C are incorrect.

Stowell suggests that, in order to be licensed, a null operator receives ±wh from its local binder. Arguing that, in (71a), the real gap, t, locally binds the null operator[35] but that the wh-operator is the local binder in (71b), he accounts for the multiple interrogation reading that some speakers get for (71b).[36]

71) a.   which paper did you file t without [Op
           reading e]
    b.   who did you give [Op pictures of e] to t

However, if the relevant binding relation between the null operator and its local antecedent involves c-command or m-command, it is difficult to see how either of the real gaps in (72) could be taken as the local binder.

72) a.   Who did you see [a picture of t] before
           meeting e
    b.   Which paper did Bill say that, without even
           reading e, Mary knew you shouldn't publish t

---

35. If null operators may be identified by NPs in A-positions, it is not obvious why wh-in-situ, quantifiers and other NPs do not license parasitic gaps.

36. The multiple-wh reading for sentences such as (71b) was first noticed by Robin Clark.

If the overt wh-operator is the local binder for the null operator, we would expect to get multiple interrogation readings for the sentences in (72), which is not possible. It could be argued that the null operator picks up the feature [-wh] from an intermediate trace, either adjoined to VP in (72a) or in the intermediate SPEC of CP in (72b). However, if null operators can pick up [-wh] from intermediate traces then we would expect the null operator in (71b) to be [-wh] as well. I assume intermediate traces are [-wh] based on the arguments in Lasnik & Saito (1984).[37]

Within the generalized binding framework adopted by A&C, a null operator is classified as an anaphor which occurs in an A'-position and which must be bound at SS by an antecedent in an A'-position within its governing category. The A&C analysis is similar to Stowell's in that it requires the null operator to have an antecedent; it is similar to the complex chain analysis in that it imposes a locality condition (via the governing category) on the null operator as well. The governing category of an anaphor in [SPEC, CP] is taken to be the superordinate CP containing the anaphor. In (73) all conditions are met and the sentence is grammatical.

73)   Which paper did you read t [$_{PP}$ before [$_{CP}$ Op [$_{IP}$ PRO
       filing e]]]

_____

37. At least in English, complicating factors make it impossible to test whether those null operators which should have the feature +wh can satisfy selectional requirements.

(74) is ruled out because there is no A'-binder for the null

operator at SS.

74)   Who read which paper, [before [cp Opi [PRO
       filing e]]...

In (75) the A'-antecedent of the null operator (<u>which article</u>)

is outside the operator's governing category, CP2; the sen-

tence is correctly predicted to be ungrammatical. ((75) =

A&C's (15b))

75) * Which article should I study t thoroughly [before [cp2
       [I call the author [without [cp1 Op [reviewing e]]]]]]

Now consider the sentences in (76).

76)   a.   which car did John know how to fix t without
             permanently damaging e
       b.   which test did you claim to know how to administer
             t before even examining e
       c.   which vegetable did you wonder whether to peel t
             before cooking e

All of these sentences have essentially the structure shown

schematically in (77).[38]

77)   whi ... [cp2 whj ... [cp1 Opi ...

According to the Aoun & Clark analysis, the governing category

for the null operator is CP2, not the matrix CP. These senten-

ces should, therefore, be as ungrammatical as (75). This is

clearly not the case; in fact, (76a-c) exhibit the level of

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38. (76c) differs from (76a,b) in that <u>whether</u> is a complemen-
tizer rather than an XP in [SPEC, CP], at least at SS. This is
irrelevant for the following discussion.

mild ungrammaticality usually associated with non-CED-type

subjacency violations.

It might be argued, following essentially Bordelois

(1986), that a controlled PRO does not constitute an acces-

sible subject and that, in cases such as (76a-c), the govern-

ing category must be extended to the matrix CP, i.e. a

governing category must include the lexical "head" of an

NP...PRO control sequence. In this case, (76a-c) should be

acceptable while (78) should be ruled out.

78)   which car did you wonder how Bill had repaired t without
       permanently damaging e

While (78) is worse than (76a-c), it does not seem to be as

ungrammatical as (75), a fact which remains unexplained under

the Aoun & Clark analysis. Notice, however, that the differ-

ence in ungrammaticality between (76a-c) and (78) is compa-

rable to the difference in ungrammaticality between (79a) and

(79b).

79)   a.   which car did you wonder how to repair t
       b.   which car did you wonder how Bill had repaired t

A reasonable hypothesis is that the difference in grammatica-

lity between (76a-c) and (78) may be attributed to the well-

known observation that finite sentences incur more severe Sub-

jacency Condition violations than infinitivals.

Assuming, as I have, that there is a single, complex A'-

chain in parasitic gap constructions leads to the prediction

that (76a-c) and (78) will be roughly as grammatical as simi-

lar sentences with direct extraction from PP adjuncts, such as those below.

80) a.   which alarm did John know how to escape without triggering e
     b.   which test did you claim to know how to relax before taking e
     c.   which medicine did you wonder whether to lie down before taking e
     d.   which alarm did you wonder how Bill had escaped without triggering e

While the sentences in (80) are somewhat worse than their parasitic gap counterparts, this is predicted by my analysis, since direct extraction crosses an additional weak boundary. (See the discussion in §3.2.2.)

It seems that the strong ungrammaticality of (75) may involve factors unrelated to the null operator. Consider that the configuration of adjuncts in (75) is somewhat deviant even in a non-parasitic gap construction.

81)   I studied that article thoroughly before I called the author without reviewing it.

The complicating factor here seems to be the compatibility of various prepositional adjuncts with other embedded adjuncts. Obviously, the temporal prepositions _before_ and _after_ are mutually incompatible. Only _after_ seems to be compatible with embedded _while,_ however.

82)   I read your letter [after/*before grading papers [while listening to Mozart]]

The status of sentences with before/after embedded under while is less clear.

83)   I read your letter [while listening to Mozart
       [after/before grading papers]]

The problem with assessing (83) is that the interpretation seems to be the same whether the second adjunct is embedded or not. Therefore, it is difficult to tell whether the embedded reading is really available. While before and without seem to be incompatible in the order shown in (75), the reverse order of embedding is somewhat better.

84)   I decided to leave [without calling you before I spoke
       to John]

In this case, it is easier to discern the matrix and embedded reading of the second adjunct. Other asymmetries surely exist, but, as I have no explanation for these facts at present and since the relevant point in regard to (75) has been made, I will leave the topic to further research.

3.3   The Anti-C-Command Constraint

3.3.1   "Reconstruction" and C-Command

One of the characteristic properties of parasitic gap constructions is the requirement that the "licensing" gap must

not c-command the parasitic gap.[39] Sentences such as those in (85) are taken as evidence for this anti-c-command constraint.

85) a. the article that I read t before filing e
    b. the movie that everyone who sees e enjoys t
    c. * the book that t fell out the window before you could catch e[40]

Sentences of the following sort (noticed by Barss & Engdahl) indicate that the anti-c-command constraint is not derivable from some property of subject gaps.

86) a. which papers did John decide to tell his secretary t were unavailable before reading e
    b. which papers did John decide, before reading e, to tell his secretary t were unavailable
    c. * which papers t were unavailable before you discovered e

In (86a) the position of the adjunct is ambiguous and the status of the sentence is unclear. However, when the subject gap clearly fails to c-command the parasitic gap, as in (86b), the sentence is grammatical.

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39. This was first discussed in Taraldsen (1979); further development and discussion of this property appears in Engdahl (1983), Chomsky (1982, 1986) and in much other work.

40. It is necessary to use a tensed adjunct clause to demonstrate the anti-c-command effect since the subjects of these adjunct clauses are controlled by the nearest subject when they are PRO. This then creates a condition C violation in the adjunct clause, as illustrated below.

    i) * the article$_i$ that t$_i$ fell out the window before PRO$_i$ reading e$_i$

While a tensed clause generally degrades the acceptability of parasitic gap constructions, the contrast between (ii) and (85c) is still strong.

    ii) the book that I dropped t before you could catch e

In CC the anti-c-command constraint follows from Binding Condition C: in a structure such as that in (87), the e_i is c-commanded by a coindexed argument, t_i.

87) $[_{CP}$ which papers$_i$ $[_{IP}$ t_i were ... $[_{PP}$ before you discovered e_i $]]]$

Under the CC analysis there are no intermediate traces between t_i and e_i in (87) and, therefore, it will also be ruled out because e_i is locally A-bound and so does not meet the contextual definition of a variable.

Contreras (1984, 1987) argues that c-command[41] does hold between the object and adjunct phrase in parasitic gaps on the basis of the ungrammaticality of sentences like (88).

88) * John filed them$_i$ without reading Mary's articles$_i$

He argues further that (88) cannot be ruled out by some constraint on backwards pronominalization because such sentences improve when c-command does not hold.

89) a. John filed their$_i$ articles without meeting those students$_i$
     b. John filed the articles about them$_i$ without meeting those students$_i$

He proposes that a null operator intervenes between the parasitic gap and "real" gap in both (85a) and (85c), eliminating the relevance of c-command in ruling out (85c).

_____

41. The definition of c-command relevant for Contreras must be equivalent to what I term "m-command". This will also be the case for the proposal made by Barss, Johnson and Saito, which is discussed in text below.

The O-subjacency approach proposed in <u>Barriers</u> to account for anti-c-command effects has been summarized above.

Returning to the idea that c-command must not hold between the real gap and parasitic gap, there are several ways to account for Contreras' observation. One approach (suggested by Barss, Johnson & Saito, p.c.) involves base-generating the adjunct under VP and allowing extraposition in the case of parasitic gap formation.[*] This type of derivation is illustrated in simplified form in (90).

90)   a.   ... $[_{VP}$ V α $[_{PP}$ ... β ... $]]$ ...
      b.   ... $[_{VP*}$ $[_{VP}$ V α $]$ $[_{PP}$ ... β ... $]]$ ...

In the derived structure (90b) c-command does not hold between α and β and the anti-c-command constraint is not violated.

In Browning (1986) I discussed a similar proposal which was finally rejected for reasons which I will now discuss. First, consider the sentence in (91), in which it seems reasonable to assume that the CP complement is base-generated in a position m-commanded by the NP complement.

91)   Who$_i$ did you warn t$_i$ [Op$_i$ that the police would arrest e$_i$]

As in the case of (85a) above, we might argue that the category containing the parasitic gap, the CP complement in this case, is in an extraposed position at SS. The relative

.

---

42. Another approach is to say that extraposition occurs in every case, but interpretation under "reconstruction" is obligatory for names and not for parasitic gaps.

unacceptability of (92), in which the complementizer is null may be evidence that the CP is in an ungoverned position.

92)   Who did you warn t [the police would arrest e]

Speakers generally find (92) somewhat worse than (91). This is consistent with the proposal (Stowell 1981; Kayne 1981) that null complementizers appear only in properly governed positions.

A possible problem for this approach is raised by sentences such as (93) in which an adjunct containing a parasitic gap is preposed outside of the SS c-domain of the overt wh-operator.[43] These sentences are acceptable in Italian with only a slight degree of marginality.

93) ? Senza conoscere e prima bene, non so proprio quale altra
    ragazza Gianni sarebbe disposto a sposare t

    'Without PRO$_i$ knowing e$_j$ well beforehand, I really don't
    know which girl$_j$ Gianni$_i$ would be ready to marry t$_j$.'

The adjunct in (93) is interpreted as if in its base-generated position, as shown by control of the adjunct subject. An adjunct which originates in a higher clause cannot contain a parasitic gap. Consider, for example, the sentences in (94) which are analogous to (93) except that the adjunct is

---

43. These sentences are from Longobardi (1985) where the
interesting properties of topicalization in Italian were first
brought to my attention; as Longobardi argues for a connected-
ness analysis of these sentences, he does not discuss the
ramifications which they have for the anti-c-command
constraint.

associated with the matrix clause, as indicated by matrix

subject control of the adjunct subject.

94)   a. * Senza PRO$_i$ conoscere e$_j$ prima bene, (io$_i$) non so
proprio quale altra ragazza$_j$ Gianni sarebbe
disposto a sposare t$_j$

'Without PRO$_i$ knowing e$_j$ well beforehand, I$_i$
really don't know which girl$_j$ Gianni would be
ready to marry t$_j$.'

b. * Prima di PRO$_i$ aver letto e$_j$ attentamente, (io$_i$)
non riesco proprio a immaginare quale libro$_j$ Maria
accetterebbe di pubblicare e$_j$ nella sua collana.

'Before PRO$_i$ reading e$_j$ carefully, I$_i$ really can't
imagine which book$_j$ Maria would accept to publish
t$_j$ in her series.'

c. * Pur senza PRO$_i$ aver letto e$_j$ attentamente, (io$_i$)
non credo che questo libro$_j$ Maria accetterebbe di
pubblicare e$_j$ nella sua collana.

'Though PRO$_i$ not having read e$_j$ carefully, I$_i$ do
not believe that, this book$_j$, Maria would accept
to publish t$_j$ in her series.

The contrast between (93) and (94) indicates that these para-

sitic gap constructions are judged to well-formed or ill-

formed on the basis of the pre-topicalized position of the

adjunct containing the parasitic gap. Even "under reconstruc-

tion" the parasitic gaps in (94) will not lie within the scope

of the licensing operator.

The evidence presented thus far indicates only that

parasitic gap constructions may be judged for well-formedness

on the basis of the pre-movement position of the adjunct.

Where it is necessary to meet scope requirements, as in (93),

"reconstruction" applies. It could be argued that, where it

would result in a Binding Condition C violation, as it might

in (85a), "reconstruction" does not apply. If a sentence such as (85c) could not be saved by topicalizing the adjunct, then we would have evidence that an adjunct is obligatorily "reconstructed" to its DS position and that the anti-c-command constraint holds. The necessary sentence is difficult to construct for several reasons. In English, the effects of the Subjacency Condition, the relative awkwardness of topicalization (compared with Italian) and the additional unacceptability triggered by the tensed adjunct clause obscure the relevant contrast between the (a) and (b) sentences below.

95) a. Which candidate$_i$ did you say that, while you
       interviewed e$_i$, John thought t$_i$ would be evaluated
    b. Which candidate$_i$ did you say that, while you
       interviewed e$_i$, John thought we could evaluate t$_i$

96) a. Before you met e$_i$, I can't remember which author$_i$
       t$_i$ was interviewed
    b. Before you met e$_i$, I can't remember which author$_i$
       I interviewed t$_i$

If adjunct movement cannot save an ill-formed structure, then (95a) and (96a) should be significantly worse than (95b) and (96b). This contrast seems rather clear in (95) but both sentences in (96) are, for me, strongly ungrammatical. The relevant contrast is more clear in the Italian version of (96).**

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44. A note on notation: Longobardi gives parasitic gap constructions with adjuncts _in situ_ and those with topicalized adjuncts the same rating: ?. My informants judged the topicalized structures to be marginally more deviant, e.g. ??, than the non-topicalized versions. Even given the increased deviance of all topicalized constructions, a sharp contrast between (97a) and (97b) was reported.

97)　a.　*　Prima che hai conosciuto e_i, non ricordo quale
　　　　　　autore t_i era stato intervistato
　　　b.　?　Prima che hai conosciuto e_i, non ricordo quale
　　　　　　autore$_i$ ha intervistato t_i

As indicated, extraction from subject does not license a
parasitic gap even when the adjunct is topicalized outside of
the c-domain of the subject.[45]

It should be noted that the movement allegedly respon-
sible for voiding a potential anti-c-command constraint viola-
tion in (85a) is rightward movement, a form of extraposition,
while the movement which has been central to my counterargu-
ment above is leftward movement, topicalization. It has often
been pointed out that these two types of movement differ in
some respects, e.g. bounding constraints, which might indicate
that we are dealing with two significantly different opera-
tions. Nevertheless, I have proceeded under the assumption
that the two types of movement behave identically with respect
to "reconstruction". The complex chain analysis allows a
return to the binding theoretic account of anti-c-command
effects proposed in CC and is consistent with the obligatory
"reconstruction" of adjuncts, i.e. with interpreting them as
if in their base-generated positions.

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45. The example is equally bad with a non-derived subject, as
illustrated by (i).

　　i)　*　Prima che hai conosciuto e_i, non ricordo quale
　　　　　scienziato$_i$ t_i ha vinto il premio Nobel

3.3.2 Some Consequences for the Connectedness Condition

It is well-known that A′-movement from a c-commanding subject position or from a position which is "too high" in the tree does not license parasitic gaps. Within the "Connectedness" framework these are sub-cases of the same general constraint on well-formed structures: ungrammaticality results whenever the g-projection set of a gap fails to include the node immediately dominating its antecedent. Sentences such as those in (98a) and (98b) are then ruled out for the same reason: the g-projection set of the parasitic gap fails to form a unified subtree with the g-projection set of the real gap, as shown schematically in (98c) and (98d).

98)   a. * which paper t fell off the table before John could
               catch t

    b. * who₁ did you warn t₁ [that John₂ had telephoned
          the police [before PRO₂ meeting with e₁]]

    c.

d.

```
                    S'₁
                   /  \
                 wh    S₁
                      / | \
                    NP Infl  VP₁
                          /      \
                        V'₁       S'
                       / |       /  \
                      V  e₁      S
                              / | \  \
                            NP Infl VP  S'₂
                                      /    \
                                     S₂
                                   / | \
                                 NP Infl VP₂
                                        /  \
                                       V    e₂
```
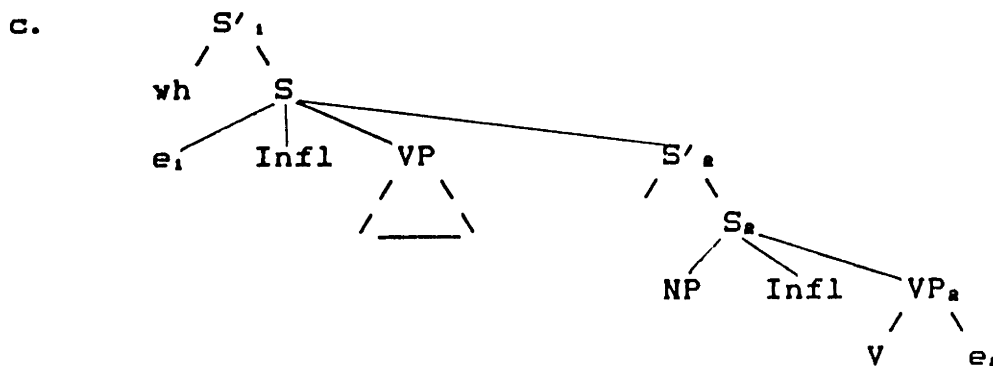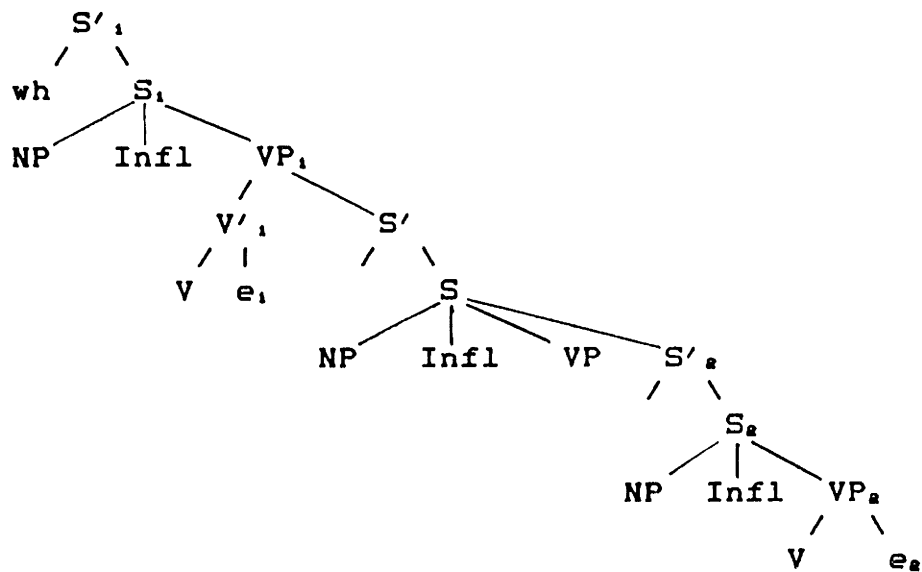
It is necessary for the analysis of sentences such as (97b) that the g-projection set of a gap does not end with the node immediately dominating its antecedent, but rather, continues up the tree until one of the conditions for g-projection formation fails to be met. This predicts that extraction configurations such as those in (98a) and (98b) should license a parasitic gap when the adjunct clause is topicalized. In the sentences of (99) the "real" gap is in a higher clause than the adjunct containing the parasitic gap and they are predictably ungrammatical.

99) a. * Non potevo ricordarmi chi₁ ti ha detto che Maria
ha rapinato la banca, dopo che ha lasciato e₁
'I couldn't remember who₁ t₁ told you that Maria
had robbed a bank after she left e₁'

b. * Non potevo ricordarmi chi₁ hai detto che Maria, ha
rapinato la banca, dopo che ha lasciato e₁
'I couldn't remember who₁ you told t₁ that Maria
robbed a bank after she left e₁'

As shown in (100), when pronouns are substituted for the parasitic gaps, the sentences are good both with and without preposed adjuncts.

100) a. Non potevo ricordarmi chi$_i$ ti ha detto che Maria
ha rapinato la banca, dopo che lo$_i$ ha lasciato
'I couldn't remember who$_i$ t$_i$ told you that Maria
had robbed a bank after she left him$_i$'

b. Non potevo ricordarmi chi$_i$ hai detto che Maria$_j$ ha
rapinato la banca, dopo che lo$_i$ ha lasciato
'I couldn't remember who$_i$ you told t$_i$ that Maria
robbed a bank after she left him$_i$.'

c. Dopo che lo$_i$ ha lasciato, non potevo ricordarmi
chi$_i$ ti ha detto che Maria ha rapinato la banca
'After she left him$_i$, I couldn't remember who$_i$ t$_i$
told you that Maria robbed a bank.'

d. Dopo che lo$_i$ ha lasciato, non potevo ricordarmi
chi$_i$ hai detto che Maria$_j$ ha rapinato la banca.
'After she left him$_i$, I couldn't remember who$_i$ you
told t$_i$ that Maria robbed a bank.'

Longobardi's analysis predicts that preposing the adjuncts in (99) will improve the sentences, but this is not the case, as shown by the ungrammaticality of (101).

101) a. * Dopo che ha lasciato e$_i$, non potevo ricordarmi
chi$_i$ ti ha detto che Maria ha rapinato la banca
'After she left e$_i$, I couldn't remember who$_i$ t$_i$
told you that Maria had robbed a bank'

b. * Dopo che ha lasciato e$_i$, non potevo ricordarmi
chi$_i$ hai detto che Maria$_j$ ha rapinato la banca.
'After she left e$_i$, I couldn't remember who$_i$ you
told t$_i$ that Maria robbed a bank.'

The extra embedding in (99) and (101), which is necessary in order to bypass the effects of matrix subject control of the adjunct subject, make the judgements here difficult. Nevertheless, the contrast between (99)/(101) and sentences such as

(97b) is quite sharp for native speakers. While the augmented

connectedness approach of Longobardi (1985) cannot account for

this contrast, it is predicted by the complex chain analysis

which takes anti-c-command effects to be Binding Condition C

violations.

3.4 Notes Towards a Theory of Empty Categories

In §2.3.6 I mentioned briefly the alternative theories

of empty categories proposed by Brody (1985) and Barss (1986).

Both theories account for the distribution of ECs by means

other than assigning the [±anaphor, ±pronominal] feature ma-

trices which produce the familiar four-part typology that has

been the basis for the proposals made herein. Brody and Barss

both offer cogent critiques of the traditional GB approach to

ECs and their proposals are interesting and provocative. This

section begins with a brief reflection on these two theories

and ends with a sketch of hybrid theory of ECs which resembles

more closely the traditional GB approach, but which incorpo-

rates some of the insights from Brody (1985) and Barss (1986).

The suggestions made in the latter part of this section are no

more than possible directions for research which I take up in

more detail in work in progress.

Brody (1985) points out that the distribution of trace

(governed ECs) and PRO (ungoverned ECs) in the LGB version of

GB theory "follows from the accidental interaction of two

unrelated modules of grammar," namely, the ECP and Binding

Theory. He argues that such an important aspect of the distri-

bution of ECs should not result from such a conspiracy, but should be encoded directly in deep principles of the grammar. He proposes that the government distinction should be accounted for by an appropriate reformulation of Case Theory, with other aspects of EC distribution falling under the Binding Theory. He first formulates the distinction between governed and ungoverned ECs as the One Fell Swoop EC Condition in (102)

102) OFS EC Condition: An EC is the head of a chain iff it is ungoverned.

and later as part of his Case-checking Theory.[46] The Binding Theory is revised along the lines of Manzini (1983) under the assumption that all ECs are anaphors.

Since there are no null pronominals and since (102) prohibits the existence of a governed null head of a chain, Brody must regard the null subject of tensed sentences in null subject languages as a non-head member of a chain headed by AGR on a par with the EC associated with clitics. Both ECs, like

---

46. Brody's theory involves the following assumptions, among others: ECs do not bear case; lexical NPs and what are called "case assigners" in a case assigning theory bear case inherently; "chain" refers to maximal chains only. The following Conditions must be met:

    i)   Case-linking Condition

        a.   * NP unless Case-linked.
        b. NP_x is Case-linked iff NP_x is the head of a chain.

    ii)   Case-matching Condition

        If NP_x is Case-linked to y, then y has a Case that matches that of NP_x.

all others, are pure anaphors. (102) encodes another crucial

difference between Brody's theory and the GB approach to ECs:

in the latter the trace left by wh-movement from an A-posi-

tion, e.g. t_i in (103),

103) What$_i$ did you buy t_i

heads an A-chain and is a non-head member of an A'-chain. In

Brody's theory, t_i in (103) is governed and, therefore, may

not head a chain. It is only a non-head member of an A'-chain.

It seems to me that this latter position misses an

important fact about the types of chains that exist and the

conditions which apply to them. Chains may be divided into

three categories depending on the types of elements which they

contain: A'-chains, A-chains and A/A'-chains (which I will

call "operator-variable chains".[47] These three types are

illustrated in (104a,b,c) respectively.

104) a.   How do you [t^4 [think [t^3 that John [t^2 [made
           so much money t^1]]]]]

---

47. I will leave out of the discussion clitic chains and the
chains formed between post-verbal subjects and the preverbal
ECs with which they are associated. The latter seem to in-
volve, like there-insertion structures, a type of A-chain. The
former has sometimes been analyzed as an A/A'-chain. If the
speculation §2.3.6 is correct, then clitic constructions
involve a one-member A-chain (pro) identified by the clitic,
which acts as a kind of agreement marker. This hypothesis
requires some additional assumptions to differentiate between
the agreement markers in languages like Hindi and Navajo and
clitics such as those in Romance languages.

Note that the use of "operator" here contradicts the usage
settled on in chapter two. This usage is adopted for ease of
reference and is not meant to invalidate the points made in
the earlier discussion.

```
b.      John seems [ t* to have been insulted t' ]
c.      What do you [ t* [ think [ t³ that John [ t*
        [ bought t' ]]]]]]
```

I will not embark on an in ̲̲ discussion of the locality

conditions which apply to these structures; chapter four con-

tains extensive discussion of the differences between argu-

ments and non-arguments, complements and non-complements with

respect to the ECP and the Subjacency Condition and empirical-

ly motivated revisions of both. At this time I simply wish to

point out a fact which, I believe, should be taken into ac-

count in formulating a theory of empty categories and chains:

chains which involve only one type of element (i.e. "internal-

ly consistent" chains) are subject to stricter locality

constraints than are operator-variable chains.

     In earlier versions of the GB framework, the locality

conditions which constrain (104a) and (104b) are distinct.

Thus, (105a) is ruled out by the ECP and (105b) by Binding

Condition A.

```
105)  a.  *  How did you wonder whether John made so much
             money t
      b.  *  John seems that Bill admires t
```

Steps towards unifying the account of (105a) and (105b) are

taken in Barriers and KoL where (105b) is ruled out by a com-

bination of the ECP and Binding Condition C. Under the assump-

tion that the ECP reduces to antecedent government, if the NP

John moves from its base-generated position, t, to its SS

position the empty category, t, will not be properly governed.

(The Subjacency Condition will also be violated.) If <u>John</u>
reaches its SS position by successive cyclic movement, as in
(106), then t will be antecedent governed by t'.

106) John [t³ [seems [t² that Bill [t¹ admires t]]]]

However, because t is A'-bound at SS it can only be a varia-
ble, an element subject to Binding Condition C in the revised
version given below. ((107) = (87), ch. 3, KoL)

107) An r-expression is A-free in the domain of the head of
      its maximal chain.

The maximal chain to which t belongs includes <u>John,</u> a coin-
dexed NP in an A-position; therefore, (106) is ruled out as a
Binding Condition C violation. Notice that this ECP + Binding
Condition C approach (which I will call the "improper movement
analysis") is a way of expressing the constraint against A'-
to-A movement; see (iic) of fn. 2 in chapter one for the for-
mulation of this constraint given in Chomsky (1973). But no-
tice that the improper movement analysis should only apply to
chains involving ECs which are subject to the binding theory
and, presumably, only null NPs are subject to the binding
theory. Nevertheless, (108a) is just as bad as (108b). The
same question arises for adjuncts, as in (108c).

108) a. * Under the bed seems that it is considered t a good
             place to hide
      b. * John seems that it is considered t to be
             intelligent.
      c. * Quickly/on Tuesday/in the garage seems that John
             fixed the car.

If (108a) and (108c) are given the structure in (109), then the ECP will be satisfied.[48]

109) $[_{CP} [_{IP} XP_i [_{VP} t_i^4 [_{VP}$ seems $[_{CP} t_i^3$ that $[_{IP}$ John
$[t_i^2 [$ fixed the car $t_i^1]]]]]]$

Two options exist at this point: either t_i^1 in (108a) and (108c) must be subject to the binding theory or there must be an independent means of ruling out A'-to-A movement.

The approach I will propose involves taking the latter option and restating the problem so that it is not "how can we rule out A-to-A' movement?", but rather, "how can we constrain the elements which can be co-members of a single chain so that we have only the three chain-types in (104)?" The first proposal is that the theory must contain a constraint which requires non-operator-variable chains to be internally consistent, e.g. (110).

110) a.   If $C = (\alpha_1, ..., \alpha_n)$ is an X, then $\forall \alpha_i \in C$, α_i is in an X-position.
      b.   X = {argument, non-argument}

Operator-variable chains are made up of two internally consistent sub-chains. The set X in (110b) could be expanded to

_____

48. In the case of adjunct movement, the Minimality Condition of _Barriers_ will rule out the structure in (109). However, this is not a desirable result, since the condition will also rule out the grammatical sentence in (i) for the same reason.

    i)   How do you want John to fix the car?

See chapter four for discussion of this and other aspects of the _Barriers_ Minimality Condition, as well as a revised Minimality Condition which does not rule out (109).

include "head" since head-to-head movement shows the same tight locality constraints as A-movement and adjunct movement.

The analysis of raising and passives in _Barriers_ presents a problem for this proposal since in these cases it requires a non-NP head (e.g. I, A, or V) to facilitate antecedent government of the NP-trace. If the antecedent governors in such cases are considered to be part of the chain, then the chain is not internally consistent. However, the mechanisms required for the _Barriers_ analysis are somewhat suspect, given the sharp ungrammaticality of (111a).

111) a. Be_i John_i will_i t_i invited_i t_i to the party?**

      b. John_i will_i be_i invited_i t to the party

---

49. R. Kayne (p.c.) first brought to my attention the fact that violations of the Head Movement Constraint (Travis (1984)) are more ungrammatical than other ECP violations. Compare (i) and (ii).

    i)   Who do you wonder why t left?
    ii)   Buy John will t a newspaper?

In (i) the EC is in violation of the ECP; as a result the lower verb is without one of its arguments and the matrix wh-operator does not bind a licensed variable. Because the EC in (ii) is unlicensed we cannot regard (buy,t) as a discontinuous entity. There is no verb in a position from which it could θ-mark and case-mark its arguments: t is not part of a verb and buy is not in a position from which it could θ-mark or case-mark its arguments. If we regard a sentence as being made up of a core (the predicate head) and satellites (the arguments and sentential modifiers), we would expect (i) to be a less serious violation than (ii): in (i) only a satellite is not licensed (i.e. missing), while in (ii) the core is not licensed.

In order for (111b) to be grammatical the subject must be coindexed with the modals and the passive participle. The first link in this "extended chain" is the agreement between subject and INFL. Head-head coindexing passes the index down to the passive participle which antecedent governs the NP-trace. Presumably the same indexing is possible in (111a). We would therefore expect _will_ to be able to properly govern the trace of _be_. (Movement of _be_ to C is taken to be an instance of head-to-head movement, which, according to Baker (1985), is governed by the ECP. These problems do not arise if we adopt the relativized minimality condition in §4.6 and if VP is not a barrier by failure of L-marking. I will not attempt to decide whether the latter condition is tenable at this time.

Consider now the case of the internally consistent chains created by wh-movement of an adjunct. I mention at several different points throughout this dissertation two different means of accounting for the stricter ECP requirement which seems to apply to adjunct chains. Lasnik & Saito (1984; L&S) characterize this requirement in terms of the trace of origin of the adjunct: since this trace must be present at LF it must be marked [+τ] by the time the ECP filter applies at the end of the LF mapping. L&S propose that Affect α is ordered before τ-marking; therefore, the trace of origin of a moved adjunct will only be τ-marked if it is a member of a chain such that every non-head member of the chain is properly governed.

Chomsky (1986, class lectures) dispenses with the ordering of Affect α and τ-marking in favor of an explicit statement to the effect that adjunct chains must be fully represented throughout the derivation. It is necessary to adopt this stipulation if the ordering approach is abandoned since extraction of adjuncts over wh-islands would otherwise be identical to the extraction of arguments, i.e. it would be expected to yield a Subjacency Condition-type violation rather than an ECP-type violation. This approach is more compatible with the line of thinking in this section since it places a constraint on the chain as a whole, rather then on one element of the chain. With the L&S approach the presence of the entire chain at LF is an epiphenomenon of the licensing of the trace of origin.[50] Therefore, to the constraint in (110) I add Chomsky's complete representation requirement (CRR).

Leaving (110) and the CRR aside for the moment, let's consider some of the points made in Barss (1986). Barss points out that sentences such as (112) are problematic for any theory of ECs which treats variables as being subject to Binding Condition C.[51]

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50. For further discussion of the licensing of adjunct chains, see §4.3.

51. Barss also gives examples involving cleft sentences such as those below.

    i)   It's him_i that $John_i$ thinks that Mary loves t_i
   ii) * It's him_i that $John_i$ admires t_i
 iii)   It's $himself_i$ that $John_i$ admires t_i
  iv) * It's $himself_i$ that $John_i$ thinks that Mary loves t_i

These illustrate the same point as the data in (112) and (113)

112) Himself$_i$, John$_i$ likes t$_i$

113) a. * John$_i$, he$_i$ admires t$_i$
      b. * Him$_i$, John$_i$ admires t$_i$
      c. * Himself$_i$, John$_i$ thinks that Mary admires t$_i$

The variable t$_i$ is A-bound by <u>John</u>, which is in the domain of
the head of the variable's maximal chain, <u>himself</u>. While the
data in (113) are consistent with the hypothesis that vari-
ables are R-expressions subject to Binding Condition C, they
are also consistent with the hypothesis that variables take on
the properties of their A'-antecedents with respect to the
binding theory. The data in (112) and (113) taken together
support the latter hypothesis over the "variable = R-expres-
sion" hypothesis. Barss proposes that these facts can be dealt
with if ECs take on the binding features of the heads of their
A'-chains. This he calls the "Feature Match Hypothesis" (FMH).

Although, the FMH works well for operator-variable
chains, it runs into serious problems with A-chains. Consider
the examples in (114).

114) a.   John was arrested t
            [-a,-p]   [-a,-p]

      b.   He was arrested t
            [-a,+p]   [-a,+p]

-----

if the focussed element is taken to be the head of the chain
containing the variable. This is inconsistent with the
approach to A'-chains adopted in this dissertation; additional
research is necessary to determine whether the aspects of
Barss's analysis of these phenomena which I wish to adopt are
ultimately compatible with the other proposals herein.

c.   John wanted PRO to be arrested t
             [+a, +p]   [+a, +p]

In (114a) the EC is an R-expression and Binding Condition C
predicts that the sentence should be ungrammatical. In (114b)
the EC is a pronominal and the sentence should be ruled out by
Binding Condition B. Finally, in (114c) the EC takes on the
features of PRO and should, therefore, be ungoverned. In
(114a,b) the problem stems from the structural relation be-
tween the EC and the head of the A-chain. Barss proposes that
this be overcome by limiting the binding theory to regulating
the relations between elements which are not members of the
same chain, that is, the binding theory is a set of con-
straints governing relations between chains, not relations
within chains. This will not take care of (114c), however,
since the problem there is not between the EC and the head of
its A-chain, PRO. The problem is that the EC is governed by
the passive participle when, as an pronominal anaphor, it must
be ungoverned.

These problems lead Barss to reject the FMH in favor of
the "No Features Hypothesis" (NFH), which dispenses with the
features [±anaphor, ±pronominal] altogether. The distribution
of ECs is determined by Brody's (1985) case-matching theory
(see fn. 22 above), Rizzi's (1982) Local Binding Condition,
and a reformulation of the Binding Theory on the basis of
Higginbotham's (1983) linking theory of binding relations. I
will not review the specifics of this approach or the interes-
ting arguments which Barss marshalls in favor of it, since I

am most interested in the simple insights behind the FMH and the NFH. Barss considers the possibility of retaining the FMH for A'-chains and adopting the NFH for A-chains, but rejects the distinction between chain-types that this solution implies as an unmotivated complication of the theory. The point of this section is that there is motivation for distinguishing between chain-types, but the relevant schism is not between A-chains and A'-chains but between internally consistent chains and operator-variable chains. Therefore, to the constraint in (110) and the CRR I will add the following: (i) the NFH holds for internally consistent chains and (ii) the FMH holds for operator-variable chains.

By (ii), I mean that traces left by movement have no features other than those they receive by virtue of being in a chain with their heads. Thus, the condition on variables in §4.2.1 is an identification condition in the strongest sense.

(i) entails the position that the argument in a sentence such as (104b) is not (John), but is rather the discontinuous entity $(John, t^e, t^i)$. Similarly, the adjunct in (104a) is not (How) but the discontinuous entity $(How, t^4, t^3, t^e, t^i)$. The primary task in developing this approach will be to determine whether the current definitions of "barrier", "antecedent government" and all the related concepts yields the desired results and, if they do not, to redefine them. (i) is a way of saying that the non-head elements of internally consistent chains are not relevant, or visible as individual entities, for a certain set of constraints, e.g. the binding theory.

Alternatively, we might say that the non-head members of internally consistent chains do bear features, but that they are inaccessible to certain constraints.

The problem with passivized PRO which led Barss to reject the FMH does not arise with this approach since the trace of NP-movement of PRO in (115)

115) John wanted PRO to be arrested t

is not itself PRO, i.e. it is not constrained to appear only in ungoverned positions. If we assume that the distribution of PRO is given by the binding theory, the binding theory must apply only to whole entities and not their subparts; since the head of the PRO chain in (115) is ungoverned, the binding theory is satisfied. If we incorporate the requirement that PRO be ungoverned directly into the grammar, then this con-straint needs to be formulated in a similar manner.

The ECP as it applies to variables in operator-variable chains and the CRR + ECP constraint on internally consistent chains might derive from the same principle:

116) Feature-sharing requires government.

In the case of operator-variable chains we could say that the type of feature-sharing which takes place is feature assign-ment, a one-time transmission of features from the operator to the EC. This feature transmission would require that the ope-rator govern the variable only at one point in the derivation, a state which obtains in grammatical structures after the

first "move" of the operator. In the case of internally con-
sistent chains feature-sharing is not really a one-time trans-
mission of features, since we are regarding the entire chain
as the relevant entity for purposes of interpretation, etc.
Therefore, for every link (α_i, α_{i+1}) of such a chain, α_i must
govern α_{i+1} so that all the elements of the discontinuous
entity share the features of the entity. Note that the identi-
fication of pro, another sort of feature sharing, also takes
place under government, even when facilitated by the agreement
chain of chapter two.

If variables receive their features from their A'-ante-
cedents and if lexical NPs are characterized in terms of
[±anaphor, ±pronominal] features, then movement-derived ECs
will still be characterized in terms of the familiar feature
matrices. Is it necesary to retain the four-part feature-
based typology for base-generated ECs? Once again I have only
some speculative remarks to make on this point which indicate
a direction for research. Brody's arguments against the tradi-
tional means of deriving the PRO Theorem from the Binding
Theory are compelling. However, his method of accounting for
the distribution of governed and ungoverned ECs, which does
not recognize the existence of pro, is incompatible with the
analysis of null operators I have proposed. An alternative ap-
proach, suggested by Chomsky (1986, class lectures), is to
regard Control theory as a licensing mechanism for ungoverned
ECs analogous to the other means of identifying ECs which have
been discussed. We could then regard both PRO and pro as pure

pronominals; PRO being the ungoverned instance which is identified as specified by Control theory, pro being the governed instance which is identified by agreement.[52]

To summarize briefly the speculative proposals made in this section: only pure pronominal ECs are base-generated; ungoverned pronominal ECs are identified by Control theory; governed pronominals are identified by agreement. Chains which are not operator-variable chains are required to be internally consistent (110) and represented throughout the derivation (CRR). Internally consistent chains are regarded as discontinuous entities and the ECs which are their sub-parts do not bear binding features, (i). Variables are identified by their operators and are assigned the binding features of those operators, (ii). (Variables are discontinuous entities of the A-chain type.) The locality constraint governing discontinuous entities is stronger than that governing the operator-variable relationship; both are given in terms of the ECP and may derive from principle (116). In work in progress I attempt to develop these notions into an articulate theory of empty categories.

* * * * * * *

A note on the improper movement analysis of (105b): Barss (1986) discusses a derivation of the sentence in (117a) which he argues is problematic for Chomsky's "improper

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52. Borer (1986a, 1986b) also proposes that all instances of PRO are actually pro.

movement" analysis summarized above; the example and derivation are credited to Epstein (in progress).

117)   a.   who is illegal to leave

b.   who [t'' is [illegal [$_{CP}$ t' [$_{IP}$ t to leave]]]]

The derivation illustrated in (117b) allows t to be an anaphor (since it is the result of movement to an A-position) and to be properly governed (by t'). However, this derivation is one of a class of derivations discussed in Epstein (in progress) which involve what I will call "vacuous lowering." Notice that who leaves the matrix SPEC of CP position in move (3) and goes to the lower SPEC. It then returns to the matrix SPEC on move (4), leaving behind the trace t'. If chains are histories of movement (and if we take who in (118) to mark the position of the matrix SPEC), then the chain associated with the derivation in (117b) is that in (118).

118)   (who, t', who, t'', t)

The chain in (118) does not exist as such at SS. Therefore, either chains are not histories of movement or the chain in (118) and the sequence of entities in (119)

119)   (who, t'', t', t)

bear no formal relation to one another.

The approach to chains and the Subjacency Condition
which I adopt in this chapter is not consistent with an ap-
proach which regards (118), rather than (119), as the relevant
chain in (117b). However, the chain formation approach to
parasitic gap constructions I adopt is also inconsistent with
the idea that chains are histories of movement. The inconsis-
tency is easily rectified in a manner which rules out all de-
rivations involving vacuous lowering if we regard SS chains as
reflections of the operations involved in their derivation
from DS. Every link of a chain at SS is the output of an ope-
ration and no operations can be involved in the derivation of
a chain which are not reflected in the SS representation of
that chain. Thus, the Subjacency Condition indirectly retains
its character as a condition on operations.

CHAPTER FOUR

CONDITIONS ON A'-CHAINS

4.1 Introduction

The ease with which an element, α, undergoes Move α depends largely on the nature of the relation, if any, which holds between α and a head. For example, it is generally true that internal arguments of a verb move more freely than does the external argument or an adjunct.[1] The constraints governing the possibilities for movement have been variously formalized with the Subjacency Condition and the ECP playing the crucial role in recent years.[2] Controversial data from parasitic gap constructions and some OWM constructions suggest that in some cases the distribution of subject and adjunct gaps[3] is more tightly constrained than is predicted by the interaction of Move α and the ECP. Taraldsen (1979) and Chomsky (1982), focussing on parasitic gaps, argue from this that these gaps are not derived by movement; the ECP is preserved as is. Stowell (1985) and Cinque (1986) partially motivate constraints designed to take the place of the ECP on the basis of

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1. But see Torrego (1984) and Koopman & Sportiche (1986) for counterexamples to this descriptive statement; see also §4.4.5 for discussion of some of the data in Koopman & Sportiche.

2. See chapter one for definitions.

3. Since I will be focussing on A'-movement and the traces left by A'-movement, the term "gap" will be taken as synonymous with "variable".

this unexpected distribution of subject and object gaps. In
this cpater I will show that the phenomena in question are not
unified and that they do not require a reformulation of the
ECP. §4.2 reviews the traditional ECP asymmetries and presents
the unexpected asymmetries in question. §4.3 and §4.4 deal
with the problematic adjunct gaps and subject gaps, respec-
tively. §4.5 and §4.6 discuss aspects of the Barriers system
relevant to the Subjacency Condition and the ECP.

4.2 Null Operators and the ECP

4.2.1 ECP Asymmetries

Inherent in most current versions of the ECP is a funda-
mental dichotomy between arguments and adjuncts. In Lasnik &
Saito (1984; hereafter L&S) this is expressed in the restric-
tion that τ-marking for adjunct traces occurs only at LF,
while τ-marking for argument traces may occur at either SS or
LF.[4] Part of the justification for this argument vs. adjunct
distinction comes from the severity of the violation incurred
by adjunct extraction from an island, as compared with the

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4. See chapter one, fn. 10 & fn. 11 for definitions. L&S allow
τ-marking of argument traces at either SS or LF under certain
conditions. In particular, they argue that (i) a trace must be
τ-marked at the level at which it is created, (ii) the
τ-marking assigned to a trace may not be changed during the
course of a derivation and (iii) τ-marking is strictly ordered
after Affect α at each level. Chomsky (class lectures, fall
1986) departs from these positions by assuming that (i) a
trace may remain unmarked at its level of creation and (ii)
τ-marking of arguments is unordered with respect to Affect α.
See §3.1 and §4.3 for further discussion.

relatively milder violation incurred by extraction of an

argument. This contrast is illustrated in (1).

1)   a. * how did Jane wonder whether to expect to fix the
             car
      b. ?? which car did Mary wonder whether to expect Jane
             to fix t
      c. ?? who did Jane wonder whether to expect t to show up

Earlier versions of the ECP (e.g. that of LGB) focussed on a

somewhat different sort of asymmetry, namely, the behavior of

subjects as contrasted with the behavior of objects. Huang

(1982) later argued that adjuncts pattern with subjects in

extraction possibilities, that is, the dichotomy is correctly

stated as subject/adjunct vs. object. This asymmetry is illus-

trated by the paradigm in (2).

2)   a. * who$_i$ did you wonder how$_j$ t$_i$ fixed the car t$_j$
      b. * how$_j$ did you wonder who$_i$ t$_i$ fixed the car t$_j$
      c. ?? what$_i$ did you wonder how$_j$ Mary fixed t$_i$ t$_j$

There is no real contradiction in these two apparently diver-

gent groupings (subject/object vs. adjunct and subject/adjunct

vs. object) when we look more closely at the formulation of

the ECP and the underlying structures of (1) and (2). The

point of interest here is why movement of a subject should

result in an ECP violation in (2a) but not in (1c). Two pos-

sible SS representations for (1c) and (2a) are given (in sim-

plified form) in (3a) and (3b), respectively.

3)   a.   who$_i$ Jane wondered [$_{CP}$ whether [$_{IP}$ PRO to
              [$_{VP}$ t$_i$' [$_{VP}$ expect [$_{IP}$ t$_i$ to show up]]]

b.   who$_i$ you [$_{VP}$ t$_i$' [$_{VP}$ wondered [$_{CP}$ how$_j$ [$_{IP}$ t$_i$ fixed the car t$_j$]]]

It is obvious that the ECP violation incurred in (2a)/(3b) follows from the structure of the sentence rather than some inherent property of subjects. That is, the ECP is not violated in (3a) because t$_i$' is in a position which allows it to antecedent govern (T-mark) the trace t$_i$. On the other hand, t$_i$' in (3b) cannot antecedent govern t$_i$ because CP is a barrier for t$_i$ by inheritance.[5]

This brief résumé of some of the ECP-related properties of subjects indicates that "long-distance" extraction of subjects does not incur an ECP violation so long as the structural context permits an antecedent governor to T-mark the trace of origin. The structural contexts which allow T-marking of the subject in English are three: ECM constructions, (4a), small clause complements, (4b), and embedded, complementizer-less finite clauses which are the complements of "bridge" verbs, (4c).[6]

4)   a.   who$_i$ do you believe t$_i$ to be a fool
      b.   who$_i$ do you consider t$_i$ a fool
      c.   who$_i$ do you think t$_i$ left

_____

5. In theories which allow lexical government (i.e., government by a head) to satisfy the ECP, such as that in LGB and L&S, (3a) is a licensed structure because t is lexically governed by expect; t in (3b) is neither lexically nor antecedent governed.

6. There has been much discussion in the literature of the "bridge" properties of certain verbs; in particular, see Erteschik (1973), Stowell (1981) and Fukui (1987).

Having established the distribution of subject and adjunct
gaps which the ECP predicts, let us now turn to the facts
concerning the distribution of subject and adjunct gaps in
parasitic gap and OWM constructions.

4.2.2 The Phenomenon

    Traces of A'-movement will naturally be ruled out when
they occur in the subject position of an infinitival clause by
the requirement that chains must receive case.[7] For this rea-
son, (5a) and (6a) must have PRO in subject position, as shown
in (5b) and (6b), rather than a variable, as in (5c) and (6c).

5)   a.   a man to fix the sink
      b.   a man [[PRO to fix the sink]]
      c.   a man [Op [e to fix the sink]]

6)   a.   Jane is too angry to leave.
      b.   Jane is too angry [[PRO to leave]]
      c.   Jane is too angry [Op [e to leave]]

Leaving aside the case illustrated in (5) and (6), the ECP
predicts that any construction should license variables in the
contexts shown in (4). This prediction does not seem to be
correct for parasitic gap and some OWM constructions. Consider
the degree complements and tough constructions in (7) and (8),
respectively.

7)   a. * Mary is too sick for Jane to expect t to recover
      b. * Mary is too sick for Jane to think t left the
            hospital

_____

7. If traces must also be head-governed, they may also be
ruled out by the inability of non-finite (or [-AGR]) INFL to
act as a head governor.

8)   a. * Mary was easy for Jane to expect t to recover
        b. * Mary was difficult for Jane to think t would never
               leave the hospital

To my knowledge, the first discussion of this phenomenon

appears in Ross (1967). In Chomsky (1973) the observation that

an ECM subject differs from a true object in not permitting

tough-construction formation (example (8a)) is credited to

John Kimball. As is obvious from (8b), the effect is not

restricted to ECM subjects. The same effect appears with

purposives.

9)   a. * I didn't hire Jane [Op₁ for [you to consider t₁
               your secretary]]
        b. * I didn't hire Jane [Op₁ for [you to think [t₁
               is incompetent]]]

Infinitival relatives with variables in embedded subject

position are also ungrammatical, as shown in (10).

10)   a. * He is not [a man (for us) to expect t to succeed]
        b. ?? They found [a man to believe t to be the Messiah]
        c. ?? Jane finally found [an accountant to consider t a
               friend]

        d. * He is [an employee for the boss to think t likes
               his work]
        e. * Jane finally found [an accountant to believe t
               likes his work]
        f. * They found [a man to believe t liked them]

I will disregard for now the somewhat weaker violation found

in (10b,c) and continue with the presentation of basic data;

this mitigation of the effect will be discussed in detail

below.

Parasitic gaps are similarly limited in their ability to appear in subject position (11), nor are they licensed by adjunct wh-movement, (12).*

11)   a. * the book that you bought t [without believing
             [e pleased Mary]]
      b. * the person that you telephoned t [before e left
             the country]

12)   a. * how did you fix the car t [after repairing the
             bicycle e]
      b. * when did you leave Boston t [in order to visit
             Mary e]

It is also known that parasitic gaps are not licensed by wh-movement of a PP, a characteristic shared by the gaps in many OWM constructions; see §4.3.3 for discussion of this phenomenon.

Finally, there are three OWM constructions which do not appear with adjuncts: purpose clauses, tough-constructions and degree clauses.

13)   a. * In the street is dangerous for Jane to fix the
             car t
      b. * Quietly is difficult for Jane to speak t
      c. * On Tuesday is difficult for Jane to come to a
             meeting t

14)   a. * I ate lunch quickly₁ [Op₁ [PRO to leave t₁]]
      b. * I called Jane [on Tuesday]₁ [Op₁ [PRO to meet
             with her t₁]]

_____

8. Note that the ungrammatical readings of (12c,d) correspond to the sentences in (i) and (ii); (12c,d) are grammatical if they are interpreted as single gap structures.

    i)   Which tool did you fix the car with after you
            fixed the bicycle with it?
    ii)   On which day did you leave Boston in order to
            visit Mary on that same day?

15)   a. * In the living room is too crowded for Jane to fix
             the television t
      b. * Quietly is too considerate for Jane to speak t
      c. * On Tuesday is too inconvenient for Jane to come to
             a meeting t

As we will see below, other OWM constructions allow adjunct

gaps (or adjunct antecedents for null operator chains).

     Within the government-binding milieu, a subject/adjunct

vs. object asymmetry, such as that displayed in (7)-(15), is

immediately suggestive of the ECP. Stowell (1985a) and Cinque

(1986) both incorporate the asymmetries just demonstrated into

two very different revisions of the ECP. Stowell proposes to

reformulate the ECP in the spirit of Jaeggli (1981) so that it

is a conjunction of conditions: the Head Government Require-

ment and the Identification Condition, both in (16).

16)   a.   The Head Government Requirement (HGR): [e] must be
             governed by a lexical head.

      b.   The Identification Condition (IC): [e] must be
             identified by a coindexed category XP.

17)   The Principle of Referential Identification (PRI):

      A category α may identify another category β iff

      a. α is coindexed with β;
      b.   (i)   the head A of the chain containing α has a
                   lexically specified reference (or range,
                   where A = QP); or
             (ii) α specifies the grammatical function
                   (θ-role) of β.

The principle in (17) defines the class of possible "identi-

fiers" which may participate in the satisfaction of (16b).

(17bii) allows a verb to identify its θ-marked complement as

well as head govern it, thereby fulfilling both clauses of the ECP. The execution of this idea follows Stowell (1981), where a slot in the θ-grid of a head receives the index of the complement assigned that θ-role. A subject or adjunct, on the other hand, must be identified by an appropriate XP antecedent, and, by (17bi), a null operator cannot be an appropriate antecedent. Thus, (17bi) is responsible for the asymmetry discussed above; explicitly, Stowell's analysis predicts that all structures involving null operator movement from the position of an adjunct or from subject position will be ruled out.

A more subtle prediction is available if the conjunction of requirements in (16) is interpreted in a particular manner. If (16a) and (16b) are independent constraints, rather than two components of a single constraint, then structures which violate only one of them might be expected to be less deviant than structures which violate both. Sentences with traces of null operator movement in the subject position of the embedded infinitival complement of ECM verbs or in the subject position of small clauses are then predicted to be somewhat less deviant than sentences with null operator traces in the subject position of complementizerless tensed sentences. In both cases traces would violate the IC, (16b), but only in the latter construction would a trace also violate the HGR.

Cinque's (1986) analysis of parasitic gaps was discussed in chapter three; therefore, I will summarize that analysis only briefly at this time. Cinque proposes a revision of the CC analysis which involves base-generating pro in the

position of the parasitic gap and imposing the conditions in
(18) on A'-bound pro.[9]

18) a. pro is governed by a lexical category (≠ P)[10]
     b. every maximal projection which dominates pro but
         does not dominate the operator A'-binding pro must
         be selected in the canonical direction by an X°
         category.

The conditions in (18) are essentially an adaptation of the
Connectedness Condition of Kayne (1981, 1983), including revi-
sions along the lines of Longobardi (1984). A'-bound pro is
essentially the null counterpart of overt resumptive pronouns.

The A'-bound pro strategy is also the means of deriving
tough-constructions, degree clauses and purposives, although
Cinque assumes that there is a base-generated null operator in
these constructions which binds the pro variable. A problem
with this approach is that we would expect the A'-pro strategy
to be marginal in a language which allows overt resumptive
pronouns only marginally. Even if it is assumed that there is
a kind of "Avoid overt Pronoun Principle" in effect in Eng-
lish, we would expect OWM constructions to demonstrate the
degree of marginality associated with parasitic gap construc-
tions, which they do not.

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9. Obenauer (1984, 1985) also proposes an A'-bound pro
analysis for parasitic gap constructions and all gaps within
islands, although he does not discuss the ramifications of
this analysis for the phenomena under discussion.

10. Naturally, in preposition stranding languages the parenthe-
sized clause is omitted.

(18a) will rule out a pro base-generated in the position

of an adjunct[11] or in the subject position of a complementi-

zerless tensed sentence. Under the assumption that ECM comple-

ment subjects and small clause subjects are governed by V, A'-

bound pro is licensed to appear in these positions so long as

(18b) is satisfied.

The proposals made by Stowell and Cinque both differen-

tiate between ECM complement subjects and small clause sub-

jects on the one hand and the subjects of complementizerless

tensed sentences on the other. Under a certain interpretation,

Stowell's approach predicts that the former will be marginally

better than the latter, although both will be ungrammatical.

Cinque predicts that the former will be completely grammatical

and the latter completely ungrammatical. As we will see below,

neither set of predictions is precisely correct.

In the sections which follow I will demonstrate that the

generalization which Stowell and Cinque incorporate in their

respective versions of the ECP is spurious. Some OWM construc-

tions do permit adjunct antecedents for null operator-derived

gaps; among those which do not, there are reasons unrelated to

the ECP which account for the facts.[12] I take up the issues

related to the distribution of adjunct gaps in §4.3. The point

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11. NP adjuncts might also be ruled out because they are not
"referential enough" to antecede a pronoun; see Cinque (1986),
p. 11.

12. Stowell notes some of the cases I will discuss and argues
that in each case the chain to which the variable belongs
ultimately ends in a lexical antecedent, thereby satisfying
the identifiction requirement.

made in §4.4 concerning subjects is that the effect discussed above differs crucially from canonical ECP violations, in particular, the degree of ungrammaticality can be mitigated by contextual factors which do not necessarily respect the distinction encoded in (16) and (18) (i.e. ECM/small clause subjects vs. subjects of complementizerless tensed sentences).

4.3 Adjuncts and Null Operators

4.3.1 Adjuncts and OWM Constructions

It is sometimes difficult to tell whether an OWM construction involving an adjunct actually involves a null operator chain since there is no conveniently obvious gap to indicate that an element has been moved. For the moment, at least, I will continue to assume that null operator movement is involved in the sentences discussed below.

The OWM constructions which appear to take adjuncts as antecedents of null operator chains are clefts, tensed and infinitival relatives, and degree clauses. Examples are given below.

19)   a.   the day that we arrived
       b.   the way you wear your hat

20)   a.   a good time to arrive
       b.   a way to fix the car
       c.   a place to meet

21)   a.   It was with a hammer that she fixed the car
       b.   It was in the garden that I read the letter
       c.   It was on Tuesday that I met you for lunch
       d. ?? It was very carefully that I opened the door

22)   a.   Tuesday is too soon to have a meeting.

b.   Next month is too early to leave.
c. ? In Boston is too nearby to hold the meeting.
d.   50 mph is too fast to drive in a residential
        neighborhood.

The OWM constructions which never appear with adjuncts are

purpose clauses and <u>tough</u>-constructions.

23)   a. * With a hammer is dangerous for John to fix the
            television t
      b. * Quietly is difficult for John to speak t
      c. * On Tuesday is difficult for John to come to a
            meeting t

24)   a. * I ate lunch quickly, [Op, [PRO to leave t,]]
      b. * I called John [on Tuesday], [Op, [PRO to meet
            with him t,]]

As a first step in formulating an alternative analysis of

these facts, I will argue that it is not necessary to work the

distribution of adjuncts in OWM constructions into a redefined

ECP, but that this distribution can be accounted for in every

case by other factors. (I am referring to OWM constructions

which have the property that there is nothing within the

domain of the null operator which would independently rule out

an adjunct gap.) This is an approach which deserves attention

because the group of constructions which allow adjuncts to

appear does not constitute a natural class. That is, it seems

very difficult to achieve a cogent reformulation of the ECP

which successfully rules in adjuncts with comparatives, degree

clauses, tensed and infinitival relatives and clefts, while

ruling out their appearance with purposives and <u>tough</u>-con-

structions. To be successful the non-ECP argument[13] must

accomplish slightly different tasks in dealing with the two

groups of constructions. For those constructions which never

appear with adjuncts it is necessary to show that independent

(non-ECP related) factors rule out every possible instance of

an adjunct. As may already be apparent, the second group is

not uniform in its ability to appear with adjuncts and there-

fore, the task will be to show that the idiosyncratic distri-

bution of adjuncts in these constructions results in each case

from other properties. The argument relies in each case on

some basic assumptions about the structure and derivation of

the construction involved. In this section I clarify these

assumptions only as much as seems necessary to indicate the

existence of a non-ECP account for the distribution of

adjuncts in OWM constructions; a more detailed analysis of

some of these constructions appears in chapter three.

Beginning with those constructions which do not allow

adjuncts, it has often been noted[14] that purpose clauses with

null operator chains are only licensed when they are predica-

ted of the THEME of a verb which is left "available" in some

sense by the action it undergoes. This was discussed in detail

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13. Let me make clear that I am not arguing that adjunct
traces are not subject to the ECP or that the ECP never plays
a role in the distribution of adjuncts. I am arguing that the
unexpected inability of some OWM constructions to appear with
adjuncts (or with certain kinds of adjuncts) should not be the
basis for a reformulation of the ECP, as Stowell (1985),
Cinque (1987) and Obenauer (1984, 1985) argue it is.

14. See Faraci (1974), Jones (1985) and the references
therein.

in chapter three; the following examples serve to illustrate
the point.

25) a. * John, invited a comedian, to his house [Op, [PRO,
            to entertain e,]]
     b. * John sent Mary, a comedian, [Op, [PRO, to enter-
            tain e,]]
     c. * John, destroyed a chair, [Op, [PRO, to get rid of
            e,]]

The inability of purpose clauses to appear predicated of an

adjunct thus appears as part of a larger constraint governing

the possible "subjects" of this sort of predicate.

A similar explanation holds for tough-constructions:

even when tough-adjectives appear without the infinitival

clause they cannot modify adverbials. The only adjectives

which modify non-NPs (if we follow Larson (1987) in calling

adverbs like fast, hard, early, late, and soon bare AP

adverbs) are not members of the tough class.[15] Therefore, we

should not attribute the inability of tough-constructions to

appear with adjunct subjects to some property of the construc-

tion qua null operator construction.

Turning now to those constructions which do (at least

under some conditions) allow adjuncts: it appears that the

heads of relative clauses may only be NPs (see Larson (1987)).

_____

15. The rather marginal sentence in (i) appears to contradict
this point, but I would probably analyze it as a reduction of
(ii).

    i)   (As for threading this needle,) Quickly is
           difficult but slowly is pretty easy.
    ii)   (As for threading this needle,) Doing it quickly
           is difficult but doing it slowly is pretty easy.

This constraint alone rules out a wide range of adjuncts as possible relative heads. The adjuncts which may appear as heads of relative clauses (and therefore, by hypothesis, as antecedents of null operators) are only the "bare-NP adverbs" of Larson (1985), which are licensed to appear as adverbials (either independently or as relative heads) because they possess an exceptional case-marking feature which allows them to be licensed in non-case-marked positions. If there is a good explanation for the small class of NP adjuncts which may appear as relative heads and for the restriction that relative heads must be NPs, then an additional constraint prohibiting adjuncts in this position on the basis of an ECP violation would be redundant.

If the structure of relative clauses is as in (26), it is not obvious why relative heads should be limited to NPs.

26)   [NP. NP CP]

XP-headed adjunction structures are generally interpreted as configurations of predication, with either the subject, as above, or predicate projecting its features to the node of adjunction. Possible instances of adjoined predication structures in which the predicate projects its features upward are small clauses, clefts and topicalization structures in English.[16]

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16. For arguments that the structure of small clauses is as in (27a) see Stowell (1981), LGB, and Barriers. If small clauses are IPs then they are irrelevant for the point made in the text. Lasnik & Saito (forthcoming) argue that topicalization

27)   a.   I consider [AP. [NP John] [AP very foolish]]
      b.   It was [CP. [PP to John] [CP that I gave a book]]
      c.   [IP. [PP to John] [IP Mary gave a book]]

The appearance of PP "subjects" of predication in (21) and

(27c) indicates that whatever it is that requires relative

clauses to be NP-headed should not be derived from some

general constraint on what may function as the subject of a

predicate.

A theory of NP determiner structure which analyses the

relative clause as an optional complement of the determiner

head offers a straightforward explanation for the NP-headed-

ness of relatives: the heads which optionally select relative

clauses obligatorily select NPs. (See §2.4.1 for discussion.)

Although there are specifiers which appear with non-NP catego-

ries, they do not license relative-type clauses. As for the

small class of adjunct NPs which may appear in the relative

head position, I adopt (at least in spirit) Larson's (1985)

account based on case requirements and the exceptionally case-

marked status of bare-NP adverbs. The distribution of adjuncts

in relative clauses is accounted for on the basis of the

selectional properties of determiners and the case properties

of a set of NP adverbs.

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in English has the structure in (27c) and that it is derived
by SS adjunction. (27b) is plausible as a structure for clefts
given that they appear with expletive it, which normally asso-
ciates only with clauses.

Cleft sentences resemble tensed relative clauses in some respects, but there are interesting differences between the constructions as well. A much wider range of adjuncts is allowed in clefts than in relatives; in particular, as has already been illustrated in several examples, clefts are not limited to appearing with bare-NP adverbs. This, I would argue, is because the clause in a cleft is licensed by the predicational nature of the construction rather than by a determiner, as are relative clauses. The presence of the clause in a cleft construction does not indicate (or participate in) selection for a particular category. The difference is reflected in the structure given to (27b), and repeated in schematic form below.

28)   it is $[_{CP*}$ XP_i $[_{CP}$ $O_i...e_i...]]$

For an argument in favor of this difference between relative clause structure and cleft structure, see §2.4.

Like relative clauses, the adjuncts which appear with degree clause constructions appear to be limited to NP-adverbs, but again this fact has nothing to do with the null operator chain. Contrast t. grammatical sentences in (29) with those in (30).

29)   a.   Tuesday is too soon.
       b.   April is too rainy.
       c.   Tomorrow is too busy.
       d.   50 mph is too fast.
       e. ?? That way is too dangerous. (manner)
       f. ?? This direction is too dangerous.

30)   a. * Loudly is too annoying.

b. * For camping trips is too boring.[17]
    c. * For John to play with is too silly.

Since degree words do not stand alone but appear as specifiers
or modifiers of adjectives or adverbs, it stands to reason
that if there is no adjective, adverb or QP which may modify
the adjunct, there will be no degree clause construction
involving a null operator chain anteceded by an adjunct which
is well-formed.

       Turning now to the possible cases of adjuncts with
degree clause constructions, when the NP-adverb in subject
position is temporal the sentence is grammatical if the degree
word modifies a "bare AP adverb", i.e. _early, late, fast,_
soon, far, long (see Larson (1987)), although some adjectives
are marginally acceptable with temporal adverbs as well.

31)   a.   Tuesday/April/next week/tomorrow is too soon/late
             to hold the meeting.
       b. ? April is too rainy to hold the picnic.
       c. ? Next week/Tuesday/tomorrow is too busy to schedule
             a meeting.
       d. ? Tuesday/April/next week/tomorrow is too inconveni-
             ent to hold the meeting.

NPs indicating speed are also quite acceptable in these

constructions.

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17. Note that more acceptable sentences can be constructed if
the constituent following the copula is an NP.

       i)   For camping trips is a good reason to buy this
             tent.
       ii)   For John to play with is not a good enough reason
             to buy this pony.

32)   50 mph is too fast to drive in a residential neighbor-
      hood.

The manner adverbial this/that way is marginally acceptable

with a too + adjective combination, as is the adverbial of

direction this/that direction.

33)   a. ?' That way is too dangerous to hold your knife.
      b. ?? This direction is too dangerous to go alone.

The locatives here and there are still more marginal with

degree clauses.

34)   a. ?? There is too far away to build the garage.
      b. ?? Here is too close to the house to build a fire.

To summarize: degree clauses are most compatible with temporal

NP-adverbs and NPs of speed; adverbials of manner, direction

and location are noticeably more marginal.

      One of the defining characteristics of NP-adverbs is the

ability to stand alone (without prepositions) in sentences, an

indication of their exceptional case properties, according to

Larson (1985).

35)   a.   Let's have the meeting Tuesday.
      b.   We'll leave next month.
      c.   He drove 70 mph all the way here.

Place names do not have the requisite case property and cause

ungrammaticality when they appear without prepositions. ((36)

= Larson's (3c))

36)   You have lived *(on) 43rd St./*(in) Germany.

These place names are also ruled out as subjects of degree clause constructions whether the degree word modifies an adverb or adjective.

37) a. * This room is too crowded to hold the meeting.
     b. * Arlington is too far to walk.

38) a.   This room is too crowded to hold the meeting in.
     b.   Arlington is too far to walk to.

If a stranded preposition appears in the embedded clause (or if the clauses are interpreted without a gap), the construction is, naturally, grammatical, as in (38). The other option for these place names, appearing as the object of a preposition, is ruled out because PP subjects are generally unacceptable with degree clause constructions, (39); locative PPs are no exception, as illustrated in (40).

39) a. ?? On Tuesday is too soon to have a meeting.
     b. ?? By next month is too early to leave.
     c. ?? At 50 mph is too fast to drive in a residential
            neighborhood.

40) a. * In this room is too crowded to hold the meeting.
     b. * To Arlington is too far to walk.

Thus, there is no way for locative adverbials to appear as subjects in degree clause constructions.

Oddly, there is a small class of NPs which, like place names, cannot appear as bare-NP adverbs, i.e. without prepositions, but which can appear as subjects of degree clause constructions. These are NPs referring to specific times or to periods of time.

41) a.   5 o'clock is too early/late/soon to leave for the
           airport.
     b.   Let's leave for the airport *(at) 5 o'clock.

42) a.   Three hours is too long to listen to him.
     b.   We listened to him *(for) three hours.

These facts indicate the following about NP adverbs: (i) some

NP adverbs which do not have exceptional case properties may

nevertheless be licensed by receiving structural (at least,

nominative) case; (ii) proper place names, unlike "time names"

such as 5 o'clock, are not interpretable as adverbs even when

case requirements are satisfied. This apparently contradicts

Larson's principle of Adverbial θ-role Assignment given below.

43)   Assign an adverbial θ-role to α, where α is any phrase.

It may be that proper place names are "too referential" to

function as adverbs, though specifying the allowable degree of

referentiality would be delicate given the ability of names

like Tuesday and November to function as adverbs.

     All of this indicates that an explanation of the dis-

tribution of adjuncts in degree clauses will very likely be

concerned with case requirements and, perhaps, the mechanism

of assigning adverbial θ-roles' It also seems reasonable to

conclude that, for all the constructions discussed in this

section (degree clause constructions, relatives, clefts,

tough-constructions and purpose clauses), the distribution of

adjuncts may be accounted for without appealing to the ECP.

4.3.2 Adjuncts and Parasitic Gaps

While the ECP is not implicated in the distribution of
adjuncts (specifically, adverbials) in OWM constructions, I
will now argue that it is precisely what rules out the possi-
bility of adjunct parasitic gaps. Consider again the examples
given in (12) to illustrate this phenomenon, repeated as (44).

44)   a. * how did you fix the car t [after repairing the
             bicycle e]
      b. * when did you leave Boston t [in order to visit
             Mary e]

In chapter three I argued that parasitic gap constructions
involve the formation of a "complex chain", a chain with a
single head and multiple "tails". The formation of complex
chains, like all A'-chain formation, is constrained by the
Subjacency Condition, repeated in (45).

45)   If (α_i, α_{i+1}) is a link of a chain, then α_{i+1} is 1-
      subjacent to α_i.

A complex chain is a sequence, like any other chain. Thus, the
sentence in (44a), with the SS representation in (46a),
contains the complex chain in (46b).

46)   a.   how$_i$ did you [$_{VP}$ t$_i$' [$_{VP}$ fix the car t [after
             [$_{CP}$ pro$_i$ [$_{IP}$ PRO [$_{VP}$ e$_i$' [$_{VP}$ repairing the
             bicycle e$_i$]]]]]]]

      b.   (how,t',t,pro,e',e)

At SS this chain meets the requirements of the Subjacency Con-
dition and the complex chain is licensed. However, at LF,

adjunct chains must meet an even stricter condition than the Subjacency Condition. At various points I have discussed two different approaches taken to explaining this effect: Lasnik & Saito's (1984; L&S) ordering of Affect α and τ-marking vs. Chomsky's (1986, class lectures) "complete representation requirement" (CRR). In §3.4 I suggested that the CRR might derive from the nature of adjunct chains as discontinuous entities and that the strict locality constraint on adjunct chains is related to a similar locality constraint on A-chains.

Given the analysis of parasitic gaps proposed in chapter three, can we guarantee that the sentence in (44a) will be ruled out? In chapter three I took the position that FI forces the deletion of any element which receives no interpretation. Under standard assumptions, the intermediate ECs in an adjunct chain receive no interpretation, yet the CRR forces all intermediate ECs in adjunct chains to be present throughout the derivation. This entails that each nonpronominal intermediate EC be +τ-marked. It is important to understand the linkage between these two requirements on intermediate ECs: bearing [+τ] alone is not enough to permit an EC to remain in a structure at LF; the presence of the EC must be required by some independent aspect of the grammar. On the other hand, nonpronominal ECs which must be present at LF must meet the requirements of the ECP, i.e. they must receive [+τ] prior to the ECP filter. What about pronominal ECs which are required to be present at LF by some aspect of the grammar? They are not sub-

ject to the ECP but we might argue that they are not licensed

at LF unless they are identified, i.e. have phi-features, at

LF. The A'-pro in a parasitic gap structure such as (46a) does

not meet the licensing requirement for pronominals at LF and,

therefore, must delete. The CRR will be violated and a parasi-

tic gap construction involving adjunct gaps will be correctly

ruled out.

The L&S approach is equally compatible with the analysis

of parasitic gaps I have proposed as long as FI requires A'-

pro in parasitic gap constructions to delete in the mapping to

LF. Consider just the A'-pro portion of structure in (46a),

given in (47).

47)   ... [$_{CP}$ pro$_i$ [$_{IP}$ PRO [$_{VP}$ e$_i$' [$_{VP}$ repairing the
        bicycle e$_i$]]...

If pro$_i$ is deleted, then there will be no way for e$_i$' to be

marked +τ. If pro$_i$ deletes, then e$_i$' must also delete; but if

e$_i$' deletes then there will be no τ-marker for the trace of

origin, e$_i$, at LF. Therefore, when τ-marking applies after all

instances of Affect α, e$_i$ will receive [-τ] and will violate

the ECP filter. Once again, sentences such as (44a) are

correctly ruled out.

4.3.3 PPs in OWM Constructions

We would naturally expect non-argument PPS to pattern

with adjuncts and might expect argument PPs to pattern with

direct objects. However, both expectations are unfulfilled.

The distribution of PPs, whether argument or non-argument, is
extremely limited. In fact, only clefts appear with PPs.
Examples of clefts with non-argumental PPs appear above in
(21). Examples with argument PPs are given in (48).

48)   a.   It was to Mary that John gave the car.
      b.   It was for Mary that Susan bought a gift.
      c.   It was on the table that I left your book.

See (13), (14) and (15) for ungrammatical examples of degree
clauses, tough-constructions and purposives with non-argumen-
tal PP antecedents. Ungrammatical examples of these construc-
tions with argumental PPs appear in (49).

49)   a. *   To John is too annoying to speak civilly,
      b. *   On that shelf is too high to put the vase.
      c. *   To John is difficult to speak civilly.
      d. *   On this small shelf is difficult to put many
             books.
      e. *   I sent a teacher to John to speak =
             I sent a teacher₁ [to John]ⱼ [Opⱼ [PRO₁ to
             speak tⱼ]

The only candidates for PP-headed relatives are those of the
form in (50a), which were analyzed in Bresnan and Grimshaw
(1978) as having the structure in (50b).

50)   a.   I will live in whatever town you live.
      b.   [PP [PP in whatever town] [S ...tPP...]]

Larson (1987) argues instead that these sentences have the
structure in (51) and are derived by means of "antecedent-
contained deletion" such as that which derives VP-deletion
sentences.

51)   [$_{PP}$ in [$_{NP}$ [$_{NP}$ whatever town] [$_S$ ...t$_{PP}$...]]

Larson's arguments are convincing and it seems safe to

conclude that relative clauses do not appear with PP heads,

presumably for the same reasons that relatives do not appear

with non-NP adjunct heads: NP determiners, which license

relative clauses, only select NPs.

Comparatives appear with PPs in constructions such as

those in (52), which Pinkham (1984) calls "metacomparatives"

and McCawley (1973) "qualitative comparatives".

52)   a.   I was speaking more to Mary than to Tom.
       b.   I fixed the car more with a hammer than with a
             wrench.

These differ from comparatives such as "I have more apples

than John has" which compare numerical quantities. The

metacomparatives in (52) can be paraphrased with _rather_

comparatives, as in "I was speaking to Mary rather than to

Tom." It seems plausible that metacomparatives differ from

numerically quantified comparatives in not containing a null

operator.

It should be clear from the preceding section that the

distribution of PPs in OWM constructions may also be accounted

for without recourse to an ECP-based explanation. Recall that

only cleft constructions may appear with PPs, whether argu-

ments or adjuncts. This, I have suggested, is because there is

no selectional restriction on the subject of the clausal pre-

dicate. Conversely, PPs do not appear as the heads of relative

clauses or in comparatives precisely because the determiners which license these clauses do not select PPs. Finally, PPs do not appear in <u>tough</u>-constructions or degree clause constructions because the AP heads in each case may not modify PP.

4.4   The Distribution of Subject Gaps

In this section I will introduce a great deal of data concerning the distribution of subject gaps in OWM constructions and parasitic gap constructions. Very often judgements will be delicate, but I believe the contrasts illustrated are real and significant.[18] The three types of subject gaps which will be examined should be familiar from the introductory discussion in §4.2.2: ECM subjects, small clause subjects and the subjects of complementizerless tensed sentences. Two things, which I believe are crucial to sorting out this complex question, will become apparent as the data unfold: (i) that the ungrammaticality signalling the phenomenon may be suborned by manipulation of lexical items; (ii) that tensedness plays an important role in the grammaticality of these constructions, whether the trace of null operator movement is in subject or object position. Although I have taken the position that the facts presented in this section do not support

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18. Since it will be necessary in this section to distinguish subtle differences in grammaticality, I will use a slightly more elaborate system of notation than I have used up to this point. The diacritics I will use are given in (i) and are ordered in ascending order of ungrammaticality from left to right.

    i)   ? - ?' - ?? - *? - *' - *

the generalizations expressed by the analyses of Stowell and
Cinque, it will become clear that the situation described is
not all anarchy. There are generalizations to be made concern-
ing the distribution of subject gaps and in this section and
in §4.5 I will make what I consider to be the correct ones and
offer a plausible account of the distribution of subject gaps
in these constructions.

4.4.1 Two Groups of OWM Constructions

The first point to be made is that there are some OWM
constructions which freely allow subject gaps in the three
target contexts. These include tensed relatives (53), clefts
(54), and comparatives (55).

53) a.   the woman that I expect t to win the race
     b.   the woman that I think t won the race
     c.   the woman that I consider t intelligent

54) a.   It was Jane that Mary expected t to win the race
     b.   It was Jane that Mary thought t won the race
     c.   It was Jane that we all considered t intelligent

55) a.   I registered more students than I expect t to show
           up
     b.   I registered more students than I think t will
           show up
     c. ?? I registered more students than I consider t
           qualified to take the course.[19]

These three constructions share three other properties which
set them apart from the remaining OWM constructions as well:

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19. I have no explanation for the marginality of small clause
subjects with comparatives.

they are all obligatorily tensed[20]; they optionally appear

with overt wh-operators; and the "highest" embedded subject is

exempt from the that-t effect. These properties will now be

illustrated in turn.

That the tensed/infinitival distinction holds is illus-

trated by the ungrammaticality of (56) and (57).

56)   a. * John is easy that anyone likes e
       b. * John is too angry that anyone could talk to e
       c. * John bought the dog for his kids that they could
              play with e

57)   a. * It is John for Bill to like e
       b. * John ate more apples than for me to pick e
       c. * John runs more often than for me to lift weights

In making the tensed/infinitival distinction I am referring to

those instances of these constructions which host null opera-

tors. Adjectives of the tough class are known to take tensed

sentential complements in the non-tough-construction configu-

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20. This is tautological with respect to tensed relatives, but
the point I wish to make is that, with resepct to the other
defining properties of the "tensed group", tensed relatives
pattern with clefts and comparatives while infinitival
relatives do not.

Another point which should be clarified is that the clauses I
refer to here as tensed or infinitival are the clauses
containing the null operator chain, not the matrix or embedded
clause containing the OWM construction as a whole. For
example, in a cleft construction, such as that in (i), the
clause which determines that it is a member of the tensed
group is α not β. As shown in (ii) and (iii), β may be
infinitival, but α may never be.

    i)   It was John that Bill nominated.
          \   _____α_____/
          _____β_____/

   ii)   I didn't expect it to be John that Bill nominated.
  iii) * I think that it was John for Bill to nominate.

rations shown in (58), but these constructions do not support

null operators.

58)   a.   It is difficult for Bill that John won the race.
      b.   It is dangerous for the community that W.R. Grace
            dumps toxic waste.

In order to purposives, RatCs in the terminology of chapter

two, may also be tensed for some speakers. Others, such as

myself, find sentences such as (59) marginal or at least

stilted.

59)   We went to Paris in order that Mary might visit the
      Louvre.

However, RatCs never appear with null operators either.

      On the other hand, there are cases of comparatives which

appear to take infinitival clauses, such as (60).

60)   a.   It's cheaper to repair the stereo now than to buy
            a new one later.
      b.   It's more dangerous to ride in a car than to fly
            in an airplane.

There are two ways to look at these sentences which preserve

the generalization about the tensed and infinitival groups.

The first is to regard them as reductions of full sentences,

with (60b) being an elliptical version of (61), for example.

61)   It's more dangerous to ride in a car than it is to fly
      in an airplane.

Alternatively, the infinitives in (60) can be viewed as the

compared entities with no reduction involved. This is a bit

difficult to see in the extraposed structures in (60), but

compare (62) and (63).

62)   To ride in a car is more dangerous than to fly in an
       airplane.

63)   Chèvre is better than Velveeta.

Without going any deeper into the analysis of comparatives, I

take it as demonstrated that the tensed/infinitival distinc-

tion is valid.

That the members of the tensed group can also appear

with overt wh-operators while the members of the infinitival

group cannot is illustrated by the sentences in (64) and (65).

64)   a.   It was Mary who won the race.
       b.   the woman who won the race.
       c.   John has more money than what I have.* '

65)   a.   John bought it (*which/what) to play with.
       b.   a person (*who) to invite
       c.   John is too aggressive (*who/whom) to invite.
       d.   John is easy (*who/whom) to please.
       e.   This view is pretty (*which) to look at.

There is a weak point in the overt operator generalization:

infinitival relatives may appear with pied-piped wh-operators,

as shown in (66).

66)   a person to whom to give the awful task of sorting
       through these papers

---

21. The appearance of overt wh-operators in comparatives is
restricted to certain dialects, but the dichotomy still holds:
there are no dialects which permit overt wh-operators in
degree clauses, tough-constructions or purpose clauses nor did
these constructions appear with overt wh-operators at any
prior stage in the development of the language. On infinitival
relatives, see below.

For now I will put aside this problem and assume that the generalization holds.

Finally, the "highest" embedded subject in the constructions of the tensed group do not appear to be sensitive to the that-t effect.

67)   a.   the woman that t won the race
          b.   It was Jane that t won the race.
          c.   More students showed up for class than t had
              registered.

The grammaticality of (67b) suggests that the cleft complementizer is of the relative clause-type, one which, if we follow the spirit of Pesetsky (1982), may take on the index of the null operator in SPEC of CP and directly bind the subject variable. If comparative _than_ is a complementizer then we would have to say the same for it, a somewhat less appealing position. However, if it is a preposition with a sentential complement, as in (68), no that-t effect is expected.

68)   ...[$_{PP}$ than [$_{CP}$ O$_i$ [$_{IP}$ t$_i$ ...

Having demonstrated that the tensed group of OWM constructions, which allows subject gaps freely, differs systematically in several ways from the infinitival group, I will now leave aside the tensed group for the moment and examine the distribution of subject gaps in parasitic gap constructions and the members of the infinitival group.

4.4.2 Parasitic Gaps as Subjects

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The purpose of this section and the next one will be to demonstrate that the phenomenon illustrated by (7) - (11) is neither uniform nor general. One argument against attributing the ungrammaticality of (7) - (11) to the ECP is found in Barriers, where Chomsky argues that the stronger contrast is between sentences such as (69a,b) and (69c), not between (69a) and (69b,c) as he argued in CC.

69)   a.   which sonata did you play t without believing Mary liked e

        b.   which sonata did you play t without believing e pleased Mary

        c.   which sonata did you play t without believing that e pleased Mary

I concur with the Barriers position. An identical argument may be made based on the constrast between (70a,b).

70)   a.   Which book did you buy t for Mary without ever understanding why she liked e

        b.   Which woman did you visit t without ever figuring out why/whether e liked you

Taking into account the increased complexity of these sentences and the wh-island embedded in the parasitic domain, it is still clear that (70b) is much more strongly ungrammatical than (70a), which I find only somewhat marginal. Assuming then that the ECP accounts for the strong ungrammaticality of (69c) and (70b), the task is to account for the marginality of (69b) and (70a).

Turning now to the phenomenon proper, I repeat the data

originally adduced to show their sensitivity to the subject

gap effect.[22]

71)   a. * the book that you bought t without believing e
            pleased Mary
       b. * the person you telephoned t before e left the
            country

---

22. In Appendix I of Chomsky & Lasnik (1977; hereafter C&L) it
is argued that the contrast between (i) and (ii) is due to the
constraint in (iii), emphasis added. (Judgements are as given
in C&L.)

    i)   someone that I believe Freddy has visited as many
            times as my brother has visited
    ii) *   someone that I believe has visited Freddy as many
            times as has visited his brother.

    iii)   In paired structures such as [(iv)], optionally
            delete a pronoun in the second member of the pair
            if trace appears in the corresponding position in
            the first member; acceptability of the result
            varies from high to low as the position of the
            deleted item ranges from the end to the beginning
            of the clause.

N. Chomsky (p.c.) suggests that a similar constraint might be
at work in creating the subject/object asymmetries discussed
in this section. The principle in (iii) applies as is to para-
sitic gap constructions but assume that we can generalize the
principle to OWM constructions as well, even though they do
not involve paired gaps. (iii) then predicts that (vi) should
be worse than both (v) and (iv).

    iv)   John is too arrogant for us to convince Mary that
            we like e
    v) *   John is too arrogant for us to convince Mary e
            likes her
    vi) ?   John is too arrogant for us to convince t that
            Mary doesn't like him

(vi) improves even more when the embedded complement is an
infinitival:

    vii)   John is too arrogant for us to convince t [PRO to
            be nice to Mary.

The strong contrast between (v) and (iv)/(vi)/(vii) suggests
that we cannot account for these facts by appealing to a
linear constraint.

(71a) seems markedly more acceptable than (71b). As above,
when (71a) is compared with (72), the latter seems to be the
stronger violation.

72) * the book that you bought t without believing that e
       pleased Mary

(71b), on the other hand, seems quite as bad as (72). Larson
(1984) argues that when temporal prepositions appear with
sentential complements, there is a null temporal operator in
the SPEC of CP, as shown in (73a).

73)   a.   ... [$_{PP}$ before [$_{CP}$ O$_t$ [$_{IP}$ ...e$_t$...]] ...

If the structure in (73a) is part of the SS representation of
(71b), as shown in (73b), then A'-pro will not be in position
to τ-mark its trace.

73)   b.   ... [$_{PP}$ pro$_i$ before [$_{CP}$ C$_t$ [$_{IP}$ e$_i$...e$_t$...]] ...

(71b) is correctly predicted to be an ECP violation. However,
if all temporal prepositions take null temporal operators in
the SPEC of their sentential complements, then movement of pro
from object position will cross an additional barrier: the
complex chain in a grammatical parasitic gap construction like
(74) is predicted to be ungrammatical.

74)   Which article did you file t after reading e?

An ECP account of (71b) appears to be incompatible with the

analysis of parasitic gap constructions in chapter three.

Notice, however, that the ECP-type effect occurs even in cases

where the preposition involved is not a temporal one.

75)   a. * Which article did you xerox t because e contained
              an analysis of parasitic gaps?
       b. * Which guy did you visit t even though e dislikes
              you?

An explanation of these facts which is compatible with the

parasitic gap analysis of chapter three is one which analyzes

the sentential complements of the prepositions which show

these ECP effects as IPs, rather then CPs.

76)   ... [$_{PP}$ pro$_i$ before [$_{IP}$ e$_i$...]] ...

The sentences in (75) and (71b) are then ECP violations on a

par with (69c).[23]

        Larson's proposal was made to account for the ambiguity

of sentences such as (77a), first discussed by Geis (1970).

77)   a.   I saw Mary in New York before she claimed that she
              would arrive.
       b.   I saw Mary in New York before she made the claim
              that she would arrive.
       c.   I saw Mary in New York before she asked how to fix
              the car.

(77a) is ambiguous with respect to the scope of the temporal

preposition: I might have seen Mary before the moment when she

spoke the words, "I will arrive on Sunday," or I might have

_____

23. This analysis is inconsistent with the relativized minima-
lity condition suggested in §4.6, however.

seen her before her projected time of arrival. Neither (77b)

nor (77c) are similarly ambiguous. The ambiguity arises in

(77a) because the null temporal operator (see (73a) above) may

originate in either clause of the prepositional complement and

move to the SPEC of CP without violating any constraints. In

(77b,c) barriers will be crossed if the null operator moves

from the most embedded clause; therefore, only one interpreta-

tion is available. If the complement of the P is IP, there is

no SS landing site for the temporal operator. There are two

possible ways to account for the ambiguity while maintaining

that the PP complements in question are IPs. First, the null

temporal operator might move at LF to an IP adjoined position,

instead of moving at SS to SPEC of CP. Adjoined to IP it would

be governed by the preposition, a requirement under Larson's

analysis; Note that since the temporal operator is an adjunct,

the loss of ambiguity in (77b,c) is a result of an ECP viola-

tion, not of a Subjacency Condition violation. Even if subja-

cency is not relevant at LF, LF movement of the temporal ope-

rator would be expected to produce the desired effects.[24] The

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24. This point is not actually as straightforward as it might
seem. In the case of (77c), for example, successive cyclic
movement of the temporal operator, including transient
adjunction to the lower IP, results in the structure in (i).

i)   ... $[_{PP}$ before $[_{IP}$ O_i $[_{IP}$ ... $[_{VP}$ t_i^3 $[_{VP}$ ...
      $[_{CP}$ how $[_{IP}$ t_i^2 $[_{IP}$ ... t_i^1 ...]]]]]]

Only a segment of IP dominates t_i^2 and segments of BCs do not
transmit barrierhood to other BCs in the Barriers system. CP
will not be a barrier for t_i^2 since it does not dominate a BC
for t_i^2. Therefore, a minimality condition is needed which
will prevent t_i^3 from antecedent governing t_i^2. The minimality
condition in Barriers will have this effect only if the V'

second possibility is that the selectional requirements of the preposition are satisfied by INFL, the repository of TNS. Since the preposition in (76) governs IP, by convention, it governs INFL and the selectional requirements would be satisfied. The ambiguity of (77a) might be the result of head-to-head movement, an anaphoric relation between the complement INFLs, or LF movement (i.e., QR) of the most embedded IP (or perhaps just the most embedded TNS marker). In any case, it seems plausible that a straightforward ECP account can ultimately be given for the ungrammaticality of (71b) and (75).

The complete paradigm of examples relevant to the subject gap question should include the three crucial configurations: ECM verbs with infinitival complements, small clauses and embedded, tensed, complementizerless clauses, as well as object gap versions of these sentences for comparison. The paradigm for parasitic subject gaps is in (78) and parasitic object gaps in (78'). Recall that a single question mark is

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projection is present in (i). However, in (iii), which is a simplified portion of the structure of (ii), the V'-level may fail to project and, in fact, must do so for the sentence to be grammatical.

ii)   What do you think that John ate t

iii)   wh₁ [₁ₚ ... [ᵥₚ₊ t₁' [ᵥₚ V [ₒₚ t₁ ...

If V' may fail to be present in (iii), there is no way to prevent its absence in (i), in which case (77c) is incorrectly predicted to be ambiguous. The relativized minimality condition in §4.6 is also unable to rule out the structure in (i). On the other hand, prohibiting transient adjunction to IP by the temporal operator would give the right results. The points raised in this footnote are also relevant for any account of quantifier scope which relies on the ECP but allows transient adjunction to IP.

the standard judgement for well-formed parasitic gap construc-

tions.

78)   a. ?? the horse that you bet on t because you expected e
             to win the race
      b. *? the professor that you consulted t without
             believing e to understand the problem
      c. ?? the professor that you consulted t because you
             thought e understood the problem
      d. ? the person that you hired t without considering e
             really qualified for the job

78') a. ? the horse that you bet on t because you expected
             Bill to ride e
      b. ?? the problem that you presented t without believing
             him to understand e
      c. ? the problem that you presented t because you
             thought he understood e

To my ear, the contrast between subject gaps and object gaps

is clearly discernible but distinctly less sharp than we would

expect from an ECP asymmetry. Moreover, when the verb of an

ECM complement is _be_ or a modal, it is possible to construct

parasitic gap sentences with subject gaps which are as fully

acceptable as those with object gaps.

79)   a. ? the person that you hired t without believing e to
             be fully qualified
      b. ? the professor that you consulted t because you
             thought e would understand your problem
      c. ? the dog that you got rid of t because you thought
             e might bite someone
      d. ? the dog that you got rid of t because you thought
             e had bitten someone

Some speakers find that the tensedness of both embedded

clauses in (79b,c,d) results in a stronger violation than with

a normal parasitic gap construction, but this increased

deviance is present also when the gap is in object position

and is therefore irrelevant to the immediate point at hand.

4.4.3 The Infinitival Group

Let us begin by reexamining the data given in §4.2.2 to

illustrate the failure of subject gaps in the infinitival

group. The paradigms given in (7) - (10) were incomplete with

respect to our three crucial configurations; I have added the

missing examples below and given sentences with object gaps

for comparison. I will refrain from discussing the examples in

detail until the first group of relevant data has been

presented.

Beginning with the degree clauses, the small clause

example (80d) is noticeably more acceptable than (80a,b,c).

80)   a. * Mary is too sick for us to expect e to recover
       b. * Mary is too inexperienced for me to believe e to
              understand the problem
       c. * Mary is too sick for Jane to think e left the
              hospital
       d. ?? Mary is too arrogant for anyone to consider e
              charming

80')   a. ? Mary is too sick for Jane to expect us to visit e
       b. ?? This problem is too complex for me to believe Mary
              to understand e
       c. ?? Mary is too sick for Jane to think (that) we
              visited e

Interestingly, the sentences in (80') are marginal (although

to varying degrees) even though they involve movement from an

object position.

Next are tough-constructions and, again, the example

involving a small clause, (81d), is significantly better than the other examples.

81) a. * Mary was difficult for Jane to expect e to recover
   b. * Mary is easy for me to believe to understand the problem
   c. * Mary was difficult for Jane to believe e had left the hospital
   d. ? Mary was difficult for anyone to consider e arrogant

81') a. * Mary$_j$ was easy for Jane$_i$ to expect PRO$_i$ to like e$_j$
   b. ?? This problem is difficult for me to believe Mary to understand e
   c. * Mary was difficult for John to believe we had not visited e in the hospital

Strikingly, the cases involving object gaps, (81'), are as bad, in some cases, as those involving subject gaps.

Infinitival relatives with embedded subject gaps repeat the pattern establshed with degree clauses and tough-constructions.

82) a. * He is not [a man for us to expect e to succeed]
   b. * He is [an employee for the boss to think e likes his work]
   c. * Jane finally found [an accountant to believe e likes his work]
   d. ?? Jane finally found [an accountant to consider e a friend]

82') a. ?? He is not [a man (for us) to expect Bill to like t]
   b. * They found [a man to believe their friends to respect t]
   c. ?? He is [a man for the boss to think (that) the employees like t]
   d. ?? John finally found [someone to believe (that) the employees like t]
   e. ? They found [a man to believe (that) they could respect t]

I find the examples with subject gaps (except for (82d))
uniformly ungrammatical, but there seems to be considerably
more variation among the object gap cases.

With purpose clauses, however, there is less contrast
between the sentences with subject gaps and those with object
gaps. In addition, the small clause example, (83c), shows
little, if any, contrast with the other subject gap sentences
and is significantly worse than the small clause examples
above, (80d), (81d) and (82d).

83)   a. * I sent the present$_i$ to you$_j$ [PRO$_j$ to expect e$_i$ to
              please your children]
      b. * I brought Jane$_i$ to the party for you to think e$_i$
              likes me
      c. ?* I didn't hire Jane for you to consider e your
              secretary

83') a. * I bought the dog for you to believe Mary to like e
      b. * I invited Jane to the party for you to think that
              I like e
      c. ?' I invited Mary to the party for you to convince
              Bill to dance with e

The exception among the purpose clauses with object gaps is
(83c'), which is surprisingly good, a result which I attribute
to the nature of the verb <u>convince</u>.

The relevance of the data in (30) - (83) is somewhat
compromised by the difficulty of embedding in these construc-
tions the sort of verbs which allow long-distance subject
extraction. It may be that these constructions are semanti-
cally incompatible with epistemic verbs. Considering just pur-
pose clauses for the moment, the problem could be a semantic
conflict between the purposive interpretation and the epis-

temic verb or it could be a requirement that the semantics of
the purpose clause demands an agentive subject. Since the
subjects of epistemic verbs are not agentive, there is a
clash. The contrast between (83'c) and (83'a,b) suggests that
something like this explanation is on the right track.

If the source of the ungrammaticality of (80) - (83) has
to do with the epistemic verbs used in the examples, then we
might expect that these constructions would improve if these
verbs are more deeply embedded. The data bearing on this pre-
diction, in (84) - (87), are not very sharp.

84)   a. ?' We found [a horse to tell John to expect e to win
             the race]
      b. ?' Bill finally found [an accountant to tell John to
             consider e a friend]
      c. * What we need is [an accountant to tell John that
             we think e understands the problem]
      d. * What we need is an [an employee for John to
             announce that the boss thinks e likes his work]

85)   a. * I gave the article₁ to John, [PRO, to tell my
             students to expect e₁ to appear in the syllabus]
      b. * I brought Mary here [for John to tell everyone to
             consider e a friend]
      c. * I showed my uniform₁ to you, [PRO, to tell the
             dean that you think e₁ meets dress code]
      d. * I brought my novel to the office to announce that
             the boss thinks e will will a prize.

86)   a. * John is difficult to tell Mary to expect e to
             recover.
      b. *' This dog is dangerous to tell Mary to consider e a
             pet.
      c. * This book is an honor to announce that the
             committee thinks e will win a prize.[25]

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25. That an honor is a member of the tough class of predicates
is shown by the grammaticality of (i), (ii) and (iii).

      i)   It is an honor to receive this prize.
      ii)   To receive this prize is an honor.
      iii)   This prize is an honor to receive.

87)   a. * John is too sick for us to tell Mary to expect e
              to recover.
        b. *? John is too sleazy for us to tell Mary to consider
              e a friend.
        c. *? This book is too controversial to announce that we
              think e deserves the prize.

As for the prediction, the only improvement at all apparent is

in the case of ECM verbs in infinitival relatives, but even

this is slight. The extra embedding required to construct the

examples in (84) - (87) might cancel out the positive effects

of embedding.

To summarize the results of this data parade: a signifi-

cant degree of the ungrammaticality associated with subject

gaps in these constructions may be attributed to the nature of

the verb, the depth of embedding and the islandhood of embed-

ded tensed clauses. The last factor in particular degrades the

sentence so markedly as to obscure almost totally the differ-

ence between subject and object gaps. The most sensitive of

the OWM constructions to these effects is the purpose clause.

The least sensitive appear to be infinitival relatives and

degree clause constructions. Finally, the data suggest that,

in spite of the three obscuring factors just mentioned (and

others which may be undetected) subject gaps do seem to result

in a somewhat greater degree of deviance than object gaps in

these constructions. However, I think the data above have also

shown that we are not dealing with a violation of the degree

or stability usually associated with ECP violations. In fact,

the sensitivity to lexical items and tensedness suggest some-

thing more akin to a Subjacency Condition violation. I leave
this as an observation for the moment and continue with the
presentation of some additional data bearing on the question
at hand.

The mitigating effect of be and certain modals is also
apparent with OWM constructions, though to a lesser degree.
The greatest improvement is seen when the ECM verb believe
takes be as a complement verb, as illustrated in (88).

88)   a. ?   What we need is [someone for them to believe e to
               be a spy]
       b. ?? They found [a man to believe e to be the Messiah]
       c. ?' John is difficult to believe e to be a spy.
       d. ?? John is too inept for me to believe e to be a spy.

The increased acceptability is most noticeable with infiniti-
val relatives, but also perceptible, I think, with tough-
constructions and degree clauses. Purpose clauses are consis-
tent with their earlier behavior in showing virtually no
improvement with the believe e to be configuration.

89)   a. *   I gave it₁ to him₂ [PRO₂ to believe e₁ to be a
               gift]
       b. *   I brought John to the party for you to believe e
               to be my friend2

Modals seem to have a lesser effect on the OWM constructions,
as shown in (90) and (90').

90)   a. ?   What we need is [someone for them to believe/think
               e might actually kidnap the President]
       b. ?   What we need is [someone for them to believe e has
               escaped]
       c. *   John is difficult to think e might be a spy.
       d. *? John would be difficult to believe e would ever do
               something like that

e. * That drug is easy to believe e could harm someone.
    f. * John is too good-hearted for me to believe e could ever harm anyone
    g. *? That movie was too innocuous for me to believe e has offended you
    h. * I gave it, to him, [PRO, to think e, might be a sign of my affection]
    i. * I brought John to the party for you to believe e could be a gentleman

90') a. ? What we need is [someone for them to believe/think we might actually kidnap e]
     b. ? What we need is [someone for them to believe we have kidnapped e]
     c. * John is difficult to think we might offend e
     d. ?? John would be difficult to believe someone could ever dislike e so much
     e. *? That drug is easy to believe the Mafia could be selling e
     f. ?? John is too good-hearted for me to believe anyone could ever dislike e
     g. *? That movie was too innocuous for me to believe you disliked e so much
     h. * I gave it, to him, [PRO, to think Mary might want e, as a sign of my affection]
     i. * I brought John to the party for you to believe I could be nice to e

As we have seen before, the purpose clauses in (90) and (90')
are strongly ungrammatical with both object and subject gaps.
In contrast, I find the infinitival relatives in both (90) and
(90') virtually perfect. The fact that OWM constructions do
not show the kind of marked improvement with modals which we
saw in the case of parasitic gap constructions is consistent
with the evidence from (80) - (83) that infinitival OWM con-
structions are extremely sensitive to tensedness, embedding
and the presence of epistemic verbs.

       To conclude this section: the data reviewed suggest that
there is a contrast between OWM and parasitic gap construc-
tions with subject gaps and those with object gaps, but it is

a weaker contrast than the subject vs. object asymmetry asso-
ciated wth canonical ECP effects. Moreover, we have seen that
OWM constructions in particular are very sensitive to the
semantic class of the verbs with which they appear and to the
islandhood of tensed embedded clauses.

4.4.4 Subject Gaps in Islands

At this point it makes sense to ask whether the weak
contrast between variables in subject position and those in
object position obtains in any other context. In this section
I will argue that extraction of subjects from islands does
create a stronger violation than extraction of objects, that
is, the weak subject/object asymmetry of the preceding sec-
tions holds in constructions other than those hosting null
operators. Compare the pairs of relative clauses in (91), for
example.

91)   a. ?? Which guy$_i$ did John wonder when to expect t$_i$ to
             show up
       a.' ? Which gift$_i$ did John wonder when to expect PRO to
             receive t$_i$

     , b. ?? Which student$_i$ did John wonder whether to believe
             t$_i$ understood the problem
       b.' ? Which problem$_i$ did John wonder whether to believe
             Bill understood t$_i$

       c. ?? Which guy$_i$ did John deny the rumor that you think
             t$_i$ likes Mary**

---

26. Most people find CNPC violations slightly worse than wh-
island violations, especially when the wh-islands involve
infinitivals. However, the CNPC violation examples I use do
not seem to me to be as bad as, for instance, Subject Condi-
tion violations. Rather than increase the complexity of my
notational system, I will mark for contrast in this case and

c.' ? Which guy₁ did John deny the rumor that you
                         believe Mary to like t₁

Complexity once again makes judgements difficult, but it seems

that the examples involving object extraction are more accept-

able than those involving subject extraction. However, as with

the cases we saw in the previous section, the increased

deviance of the subject examples does not reach the level of

an ECP violation, as can be seen by comparing (91b,c) with

(92a,b).

92)   a. * Which student₁ did John wonder whether to believe
                that t₁ understood the problem
        b. * Which guy₁ did John deny the rumor that you think
                that t₁ likes Mary

We saw above that the best examples of subject gaps were found

with small clauses, ECM complements with _be_ and tensed, com-

plementizerless embedded sentences with modals. These contexts

also improve subject gaps within islands.

93)   a. ?' Which guy₁ did you wonder whether we considered t₁
                a fool
        b. ?' Which guy₁ did you wonder whether we believed t₁
                to be fully competent
        c. ?' Which professor₁ did you wonder whether I thought
                t₁ would understand your problem
        d. ?' Which dog₁ did you wonder whether I thought t₁ had
                attacked someone

        e. ?' Which guy₁ did John deny the rumor that you
                believed t₁ to be mentally incompetent
        f. ?' Which dog₁ did John believe the claim that you
                thought t₁ would bite someone

_____

leave it to the reader to compensate for the increased
marginality of CNPC violations.

That some of the sentences in (93) do not improve to the same

level of acceptability as the parasitic gap constructions

above is not surprising given that some of the examples of

island constructions in (92) are more deviant than parasitic

gap constructions to begin with.[27]

The examples above all involved either wh-islands or

complex NPs. Pesetsky (1982) noticed that a similar effect

holds with extraction of subjects from adjunct islands.

94)   a. *   the man, that John went to the interview without
               expecting t, to show up for it
       a.'?? the gift, that John went to the party without
               expecting PRO to receive t,

       b. *   the student that John finished the lecture without
               believing t, understood the problem
       b.'?? the problem, that John finished the lecture
               without believing Bill understood t,

       c. *   the man, that John went to the police because he
               believed t, to have stolen a car
       c.'?? the car, that John went to the police because he
               believed Bill to have stolen t,

Once again, it seems the cases of subject extraction are sig-

nificantly worse than those of object extraction. Except for

small clauses, the contexts discussed above which improve

subject extraction seem to have very little effect on these

cases.

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27. The exception is extraction configurations of the form

       i)   what did you wonder how to fix

where a direct object is taken out of an infinitival wh-
island. Most speakers, including me, find these grammatical.

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95)   a. *? the man$_i$ that John went to the interview without
          expecting t$_i$ would show up for it
      b. *? the student that John finished the lecture while
          believing t$_i$ to be asleep
      c. ?? the man$_i$ that John went to the police because he
          considered t$_i$ a thief

The data in this section indicate that what I have been call-
ing the "weak" subject/object asymmetry apparent in some OWM
constructions and parasitic gap constructions is also in
effect with extraction from wh-islands, adjunct islands and
complex noun phrases.

The means to account for this weak ᵤsymmetry lie close
at hand within the Barriers-style framework I have adopted.
The data which have been reviewed in this and the previous
section lead to the conclusion that the bounding constraints
on subjects are stricter than those on objects. I propose that
this asymmetry be encoded in a relativized Subjacency Condi-
tion which takes into account the nature of the position from
which A'-movement originated. Representationally, we can
characterize this as taking into account the nature of α_n in a
chain C = $(\alpha_1, ..., \alpha_n)$. Thus, if α_n is a complement, C is a
complement chain; if α_n is a non-complement, C is a non-
complement chain. Non-complement A'-chains must meet 0-
subjacency, while the links of complement A'-chains must meet

1-subjacency.**,** This is incorporated into the Subjacency

Condition as shown in (96).

96)   a.   If (α_i, α_{i+1}) is a link of a chain C, then α_{i+1} is
             n-subjacent to α_i.

      b.   (i)   If C is a complement chain, then n=1.
            (ii)   If C is a non-complement chain, then n=0.

97) β is n-subjacent to α if there are fewer than n+1
      barriers for β which exclude α.

The question of how to "quantify" Subjacency Condition viola-

tions now arises. The non-relativized version of the Subja-

cency Condition proposed in **Barriers** had n=1 for all chains.

The optimal case was one in which no barriers intervened

between the members of a chain link. The intervention of a

single barrier between any α_{i+1} and α_i resulted in a mild

violation and the intervention of two barriers resulted in a

CED-level violation, i.e. something weaker than an ECP

violation but stronger than a simple wh-island violation. It

is possible to maintain something like this approach if we say

_____

28. The complex chains which characterize parasitic gap
constructions must be viewed as follows: assume (i) is a
complex chain with e_i (the parasitic gap) in a non-complement
position and t_i in a complement position.

    i) $(wh_i, \ldots t_i, pro_i, \ldots. e_i)$
             _____/_____/
                a   b
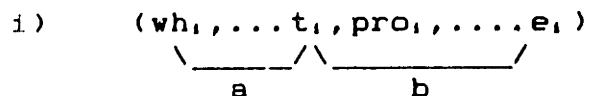
Segment b of the complex chain is subject to the non-comple-
ment version of the Subjacency Condition in (96) and segment a
is subject to the complement version.

29. I use the terms "complement" and "non-complement" rather
than "subject" and "object" for generality. The effect of the
stronger subjacency requirement on adjuncts will be obscured
by the effects of the ECP.

that the intervention of zero barriers between the links of a chain results in grammaticality and the intervention of n+1 barriers results in a CED-level violation. This means that when only one barrier intervenes between two links of a chain with α_n in subject position, a strong violation will result. To incur a similarly strong violation, a link in a chain with α_n in a complement position must be broken by two adjacent barriers. A third option exists for complements, the intervention of one barrier, and this results in mild deviance.

The ungrammaticality which we observed with subject gaps in OWM constructions, parasitic gap constructions and extraction from islands may now be analyzed fundamentally as a Subjacency Condition violation. The different degrees of ungrammaticality reflect additional factors which add to or minimize this underlying violation. For example, the "weak" islandhood of tensed IPs (see Barriers, p. 37ff) will have a stronger impact on the grammaticality of a sentence involving subject extraction than on the grammaticality of one involving object extraction. Add to this the incompatibility of some of the constructions examined with many of the verbs which allow embedding and the level of grammaticality deteriorates even further. There are many related questions to be dealt with, in particular, the "weak" barrier status of tensed IP/CP and the relevance of lexical subjects to the barrierhood of IP. Sonme of these questions will be taken up in §4.5, but for now I will leave them aside in order to examine a subject/object asymmetry in Italian and French.

4.4.5 Obligatory Intermediate ECs

Verbs which are members of the class including French croire and Italian ritenére have the peculiar property of being ungrammatical with lexical subjects and grammatical with wh-moved subjects.[30] ((98a),(99a)=R, (98b),(99b)=K)

98) a. * Ritieni Gianni essere intelligente.
            'You believe John to be intelligent.'
     b. * Je crois Jean être le plus intelligent de tous.
            'I believe Jean to be the most intelligent of
            all.'

99) a.   il ragazzo che ritieni t essere intelligente
            'the boy that you believe t (to) be intelligent'
     b.   Quel garçon crois-tu être le plus intelligent de
            tous?
            'Which boy do you believe to be the most intelli-
            gent of all?'

Kayne (1981) and Rizzi (1982) argue that sentences such as those in (98) are ungrammatical because the subject fails to be case-marked in its SS position; where English allows CP-deletion to permit exceptional case-marking across the IP boundary, Italian and French do not. The CP boundary remains intact in the French and Italian sentences and blocks assign-

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30. Some of the data in this section are taken from Rizzi (1982), Cinque (1986, 1987), Kayne (1981) and Obenauer (1984, 1985). Examples taken from these sources will be marked with the appropriate initial and, where necessary, date; for example, ((1a), (2a) = R, (1b), (2b) = K) signifies that (1a) and (2a) are from Rizzi (1982) and (1b), (2b) are from Kayne (1981).

ment of case to the subject of the infinitival.[31] Successive
cyclic movement through SPEC of CP in (99) leaves a trace
which is accessible to case-marking, as shown in (100).

100)   ... V [$_{CP}$ t' [$_{IP}$ t ...

The A'-chain thereby receives case and the structure is
licensed.

Before discussing the croire/ritenére class of verbs any
further, let me review a few facts about extraction from wh-
islands in Italian and French. Rizzi (1982) pointed out that
extraction from within the most deeply embedded clauses in a
structure such as that in (101) is grammatical if CP~ is
infinitival and ungrammatical if it is tensed. Sportiche
(1981) argues that the same is true for French. The relevant
sentences are given in (102) and (103). ((96)=R, (97)=S)

101)   wh$_i$ ... [$_{CP}$ wh$_j$ ... [$_{CP}$~ ... t$_i$ ...
       ↑_____|

102)   a. * Mario, che non immagino perché tu abbia deciso che
              non incontrerai, è una brava persona.
              'M., that I do not imagine why you have decided
              that you will not meet, is a nice fellow.'
       b. ? Mario, che non immagino perché tu abbia dec'so di
              non incontrare, è una brava persona.
              'M., that I do not imagine why you have decided
              not to meet, is a nice fellow.'

---

31. The Rizzi/Kayne analysis of these constructions is
incompatible with the imposition of a head government require-
ment on traces. Under the assumption that untensed INFL is not
a licit head governor, (99) will be incorrectly ruled out. It
may be that in French and Italian the verb optionally moves to
INFL when INFL is untensed, perhaps at LF, providing a proper
governor for the subject trace.

103) a. * Voilà quelqu'un à qui je sais lequel je crois que
           j'offrirais.
           'Here is someone to whom I know which one I think
           I will offer.'
     b. ? Voilà quelqu'un à qui je sais laquelle je veux
           écrire.
           'Here is someone to whom I know which one I want
           to write.'

If the embedded infinitival relative is an infinitival ques-
tion itself, it has the same effect as a tensed complement
clause, i.e. an island violation results. ((104)=R)

104)* I tuoi ospiti, che non immagino chi sappia dove portare,
       ...
       'Your guests, that I do not imagine where to take, ...'

Rizzi points out that the infinitival complements of the
croire/ritenére class of verbs act like infinitival questions
rather than like other infinitival complements in that they
trigger the wh-island effect. This is illustrated in (105).
((105)=R)

105)* Un simile riscatto, che mi domando quante persone
       ritieni poter pagare, è altissimo.
       'Such a ransom, that I wonder how many people you
       believe to be able to pay, is extremely high.'

The ungrammaticality of (105) supports the analysis of this
class of verbs proposed by Rizzi and Kayne.

  An unexpected property of this class of verbs is that
they are sensitive to extraction of their subjects from within
islands.[32] The examples below indicate this effect with wh-

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32. This was pointed out by Rizzi (1982) for wh-islands and by
Kayne (class lectures, 1983). This phenomenon is discussed at
length in Cinque (1987). Rizzi's example is given in (1).

islands, (106), extraposed subjects, (107), and PP adjuncts,

(108). ((106),(107)=C87, (108)=C86).

106)   a. *   L'unica persona che non sapevo come potessero
                ritenere essere una spia, ...
       b. *   La seule personne que je ne savais pas comment ils
                pouvaient croire être un espion, ...
                'The only person who I did not know how they could
                believe t to be a spy, ...'

107)   a. *   La seule personne que ça l'ennuierait qu'elles
                pensent être de son côté, ...
       b. *   L'unica persona che lo danneggerà che pensino
                essere dalla sua parte, ...
                'The only person who it will harm him that they
                think t to be on his side, ...'

108)   a. *   La seule personne que nous avons été recompensés
                pour avoir cru être intelligente, ...
       b. *   L'unica persona che siamo stati ricompensati per
                aver ritenuto essere intelligente, ...
                'The only person who we have been rewarded for
                considering t to be intelligent, ...'

The ungrammaticality of these sentences is quite strong,

comparable to an ECP violation.[33]

   If the Rizzi/Kayne analysis of the grammatical sentences

in (99) is correct, then there is an intermediate trace in the

_____

       i) *   Gianni, che mi domando che cosa ritieni aver
                fatto, comunque non merita una simile punizione.
                'G., that I wonder what you believe t to have
                done, anyway doesn't deserve such a punishment.'

33. This is apparently not the case for some French speakers,
who, nevertheless, find extraction of subjects from comple-
ments of these verbs noticeably worse than extraction of
objects. If the phenomenon should not be classed as an ECP
violation, then an analysis such as Pollock's (1985), which
does not require a trace in the SPEC of the embedded CP, would
group the croire/ritenére facts with subject extraction in
English. The analysis of the que/qui alternation and extrac-
tion of direct objects in Dutch discussed later in this sec-
tion are still valid whatever the correct approach to the
croire/ritenére facts.

SPEC of the embedded CP, as shown in (100), which is crucial

to the well-formedness of the structure at LF. I adopt the

suggestion of J. Aoun, discussed in KoL, that an NP (i.e. an

NP chain) must be case-marked in order to be visible for θ-

marking. Moreover, I interpret the Visibility Condition as

requiring that means of case-marking an NP must be extant at

LF when the θ-criterion is checked. By this interpretation,

case-marking is not like τ-marking: the configuration of case-

marking may not be satisfied once during a derivation and then

destroyed by Affect α. Therefore, the intermediate trace in

the SPEC of CP in (100) must be present at LF.

Other than the constraint on case-marking configurations

just proposed, only the ECP is relevant to determining the

status of t' in (100) at LF. Let's examine the structure of a

sentence like those in (106) in a bit more detail to see if

the ECP will correctly rule out (106) - (108). (V~ = a verb

from the croire/ritenére class.)

109) $[_{CPc}$ wh$_i$ ... $[_{VPec}$ t$_i^4$ $[_{VPc}$ V $[_{CPb}$ wh$_j$ ... $[_{VPeb}$ t$_i^3$
       $[_{VPb}$ V~ $[_{CPa}$ t$_i^2$ $[_{IPa}$ t$_i^1$ ...

The empty categories which are required to be present for

independent reasons are t$_i^1$ (by the θ-Criterion and the Pro-

jection Principle) and t$_i^e$ (by the Visibility Principle and

indirectly by the θ-Criterion). Recall that Chomsky's (1986,

class lectures) version of τ-marking assumes the following: τ-

marking of traces is freely ordered wrt Affect α, both at SS

and LF; the entire A'-chain of an adjunct (including all

intermediate traces) must be present throughout the deriva-

tion; ECP is checked at the end of the LF derivation. At some

point before the ECP is checked the intermediate trace t_i^2

will τ-mark t_i^1 Similarly, the VP_b-adjoined trace, t_i^3, will

τ-mark t_i^2. The remaining intermediate traces may delete at

any point in those two mappings so long as t_i^3 does not delete

before it τ-marks t_i^2. By the time the ECP is checked at the

end of the LF mapping, there are no [-τ] traces in the repre-

sentation. The sentence is incorrectly predicted to be gramma-

tical by this approach to proper government and τ-marking.

The L&S approach to τ-marking fares much better. Recall

that L&S argue that both τ-marking and Affect α apply in the

mappings from DS to SS and from SS to LF, but that τ-marking

is always ordered after Affect α in a mapping. The ECP is

checked after LF τ-marking. L&S must also adopt the principle

in (110), their "principle (109)".

110)   Only an argument receives a τ-feature at SS.

Since t_i^2 is not an argument, it will not receive a τ-feature

at SS. Crucially, it will not be marked [-τ], since they also

must assume that a τ-marked trace cannot be re-τ-marked at a

subsequent level. In order for t_i^2 to receive [+τ] at LF the

next intermediate trace, t_i^3, must also be present at LF. But

recall that Affect α precedes τ-marking at each level; this

means that t_i^3 will not be able to τ-mark t_i^2 and then delete.

Therefore, t_i^3 must also be τ-marked at LF. In fact, for the

sentence to be licensed the entire chain must be present at

LF, i.e. all empty categories must satisfy the ECP by being marked $[+\tau]$. However, $t_i{}^4$ does not properly govern $t_i{}^3$ because of the intervening wh-island. Therefore, the L&S approach to τ-marking correctly predicts that a sentence with the structure in (109) will be an ECP violation.

There is a modification of Chomsky's approach which captures the generalization suggested by the data in (106) - (108), namely, that subjects of the complements of the <u>croire/ ritenére</u> class of verbs behave like adjuncts wrt the ECP. The modification involves extending the stipulation on adjunct chains to all cha is incorporating A'-empty categories, as shown in (111).

111)   Any A'-chain containing a non-pronominal empty category
        in an A'-position at LF must be entirely represented
        throughout the derivation.

(111) has the same effect as the principle in (110) plus the ordering of Affect α and τ-marking in the L&S approach.

The <u>que/qui</u> alternation in French is also dependent on the presence of a trace in the SPEC of CP, according to the analysis of Pesetsky (1978).[34] In French an ECP violation is avoided in (112a) by virtue of the <u>qui</u> complementizer, which, according to Pesetsky, may take on the index of the trace in the adjacent SPEC. He also argues that a similar process is responsible for the grammaticality of (112b).

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34. See also Kayne (1984). Pesetsky's analysis transfers straightforwardly to the CP/IP approach to sentence structure.

112) a.   la femme$_i$ que je crois qui$_i$ t$_i$ aime Jean
     b.   the woman$_i$ that$_i$ t$_i$ likes John
     c. * Who$_i$ do you think that t$_i$ likes John?

English differs from French in that complementizer indexing

occurs only with relative clause (and cleft) complementizers;

thus, (112c) is ruled out by the ECP.

    If the trace which triggers the que/qui alternation must

be present at LF, then we would expect that the A'-chain

formed by subject extraction would have the status of an

adjunct A'-chain for τ-marking. The prediction of (111) is

that embedding a complement clause of the form in (112a)

within a wh-island will result in strong ungrammaticality. As

shown in (113), the prediction is borne out. ((113b,c,d)=C87)

113) a. * la femme que je ne sais pas qui croit qui aime
            Jean
            'the woman that I don't know who believes (qui)
            likes John
      b. * Qui vous demandiez-vous comment elles croyaient
            qui était mort?
            'Who were you wondering how they could believe had
            died?'
      c. * Qui t'ennuierait qu'elle pense qui est mort?
            'Who would it harm you that she thinks has died?'
      d. * Qui regrett-t-il que nous croyons qui n'était pas
            amical?
            'Who does he regret that we believed wasn't
            friendly?'

In every case in (113) there is an A'-trace which is blocked

from receiving [+τ] by the intervention of a barrier. The ECP

correctly rules out the que/qui alternation within islands.

    The analysis of parasitic gap constructions proposed in

chapter three in combination with this analysis of the croire/

ritenére and que/qui facts predicts that neither of these two

will occur within the parasitic domain. That is, a parasitic

gap will be ungrammatical as the subject of a croire/ritenére

infinitival complement and will not license the que/qui

alternation; the result in both cases will be a strong viola-

tion. Both predictions are true. ((114)=C86)

114)　a. ＊　L'homme$_i$ que nous apprécions t$_i$ sans croire e$_i$
　　　　　　être intelligent
　　　b. ＊　L'uomo$_i$ che apprezzàvamo t$_i$ pur senza ritenere e$_i$
　　　　　　essere intelligente
　　　　　　'the man that we appreciated t without believing e
　　　　　　to be intelligent'

115)＊ La femme que Jean voulait rencontrer sans croire qui
　　　l'aime

I have argued that the A'-pro in parasitic gap constructions

must delete in the mapping from SS to LF by the principle of

Full Interpretation, giving an LF representation with the

intermediate traces shown in (116) for sentences such as those

in (114). (Ø marks the location of deleted A'-pro.)

116)　...wh$_i$...[$_{VP}$ t$_i$' [$_{VP}$ [$_{VP}$...t$_i$...] [$_{PP}$...[$_{CP}$ Ø [$_{IP}$...
　　　[$_{VP}$ e$_i$'' [$_{VP}$...[$_{CP}$ e$_i$' [$_{IP}$ e$_i$...]]]]]

According to the analysis I proposed above, it is necessary

for e$_i$' to remain in the representation at LF. Whether we

adopt the L&S approach to τ-marking or one incorporating

(111), the representation will be ruled out as e$_i$'' will not

be marked [+τ].

　　　An objection that could be raised against this analysis

concerns the requirement that A'-pro not appear in the LF

representation of parasitic gap constructions. I have argued

that this pro is "licensed" at SS as an intermediate member of an A'-chain. However, it is not licensed as a null pronominal: it never receives phi-features (or has its phi-features licensed) by participating in an agreement relation. The ungrammaticality of (114) and (115) indicate that being an intermediate member of an A'-chain is not sufficient to license an empty pronominal in an A'-position at LF. A'-pro may be licensed functionally at SS but it must be licensed in content (i.e. phi-features) in order to escape the filtering effects of the principle of Full Interpretation at LF.

An analysis similar to that proposed for the que/qui alternation and the croire/ritenére facts may also account for the behavior of direct objects (DOs) in Dutch. Koopman & Sportiche (1986b; hereafter, K&Sb) point out that extraction of DOs in Dutch, (117a), is strongly blocked by islands, as is extraction of adjuncts and subjects, (117b,c), while extraction of argument PPs over islands, (117d), is possible. (All examples are from K&Sb.)

117) a. * Wie$_i$ hij zich afvroeg of jij t$_i$ aardig vond?
          who$_i$ he wondered whether you t$_i$ liked
          'Who$_i$ did he wonder whether you liked t$_i$?'
      b. * Wie$_i$ hij zich afvroeg of t$_i$ jouw aardig vond?
          who$_i$ he wondered whether t$_i$ you liked
          'Who$_i$ did he wonder whether t$_i$ liked you?'
      c. * Waarom$_i$ hij zich afvroeg of Jan t$_i$ ontslagen was?
          why$_i$ he wondered whether Jan t$_i$ fired was
          'Why did he wonder whether Jan had been fired?'
      d.   Met wie$_i$ hij zich afvroeg of hij t$_i$ zou kunnen praten?
          with whom$_i$ he wondered whether he t$_i$ would be able to talk
          'With whom$_i$ did he wonder whether he would be able to talk t$_i$?'

K&Sb argue that, in this context, DOs pattern with adjuncts in Dutch because the normal SS position for a DO is an A'-position: for reasons having to do with Case, a DO must move from its DS θ-position to a VP-adjoined position. This is move (a) in (118), which is essentially K&Sb's (27).

118) * $[_{CP2}$ wh$_i$ ... $[_{CP1}$ +wh ... $[_{VP}$ t$_i$ [t$_i$ V]]]]]]
$$\uparrow\underline{\hspace{6cm}}\uparrow\underline{\hspace{1.5cm}}|$$
$$\text{(b)}\hspace{5cm}\text{(a)}$$

It is from this adjoined position that wh-movement originates, shown in (118) as move (b). They then argue that long movement, i.e. non-successive cyclic movement, is possible only from θ-positions and is, therefore, not an option for DOs.

That Dutch DOs are in an A'-position at SS is further supported by their ability to license parasitic gaps without being wh-moved. This is discussed in Bennis & Hoekstra (1985; hereafter, B&H), where the following examples are given.

119) a.   Jan heeft die boeken$_i$ [zonder e$_i$ te bekijken] weggelegd.
            John has those books [without to inspect] away put
      b.   Ik heb deze scriptie$_i$ [alvorens definitief e$_i$ te beoordelen] eerst aan Jan voorgelegd.
            I have this term paper [before definitively to judge] first to show John

If this analysis of DOs in Dutch is correct, it means that when a DO is wh-moved, there must be an intermediate A'-trace in VP-adjoined position for case purposes, just as is the case when the subject of an infinitival complement of a verb from the _croire/ritenére_ class is wh-moved. DOs in Dutch straight-

forwardly come under the analysis proposed above for the sub-
jects of infinitival complements of croire/ritenére verbs.

There is a problem with this, however: according to B&H
the DO is in an A'-position only when the word order is ...DO
Adjunct V..., not when it is ...Adjunct DO V.... If this means
that the DO is free to remain in its DS position at SS, then
neither the K&Sb analysis nor my recasting of it in terms of
the croire/ritenére analysis is motivated.

Koopman & Sportiche (1986a) discuss some facts about wh-
movement in Vata which might also be brought under the analy-
sis I have proposed. Wh-movement in Vata has the following
characteristics: extraction of argument PPs and direct objects
from within wh-islands (long-extraction") is possible; short
wh-movement of subjects, adjuncts and verbs obligatorily
leaves behind a resumptive pronoun; long-extraction does not
apply to subjects, adjuncts and verbs. K&Sa argue that the
resumptive pronoun strategy is necessary because a wh-moved
element, even in the case of "short" movement, goes to a
position from which an antecedent may not properly govern its
trace. Therefore, the ECP cannot be claimed to rule out long
extraction of subjects, adjuncts and verbs as they do not
leave behind empty category traces. To account for these
facts, K&Sa propose a Condition on Long Extraction:

120)   x is a possible long extraction site iff x is a θ-
        position.

They further argue that the subject position (in Vata at least, perhaps more generally) is a θ'-position, the subject being base-generated within the VP and raised to its SS position. There are several ways this range of facts could be accounted for by the proposals in this section; however, assessing how well the analysis accounts for the data or what kind of ramifications the Vata facts have for the analysis requires more subtle comparative judgements of the violations in question than I have access to. Therefore, the assessment of my analysis vis-a-vis Vata wh-movement cannot be undertaken at this time.

4.4.6 Overt/Finite vs. Null/Infinitival

In §4.4.1 I began by dividing the OWM constructions into two groups. The members of the first group, infinitival relative clauses, tough-constructions, purpose clauses, and degree clauses, occur only with infinitival clauses, never appear with overt wh-operators and exhibit the subject/object asymmetry discussed at length above. The second group is made up of tensed relative clauses, clefts and comparatives, which appear obligatorily with tensed clauses, optionally with overt wh-operators, and which seem to be less deviant with embedded subject gaps than the infinitival group, though the effect is still noticeable in certain contexts. Optimally, we would hope to find a unified explanation for the distribution of these properties. I do not have such an analysis, but I do have a

few things to say about the problem which may shed some light on directions for further research.

First, I will attempt to separate out the various aspects of the subject gap problem. I suggested above that most of the verbs which allow embedded subject gaps are incompatible with a purposive interpretation. This is most apparent, naturally, in purpose clauses. If there were reason to believe that the infinitival OWM constructions share a kind of inherent purposive aspect to their semantics which the tensed OWM constructions do not, then the subject gap contrast would be virtually explained. Analysing the semantics of the OWM constructions in question is beyond the scope of this work, but there are reasons to believe the purposive connection to be the key to the subject gap problem.

There is evidence that the infinitival clauses in the constructions of the infinitival group derive diachronically from dative nominals and PPs.[35] In OE the infinitive appears as a nominal, complete with case-endings. As such, the infinitive was able to appear as the object of certain prepositions, e.g. the purposive to and for. During the transition to ME, when the language lost most of its affixal case-indicators, a wide variety of prepositions were coopted into use as case-markers; see Lumsden (in progress) for arguments that these prepositional case-markers do not head full PPs. Over time,

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35. This brief discussion owes much to J. Lumsden, who should not be held accountable for the uses to which I put some of the insights and arguments found in Lumsden (in progress).

these prepositional case-markers were reanalysed as infiniti-
val INFL and COMP, respectively, a process which corresponded
to the reanalysis of infinitival phrases (even some of those
originally analysed as nominal objects of PPs) as clausal
entities rather than nominals.

The point I wish to make here is that the clausal com-
plements of the infinitival group of OWM constructions are
plausibly derived from PPs with nominal objects. In fact,
three of the infinitival OWM constructions, relatives, purpose
clauses and degree clauses, still have purposive PP counter-
parts of the infinitival forms.

121) a.   a topic to discuss calmly
      b.   a topic for calm discussion

122) a.   I bought John a tent to take camping in the
           Rockies
      b.   I bought John a tent for camping trips in the
           Rockies

123) a.   This topic is too difficult to research any
           further.
      b.   This topic is too difficult for further research.

Taking the sharp ungrammaticality of purpose clauses with
epistemic verbs as evidence that there is a "purposive-
epistemic clash" (which naturally requires an explanation), it
should not be surprising that the constructions in (121a),
(122a) and (123a) do not easily host epistemic verbs.

In the remaining member of the infinitival group, the
tough-construction, the clause does not seem to correspond so
neatly to a purposive PP, as shown by the ungrammaticality of
(124b).

124) a.   This topic is difficult to discuss calmly.
     b. * This topic is difficult for calm discussion.

In this case the difficulty surely arises from the nature of

the tough-adjective as a clausal or propositional modifier,

although I have no concrete proposals for ruling out (124b).

The tensed OWM constructions do not have counterparts

involving purposive PPs and do not seem to have any sort of

purposive aspect to their interpretation. Nor do any of them

involve heads (adjectival, adverbial or otherwise) which indi-

rectly exert some kind of selectional constraints on the "top-

most" verb in the embedded clause. Without the interference of

the "purposive clash", complements with embedded subjects will

naturally be more acceptable.

The above discussion is no more than a rough sketch of a

possible line of argument, but let us assume that the subject

gap issue is resolved in the manner suggested. This leaves us

with the following phenomenon to explain: tensed clauses may

appear with either overt or null operators and infinitival

clauses appear only with null operators. This correspondence

was noted in Levin (1983, 1984) where the distribution of null

and overt operators was argued to be crucially linked to the

finiteness of the clause within which they occur. Levin (1983)

proposes the Case Visibility Principle (CVP):

125) Case is only visible under government.

Overt operators, like overt NPs in A-positions, must have

Case. A verb may govern the COMP of a clausal argument,

licensing an overt operator, or INFL, which is base-generated

in COMP, may govern an operator in COMP and satisfy the CVP if

it is finite. In Levin (1984) these proposals are incorporated

into a revised version of Brody's (1983) theory of empty cate-

gories, chains and case-relations. I will not rehearse the

details of Brody's theory or Levin's proposed revision, but

will simply summarize the relevant consequences and refer the

reader to Levin (1984) and Brody (1984) for discussion.

The crucial result of the Brody/Levin analysis for the

problem at hand is that overt operators must be governed and

null heads of chains (PRO and null operators) must be ungo-

verned; the latter condition being derived from case theory

rather than binding theory. This, along with the assumption

about INFL in COMP noted above, accounts neatly for the dis-

tribution of overt and null operators in the data in (126) -

(127). (The examples below follow the paradigms in Levin

(1983) and the judgements given are hers.)

126) a.   I know who Jane likes t
     b.   I know who to visit t
     c.   I know with whom to speak t
     d.   I know who to talk to t
     e. *   I know to talk to e
     f. *   I know to visit e
     g. *   I know with e to speak t
     h. *   I know Jane likes e

127) a.   I know the person who Jane likes t
     b. *   I know the person who to visit t
     c.   I know the man with whom to speak t
     d. *   I know the man who to talk to t
     e.   I know the man to talk to e

f.   I know the man to visit e
        g. * I know the man with e to speak t
        h. * I know the man Jane likes³⁶

As can easily be verified, under the above assumptions

(126e,f,g,h) and (127b,d,g,h) are ruled out and the rest are

predicted to be grammatical. This approach, embedded in a

general theory of empty category distribution, is quite

attractive as an explanation for the overt/tensed vs.

null/infinitival dichotomy within OWM constructions.

There are some problems with adopting this analysis,

however. For one thing, this approach requires an analysis of

tough-constructions which treats the infinitive as an adjunct

rather than as a complement of the adjective; if the structure

is as in (128) the adjective will govern the null operator and

the sentence will be incorrectly ruled out.

128)   ...[$_{IP}$ John is [$_{AP}$ easy [$_{CP}$ Op [$_{IP}$ PRO to
       please e]]]...

---

36. Levin assumes that complementizer deletion is responsible
for forming the grammatical version of (127h) but that
complementizer deletion is a PF phenomenon. Therefore, she
argues that there will be no SS configuration in which a null
operator occurs in the COMP of a tensed sentence. I have
assumed that null operators are involved in the derivation of
relative clauses without overt operators regardless of the
presence or absence of the complementizer. Thus, from my
perspective, a representation such as (i) must be allowed as a
viable SS representation. (e = a null complementizer)

     i)   ...[$_{NP}$ the man [$_{CP}$ Op$_i$ that/e [Jane likes e]]]...

Such a representation is ruled out by the CVP/Case-linking
theory.

Secondly, it is predicted that pied-piping of overt wh-operators will always be licensed in infinitivals when, in fact, it is only possible to have PP pied-piping in infinitival relatives and infinitival questions. Compare (126c) and (127c) with (129).

129) a. * John is easy to whom to speak.
     b. * John is too angry to whom to speak.
     c. * I gave it to Mary with which to play.

Finally, the problem with Levin's analysis of (127h) noted in fn. 12, which also arises with clefts and comparatives, seems to me to be a significant one. While the Brody/Levin theory is the only promising account of the overt/tensed vs. null/infinitival dichotomy around, there remain important problems to be resolved.

4.5 Calculating Barriers

4.5.1 Introduction

The main goal of §4.4 was to account for a subtle, yet systematic, contrast between A'-movement of subjects and A'-movement of objects, a contrast which mimics ECP effects in some respects but which does not seem to result in full-blown ECP violations. I proposed to account for this contrast by relativizing the Subjacency Condition so that the bounding constraints placed on non-complements is stricter than that placed on complements. As I noted in §4.4.4 the evidence presented to motivate this revision involves only contrasts

subjects and objects. The complement/non-complement formulation is more general than the subject/object formulation of the same condition in two ways: it suggests that movement of adjuncts will be subject to the same bounding conditions as movement of subjects and it suggests that movement of complements other than direct objects (e.g. argument PPs) will be subject to the weaker bounding condition. Is this greater generality warranted?

It is difficult to judge the nature of the bounding conditions (if any) which apply to adjunct movement because the effects of a Subjacency Condition violation will be obscured by the ECP violation which, for adjuncts, results from the crossing of even one barrier. On the other hand, extending the weaker bounding restriction to complements other than direct objects seems well-motivated in at least one case: Koopman & Sportiche (1986b) point out that wh-islands are not absolute islands for movement of argument PPs in Dutch. Other facts concerning extraction of argument PPs from PP adjuncts and complex NPs suggest that PPs should be subject to rather strict bounding conditions. These issues will be discussed in §4.5.3 where I will argue that the Subjacency Condition should be maintained in the form given in (96), a form which imposes the same constraints on argument PPs as on direct objects.

The second proposal made in §4.4 concerned the nature of the ECP asymmetry. I argued that any chain with an empty category in a non-argument position at LF should be subject to the ECP-related constraints placed on adjunct A'-chains, whether

these constraints are formulated in the manner of L&S or in the manner of Chomsky (1986, class lectures) as revised to include (111).

The system as developed so far expresses a more articulated range of grammaticality than the Barriers system on which it is based. At SS, crossing one barrier yields a mild violation for a complement and a stronger one for a subject (or adjunct). (The violation is mitigated if the barrier crossed is the "weak" barrier of a tensed IP/CP.) Crossing two barriers yields a strong violation for a complement.[37] At LF, subject and adjunct ECP ·iolations result in the strongest ungrammaticality. Nevertheless, a great deal of indeterminacy remains within the system; this section and the next will be devoted to examining some problems for this approach to bounding effects. In §4.5.2 I will discuss some issues related to the Subjacency Condition and the calculation of Subjacency Condition violations, in particular, the weak barrierhood of tensed IP/CP and the cumulative effect of crossing non-adjacent barriers. §4.5.3 will be devoted to examining the extraction of argument PPs from within NPs, PPs and other islands.

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37. The violations produced by crossing one barrier in the case of subject extraction and two barriers in the case of object extraction should be equivalent, though this true only in some cases.

4.5.2 Weak and Non-adjacent Barriers

The definitions of L-barrier, BC, and L-mark which I adopted in chapter one are repeated below.

130) (Where τ is a maximal projection,) τ is a **barrier** for β iff (a) or (b):
  a.   τ immediately dominates δ, δ a BC for β;
  b.   τ is a BC for β, τ ≠ IP

131) τ is a BC for β iff τ is not L-marked and τ includes β.

132) τ **L-marks** β iff β is the complement of τ.

These are essentially the definitions found in <u>Barriers</u> with some modifications based on Chomsky (1986, class lectures).[38]

The definition of "barrier" in (130) treats IP as exceptional; it is not L-marked, yet it is never automatically a barrier. IP may only inherit barrierhood from another BC or induce barrierhood in CP. Treating IP as an exceptional category in this respect is well-motivated since otherwise every instance of short wh-movement would be at least a one barrier violation. However, it has often been observed that tensed IP is active, though not always in very clear ways, in inducing

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38. I have not adopted a version of L-marking which allows the SPEC of an L-marked category to be L-marked. (i) has this property and is modeled on the <u>Barriers</u> revised definition (p. 24).

  i)   (...) α L-marks β iff β agrees with the head of τ that is the complement of α.

While this definition correctly allows wh-extraction from the SPEC of CP (E. Torrego's sentences), it incorrectly predicts that extraction from ECM and small clause subjects and extraction from within the SPEC of an L-marked NP will all be possible. I have no solution to this problem.

island violations. Rizzi (1982) pointed out that in Italian if CP~ is tensed in the configuration in (?33) a wh-island violation results, while if it is infinitival no violation results. Examples (from Rizzi (1982) are given in (134).

133)   [cp whᵢ [ᵢₚ...[cp' whⱼ [ᵢₚ...[cp~...tᵢ...

134)   a. * Mario, che non immagino perché tu abbia deciso che
              non incontrerai, è una brava persona.
              'M., that I do not imagine why you have decided
              that you will not meet, is a nice fellow.'
        b.   Mario, che non immagino perché tu abbia deciso di
              non incontrare, è una brava persona.
              'M., that I do not imagine why you have decided
              not to meet, is a nice fellow.'

The judgements are as given in publication, but L. Rizzi suggests (p.c.) that they be interpreted as contrastive rather than absolute. The comparable English sentences in (135) show the same contrast.

135)   a. ?? John, who I can't imagine why you've decided that
              you won't visit t, ...
        b. ?? John, who I can't imagine why you've decided not
              to visit t, ...

In Barriers only the most deeply embedded tensed clause is regarded as inducing weak bounding effects, the motivation for this position being that (136) is well-formed.

136)   Who do you think that Bill said that Mary visited t

If tensed IP were always a weak barrier, then (136) should be noticeably deviant, under the assumption that the degree of ungrammaticality exhibited by a sentence increases cumulatively when non-adjacent barriers are crossed. (However, even

limiting the weak barrierhood of tensed IP to the most embed-
ded clause incorrectly predicts that (136) will be somewhat
marginal.)

If only the most deeply embedded tensed clause is a weak
barrier then the tensedness of CP' in (134a) should be irrele-
vant. The sentences in (137) are of the form in (134a); in
both (137a,b) the most deeply embedded clause is tensed and
the intermediate clause has a wh-filled SPEC. (137a,b) differ
only with respect to the tensedness of the intermediate
clause.

137) a.   which problem$_i$ did you figure out who to persuade
           that you couldn't solve t$_i$
     b.   which problem$_i$ did you figure out who Bill
           persuaded that you couldn't solve t$_i$

Contrary to the prediction, (137b) seems marginally worse than
(137a), suggesting that the tensedness of clauses other than
the most deeply embedded is a factor in the acceptability of a
sentence. Another question to be asked is whether crossing a
tensed IP and a CP with a wh-filled SPEC (which I will refer
to as a wh-CP) yields the same degree of deviance when the wh-
CP does not immediately dominate the tensed IP.[39] Extraction
of <u>which problem</u> in (137a) crosses a tensed IP and a wh-CP, as
does object extraction in (134b) and in (138).

138) a.   which problem$_i$ did you decide to ask how Bill had
           solved t

---

39. Assume for this discussion that "immediately dominates"
holds between maximal projections, i.e. intervening X' levels
are irrelevant.

b.   which problem₁ did you wonder how Bill had tried
        to solve t₁

(137a) and the sentences in (138) sound about the same to me,

which leads to the conclusion that crossing a tensed IP and a

wh-CP induces the same degree of ungrammaticality whether they

are adjacent or not. This is not the case with other combina-

tions of barriers. For example, crossing two barriers in

(139a) results in a strong (CED) violation; the two barriers

crossed are NP and IP.

139)   a. *? Who do you think that stories about annoy Mary?
        b.   Which problem did you know who to ask how to
               solve?

However, crossing two wh-CP barriers which are non-adjacent,

as in (139b), results in an extremely mild violation. The

ungrammaticality of (140) indicates that, even when infiniti-

val, wh-CPs create a one-barrier break in a chain.

140) * How₁ do you know [what₂ to fix t₂ t₁]

Therefore, we cannot explain the relative well-formedness of

(139b) by claiming that infinitival wh-islands do not form

barriers. The conclusion which I will (tentatively) draw from

this brief discussion is that a sentence in which a chain is

broken by two adjacent barriers, as shown in (141a),

141)   a.   α₁...α₂...[ₐ₁ [ₐ₂...α₃...
        b.   α₁...[ₐ₁...α₂...[ₐ₂...α₃...

will exhibit a stronger degree of ungrammaticality than a
sentence in which a chain is broken by two non-adjacent
barriers, as shown in (141b).

Some additional remarks on the weak barrierhood of
tensed IPs: whatever the status of the tensed IP barrier, it
must be relevant only for the Subjacency Condition or even
simple adjunct extraction, as in (142a), will be ruled out
along with more complex examples such as (142b).

142) a.   How did John fix the car?
      b.   How do you think that John fixed the car?

This suggests that the weak barrierhood of tensed IP is of an
altogether different character than the barrierhood of a wh-CP
or adjunct.

Longobardi (p.c.) has argued that parasitic gap con-
structions with embedded islands do not exhibit a degree of
ungrammaticality equal to the sum of an Adjunct Condition
violation and a wh-island violation, i.e. (143a) is not as
ungrammatical as (143b) + (143c).

143) a.   the appliance which did you bought t without
             finding out how to use e
      b.   the appliance which you found out how to use t
      c.   the appliance which you left the store without
             buying t

I am not sure that I agree with this assessment of the rela-
tive grammaticality of these three sentences. It is true that
(143a) is somewhat more acceptable than (144).

144)   the applicance which you left the store without finding
        out how to use t

The analysis of parasitic gaps constructions in chapter three

predicts that this should be the case, however, given that

direct extraction from within PPs crosses two barriers while

the complex chain in a parasitic gap construction is broken by

only one barrier. (See §3.2.2 for discussion.)

        There are three possible structural relations between a

wh-island and parasitic domain: (a) the wh-island contains the

parasitic domain, (b) the parasitic domain contains the wh-

island, (c) neither contains the other. The three possibili-

ties are illustrated in (145).

145)   a. $[_{CP}$ wh$_i$...$[_{CP}$ wh$_j$...t$_i$...$[_{PP}$...pro$_i$...e$_i$...]]]
        b. $[_{CP}$ wh$_i$...t$_i$...$[_{PP}$...pro$_i$...$[_{CP}$ wh$_j$...e$_i$...]]]
        c. $[_{CP}$ wh$_i$...$[_{CP}$ wh$_j$...t$_i$...]...$[_{PP}$...pro$_i$...e$_i$...]]

The real question regarding bounding effects in parasitic gap

constructions is whether the three configurations in (145)

result in different degrees of deviance. If the configuration

in (145b) consistently yields constructions which are more

grammatical than constructions corresponding to (145a) and

(145c), then there is reason to maintain the hypothesis that

the parasitic domain of a parasitic gap construction is not

sensitive to wh-islands. Some examples of the configurations

in (145) are given in (146) - (148).

146)   a.   the vegetable that you found out how to prepare t
                without overcooking e
        b.   the vegetable that you bought t without finding
                out how to cook e properly

c.   the vegetable that you realized you didn't know
                 how to cook t after buying e on a whim

147)   a.   a car that John didn't know whether he could fix t
                 without damaging e
       b.   a car that John bought t without knowing whether
                 he could fix e
       c.   a car that John knew whether he could fix t
                 without even examining e

148)   a.   the paper that you were wondering who translated t
                 without proofreading e
       b.   the paper that you read t without guessing who had
                 written t
       c.   the paper that you found out who had written t
                 only after reviewing e

The wh-phrase which forms the islands in (146) is the adjunct

how, in (147) it is the complementizer whether and in (148) it

is the subject who. In addition, the wh-CPs in (147) and (148)

are tensed. Taking these potentially complicating factors into

account, I find no systematic improvement when the wh-island

is embedded in the parasitic domain, i.e. the (b) examples are

not uniformly more grammatical than the (a) and (c) examples.

        A final comment on the cumulative effect of non-adjacent

barriers: in chapter three I analyse the sentence in (149a) as

involving a single complex chain of the form in (149b) or

(149c).

149)   a.   a man who close friends of e^1 admire t without
                 respecting e^2
       b.   (who, t, pro^1, e^1, pro^2, e^2)
       c.   (who, t, pro^2, e^2, pro^1, e^1)

The two pros in (149b) are the A'-pros of parasitic gap con-

structions; see chapter three for discussion. The complex

chain in (149) is broken in two places by single barriers: in

(149b) the link (t,pro') is divided by an NP barrier and the link (e',pro⁰) is divided by a PP barrier. In (149c) the link (t,pro⁰) is divided by a PP barrier and the link (e⁰,pro') is divided by an NP barrier. (149a) should therefore be a stronger Subjacency Condition violation than either of the sentences in (150).

150) a.   the man that close friends of e admire t
      b.   the man that you admire t without respecting e

While (149a) is less acceptable than the sentences in (150) it is difficult to judge whether the decreased acceptability should be attributed to a more severe violation of the Subjacency Condition. (149a) is also more complex than either (150a) or (150b) as its complex chain has one more "tail" than either of the complex chains in (150). At this point I draw no conclusions from these data, but regard them and the points brought up in this section as evidence that the reformulation of the Subjacency Condition which I have proposed does not account for all the factors affecting the acceptability of constructions involving multiple and complex A'-chains. Further research may allow a systematic account of both the tensedness effect and the cumulative effects of crossing non-adjacent barriers.

4.5.3 PPs and Extraction

In a preposition stranding language such as English, extraction of the NP objects of prepositions from within sub-

categorized PPs[40] does not incur violations either of the ECP

or of the Subjacency Condition.

151) a.   Who did you speak to t
      b.   Who can you depend on t

152) a.   Who did you give the paper to t
      b.   Who did you steal the money from t
      c.   Who did you buy a present for t
      d.   What did you leave the book on/under/in t
      e.   What did you put the cake on/in t

Leaving aside the question of whether these PPs are base-

generated as sister to V or V', I will assume that they are

within VP, rather than in an adjoined position, as seems

reasonable for arguments of V. The sentences in (151) and

(152) will then share the portion of structure in (153).

153) ... [$_{VP}$ t' [$_{VP}$ ... V ... [$_{PP}$ P t]] ...

The system must allow t' to antecedent govern t, that is,

there must be no government barriers between t' and t. Fur-

thermore, there must be no subjacency barriers between t' and

t since (151) and (152) are not even mild Subjacency Condition

violations. The PPs in question are L-marked since they are

arguments of a lexical head. Thus, no Subjacency Condition

violation will be incurred nor will t' be prevented from

antecedent governing t by the presence of a barrier created by

a failure of L-marking (L-barrier). However, by the definition

of M(inimality)-barrier given in Barriers, (154a), and that

---

40. "Subcategorized" may be too strong a descriptor here,
since instrumentals and some locatives allow grammatical
extractions as well.

given by Chomsky (1986, class lectures), (154b), PP is an M-barrier in (153) (and therefore in (151) and (152)), blocking government of t by t'.

154)   a.   Given the structure ...α...[γ...δ...β...], τ is an
            M-barrier for β (wrt α, a category excluded by τ)
            if τ is the immediate projection of δ, a zero-
            level category distinct from β.

       b.   α is an M-barrier for β if α includes β, δ (an X°
            c-commander of β), and τ (a maximal projection not
            necessarily distinct from α).

With either definition, the system predicts that the sentences in (151) and (152) should be strongly ungrammatical.

An obvious solution within the **Barriers** framework is to allow "transient" adjunction[41] to PP, a move proposed by Chomsky for other reasons in his discussion of parasitic gaps. This gives the structure in (155) as an alternative to (153).

155)   ... [VP. t [VP ... V ... [PP. t' [PP P t]]] ...

In (155) the category PP is not an M-barrier for t under either definition in (154).[42] If the definition of M-barrier is as in (154a), there must be no P' level of projection. In **Barriers** it is suggested that intermediate levels of projec-

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41. By transient adjunction I mean any sequence of two
applications of move α which result in the following schema
(where α is the element moved from the position of t):

   i)   ...α...[XP t' [XP ...t...]...
             ↑_____↑_____|
                 2   1

42. The **segment** PP cannot be an M-barrier under either defini-
tion in (154) without eliminating the significance of the
definition of government based on exclusion.

tion may be omitted when they are not structurally necessary; see §1 and §8 for discussion. Accordingly, as there is no overt SPEC of PP in these constructions, we may assume there is no P' level. This proviso is not necessary with definition (154b) since there is no τ, necessarily a maximal projection, in an adjunction structure such as (155), as illustrated schematically in (156).

156)   ... $[_{XP}$ t' $[_{XP}$ ... $[_{X'}$ X t] ...
                          /   / |
        (τ??) α? δ β

By allowing transient adjunction to PP, the ECP problem (i.e. the failure of (151) and (152) to exhibit ECP-type violations) is resolved, whether we choose the (154a) or (154b) version of M-barrier.

However, this solution to the ECP problem leaves us with no explanation for the ungrammaticality of the sentences in (157). (Judgements vary among speakers and there are slight differences depending on the preposition chosen, but the speakers consulted consistently rated sentences such as these ? or ??.)

157)   a.   Which concert did you fall asleep during t
        b.   Which performance did you get sick before/after t
        c.   Which bridge did you park the car near t
        d.   What did you leave home without t
        e.   What did you buy tuna instead of t

These PPs are presumably not L-marked and therefore should be barriers both to government and movement. The relatively mild ungrammaticality exhibited by the sentences in (157) indicates

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that, once again, it is necessary to rule out the possibility
of an ECP violation. However, if this is accomplished by
allowing adjunction to PP in these cases as well, no subjacen-
cy violation should result. The same is true for non-argument
NPs, as shown below.

158)   a.   I will arrive [the first week of November]
       b. ?? Which month will you arrive [the first week of t]

An obvious solution is to allow PPs the full internal struc-
ture licensed by X'-theory, as shown below, including a SPEC
which acts as an escape hatch for wh-movement.

159)   PP
           / \
       SPEC   P'
            / \
           P   complement
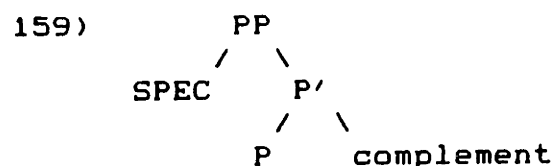
This is essentially van Riemsdijk's (1978) proposal, though
the structure in (159) is a great deal less articulated than
that which he motivates. If there is no transient adjunction
to PP then the Subjacency Condition violation of (157) is
explained.

       This solution to the problem of extraction from PPs
leaves us with the problem of explaining why transient adjunc-
tion to PP should be prohibited and whether this is a general
constraint, i.e. does transient adjunction exist at all? If
so, is there a principled way to characterize the categories
which may be adjoined to? These questions are particularly
important within the Barriers approach to movement since

adjunction to VP is a crucial means of limiting the effects of both L-barriers and M-barriers. N. Chomsky suggests (p.c.) that adjunction be allowed only to those categories which are neither arguments nor predicates.[43] This would permit adjunction only to IP and sisters of I (e.g. VP and AP in sentences such as "John is intelligent").

Given the structure of PP in (159), and assuming a structure for NP which allows for an NP internal landing site, adjunction to VP is the only instance of transient adjunction which is still crucial to prevent both Subjacency Condition and ECP violations. In §4.6.4 I will adopt a revision of Rizzi's (1986, class lectures) relativized minimality condition which does not allow heads to block antecedent government of an XP trace by an XP. Therefore, the minimality motivation for adjunction to VP is eliminated. By the definitions in (130) - (132), however, VP will always be a BC and barrier, so adjunction is still required. For the moment, I will continue to assume VP-adjunction.

It is well-known that parasitic gaps cannot be PPs, as shown by (160).

160)   a. *? a man to whom we sent a letter t after giving some
            money e[44]

---

43. Perhaps by extending K. Johnson's θ-based argument against adjunction to arguments.

44. Longobardi (forthcoming) notes that Italian sentences comparable to (160a) are accepted by many speakers; I find (160a) far more acceptable than (160b) in English as well. Longobardi hypothesizes that it is the (semi-)optionality of dative arguments which makes these sentences more acceptable,

b. * a man with whom she eloped t before living e

In Cinque (1986) the impossibility of PP parasitic gaps is a
consequence of the nature of the gap itself: it is base-
generated pro and he assumes that there is no PP equivalent of
pro. This route would also be open for the analysis I propose
in chapter three, since I also assume that a pro is base-
generated in the position of the parasitic gap. However, this
creates a problem for the analysis of clefts if, as I assume,
a null operator is involved in the derivation of sentences
such as (161).

161)   It was to John that he gave the money.

Cinque extends his account of the ungrammaticality of (160) to
the contrast between (162) and (163) as well.

162)   a. ?' the man that you left London without visiting t
        b. ?' the man that you believe the rumor that John
           killed t

163)   a. *' the man to whom you left London without speaking t
        b. *' the man to whom you believe the rumor that John
           gave all his money t

According to Cinque, the relative acceptability of (162) is
due to the possibility of using the A'-bound resumptive pro
strategy, as in the case of parasitic gaps. The sentences in
(163) are ruled out for him because (i) both long extraction
and successive cyclic movement are absolutely blocked by

_____

i.e. there is no parasitic gap in the adjunct, simply an unre-
alized dative argument.

complex NPs and adjuncts and (ii) there is no PP equivalent of pro to allow the (null) resumptive pronoun strategy to come into effect.

Since I analyse sentences such as those in (162) and (163) as involving extraction out of PP and the complex NP, this account of the contrast between (162) and (163) is not open for me. I propose that this contrast can be explained by the condition in (164).

164)   Only NP may use the SPEC of PP or the SPEC of NP as an
        escape hatch for A'-movement.

This condition can be derived if the movement in question is substitution, as seems likely, and if the empty category base-generated in the SPEC of PP or NP to "receive" the moving category must be amember of the class of actual specifiers of PP or NP. As far as I know, PP never appears in either of those positions, therefore, a PP will never be able to pass through that position. With an appropriate reformulation of the definition of "barrier", condition (164) will account for the contrast between (162) and (163).

4.6   Remarks on Proper Government

4.6.1   Minimality and Head Government

In §4.3 I proposed an analysis of the que/qui alterna-tion and the croire/ritenére facts which requires that the entire chain of the subject be present throughout the deriva-tion, i.e. that at LF there be no link in the chain with its

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members separated by even one barrier. The discussion in §4.4 did not take into account barriers created by the presence of a minimal governor; see (154) above for definitions. I will adopt the definition in (154b) for now. M-barriers are crucial for the ECP account of the that-t effect, illustrated in (165a) with a more detailed structure given in (165b).

165) a.　Who do you think that t left
b.　who$_i$ [$_{IP}$ NP [$_I'$ I [$_{VP}$ t$_i^3$ [$_{VP}$ [$_{V'}$ V [$_{CP}$ t$_i^2$ [$_{C'}$ that [$_{IP}$ t$_i^1$ ...

By the definition in (154b) C' is an M-barrier for t$_i^1$; t$_i^1$ = β, that = δ, C' = α, and IP = τ. The intermediate trace t$_i^2$ will be blocked from governing t$_i^1$ by C' and t$_i^1$ will not be marked [+τ]. The sentence is correctly ruled out.

It is well known that extraction of adjuncts is not subject to the that-t effect. The adjunct extraction equivalent of (165a), given in (166a), is fully grammatical.

166) a.　How do you think that John fixed the car t
b.　how$_i$ [$_{IP}$ NP [$_I'$ I [$_{VP}$ t$_i^3$ [$_{VP}$ [$_{V'}$ V [$_{CP}$ t$_i^2$ [$_{C'}$ that [$_{IP}$ ... [$_{VP}$ t$_i^1$ ...

However, by the definition in (154b) C' in (167b) is an M-barrier for t$_i^1$ just as it is in (165b); t$_i^1$ = β, that = δ, C' = α, and IP = τ. The definition in (154b) incorrectly rules out (166a). Since, by the analysis proposed in §4.4.5, the A'-chains in sentences involving embedded infinitival complements of croire/ritenére verbs or an embedded qui complementizer are subject to the same conditions as the adjunct chain in (166a), (154b) will also incorrectly rule out those sentences.

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(154b) also defines the embec' 'ed CP in (162b) and (163b)

as an M-barrier for the trace in the SPEC of CP, t_i^*. In this

case, $\beta = t_i^*$, $V = \delta$, $V' = \alpha$, and CP = τ. To overcome this

problem, which is also a problem for the __Barriers__ definition

of M-barrier, Chomsky suggests that X' levels may fail to be

projected either when a head has no features or when there is

no structural motivation for it.

Chomsky proposed to solve the first problem, how to

allow t_i^1 to be properly governed in (166a) but not (165a), by

means of VP-fronting at LF. With the lower VP in (166b)

adjoined to the lower IP, as in (167), C' will no longer be a

barrier for t_i^* because there is no τ intervening between t_i^*

and t_i^3. (Recall that (154b) requires τ to be a maximal

projection, not a segment of a category.)

167) $[_{CP}$ wh$_i$ $[_{IP}$ ... $[_{VP^*}$ t_i^4 $[_{VP}$ V $[_{CP}$ t_i^3 $[_{C'}$ that
      $[_{IP^*}$ $[_{VP^*}$ t_i^* $[_{VP}$ V ... (t_i^1) $]$ $[_{IP}$ ... t_{VP} ...

The merits of this proposal notwithstanding, there are consi-

derations which argue against its adoption. First, if LF VP-

fronting is meant to be an analog of SS topicalization, it is

unclear why sentences such as (166a) fail to have a topica-

lized interpretation.[45] Secondly, many speakers find VP

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45. N. Chomsky (p.c.) suggests that there is no relevant dif-
ference of meaning between topicalized and non-topicalized
sentences and, therefore, VP-fronting at LF should be innocu-
ous. I agree that the difference between topicalized and non-
topicalized structures is not best characterized in terms of
meaning, if by "meaning" is meant the lexical semantics,
thematics, etc. of the sentences; nevertheless, there is a
difference in focus which is clearly linked to the structural
difference.

topicalization rather marked in English. If sentences such as

(166a) obligatorily involve VP fronting, some explanation for

their grammaticality in comparison with (168) would have to be

found.[46]

168) I don't think that, fix the car, John ever will.

Finally, if traces at LF must be both antecedent governed

(i.e. τ-marked) and head governed, LF VP-fronting creates

structures in which the status of certain traces with respect

to the head government requirement is unclear. In order to see

that this is so, a more detailed version of (167) is needed,

one which shows the effects of V-to-I raising.[47]

169) $[_{CP}$ wh$_i$ $[_{IP}$ ... $[_{VP}$ t_i^4 $[_{VP}$ V $[_{CP}$ t_i^3 $[_{C'}$ that
      $[_{IP}$ $[_{VP}$ t_i^2 $[_{VP}$ t_V ... (t_i^1) $]$ $[_{IP}$ ... $[_{I'}$ V/I t_{VP} ...

---

46. There are other factors which decrease the acceptability
of VP topicalized structures even more, for example, the
particular modal or form of negation stranded by topicaliza-
tion. The contrast between (i) - (iv) vs. (v) is particularly
relevant in this regard.

    i) * I think that, finished the painting by Monday,
          John will have.
    ii) * I think that, have finished the painting by
          Monday, John will.
    iii) * I think that, finished the painting, John will
          have by Monday.
    iv) * I think that, have finished the painting, John
          will by Monday.

    v)   When do you think that John will have finished the
        painting?

47. In Barriers, it is argued that V-to-I raising takes place
in the mapping from DS to SS in English as well as Romance.
Since we are dealing with LF structures here, this issue is
less relevant.

There are two traces which have a potentially questionable

status in (169): t_v and $t_i{}^a$.[48] We might ask whether in both

cases C = <u>that</u> can act as a head governor. Notice that no L-

or M-barriers intervene between <u>that</u> and $t_i{}^a$; only category

segments intervene and at least one full maximal projection is

required to create either L- or M-barriers.[49] Notice that when

the VP is <u>in situ</u>, as in the fragment of structure in (169'),

the complex head V/I is a possible head governor for both

traces.

169') ... $[_{IP}$ ... $[_I{}'$ V/I $[_{VP*}$ $t_i{}^a$ $[_{VP}$ t_v ... $(t_i{}')$] ...

However, in (167), V/I does not m-command either trace.[50]

There doesn't seem to be anything blocking C from governing t_v

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48. If we adopt the <u>LGB</u> version of c-command, then t_v governs
$t_i{}^a$. The question then becomes whether the trace of a verb may
head govern; according to Baker (1985) the answer is no;
according to Chomsky (class lectures, fall, 1986) the answer
is yes.

49. Or a category segment immediately dominating a barrier, as
I have argued above, following Belletti & Rizzi (1986).

50. That is, V/I does not m-command a category adjoined to IP
under the <u>Barriers</u> definition or the definition proposed by
Chomsky in class lectures (fall, 1986). However, a definition
of command along the lines of that proposed in <u>LGB</u> would allow
the adjoined category to be governed. Such a definition allows
a head to command everything dominated by any segment of its
projections. In (i), for example, X commands α, β and τ. (By
the <u>Barriers</u> definition and that in fn. 11 of chapter one, X
m-commands only τ and β.)

```
i)                    XP*
                     /  \
                  α     XP
                       /  \
                     X'     β
                    / \
                   X   τ
```
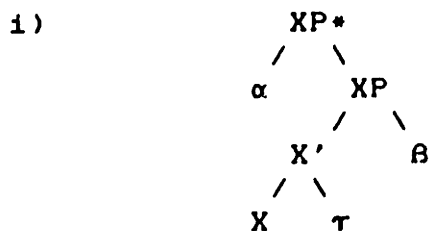
and t_i[a]. But is C a possible head governor? There is a sharp

contrast between the sentences in (170), a contrast which

might well be attributed to the ability of I to head govern

(when lexical in the appropriate sense) and the inability of C

to do so.

170)   a. ?? [$_{VP}$ Eat this mess], I think that he will not t_{VP}
       b. * [$_{IP}$ he will not eat this mess], I think that t_{IP}

The contrast is even more striking in Italian, where VP and CP

topicalize rather freely.

171)   a.   [$_{VP}$ Mangiato le mele], credo che Mario non abbia
              'Eaten the apples, I think that Mario has not'
       b.   Penso che, [$_{CP}$ di sposare questa ragazza] Gianni
              si rifiuterà
              'I think that, to marry this girl, G. will refuse'
       c. *   Penso che, [$_{IP}$ sposare questa ragazza] Gianni si
              rifiuterà di
       d. *   [$_{IP}$ Gianni si rifiuterà di sposare questa
              ragazza], penso che

I will assume, then, that C cannot act as a head governor for

empty categories in IP adjoined positions.[51] It appears that,

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51. The ungrammaticality of sentences such as (i), with the
structure in (ii), does not give evidence one way or another
on the issue of C as a head governor.

    i) * Penso che, dormire, Gianni sembra
    ii)   ...[$_{CP}$ [$_{C'}$ che [$_{IP2}$ [$_{IP1}$ t_i dormire] [$_{IP2}$ Gianni,
         sembra t_{IP}]]]]

In (ii) the category IP1 intervenes between t_i and che, the
potential head governor. I assume, as is consistent with the
Barriers framework, that L-marking is not analogous to τ-
marking, that is, a category is no longer L-marked if it is no
longer sister to its L-marking head. Therefore, even if C
could head govern traces, it would be blocked from governing
t_i in (ii) by the presence of a barrier.

in the structure given in (167), there is no category capable of acting as a head governor for t_v and t_i*.

At this point in the argument against the VP fronting solution to the absence of _that-t_ effects with adjunct extraction an important question arises. First, assume, as I have above following Chomsky (1986, class lectures), that the ECP is satisfied only by antecedent government and that a separate head government requirement is imposed on non-pronominal empty categories. Can the head government requirement be satisfied once at some point in the derivation and then fail to be met at some later point in the derivation? If we conceive of head government as a kind of τ'-marking, on a par with τ-marking, then subsequent applications of Affect α might obliterate the context of head government, nevertheless leaving a trace licensed wrt the head government requirement. If this is the appropriate conception of head government, then both t_v and t_i* in (169) will be τ'-marked by V/I. Regardless of the status of the VP fronting analysis of (166a), the question just raised is an interesting one, and I will examine it in more detail in the next subsection. In §4.6.4 I will discuss some possible means of accounting for the contrast between (165a) and (166a) which do not rely on VP fronting and which are consistent with the proposals in §4.4.

4.6.2 Head Government

Longobardi (1985) argues, on the basis of the data in

(172), that a "local" ECP, such as that of <u>LGB</u>, is not able to account adequately for the distribution of empty categories.

172) a. * t$_i$ dormire, Gianni$_i$ sembra.
      b.   PRO$_i$ dormire, Gianni$_i$ vorrebbe.
      c. ?* Quale ragazza$_i$ pensi che di sposare t$_i$ Gianni si
             rifiuterà

In <u>LGB</u> (172a) is out because t$_i$ fails to be properly governed; (172b) is grammatical since PRO does not fall under the ECP. (172c) is problematic for an <u>LGB</u>-type ECP since t$_i$ is governed by a lexical head (<u>sposare</u>) and therefore properly governed. Longobardi demonstrates that the ungrammaticality of (172a) and (172c) can be accounted for by the Connectedness Condition (CCon) of Kayne (1983). However, the CCon fails to account for the grammaticality of (173).

173) a.   How likely to win is John?
      b.   [$_{CP}$ [how likely [$_{IP_i}$ t$_i$ to win]] [IP$_2$ John$_i$
             is t$_{i*}$]]

As in (172c) the empty category is contained in a left branch. It is, therefore, impossible to construct a connected path which includes the antecedent of the empty category and the empty category itself. The CCon incorrectly rules (173a) out.[52] The same contrast is marginally apparent in English

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52. Longobardi (1985) noticed that sentences such as those in (i) and (ii) are grammatical in Italian so long as the trace contained in the moved category is an NP-trace or a clitic trace. (The contrast between a sentence like (172c) and (173a) cannot be tested because there are no raising adjectives in Italian.) Examples from Longobardi are given below.

    i)   [Tradito t$_i$ da sua moglie]$_j$, credo che Mario$_i$ non
           sia mai stato t$_j$

when topicalization rather than wh-movement is involved,

although the relative awkwardness of clausal topicalization in

English complicates the judgements.

174) a. * t_i to win, John$_i$ is not likely.
      b. ?? Likely t_i to win, John$_i$ is not.

A theory which requires that traces be both head governed and

antecedent governed provides a neat account of these facts and

offers the beginning of an answer to the ECP-related questions

mentioned above. In (173) t_i is head governed in its SS posi-

tion, while in (172a) it is not. The contrast between the two

suggests that head government must be satisfied on the basis

of the SS position of the empty category, i.e. head government

cannot be satisfied "under reconstruction".[53] This would rule

out the possibility that the complex head V/I in (169) could

act as the head governor for the traces t_i* and t_v by virtue

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ii)   [Offerte t_i a sua moglie]$_j$, credo che Mario ancora
       no le$_i$ abbia t$_j$

He suggests that the CCon should be restricted to A'-bound
empty categories, perhaps by being incorporated into the
definition of A'-chain formation. Pesetsky (1982) also notices
that the CCon is unable to account for the distribution of NP-
traces.

53. Through the rest of this portion of the discussion, "under
reconstruction" should be taken as shorthand for three rather
different possibilities: (1) the τ'-marking approach to head
government which licenses the empty category by virtue of its
having been head governed prior to reaching its SS position;
(2) the possibility that head government is satisfied by an SS
mechanism (such as that of Barss (1986), for example); and (3)
the possibility that head government is satisfied by lowering
the constituent containing the empty category to its original
position at LF.

of having governed the traces at some point prior to VP
fronting at LF.

If _John_ is the antecedent governor of t_i in (173), then
it appears that antecedent government need not be satisfied on
the basis of the SS positions of the trace and antecedent
governor. However, the analysis of passive and raising given
in _Barriers_ makes it somewhat difficult to establish whether
this is the case. According to that analysis, _likely_ (or in
the case of passive, the passive participle) acts as the
antecedent governor for t_i; it is licensed to do so by the
formation of a chain which includes the coindexed elements
John, INFL, and _likely_. (_John_ and INFL are coindexed by agree-
ment; INFL and _likely_ are coindexed by a special head coindex-
ing rule.) Therefore, in (174), the local antecedent governor
as well as the local head governor is in the proper position
at SS. There is a conceptual consideration to take into
account here: antecedent government licenses empty categories
by ensuring that they are τ-marked at some point in the deri-
vation. Chomsky's version of the L&S mechanism of τ-marking
allows the empty category created by movement of an argument
to be τ-marked at any point in the derivation prior to the ECP
filter. For example, t could be τ-marked by _who_ at the point
in the derivation shown in (175a) or by t′ at the point in the
derivation shown in (175b).

175) a. $[_{CP} [_{IP} \ldots [_{VP} \text{ who } [_{VP} \ldots t \ldots]]]]$
      b. $[_{CP} \text{ who } [_{IP} \ldots [_{VP} t' [_{VP} \ldots t \ldots]]]]$

This approach to τ-marking allows a derivation for (173a) in which the NP-trace is created and τ-marked before wh-movement applies, as in (176a). (The lines indicate the "extended chain" which is formed to facilitate τ-marking.) Once wh-movement applies, the structure for (173a) is as shown in (176b).

176) a. $[_{CP} [_{IP}$ John$_i$ is$_i$ [how likely$_i$ t$_i$ to win]]]
          |___|_____|____↑(+τ)

      b. $[_{CP}$ [how likely$_i$ t$_i$ to win] $[_{IP}$ John$_i$ is$_i$ t$_{*}$]]
                    (+τ)

The structural relation which holds between the antecedent governor and the trace should no longer be relevant once τ-marking has taken place. Hence, it is conceptually preferable, given other aspects of the theory, to assume that (174a) is ruled out on the basis of a failure of head government.[54]

4.6.3 A Digression on Antecedent Government

There are two government-related proposals at issue: (i) an empty category must be head governed in its SS position[55] and (ii) an empty category need not be governed by an antecedent in its SS position. I will take (172a,b) and (173) as

54. This means that the empty category in (166c) will be τ-marked and head governed and, therefore, completely licensed. Some other means of ruling out sentences such as (166c) must obviously be found.

55. This does not necessarily mean that the head government requirement is checked at SS; it could be checked at LF so long as there is no LF reconstruction process which relocates a category in its DS position. See Barss (1986) for arguments against such a process.

evidence that (i) holds. Turning to (ii), there are three ways
in which the τ-marking configuration for a trace might be
distorted: the trace itself moves, a category containing the
trace moves, or the τ-marker moves. I will not discuss the
third possibility; see fn. 47. In order to assess the plausi-
bility of (ii) we need to know whether allowing τ-marked
traces to move (either by being subject to Move α themselves
or by being contained in a category subject to Move α) is
crucial for any licit derivations or, on the other hand,
whether it derives any sentences which cannot be ruled out by
other constraints; that is, we need answers to the following
questions:

177) a.   Are there grammatical sentences which cannot be
           derived unless a τ-marked trace moves to a
           position in which it is not properly governed by
           an antecedent?
     b.   Are there ungrammatical sentences which are
           allowed by assuming that τ-marked traces can move?

Keeping these questions in mind, consider the sentences in
(178) and (179).

178) a.   There is some Roquefort in the refrigerator.
     b.   There is too much money in the safe.
     c.   There are four people to interview.

179) a.   What sort of cheese is there in the refrigerator?
     b.   How much money is there in the safe?
     c.   How many people are there to interview?

The KoL analysis of the sentences in (178) involves movement
of the post-copular subject to the position of the expletive
at LF, i.e. expletive replacement, yielding an LF representa-

tion along the lines of (180b) from SS representations like (180a).[56]

180) a.   ... $[_{IP}$ there is NP_i ...
    b.   ... $[_{IP}$ NP_i is e_i ...

Expletive replacement is an instance of LF A-movement and e_i in (180b) is an anaphor subject to the ECP and Condition A of the Binding Theory.

    In contrast to (178), the post-copular NP in (179) is an empty category at SS, as demonstrated in this section of the SS representation of (179).

181)   ... $[_{CP}$ wh_i $[_{IP}$ there $[_I{'}$ ... $[_{XP}$ $t_i{'}$ $[_{XP}$ ... t_i ...
                                                          $[+T]$

Whether XP is a small clause or a VP containing a small clause, adjunction should be allowed and t_i will be antecedent governed (+T-marked) by $t_i{'}$ by SS, as shown.[57] At LF, expletive replacement will apply, moving t_i to the SS position of <u>there</u>, giving the LF representation in (182).

182)   ... $[_{CP}$ wh_i $[_{IP}$ t_i $[_I{'}$ ... $[_{XP}$ $t_i{'}$ $[_{XP}$ ... e_i ...
                      $[+T]$

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56. I leave open the question of whether there is coindexing between the post-copular NP and the expletive.

57. Note that this is not a case of "improper movement" such as (i)

    i) $[_{IP}$ $John_i$ ... was $[_{VP}$ $t_i{'}$ $[_{VP}$ elected t_i ...

since, in (181), no constraints will be violated if t_i is a variable at this point in the derivation; in fact, t_i must be a variable throughout the derivation. In (i), however, t_i should never be a variable.

In the mapping from SS to LF e_i might be τ-marked by either

the adjoined trace $t_i{}'$ (which could subsequently delete) or

the copula (assuming the _Barriers_ approach to proper govern-

ment of anaphoric traces in raising constructions).

These sentences are not completely convincing evidence

that the answer to question (177a) is yes. Looking again at

the LF representation (182), it appears that the overt antece-

dent wh_i could τ-mark the trace in pre-verbal subject position

after expletive replacement occurs. In fact, filling the

adjacent SPEC with another wh-phrase, as in (183), results in

ungrammaticality, which would seem to indicate that the LF

subject trace _is_ τ-marked from the SPEC of CP at LF.

183) a. *   How many people do you wonder in which office
             there are
      b. *? What kind of cheese do you know whether there is
             in the refrigerator

(183b) seems distinctly better than (183a) and not, for most

speakers, as strong as an ECP violation, a fact which strongly

supports the "movement of τ-marked trace" hypothesis.[58] More-

over, the sentences in (184) are as bad as (183a), suggesting

that the stronger deviance of (183a) may have to do with other

factors.

184) a. *   Which man do you wonder how foolish John considers
      b. *   Which man do you wonder how foolish John believes
             to be

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58. The ungrammaticality of (178b) is predicted by the relati-
vized Subjacency Condition of §4.4.

c. * Which man do you wonder how foolish John believes
t is t

Another sort of example which might indicate whether the trace in pre-verbal position after expletive replacement may be τ-marked from the SPEC of CP is given below in (185), with the relevant portions of SS and LF representations in (186) and (187).

185) What sort of cheese do you think that there is in the refrigerator?

186) $wh_i...[_{CP} t_i''$ that $[_{IP}$ there$...[_{xp.} t_i'$ $[_{xp}...t_i...$

187) $wh_i...[_{CP} t_i''$ $[_C'$ that $[_{IP} t_i...[_{xp.} t_i'$ $[_{xp}...e_i...$

If t_i is not τ-marked at SS by t_i', it cannot be τ-marked at all, since t_i'' will be blocked from governing t_i by the M-barrier C'.[59] (This is assuming that the complementizer that may not delete at LF.) (185) gives a definitive answer to question (177a): if expletive replacement exists and if that-deletion at LF is not possible, then τ-marked traces may move to a position in which they are no longer antecedent governed.

Let's turn now to (177b), are there ungrammatical sentences which are allowed by assuming that τ-marked traces may move? The first thing to observe is that the moveable τ-marked traces which figured in the discussion above were all variables, that is, arguments. They should, therefore, be

___

59. Sam Epstein independently noticed the relevance of sentences such as (185) for these issues; see Epstein (in progress) for discussion.

subject to any constraints which apply to operations affecting

overt arguments, for example, the θ-criterion, the principle

of Recoverability of Deletion, and the Projection Principle.

There is at least one ungrammatical sentence which has a deri-

vation involving movement of a τ-marked trace, which is not

obviously ruled out by independently motivated constraints.

This is (188), with the derivation shown in (189) and (190).

188) * Who$_i$ do you think that t_i' was hired t_i

189) SS:

$[_{CP}$ wh$_i$ $[_{IP}$ $[_{CP}$ t_i'' that $[_{IP}$ e was $[$ t_i' $[$ hired t_i $]]]]]]$ $[+\tau]$

190) LF:

$[_{CP}$ wh$_i$ $[_{IP}$ you think $[_{CP}$ that $[_{IP}$ t_i was$_i$ $[$ hired$_i$ e$_i$ $]]]]]$ $[+\tau]$ $[+\tau]$

At SS the derivation involves only A'-movement; the trace t_i

is a variable rather than an NP-trace. In (189) e is the

structural subject position, not a member of any chain. who$_i$

adjoins to the lower VP, moves through the embedded SPEC of

CP, and up to the matrix CP (adjoining to the matrix VP on the

way which has not been indicated). The variable in argument

position, t_i, is τ-marked by the adjoined trace, t_i'. At LF

the intermediate traces delete and the τ-marked variable moves

to the subject position leaving an NP-trace behind (e$_i$). This

NP-trace is τ-marked by means of the antecedent government

chain of _Barriers_, i.e. agreement between the subject (t_i) and

INFL, coindexation of INFL and the past participle. All empty

categories in (190) are properly governed and licensed.

Several ways of ruling out this derivation come to mind.

However, the grammaticality of (191),[60]

191) Quale autore pensi che era stato intervistato?
'Which author do you think that was interviewed?'

suggests that the difference should be linked to the pro-drop

parameter. The SS representation (189) will be ruled out in

English since that language possesses no null expletives;

there is no empty category which will be licensed in the posi-

tion of e in (189). In a pro-drop language with null exple-

tives, the same representation will be well-formed. The opera-

tive principle here is the Extended Projection Principle,

which requires all clauses to have subjects. Thus, it seems

that there is no bar to assuming what is, after all, the null

hypothesis: τ-marked traces may be moved after τ-marking to

positions in which they are not antecedent governed.

4.6.4 Minimality

In §4.6.1 I pointed out that the definition of M-barrier

in (154b), repeated below, incorrectly rules out the French

and Italian sentences in (192) and (193) and the English
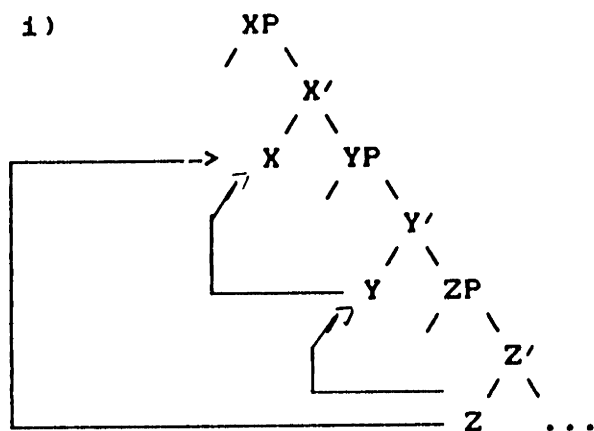
(194).[61]

_____

60. The Spanish analog of (191) is also grammatical.

61. Baker (1985) has argued that syntactic incorporation is
head to head movement, which is subject tot he ECP. Therefore,
incorporation only occure under government and intervening

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154) b.   α is an M-barrier for β if α includes β, δ (an X°
            c-commander of β), and τ (a maximal projection not
            necessarily distinct from α).

192) a.   il ragazzo che Gianni penso che ritieni essere
            intelligente
            'the boy that John thinks that you believe to be
            intelligent'
     b.   la femme que je sais que tu crois être le plus
            intelligent de tous
            'the woman that I know that you believe to be the
            most intelligent of all'

193) la femme que je sais que tu crois qui aime Jean
     'the woman that I know that you believe loves John'

194) How do you think that John fixed the car?

In (192) - (194) there is a subsection of structure equivalent

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heads block incorporation. In the hypothetical structure in
(i), three possible instances of head movement are indicated
and in (ii) the structures which might result from these moves
are given. Minimality is taken to block case c in (ii).

i)

ii)   a.   ... [$_{IP}$ X/Y [$_{VP}$ t$_y$ [$_{IP}$ Z ...
        b.   ... [$_{IP}$ X [$_{VP}$ Y/Z [$_{IP}$ t$_z$ ...
        c.   ... [$_{IP}$ X/Y/Z [$_{VP}$ t$_{y/z}$ [$_{IP}$ t$_z$ ...
        d. *   ... [$_{IP}$ X/Z [$_{VP}$ Y [$_{IP}$ t$_z$ ...

Since all the minimality proposals discussed in the text can
handle these facts, I will not discuss them any further.

to (195). If (154b) is adopted then C' acts as an M-barrier

preventing t' from antecedent governing t.

195)   ...[$_{CP}$ t' [$_{C'}$ C [$_{IP}$...[$_{VP}$ t [$_{VP}$...

(154b) incorrectly predicts that (192) - (194) will be ECP

violations.

There is something odd about the minimality account of

the contrast between (194) and (196):

196) * Who do you think that t left?

In both cases the relation between the potential governor and

the "minimal" or closer governor remains the same, what diffe-

rentiates the two sentences is the configurational distance

between the governed element and the two governors. Observa-

tionally, it seems that when the trace is "far enough" from

the potential governors, the effects of minimality disappear.

The definition of M-barrier in (154b) handles this peculiarity

by attributing minimality effects to the presence of both a

minimal governor and a maximal projection. VP fronting elimi-

nates the maximal projection and, therefore, the minimality

effects. But it seems to me that the peculiarity resurfaces

with this solution: the relation between the two governors is

the same, but, if the the trace is "close enough", minimality

effects disappear. I have given some arguments against the VP

fronting solution to the (194)/(196) contrast in §4.6.1 and I

will not review them. Instead, I will briefly examine two

possible alternatives to this approach, both of which are consistent with the rest of proposals I have made thus far.

L&S account for the (194)/(196) contrast by assuming free complementizer deletion at LF. For this account to work, it is crucial that all argument traces which exist at SS receive [±τ] at SS. Therefore, the trace in subject position in (196) will be receive [-τ] at SS and, since τ-marking cannot be changed, even if the complementizer deletes at LF (196) will be ruled out. (194) on the other hand involves an adjunct trace and adjunct traces are not τ-marked until LF; in particular, they are not marked [-τ] at SS if they are not properly governed at that level. At LF the complementizer in (194) deletes and t' antecedent governs and marks t [+τ] as required. The definition of M-barrier in (154b) is perfectly consistent with this account.⁶⁶ Moreover, the L&S approach handles (192) and (193) equally well. The only argument trace in these constructions is the one in subject position of the embedded clause and this will be marked [+τ] at SS, either by the coindexed qui complementizer or a trace in SPEC of CP. The other traces, which I have argued are required to be present throughout the derivation, are non-argument traces and, as such, cannot be τ-marked until LF. At LF the complementizers delete and the intermediate traces are all successfully marked [+τ].

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62. The problem with V' remains with the L&S account, but the possibility of resorting to the optionality of X' still exists.

The approach to minimality expressed in definition (154b) regards any kind of government as being blocked by the intervention of a closer governing head (and a suitable configuration of projections). Rizzi (class lectures, 1986) suggests an alternative "relativized" version of minimality which allows δ to block government of β by α only if α and δ are the same sort of governor, e.g. only heads may block head government and only XPs may block antecedent government by an XP. Rizzi's minimality condition[63] was designed to exclude subject that-t effects from the realm of minimality violations. I suggest instead the minimality condition in (197), which is similar to Rizzi's but which treats the subject that-t effect as a minimality violation.

197) Given α, δ, β where
     i) α, δ govern β and
    ii) α, δ are potential antecedents for β

    α antecedent governs β iff there is an X^n, $n \geq 1$, which includes α and excludes δ.

---

63. The definitions from Rizzi's class lectures (1986) are given below.

    i)   Relativized Minimality: α X-governs β only if there is no τ such that
        a. τ is a potential X-governor for β
        b. τ is closer to β than α

    ii)   Closeness in (ib) is determined in terms of the length of a path between two elements.

    iii) X-government = (head government, antecedent government from an A-position, antecedent government from an A'-position)

The definition of "potential antecedent" is crucial and must include at least the following two statements:

198) a.   XP is a potential antecedent for YP iff X=Y.
      b.   Complementizer <u>that</u> counts as a potential antece-
            dent for a trace in the subject position of its
            clause.[64]

The stipulative nature of (198b) is apparent; rather than attempting to justify it directly, I will enumerate some of the benefits of a relativized minimality condition leaving a more insightful formulation of the condition for further research.[65]

A relativized version of minimality does away with the need for X'-deletion and complementizer deletion as methods of limiting the effects of the condition for adjunct traces. It also has the advantage of accounting for Obenauer's (1984) "pseudo-opacity" effects. Obenauer (1976, cited in (1984))

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64. In order to permit sentences such as those in (192) and (193), it is crucial that a complementizer not be able to block τ-marking of intermediate traces resulting from the movement of the subject of another clause. For example, the structure for sentences such as those in (192) looks something like (i), greatly simplified. (C = <u>que</u> or <u>che</u>; $V^{\sim}$ = <u>croire,</u> <u>ritenére,</u> etc.)

i)   ...$[_{CP}$ O_i $[_{IP}$...$[_{VP}$ t_i^5 $[_{VP}$...$[_{CP}$ t_i^4 C $[_{IP}$...
      $[_{VP}$ t_i^3 $[_{VP}$ $V^{\sim}$ $[_{CP}$ t_i^2 $[_{IP}$ t_i^1...$]]]]$...

t_i^1 is the trace of origin; t_i^2 is the trace required for case-marking purposes. By (111) all traces in (i) must be marked $+\tau$. If C is a potential antecedent for t_i^3 then t_i^4 will not be able to τ-mark t_i^3. Therefore, complementizers must only be potential antecedents for the subjects of their own clauses.

65. Most of the arguments below follow Rizzi's (1986) class lectures on the topic, at least in spirit.

noticed that the presence of certain adverbial quantifiers

blocks wh-movement of <u>combien</u> from object position.[66]

199) a. * Combien as-tu beaucoup consulté de livres?
      b. * Combien a-t-il beaucoup rencontré de collègues?
      c. * Combien as-tu peu conduit de voitures?

Wh-movement over these QP-adverbs is grammatical so long as

the moved element is not <u>combien</u> alone.

200) a. Combien de livres as-tu beaucoup consultés?
      b. Combien de collègues a-t-il beaucoup rencontrés?
      c. Combien de voitures as-tu peu conduites?

201) a. Qui a-t-il beaucoup rencontré?
      b. Avec qui a-t-elle beaucoup joué?
      c. un hotel dans lequel ils sont beaucoup descendus

Even when QP-adverbs such as <u>beaucoup</u> receive a less quantifi-

cational interpretation, they do not permit extraction of

<u>combien,</u> as illustrated by the ungrammaticality of (202).

Other adverbs which are not QPs do not induce pseudo-opacity

effects, as illustrated in (203).

202) a. * Combien a-t-il beaucoup aimé de femmes?
      b. * Combien a-t-il peu apprécié de films?

203) a. ? Combien a-t-il passionnément aimé de femmes?
      b. ? Combien a-t-il modérément apprécié de films?

Finally, QP-adverbs can block extraction from NPs into which

they cannot themselves quantify. (204a) shows that <u>combien</u> may

bind into the post-verbal NP and (204b) indicates that

_____

66. The data in (199) - (205) are from Obenauer (1984).

beaucoup may not. The ungrammaticality of (205a) shows that
beaucoup blocks extraction of combien even in this case.

204) a.   Combien (l')as-tu applaudi(e) de fois?
             'How many times did you applaud (her)?'
      b. * J'ai beaucoup applaudi de fois.
             'I applauded many times.'

205) a. * Combien (l')as-tu beaucoup applaudi(e) de fois?
      b.   Combien de fois (l')as-tu beaucoup applaudi(e)?
             'How many times did you applaud (her) a lot?'

(205b) is included to show that there is nothing inherently
incompatible about the combien-beaucoup combination.[67]

The relativized minimality condition straightforwardly
rules out the ungrammatical sentences in (199), (202), (204)
and (205) given the L&S/Barriers approach to the ECP and cer-
tain additional, well-motivated, assumptions. I will restrict
the discussion to A'-chains and will assume that the class of
antecedent governors and elements which may block antecedent
government is restricted to categories which are not in A-
positions, i.e. heads and A'-elements. As combien and the mem-
bers of the beaucoup class of adverbs are QPs, the configura-
tion which results in ungrammaticality in the sentences above
is that shown in (206), where both QPs are in A'-positions.

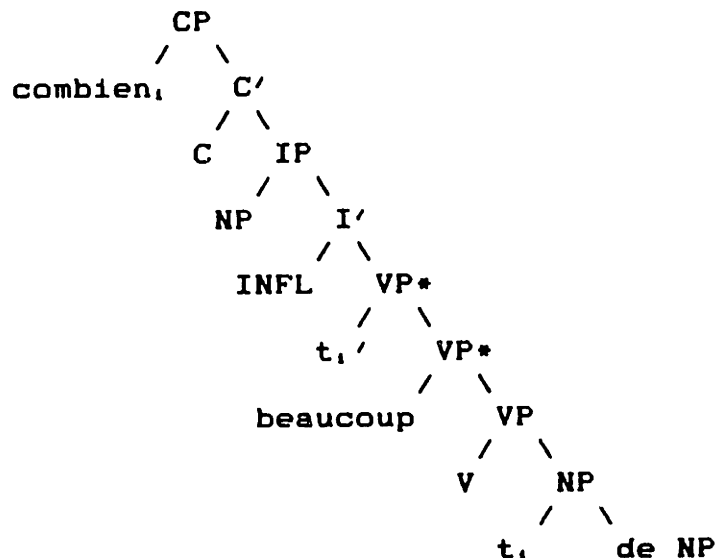206) ...QP$_i$...QP$_j$...t$_i$...

_____

67. Obenauer offers extensive arguments to show that the
ungrammatical combinations of combien/beaucoup are not ruled
out by a requirement that combien pass through the pre-verbal
position (occupied by beaucoup) on its way to SPEC of CP.

What is the nature of t_i, the trace of _combien_, in these con-
structions? If _combien_ is a quantificational specifier, then
its NP-internal trace will be a non-argument. For concrete-
ness, I will adopt the approach to the τ-marking of non-argu-
ments which incorporates (111) from §4.4.5, repeated below,
although the L&S alternative works equally well in this case.

111) Any A'-chain containing a non-pronominal empty category
      in an A'-position at LF must be entirely represented
      throughout the derivation.

(111) requires the A'-chain of _combien_ to be fully represented
throughout the derivation, which in turn requires that all
empty categories in the chain receive $[+\tau]$ before the ECP is
checked at the end of the LF mapping. The ungrammatical
sentences above will be ruled out by the relativized version
of minimality if there is at least one empty category in the
chain $(QP_i,...,t_i)$ which is blocked from being antecedent
governed by the presence of _beaucoup_ as a closer governor. In
order to see if such a state of affairs holds in these senten-
ces, it is necessary to look at the structure of one in more
detail. Assume that _beaucoup_ is a VP-adjoined adverbial; after
wh-movement of _combien_ the structure of the ungrammatical sen-
tences above will be essentially as in (207). (I have purpose-
ly been vague about the internal structure of NP as there is
only one thing which is relevant for this discussion: the
trace of _combien_ must be a non-argument position.)

207)

```
                        CP
                      /    \
            combien_i     C'
                         /  \
                        C    IP
                           /   \
                         NP     I'
                               /  \
                            INFL   VP*
                                  /   \
                               t_i'    VP*
                                      /   \
                                 beaucoup   VP
                                          /   \
                                         V     NP
                                        /  \
                                      t_i    de NP
```

In order for the chain (combien, t_i', t_i) to be licensed, both empty categories must be antecedent governed. Our working definition of relativized minimality would prevent combien from antecedent governing t_i' only if there were a "closer" QP in an A'-position which governed the trace. There is no such QP between combien and t_i', therefore t_i' may be marked [+T]. For t_i to be marked [+T], t_i' must antecedent govern it, but beaucoup, a QP in an A'-position intervenes between t_i' and t_i. By relativized minimality, t_i' does not antecedent govern t_i and an ECP violation is the result.

The sentences in (208) are, at first glance, problematic for the relativized minimality approach. (In (208b) $O_{i/j}$ is the null relative operator; the slash indexing is meant to indicate that the sentence is grammatical with either operator corresponding to either variable.)

208) a. * Combien sais-tu où inviter t de filles?
            'How many do you know where to invite t of girls?'
      b.   l'uomo$_{i/j}$ ($O_{i/j}$) che non so chi$_{i/j}$ e$_j$ conosca e$_i$

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In (208a) antecedent government of the trace of _combien_ is

apparently blocked, but the intervening A'-operator is not a

QP. The minimality condition in (197) could be altered to

account for this by substituting for the category matching

requirement, the requirement that α and δ (the potential

governor and the minimal governor) match in argument status.

Since _combien_ and _où_ are both non-arguments, (208a) is ruled

out. However, this revision is unnecessary as long as the

presence of the intermediate wh-operator creates at least one

barrier. The ungrammaticality of (209) indicates that an

embedded infinitival question such as that in (208a) does

indeed create at least one barrier.

209) * Où sais-tu quelles femmes$_j$ inviter t$_j$ t$_i$

As in English, extraction of a non-argument over even one

barrier results in an ECP violation.

Turning now to (208b), the sentence is grammatical with

either indexing configuration shown in (210).

210)   a.   wh$_i$...wh$_j$...e$_j$...e$_i$
       b.   wh$_j$...wh$_i$...e$_j$...e$_i$

The indexing in (210b) arises as a result of the resumptive

pronoun strategy with the resumptive pronoun being, in this

case, the null pronominal in subject position; that is, (210b) is properly represented as (210b').[68]

210) b.' $wh_j...wh_i...pro_j...t_i$

The construction in (208b) seems to pose serious problem for relativized minimality regardless of which indexing holds, given that both configurations in (210) are similar to the configuration which resulted in an ECP violation in the combien/beaucoup sentences. The difference between (208b) and the combien/beaucoup sentences is that the former involves argument chains rather than non-argument chains. Therefore, it is only necessary for the traces in argument positions to be properly governed; in the normal case, intermediate traces in an argument A'-chain need not be properly governed.[69] Looking at (210a,b) in more detail, it is clear that in each case there is an antecedent governor for the argument trace.[70]

211) a. $wh_i...wh_j$ $[_{IP}$ $t_j...[_{VP}$ t_i' $[_{VP}...t_i...$
      b. $wh_j...wh_i$ $[_{IP}$ $pro_j...[_{VP}$ t_i' $[_{VP}...t_i...$

In (211a) t_i' antecedent governs t_i and wh_j antecedent governs t_j. In (211b) t_i' agains antecedent governs t_i, but antecedent government is irrelevant to the licensing of the null resump-

_____

68. This is not an instance of the A'-bound pro strategy of Cinque (1986), discussed above; rather, this is a case where the null pronominal, independently licensed by AGR, acts as a resumptive pronoun in a manner completely parallel to overt resumptive pronouns.

69. The exceptions being those cases discussed in §4.4.5.

70. There is also a head governor in each case.

tive pronoun as it is not subject to the ECP. Neither indexing possibility for (208b) is ruled out by relativized minimality.

The original purpose of this section was to find a definition of minimality which would not rule out the sentences in (192) - (194). The minimality condition in (197) has this property and, in addition, accounts for a wide range of facts beyond the scope of the definition of M-barrier in (154b). Nevertheless, the stipulative nature of clause (b) of the relativized minimality condition suggests that something is still being missed in the analysis of that-t effects.

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