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## Chapter 1

### Opacity Effects on Adjunct Variables

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#### 1.1 Introduction

The minimality principle is a partial characterization of the locality conditions on government. The core case to be captured is that a governor cannot govern inside the domain of another governor; i.e., in configuration (1), X cannot govern Y if there is a closer potential governor Z for Y.

(1) . . . X . . . Z . . . Y . . .

The functional correlate of this formal principle is the reduction of ambiguity in government relations: there will be exactly one governor for each governee in the general case. For instance, in a configuration like (2), the verb will not govern the prepositional object *John* because of the intervention of the preposition, a closer potential (and actual) governor.

(2) . . . [ talk [ to John ] ] . . .

Most current definitions implement this core idea in an asymmetric way with respect to the kinds of government. The theory specifies two kinds of government, depending on the nature of the governor: head government (relevant for Case, Binding, and the modules licensing the various types of empty categories) and antecedent government (relevant for the ECP and/or for the definition of chain—see chapter 3). The asymmetry is that an intervening potential head governor blocks both kinds of government, whereas an intervening potential antecedent governor does not have any blocking capacity. That is, if Z is a potential head governor for Y in (1), X can neither head-govern nor antecedent-govern Y, whereas if Z is a potential antecedent governor for Y, both kinds of government are still possible from X. This is, in

essence, the effect of the minimality principle of Chomsky (1986b), even though the blocking capacity of an intervening head is indirect in that system, mediated through the notion “barrier”.<sup>1</sup> We will call an asymmetric principle of this sort Rigid Minimality.

In this chapter we will explore the consequences of a symmetric approach to minimality. The principle to be introduced, Relativized Minimality, makes the blocking effect of an intervening governor relative to the nature of the government relation involved: in (1), if Z is a potential governor of *some kind* for Y, it will block only government of *the same kind* from X. If Z is a potential head governor, only head government from X will be blocked. If Z is a potential antecedent governor, only antecedent government will be blocked.

Conceptually, this symmetric approach appears to be closer to the intuitive functional correlate of disambiguation, as expressed above. Empirically, the symmetric approach is both more and less restrictive than the asymmetric approach. It is more restrictive because relativized minimality blocks antecedent government from X when Z is a potential antecedent governor, a configuration about which rigid minimality has nothing to say. The symmetric approach is also less restrictive because relativized minimality cannot block antecedent government from X if Z is a potential head governor, whereas rigid minimality does. Within the symmetric approach, head government and antecedent government proceed on parallel tracks and cannot interfere with each other.

The main empirical motivation for relativized minimality has to do with its more restrictive character. It will be argued that this approach permits a unified treatment, under the Empty Category Principle, of three empirical domains which are intuitively very close:

- Huang’s (1982) observation that adjuncts cannot be extracted from *wh* islands:

- (3) a ?Which problem do you wonder [how [PRO to solve t t]]  
 b \*How do you wonder [which problem [PRO to solve t t]]

- Obenauer’s (1984) pseudo-opacity effects: In French a VP-initial adverbial QP selectively blocks extraction of certain VP-internal elements—for example, extraction of the direct object is possible, but extraction of the specifier of the direct object is not, as in (4).

- (4) a Combien de livres a-t-il beaucoup consultés t  
 ‘How many of books did he a lot consult’  
 b \*Combien a-t-il beaucoup consulté [t de livres]  
 ‘How many did he a lot consult of books’

- Ross’s (1983) inner islands: Adverbial elements cannot be extracted from the scope of negative operators, as (5) shows.

- (5) a Bill is here, which they (don’t) know t  
 b Bill is here, as they (\*don’t) know t

The striking similarity among these three cases is that the class of possible extractions is, by and large, defined in the same way: an argument can be extracted, an adjunct cannot. A unified account seems to be in order. As a first approximation we could reason in the following way: Certain operators create a selective opaque domain for adjunct variables; i.e., in the context of (6) adjunct variables cannot be free in the domain of the operator.

- (6) . . . [ OP . . . \_\_\_\_ . . . ] . . .

Of course, the empirical effects of this opacity principle would overlap to a significant extent with the effects of the ECP, thus suggesting a unification. But standard assumptions on the ECP module, and rigid minimality in particular, do not seem to allow the ECP to subsume our descriptive scope constraint: why should an intervening VP initial operator or negation block the required government relation in (4b) and (5b)?

The basic goal of this chapter is to show that a unified treatment of (3)–(5) is made possible by a symmetric theory of government and minimality. We will also discuss cases in which relativized minimality is less restrictive than standard minimality. In some such cases, the reduced restrictiveness will turn out to yield desired empirical consequences (see the end of subsection 1.3.1). In chapter 2 we will go back to other, more problematic cases involving Comp-trace effects.

## 1.2 *Wh* Islands

Huang (1982) noticed that extraction of an adjunct from a *wh* island gives a notably worse result than extraction of a complement, and made the influential proposal of assimilating this asymmetry to familiar subject-object asymmetries under the ECP. Consider the following paradigm:

- (7) a ??Which problem do you wonder how John could solve t t  
 b \*Which student do you wonder how t could solve the problem t  
 c \*How do you wonder which problem John could solve t t
- (8) a Which problem do you think [t [John could solve t]]  
 b Which student do you think [t [t could solve this problem]]  
 c How do you think [t [John could solve this problem t]]

How can one express the fact that subjects and adjuncts pattern alike, and differently from complements, in this respect? The classical formulation of the ECP (Chomsky 1981) does not seem to draw the right distinction here:

- (9) ECP I: A nonpronominal empty category must be  
 (i) lexically governed, or  
 (ii) antecedent-governed.

Manner adverbials are base-generated VP-internally, as is shown by the fact that they may be carried along under VP preposing (see Roberts 1988a):

- (10) . . . and speak in this way he did

Therefore, they are lexically governed by V. Still, they appear to require antecedent government if (7c) is to be ruled out by the ECP. The same argument-adjunct asymmetry is found even with manner adverbials which are obligatorily selected by certain verbs:

- (11) a ??With whom do you wonder [how [PRO to behave t t]]  
 b \*How do you wonder [with whom [PRO to behave t t]]

There can be little doubt, in this case, that the adjunct (or its trace) is lexically governed by the verb that selects it. If (9) is correct, why should antecedent government be required? The classical formulation of the ECP is insufficient here.

Stowell's (1981) proposal that the first clause of the ECP should refer to Theta government (government by a Theta assigner) appears more promising:

- (12) ECP II: A nonpronominal empty category must be  
 (i) Theta-governed, or  
 (ii) antecedent-governed.

In (7a) the object trace is governed by the verb that assigns a Theta role to it; hence, it is Theta-governed, the ECP is fulfilled, and the weak deviance of the structure is solely determined by a Subjacency

violation. In (7b) the subject trace is neither antecedent-governed nor Theta-governed (the verb does not govern the subject); hence, the structure is ruled out by the ECP. Huang's influential insight was that (7c) should be ruled out on a par with (7b) by the ECP. In fact, the adjunct trace is not Theta-marked; hence, the first clause of the ECP cannot be fulfilled, nor is it antecedent-governed in this structure; thus the ECP, as formulated in (12), is violated. On the contrary, examples (8b) and (8c) are well formed because the trace in the specifier of Comp antecedent governs the initial trace, and the second clause of the ECP is satisfied. (11b) can be excluded on a par with (7c) if we make the assumption that lexical selection of an adverbial does not involve Theta marking of the appropriate kind, which is restricted to referential expressions.<sup>2</sup>

Of course, in order to achieve this result, our theory of government must state that the *wh* phrase in the main Spec of Comp in (7b), (7c), and (11b) is too far away to directly antecedent-govern a trace in the lower clause, whereas the trace in the embedded COMP in (8b) and (8c) is close enough to do so. Keeping the discussion at an informal level for the moment, we can now see how Relativized Minimality gives us the desired result. Consider the informal characterization given in the introduction. In (7b) and (7c) a potential antecedent governor for the subject or adjunct trace is the operator in the lower Spec of Comp. This element is not an actual antecedent governor (in fact it is not an actual antecedent, there being no coindexation), but its presence suffices to block government from the actual antecedent: given Relativized Minimality, antecedent government cannot take place inside the domain of a potential antecedent governor. Since in (7b) and (7c) the relevant trace is not Theta-governed either, the ECP is violated. In (8b) and (8c), on the other hand, the non-Theta-governed trace is antecedent-governed by the trace in the embedded Spec of Comp; hence, the ECP is satisfied. In general, the combined effect of the ECP and Relativized Minimality on traces that are not Theta-governed is that the closest potential antecedent governor must be the *actual* antecedent governor; otherwise the ECP will be violated.

Concerning the well-formedness of (8c), one should raise the question why the subject (or the object) does not count as a potential antecedent governor for the adjunct trace: if it did, it would induce a minimality effect and hence an ECP violation. Clearly, what is needed is a selective definition of the notion "potential antecedent governor" such that an operator in the specifier of Comp counts as a potential

antecedent governor for a *wh* trace but other clause-internal c-commanding positions do not count. And, of course, we need precise definitions of all the principles and notions involved.

### 1.3 Relativized Minimality

First of all, we must define the two types of government which the system uses:

(13) **Head Government:** X head-governs Y iff

- (i)  $X \in \{A, N, P, V, Agr, T\}$
- (ii) X m-commands Y
- (iii) no barrier intervenes
- (iv) Relativized Minimality is respected.

(14) **Antecedent Government:** X antecedent-governs Y iff

- (i) X and Y are coindexed
- (ii) X c-commands Y
- (iii) no barrier intervenes
- (iv) Relativized Minimality is respected.

The two definitions are fully parallel. They differ in the characterization of the classes of governors: head governors are the lexical heads and some functional heads, at least those containing the agreement and tense specification (we will assume here that Agr and T can head independent projections and can also be associated as features with other heads); antecedent governors are coindexed categories. Both definitions involve a command requirement, to exclude upward government.<sup>3</sup> Both definitions include some notion of barrier, in the sense of Chomsky 1986b. Clearly, there is some tension between the Relativized Minimality idea and the notion of barrier, in that the former directly subsumes some of the cases dealt with by the latter in Chomsky's system. We will not fully explore the consequences of this tension here; in particular, we will not try to assess its implications for the important project of unifying in part the theories of government and bounding, and we will limit the comparison with Chomsky's (1986b) system to the domain of the theory of government. For our current purposes it will be sufficient to assume that XP's which are not directly selected by [+V] elements are inviolable barriers for government (see note 6), and we will not address the question of how subjacency barriers are to be characterized.

We then define Relativized Minimality through the variable notion " $\alpha$ -government," ranging over head government and antecedent government, as in (15).

(15) **Relativized Minimality:** X  $\alpha$ -governs Y only if there is no Z such that

- (i) Z is a typical potential  $\alpha$ -governor for Y,
- (ii) Z c-commands Y and does not c-command X.

The second clause of the principle simply defines "intervention" in hierarchical terms, rather than in linear terms as in our initial intuitive characterization.<sup>4</sup> As for the first clause of (15), we now have to define the notion "typical potential  $\alpha$ -governor." The intuitive idea is that a typical potential  $\alpha$ -governor for an element Y is a base-generated position that could bear the relevant kind of government relation to Y. For the moment I will leave this notion at an intuitive level, and will simply list the different subcases. A formal unification is offered in the second appendix of this chapter. As for the head government subcase, things are quite straightforward:

(16) Z is a typical potential head governor for Y = Z is a head m-commanding Y.

As for antecedent government, we assume, with Chomsky (1986b, p. 17) that this notion is a property of chains; it is then natural to distinguish three subcases, depending on whether Y is a trace in an A-chain (NP movement), in an A'-chain (*wh* movement), or in an X<sup>0</sup>-chain (head movement):

- (17) a Z is a typical potential antecedent governor for Y, Y in an A-chain = Z is an A specifier c-commanding Y.
- b Z is a typical potential antecedent governor for Y, Y in an A'-chain = Z is an A' specifier c-commanding Y.
- c Z is a typical potential antecedent governor for Y, Y in an X<sup>0</sup>-chain = Z is a head c-commanding Y.

That is to say, minimality effects are exclusively triggered by potential governors of the different kinds filling base-generated positions: heads for head government and (respectively) A specifiers, A' specifiers, and heads for antecedent government in A, A', and X<sup>0</sup> chains. One will notice here a certain similarity with the Theory of Binding, in particular with the Generalized Binding approach (Aoun 1985, 1986). The classical insight behind the Specified Subject Condition and many more recent formulations of the Theory of Binding is that subjects (A spe-

cifiers) have a critical role in determining opaque domains for A anaphora: an anaphor must be bound in the domain of the closest A specifier, and not necessarily in the domain of the closest potential A antecedent; an A specifier seems to be the typical antecedent for an anaphor (the only possible antecedent in some languages), and as such it determines an opaque domain. Relativized Minimality, in a sense, generalizes this idea to government relations: typical potential governors of different kinds create impermeable domains for government. A close conceptual analogy also exists with Burzio's (1989) approach to cross-linguistic variation with respect to the Theory of Binding. According to Burzio, the class of elements which block binding relations and the class of possible antecedents are equivalent and are structured along an identical hierarchy of strength (a stronger potential antecedent is a stronger block, and so on). The analogies with the theory of binding look more than superficial, and suggest the possibility of a partial unification of government and binding along these lines, an important issue that I will not address here. See chapter 6 of Kayne 1984 for relevant discussion. The second appendix of this chapter capitalizes on the analogies between government and binding to attempt a formal unification of (16) and (17).

The next four subsections will show how the system works for antecedent government in A'-chains, A-chains, and X<sup>0</sup>-chains, and for head government.

### 1.3.1 A'-Chains

Let us now go back to structures like the following:

(18) \*How do you wonder [which problem [PRO to solve t t']]

Here the A' specifier *which problem* intervenes between *how* and its trace *t'*, an A'-chain. Hence, by Relativized Minimality, *t'* is not antecedent-governed; it is not Theta-governed either, and therefore the structure is ruled out by the ECP. Notice that the same result holds if movement of *how* can proceed through VP adjunction, as in the system of Chomsky 1986b, and even if adjunction to IP is allowed as an intermediate step for *wh* movement. The relevant representation would be (19).

(19) How do you [ t' [ wonder [ which problem [ t'' [ PRO to [ t''' [ solve t t'''' ]]]]]]]

Here *t* is Theta-governed, and *t''''*, *t'''*, and *t'* are antecedent-governed, but *t''* is not: *t'* is too far away because a potential A' governor, the

*wh* operator in the spec of the embedded C, intervenes. In general, extraction of an adjunct from a *wh* island always gives rise to an ECP violation under Relativized Minimality: no matter how many intermediate traces there are, and where they are, an adjunct chain will include a link (which is (*t'*, *t''*) in (19)) crossing the A' specifier of the embedded C, hence violating the ECP. So, for this class of cases, the stipulation that IP is not a possible adjunction site for *wh* movement (see Chomsky 1986b) can be dispensed with. (See Frampton 1989 for an elegant alternative approach, closer to Chomsky's original system, that also avoids this stipulation.)

Now consider (20).

(20) How do you think [ t' that [ Bill solved it t'' ] ]

Here three heads (V, I, and C) and one A specifier (the subject) intervene between *t'* and *t''* and between *how* and *t''*. Nevertheless, they do not interfere with antecedent government, as we now expect. Here Relativized Minimality is clearly superior to Rigid Minimality, which, unless special provisos are added, predicts that the relevant antecedent-government relations should be blocked by the intervening heads.

In the system of Chomsky 1986b the intervention of V<sup>0</sup> is nullified by the option of not projecting the V' level, which is crucial for minimality to apply in that system (see note 1). The intervention of I<sup>0</sup> is nullified by the assumption that the I system is intrinsically defective with respect to the theory of government in that its projections never count as inherent or minimality barriers. The intervention of C<sup>0</sup> realized as *that* is made irrelevant by the option of deleting *that* in the syntax of LF (and checking antecedent government for adjuncts at LF), along the lines of Lasnik and Saito's (1984) proposal. As for the intervention of a C<sup>0</sup> realized as an inflected auxiliary, the problem is not directly addressed in Chomsky 1986b; one could explore the possibility that this particular instance of I-to-C movement is a PF phenomenon, and as such does not interfere with the ECP (but see below for arguments against this view). Each of these problems, considered individually, looks solvable, and the proposed solutions may very well be tenable and plausible. Still, if we consider these cases jointly, the important question arises of why four independent factors should conspire to give the result that an intervening head never blocks antecedent government in the adjunct system.<sup>5</sup>

It appears reasonable to look at things from a different perspective: there is no conspiracy, it simply is the case that, in general, different kinds of government do not interfere with one another. This is the guiding intuition of the current approach. In (20) the relevant relation involves an A'-chain; hence, under relativized minimality, the intervening heads and A specifiers do not have any blocking power. The same is true of the antecedent-government relation between *how* and *t'*. In general, intervening heads and A specifiers never interfere with antecedent government in A'-chains.<sup>6</sup>

### 1.3.2 A-Chains

The fundamental case to consider under this rubric is the impossibility of SuperRaising:

(21) \*John seems that it is likely [ *t* to win ]

Here the trace should be antecedent-governed, but it is not under Relativized Minimality: the intervening A specifier *it* blocks the government relation between *John* and its trace, and hence the structure violates the ECP. In this system we do not expect intervening heads to ever interfere with antecedent government in A-chains; in fact, an intervening V<sup>0</sup> and I<sup>0</sup> do not:

(22) John does not seem [ *t* to be here ]

Here again Rigid Minimality is forced to resort to special provisos, unnecessary under the current approach.<sup>7</sup> We also do not expect intervening A' specifiers to interfere. This is correct if the negation in (22) occupies an A' spec position, as will be argued below. The same conclusion holds for (23), given the evidence (to be provided below) that *beaucoup* occupies an A' specifier position.

(23) Ce livre a été beaucoup consulté *t*  
'This book was a lot consulted'

Strictly speaking, under the formulation (12) of the ECP the well-formedness of (23) does not establish the point that antecedent government holds in that structure: the passive trace is Theta-governed by the verb, and this suffices under formulation (12). But it will be shown in chapter 3, following Chomsky's (1986b) discussion, that antecedent government must hold in passive structures (see sections 3.4 and 3.6 in particular).

### 1.3.3 X<sup>0</sup>-Chains

Here the descriptive generalization to be captured is the Head Movement Constraint, the fact that a moved head cannot skip an intervening head between its base position and its landing site (Travis 1984; Chomsky 1986b; Baker 1988); movement to C<sup>0</sup> can give (24b) but not (24c) from a basic structure like (24a).

(24) a They could have left  
b Could they *t* have left?  
c \*Have they could *t* left?

The moved X<sup>0</sup> antecedent-governs its trace in (24b), but not in (24c) because of the intervening I<sup>0</sup> in the latter case. The subject, an A specifier, does not interfere here, nor does the A' specifier *beaucoup* in the case of V-to-I movement in French illustrated by (25b).

(25) a Jean a [ beaucoup dormi ]  
'Jean has a lot slept'  
b Jean dort [ beaucoup *t* ]  
'Jean sleeps a lot'

In this case Relativized Minimality and Rigid Minimality give the same result.

### 1.3.4 Head Government

Minimality effects of head government can be illustrated through Case Theory. The most significant case is the fact that Exceptional Case Marking cannot take place across a CP level, and PRO is allowed to occur:

(26) a \*John tried [ C<sup>0</sup> [ Bill to win ] ]  
b \*John wonders [ how C<sup>0</sup> [ Bill to win ] ]

Whenever a CP is present, a C<sup>0</sup> (overt or null) must be present. It intervenes between the external governor-Case assigner and the lower subject in (26); hence, it blocks government and Case assignment. Here the tension between an approach to locality via barriers and one via minimality (rigid or relativized) becomes apparent. We have obtained the effect that government of a subject is always blocked across a CP, but this does not require treating CP as a barrier in these cases (inherently or through inheritance, as in Chomsky 1986b): the intervening C<sup>0</sup> suffices to determine the effect through minimality.<sup>8</sup>

#### 1.4 Pseudo-Opacity

This section is based largely on important work by Hans Obenauer on various *wh* constructions in French (see, in particular, Obenauer 1976, 1984). The first relevant property of French is that the *wh* quantifier *combien* (how much/many), when used as an NP specifier, can pied-pipe the NP or be extracted from it:

- (27) a [Combien de livres] a-t-il consultés t  
 'How many of books did he consult'  
 b Combien a-t-il consulté [t de livres]  
 'How many did he consult of books'

This construction raises immediate questions about the nature of the Left Branch Constraint and its apparent violability. Here we will simply acknowledge the existence of such violations.<sup>9</sup>

The second relevant property of French is that it allows adverbial QP's to occur in VP-initial position:

- (28) Il a beaucoup consulté ces livres  
 'He has a lot/many times consulted these books'

This position can apparently be used as a landing site for movement of a QP specifier of the object NP:

- (29) a Il a consulté [beaucoup de livres]  
 'He has consulted many of books'  
 b Il a beaucoup consulté [t de livres]  
 'He has many consulted of books'

It is not really crucial for us to determine whether (29b) is derived through actual movement from a representation like (29a).<sup>10</sup>

These two properties are related in an interesting way, Obenauer points out. If the VP-initial position is filled by an adverbial quantifier, then *wh* extraction of the specifier of the object gives rise to a deviant structure whereas extraction of the whole object is acceptable. Consider the examples in (30).

- (30) a Combien de livres a-t-il beaucoup consultés t  
 'How many books did he a lot consult'  
 b \*Combien a-t-il beaucoup consulté [t de livres]  
 'How many did he a lot consult of books'

In order to exclude structures of this type, Obenauer introduces a principle requiring that empty categories be bound by the closest potential binder available. This is, of course, very close to the idea of

relativized minimality, which has the property of reducing the local binding effect to the ECP. Why should such facts as (30) be reduced to the ECP? There is a double similarity between Obenauer's pseudo-opacity and Huang's *wh* islands which strongly supports the idea of a unified account. First of all, extraction of (NP specifier) *combien* from a *wh* island gives rise to a strong violation, comparable to adjunct extraction and much worse than extraction of the whole direct object:

- (31) a ?Combien de problèmes sais-tu [comment[PRO résoudre t t]]  
 'How many of problems do you know how to solve'  
 b \*Combien sais-tu [comment[PRO résoudre [t de problèmes] t]]  
 'How many do you know how to solve of problems'

Second, a VP-initial adverbial QP blocks not only extraction of the specifier of the direct object but also extraction of ordinary VP adjuncts:

- (32) a Comment a-t-il résolu [beaucoup de problèmes] t  
 'How did he solve many of problems'  
 b \*Comment a-t-il beaucoup résolu [t de problèmes] t  
 'How has he many solved of problems'

These cases appear, in fact, to have the same status as Obenauer's examples.

How can this parallelism be represented by the theory? Notice, first of all, that the adjunct status of an NP specifier follows immediately from the definition of the ECP in (12). Consider (31). In (31a), a direct object is extracted; hence, the trace is Theta-governed by the verb and the ECP is fulfilled. The slightly degraded status of the sentence is presumably to be attributed to bounding theory, or to whatever property makes interrogative extraction out of an indirect question awkward in many languages. In (31b), the specifier obviously is not Theta-marked; hence, it is not Theta-governed. The only possibility for a specifier trace to satisfy the ECP is for it to be antecedent-governed, but this option is excluded in (31b) by Relativized Minimality; hence, the structure is ruled out by the ECP, as desired.

Consider now (30b) and (32b). Given minimal X'-theoretic assumptions, the VP-initial QP is the A' specifier of the VP.<sup>11</sup> In parallel with the other major case of an A' specifier, the specifier of C, this position is a possible scope position for quantifiers of a designated kind (*wh* operators for the Spec of C, adverbial quantifiers for the Spec of V), and is apparently available as a landing site for A' movement (or A'



construal—see note 10). Then, a VP-initial QP meets our definition of potential antecedent governor in A'-chains for relativized minimality. In (30b) and (32b), the fact that the traces of *combien* and *comment* cannot be A'-governed by their actual antecedents is due to relativized minimality. They are not Theta-governed either; hence, the ECP is violated. In (30a), the object trace is Theta-governed by the verb, and the structure is well formed. We thus have the desired unified account of the two empirical domains under the ECP.<sup>12</sup>

Example (32b) should be contrasted with (33), which is acceptable.

(33) Pourquoi a-t-il beaucoup résolu de problèmes?

'Why has he many solved of problems?'

At first sight, this asymmetry between *comment* and *pourquoi* with respect to pseudo-opacity is surprising, as both elements are strongly nonextractable from *wh* islands. A closer look at the level of attachment immediately clarifies things. (33) is acceptable because *pourquoi* differs from *comment* in that it is not a VP adverbial, and hence it is not extracted from the domain of *beaucoup* (perhaps it is not extracted at all—see section 2.4.), and no ECP violation arises.

Obenauer (1984, p. 173) points out an additional surprising asymmetry: if *de livres* is pronominalized by *en* and moved to the inflected verb in (30b), the structure appears to improve (even though it remains deviant for many speakers). Consider (34).

(34) Combien en a-t-il beaucoup consultés?

'How many of-them-has he a lot consulted?'

Why should cliticization of *en* improve things? The behavior of past-participle agreement suggests that (34) and (30b) differ structurally in a significant way:

(35) a Combien a-t-il conduit de voitures?

'How many did he drive of cars?'

b Combien en a-t-il conduites?

'How many of-them-did he drive (+Agr)?'

Agreement is possible in (35b) but not in (35a). We continue to follow Kayne's (1985) approach, according to which past-participle agreement is triggered when the direct object passes through an NP position higher than the past participle. This position cannot be the Spec of VP—already filled in (34)—so presumably it is the specifier of an object-agreement morpheme, or is adjoined to the projection of such a morpheme, essentially along the lines of Chomsky 1988. For con-

creteness we will call it the "Object-Agreement Position" (on which see also Belletti 1989). This analysis creates the option of a well-formed derivation for (34). Starting from a D-structure like (36a), the whole object NP first moves to the object-agreement position in (36b), thus bypassing the VP specifier; then, in (36c), the object-agreement position is vacated by clitic movement of *en* and *wh* movement of *combien*:

(36) a COMP II a NP [beaucoup consulté [combien en]]

b COMP II a [combien en] [beaucoup consultés t]

c Combien il en a [t' t''] [beaucoup consultés t]

t, an argument trace, is Theta-governed and hence well formed, t' is antecedent-governed by *combien*, and t'' is antecedent-governed by *en*. Thus, the Spec of VP does not intervene between *combien* and its trace, and the structure is well formed. This derivational option is not available for (30b), in which *combien* is directly extracted from the object position and hence cannot antecedent-govern its trace across the VP specifier.<sup>13</sup> Two differences between (35a) and (35b) with respect to pseudo-opacity and past-participle agreement can thus receive a uniform account.

### 1.5 Inner Islands

Ross (1983) noticed that negation interferes with extraction of adverbial elements but leaves unaffected the extractability of arguments. A striking minimal pair is the following (adapted from Ross 1983):

(37) a Bill is here, which they (don't) know

b \*Bill is here, as they (\*don't) know

*wh* movement of the adverbial element *as* is affected by the presence of negation, whereas movement of the argumental (proclausal) element *which* is not in the nearly synonymous sentence (37a).<sup>14</sup>

Similar contrasts hold quite systematically (Travis 1984; Kayne 1986, note 17):

(38) a It is for this reason that I believe that John was fired

b It is for this reason that I don't believe that John was fired

(38a) is ambiguous; the clefted adverbial can be construed with the main clause or with the embedded clause. (38b) is not ambiguous; the negation on the main verb blocks the lower construal (that is, the sentence cannot mean "this is the reason such that I don't believe that

John was fired for this reason," and can mean only "this is the reason which motivates my disbelief").

The same effect can be detected in simple clauses:

- (39) a John was not fired for this reason  
 b It is for this reason that John was not fired

In (39a) the adverbial PP can be interpreted inside or outside the scope of negation ("not for this reason John was fired" and "John was not fired, and this happened for this reason"). When the adverbial is clefted, only the external reading survives; that is, (39b) cannot mean "this is the reason that didn't motivate John's firing." As Ross points out for similar cases, the internal reading remains impossible if a context is set up which would make it pragmatically plausible (for example, if there were *a priori* three potential motivations, and I wanted to stress that one wasn't actually involved in John's firing, I could still not use (39b) to express this). This seems to be valid in general for the sentences discussed in this section.

The same effect is found, at a somewhat variable degree, with other types of adverbials—for instance, measure phrases. The examples in (40) are due to Bill Ladusaw.

- (40) a How strongly do you believe that inflation will rebound  
 b How strongly do you not believe that inflation will rebound

(40a) allows both main and embedded construal: the question can be about the strength of the belief or of inflation's rebound. (40b) is unambiguous and solely concerns the extent of the (dis)belief.

The argument-adjunct asymmetry is clearly illustrated by the following examples:

- (41) a What do you believe he weighed (last week)  
 b What do you not believe he weighed (last week)

(41a) allows both "Potatoes" and "200 pounds" as possible answers; (41b) seems to naturally allow only the first answer, in the appropriate context (that is, the direct object of agentive *weigh* can be extracted from the domain of negation, whereas the adverbial measure phrase selected by stative *weigh* cannot).

Now consider manner adverbials:

- (42) a John didn't fix the car in this way  
 b ?It is in this way that John didn't fix the car  
 (43) a It is in this way that I think that John fixed the car  
 b \*It is in this way that I don't think that John fixed the car

Manner adverbials, contrary to cause adverbials, do not naturally allow external scope. That is, the natural interpretation of (42a) has the adverbial in the scope of negation; the external reading is marginally possible only if the negated VP is somehow interpretable as referring to a purposeful achievement: John didn't fix the car, and he managed to do so in this way. (42b) is marginally acceptable only in this unnatural reading. (43a) is unambiguously interpreted with the manner adverbial construed with the embedded verb, and (43b) is excluded by the intervening negation, which blocks the only possible construal.

Thus, negation appears to create opacity effects on adjunct variables, a state of affairs which is obviously reminiscent of our previous discussion of *wh* islands and pseudo-opacity.

If negation qualifies as a typical potential A' binder (an A' specifier), the inner-island effect can be reduced to the ECP through relativized minimality: if a non-Theta-marked element is extracted from the domain of negation, it will be unable to antecedent-govern its trace because of relativized minimality, and an ECP violation will result. The A' binding nature of negation is particularly visible in French, where negation patterns on a par with uncontroversial A' binders such as *wh* elements and adverbial QP's in licensing a null NP specifier:

- (44) a Combien a-t-il lu [*e* de livres]  
 'How many did he read of books'  
 b Il a beaucoup lu [*e* de livres]  
 'He has many read of books'  
 c Il n'a pas lu [*e* de livres]  
 'He has not read of books'

The analysis of clausal *pas/not* as specifiers is made plausible by the fact that they can function as specifiers of other projections: QP's (*pas beaucoup, pas tout* = *not much, not all*) and AP's (*Je croyais Marie pas capable de faire cela* = *I considered Marie not capable of doing this*). Consider also the quasi-idiomatic French construction *Pour pas qu'il le fasse, . . .* (in order not that he do it), where *pas* appears as C specifier.

What projection could sentential negation be a specifier of? French clearly shows that *pas* is not a spec of VP; in fact, it can co-occur with a spec of VP, in a fixed order (*beaucoup pas* is ill formed):

- (45) Jean n'a pas beaucoup mangé  
'Jean has not a lot eaten'

This seems to require the articulated structure of inflectional projections argued for by Pollock (1989, preliminary version dated 1986), according to which Agreement and Tense head distinct functional projections, AgrP and TP (see also Moro 1988). Following Belletti 1989b and Chomsky 1988, we will assume that AgrP is the highest inflectional projection; thus, *ne*, on a par with the other nonsubject clitics, is attached to Agr<sup>0</sup>, and *pas* is the specifier of the lower inflectional head T<sup>0</sup>:<sup>15</sup>

- (46) [<sub>AgrP</sub> Jean n'a [<sub>TP</sub> pas [<sub>VP</sub> beaucoup mangé ]]]

Under this analysis, inner-island effects immediately follow from the ECP under Relativized Minimality. Consider the following case in French, illustrating the effects directly in terms of the scope interaction of *pas* and *beaucoup*:

- (47) a Il n'a [pas [résolu [beaucoup de problèmes]]]  
'He has not solved many of problems'  
b Il n'a [pas [beaucoup résolu [*e* de problèmes]]]  
'He has not many solved of problems'

Both sentences are well formed. (47a) shows a scope ambiguity: it can mean "many problems are such that he did not solve them," or "not many problems are such that he solved them." On the other hand, (47b) is unambiguous and allows only the second reading, with *beaucoup* receiving internal scope. In other words, (48a) is a possible LF representation, whereas (48b) is not (t is the trace of LF movement applying on (47a) and (47b)).

- (48) a [beaucoup de problèmes] il n'a [pas [résolu t]]  
b \*beaucoup il n'a [pas [t résolu [*e* de problèmes]]]

This is another instance of inner-island effect induced by negation, applying on LF movement in this case. In (48a) the trace of the object is theta-governed by the verb, and the ECP is fulfilled. In (48b) the trace of *beaucoup* in the spec of VP is not theta-governed; it should be antecedent-governed, but it is not under relativized minimality, because of the intervening *pas*. (48b) is then ruled out by the ECP, and the only well-formed LF associated to (48b) is the one in which *beaucoup* is not extracted from the domain of *pas*. If sentential negation is analyzed as an A' specifier, all the other cases of inner islands discussed so far follow straightforwardly in the same way. Not sur-

prisingly, sentential negation also affects the syntactic extractability of *combien*, as pointed out by Moritz (1989):

- (49) \*Combien n'a-t-il pas conduit [t de voitures]  
'How many did he not drive of cars'

This case is the exact syntactic equivalent of the LF representation (48b). The proposed analysis covers both cases.

Inner-island effects are apparently not limited to sentential negation. Other negative or negative-like operators give rise to a similar pattern. Consider the following contrasts:

- (50) a It is for this reason that everyone believes that Bill was fired  
b It is for this reason that no one believes that Bill was fired  
(51) a It is by lethal injection that many people believe that John was executed  
b \*It is by lethal injection that few people believe that John was executed  
(52) a It is for this reason that John believes that Bill was fired  
b It is for this reason that only John believes that Bill was fired

Judgments vary in strength and across informants, but the general tendency seems to be that the lower construal is possible in examples (50a), (51a), and (52a) but is very awkward or impossible in examples (50b), (51b), and (52b). For example, (50a) is ambiguous, whereas (50b) can mean only "This is the reason which motivates the fact that no one believes that Bill was fired," and not "This is the reason such that no one believes that Bill was fired for this reason." (51a) can be interpreted with the clefted adverbial construed with the embedded verb; this interpretation—the only possible interpretation in such cases—is not available in (51b); hence, the structure is deviant (this example was pointed out by Bill Ladusaw). In (52b) the lower construal (possible in (52a)) is excluded, and the only possible interpretation is "This is the reason which motivates the fact that only John believes that Bill was fired."

It would then seem that inner-island effects are determined by "affective" operators, in Klima's (1964) sense—that is, operators licensing negative-polarity items (see Ladusaw 1981 and Barwise and Cooper 1981 for a semantic characterization of the class). Non-affective operators, such as *every* and *many*, do not trigger the effect. A particularly clear minimal pair was suggested by M. Rochemont:

- (53) a Few people did anything  
 b \*A few people did anything
- (54) a Why do few people think that Bill was fired?  
 b Why do a few people think that Bill was fired?

(53) shows that *few* is an affective operator whereas *a few* is not. In fact, the long-distance construal of *why* appears to be possible across the latter but not across the former in (54).

A possible interpretation of this apparent generalization is suggested by the fact that only affective operators trigger subject-aux inversion (Lieberman 1974):

- (55) With no job / few jobs would Bill be happy  
 (56) \*With some job / a few jobs would Bill be happy

Under current assumptions, Subject-Aux Inversion is amenable to I<sup>0</sup>-to-C<sup>0</sup> movement, a particular case of head-to-head movement. It then appears to be the case that, in English, affective operators and only affective operators can move to the spec of C in the syntax. We will make the conjecture that this is the syntactic reflex of a more general LF property: the canonical scope position for affective operators is an A' specifier position (of Comp, and possibly of other categories as well). This is obviously the case for an important subclass of affective operators, *wh* quantifiers, whose scope position is the Spec of Comp. For nonaffective operators, we keep the standard assumption that their canonical scope position is created through adjunction to IP (and possibly to other categories; see May 1985).

Let us now compare the LF representations of (50a) and (50b) in the lower construal under these assumptions:

- (57) \*It is for this reason [<sub>CP</sub> no one [<sub>IP</sub> t believes [ that Bill was fired t ]]]
- (58) It is for this reason [<sub>CP</sub> [<sub>IP</sub> everyone [<sub>IP</sub> t believes ] that Bill was fired t ]]]

Taking literally our definition of "Typical Potential Antecedent Governor in A'-chains," we can account for the difference through relativized minimality and the ECP: in (57) *no one* is an A' specifier and hence a potential antecedent governor intervening between the adverbial PP and its trace (a trace of its A'-chain). Hence, the trace will not be antecedent-governed, and the ECP will be violated. In (58) on the other hand, *everyone* does not meet the definition of potential antecedent governor in A'-chains, in that it is not a specifier but an adjunct.

Hence, relativized minimality is not triggered, and the A'-chain of the clefted adverbial does not violate the ECP.<sup>16</sup>

Simple negative questions such as (59) raise the issue of the LF position of the negative quantifier:

- (59) What did no one say ?

One possibility that comes to mind is that the Spec of C can be multiply filled at LF by the *wh* element and the negative quantifier. In fact, the idea that nodes can be multiply filled at LF is not implausible, as the uniqueness of fillers at S-structure may be regarded as a consequence of the obligatory linearization at PF, a process that does not affect LF representations: multiply filled nodes cannot be properly linearized. Among other things, this would immediately account for the otherwise mysterious asymmetry between S-structure and LF that many languages manifest in multiple questions: at most one *wh* element is moved to Comp at S-structure, while all the *wh* elements presumably are in Comp at LF:

- (60) S-s: I wonder [ what [ you gave t to whom ]]  
 LF: I wonder [ what [ you gave t t ]  
 to whom

Whatever its general plausibility, two considerations strongly suggest that the option of multiply filling Spec of C at LF does not provide the solution of the problem raised by (59). First of all, the LF representation assigned to (59) would be indistinguishable from a superiority violation (\**What did who say*). Whatever principle rules out superiority violations of this kind (see note 15 to chapter 2) would presumably exclude such a representation as well. Second, there is an inner-island effect in this case too. Example (61) does not allow the internal construal (What is the reason such that no one came for this reason?).

- (61) Why did no one come ?

Now, if *no one* was in the same position as *why* at LF, it would not intervene between the latter and its trace in the relevant sense, and the internal construal would not be blocked in the familiar manner.

A more plausible hypothesis to cover cases such as (59) and (61) appears to be that the spec of IP can optionally count as an A' specifier at LF. In cases such as (59) this option must be taken to properly assign scope to the affective operator, as the spec of C is not available. (Even if we allow nodes to be multiply filled at LF, the representation obtained by moving *no one* to spec of C<sup>0</sup> would be ruled out by the

principle excluding superiority violations.) Thus, *no one* does not have to move, and it determines the inner-island effect from its S-structure position.<sup>17</sup>

### Appendix 1 Negation and V-to-I Movement

The above discussion presupposes an analysis of the negative marker as an A' specifier on the appropriate level(s) of representation. This assumption is in conflict with various recent proposals according to which the negative marker heads an autonomous projection, NegP (negative phrase). From the perspective of the approach introduced here, this alternative appears problematic, at least for such elements as English *not* and French *pas*. (As is mentioned in note 15, our approach is compatible with the NegP idea if *pas*, *not* is analyzed as the specifier, rather than the head, of the negative phrase.) We have seen that an intervening negation of this kind blocks A'-chains involving adjuncts. Reciprocally, it does not block X<sup>0</sup>-chains. This is shown by the possibility of V-to-I movement in the following cases:

- (62) a They should [not have left]  
       b They have [not t left]

- (63) a Pour ne [pas manger]  
       b Ils ne mangent [pas t]

On *have/be* Raising see Emonds 1976 and Lasnik 1981; these works follow lines originally proposed by Edward Klima. On the French case, see Emonds 1978 and Pollock 1989. Similarly, the Continental Scandinavian languages offer particularly clear cases of head-to-head movement across a negative marker: the tensed verb follows the negative marker in embedded clauses, whereas it precedes the negative marker in main clauses (see Holmberg and Platzack 1988 and references quoted there). Consider the following Swedish examples:

- (64) a Jan köpte inte boken  
       'Jan bought not books'  
       b ... om Jan inte köpte boken  
       '... if Jan not bought books'

As main-clause word order is determined by Verb Second, the now familiar analysis of such alternations involves the assumption that (64b) manifests the basic word order, whereas (64a) is a V-2 structure with the tensed verb in C<sup>0</sup> and another constituent (the subject in this

case) in its Spec. Clearly, this particular instance of head-to-head movement can move the verb across a negation marker here. It thus appears to be quite generally true that an intervening negation blocks antecedent government in A' chains but not in X<sup>0</sup>-chains. If negation was a head, we would expect the opposite pattern, which is not attested.

Looking more closely, we must acknowledge a residual blocking effect of negation on an apparent X<sup>0</sup> dependency: negation appears to block the association of the inflectional morpheme with a lexical verb in English, as (65) illustrates.

- (65) a John smokes  
       b \*John smokes not  
       c \*John not smokes  
       d John does not smoke

There seems to be a general consensus on the assumption that a lexical verb is not allowed to move to an inflectional head in modern English, whence the ill-formedness of (65b) (Emonds 1976; Pollock 1989; Chomsky 1988); the well-formedness of (65a) then involves affix-hopping (Chomsky 1957), lowering the content of Infl to V in the VP, and the sentence has the following S-structure (Chomsky 1988):

- (66) John [<sub>IP</sub> t] [<sub>VP</sub> [smoke +s] ]

The ill-formedness of (65c) then seems to suggest that an intervening negation blocks affix hopping, and makes it necessary to insert the dummy auxiliary *do* in Infl to ensure morphological well-formedness. We thus seem to reach a rather paradoxical conclusion: an intervening negation does not affect the regular V-to-I movement of (62)–(64), but it blocks I-to-V movement (affix hopping). Why should this be so? Different answers are suggested by the different possible approaches to a more fundamental question: Why is a downgrading application of head-to-head movement allowed in (66)? Chomsky (1988) proposes that an upgrading movement of the inflected verb in the syntax of LF rescues the structure. Consider the following adaptation of Chomsky's proposal (an analogous approach is independently proposed by M. R. Manzini in forthcoming work). We will assume that whatever constraint blocks V-to-I movement in the syntax, it is still operative at LF; hence, in (66) the inflected verb cannot cover the trace of Infl at LF. But the verb is now assigned the tense specification, a specification often regarded as operator-like. It is then natural to assume that the inflected verb can undergo operator movement, a familiar LF process,

adjoining it to some I projection. The LF representation of (66) would then be (67).

(67) John [<sub>VP</sub> [smoke]+[s]] [<sub>IO</sub> t] [<sub>VP</sub> [<sub>VP</sub> t] ]

This is a well-formed representation, with both traces properly bound and governed by their antecedents. The inflection *-s* governs the Infl trace (assuming that the intervening V boundary does not block the required command relation; in fact, X<sup>0</sup> boundaries never do if the command relations are defined in terms of “projection,” as in note 3; see also Baker’s (1988) Government Transparency Corollary); moreover, the inflected verb and the verbal trace now form an A’-chain, created by operator movement; therefore, the intervening I<sup>0</sup> does not block the antecedent-government relation under Relativized Minimality.

An important consequence of this analysis is that it immediately explains why an intervening negation blocks structures like (65c): if syntactic lowering of Infl can be salvaged by LF operator movement of the tensed verb, we expect the corresponding A’ dependency to be affected by an intervening negation, as A’ dependencies generally are. Thus, in the LF representation (68) the verbal trace cannot be antecedent-governed by its A’ antecedent, the inflected verb; therefore ECP is violated, and (65c) is correctly ruled out.<sup>18, 19</sup>

(68) John [<sub>VP</sub> [smoke]+[s]] [<sub>IO</sub> t] not [<sub>VP</sub> [<sub>VP</sub> t] ]

## Appendix 2 Government Theory Compatibility

The system of definitions of section 1.3 specifies the different subcases of the crucial notion *typical potential  $\alpha$  governor* and expresses the unitary nature of these cases only at an intuitive level. The purpose of this appendix is to present a slightly more refined system of definitions in which the four subcases are formally unified. I will draw on the conceptual and formal similarity between government and binding, and achieve the desired unification through an extension of Chomsky’s (1986a) notion *Binding Theory compatibility* to Government Theory. Let us first rephrase the definitions of the different kinds of government by sharpening certain distinctions that were partly implicit in the initial characterizations. In particular, we will now assume that each definition must specify some *configurational conditions*, the tree geometry in which the relation can hold, some *substantive condition* that an element must satisfy to qualify as a governor, and some *locality con-*

*ditions*. Once this tripartite distinction is made, the definition of head-government takes the following shape:

(69) **Head Government:** X head governs Y iff

- (i) a. X is a head
- b. X m-commands Y
- (ii) X = {[ $\pm$ V  $\pm$ N], Agr, T}
- (iii) a. no barrier intervenes
- b. Relativized Minimality is respected

(i) and (iii) express the configurational and locality conditions, respectively; (ii) expresses the substantive condition: a head-governor must be endowed with some special property, lexical content or T or Agr.

As for antecedent government, I agree with Chomsky (1986b, p. 17) that this notion is a property of chains; thus, it is natural to assume that antecedent government splits into three subcases, depending on the kind of chain involved:

(70) **Antecedent Government:** X W-antecedent governs Y (W = {A, A’, X<sup>0</sup>}) iff

- (i) a. X is in a W-position
- b. X c-commands Y
- (ii) X and Y are coindexed
- (iii) a. no barrier intervenes
- b. Relativized Minimality is respected.

W is a variable ranging over A, A’, and X<sup>0</sup> antecedent government, the three subcases corresponding to chains formed by NP movement, *wh* movement, and head movement. The substantive condition on antecedent government is that X and Y are coindexed categories (see (70ii); but see section 3.6 for a modification required by the theory of indices developed in chapter 3). The locality conditions (iii) are identical in (69) and (70), and can be factored out. The new definitions differ from (13) and (14) in that the distinction between purely configurational conditions and substantive conditions is clearly stated, and the three subcases of antecedent government are overtly expressed.

In approaching the definition of relativized minimality, we can now consider the variable notion  *$\alpha$ -government* as ranging over the four cases expressed by (69) and (70), head government, and the three subcases of antecedent government (A-antecedent government, A’-antecedent government, and X<sup>0</sup>-antecedent government). The intuitive idea is that a particular kind of government is blocked by the intervention of an element which typically has the potential for government

of that kind. The four subcases of typical potential governor are repeated in (16) and (17) for ease of reference.

- (16) Z is a typical potential head governor for Y = Z is a head m-commanding Y
- (17) a Z is a typical potential antecedent governor for Y, Y in an A-chain = Z is an A specifier c-commanding Y  
 b Z is a typical potential antecedent governor for Y, Y in an A'-chain = Z is an A' specifier c-commanding Y  
 c Z is a typical potential antecedent governor for Y, Y in an X<sup>0</sup>-chain = Z is a head c-commanding Y.

The next step is to formally unify these cases. We can now take direct advantage of the close conceptual analogy with the theory of binding stressed in section 1.3. In Chomsky's (1986a) approach, the locality conditions on binding are determined in part by the virtual satisfiability of the Binding Principle: the Governing Category of an element is a domain virtually allowing an indexation *Binding Theory compatible*, i.e., a domain in which the configurational properties for Binding are satisfied, while the substantive property (actual indexation) need not be. We can think of the locality conditions on government in essentially the same way. We continue to assume that the theory of government consists of the four subcases defined by (69) and (70). We then say that an element Z is *α-Government Theory compatible* (α-GT compatible) with an element Y when the configurational conditions (i) for the appropriate subcase of government are met (categorical status and position of the governor, command), while the substantive condition (ii) on the nature of the governor need not be (actual coindexation for antecedent government, actual possession of the governing quality for head government). (It is immaterial for the present purposes whether the locality conditions enter into the definition of GT compatibility or not.) Thus, for instance, a head is head-GT compatible with an element it m-commands, whether or not it is endowed with actual governing force; an A-specifier is A-antecedent GT compatible with an element it c-commands, whether or not it is actually coindexed with this element; etc. It should now be clear that α-GT compatibility encompasses the different types of typical potential governors. We can then write the following principle.

- (71) **Relativized Minimality:** X α-governs Y only if there is no Z such that
- (i) Z is a base-generated position
  - (ii) Z is α-GT compatible with Y
  - (iii) Z c-commands Y and does not c-command X.

Clause i is intended to limit the blocking effect to heads and specifiers, as adjoined positions do not seem to have this capacity (see section 1.5, in particular, for empirical evidence showing this point). Clause iii expresses the intervention in hierarchical terms, as before. Clause ii unifies the four cases of typical potential governors of (16) and (17) under the notion GT compatibility, obviously reminiscent of Chomsky's BT compatibility.

In conclusion: A significant parallelism is drawn between government and binding in that in both theories locality is (partially) defined by the occurrence of a structural configuration that fulfills the geometric conditions on the relevant relation, irrespective of whether or not this configuration also fulfills the substantive conditions (actual coindexation, etc.).

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## Notes

### Chapter 1

1. In Chomsky's system, *g* is a barrier for *b* in (i)

(i) . . . a . . . [*g* . . . d . . . b . . . ] . . .

if *g* is (a projection, the immediate projection) of *d*, a zero-level category distinct from *b*. See pp. 42ff. of Chomsky 1986b for a discussion of the consequences of this view of Minimality, and for the empirical differences between a definition assuming *g* to be the *immediate* projection of *d* and one assuming it to be *any* projection of *d*.

2. Various other approaches have been suggested in the recent literature to deal with the adjunct-argument asymmetries; see Cinque 1984, Obenauer 1984, Lasnik and Saito 1984, Chomsky 1986b, Longobardi (forthcoming), and Rizzi 1988. Here we have initially selected the Theta-government approach for concreteness. See chapter 3 for a detailed discussion of the issue.

3. *X* m-commands *Y* (or c-commands *Y* à la Aoun and Sportiche 1981) iff neither *X* dominates *Y* nor vice versa, and the first maximal projection dominating *X* dominates *Y* as well. *X* c-commands *Y* iff neither *X* dominates *Y* nor vice versa, and the first projection dominating *X* dominates *Y* as well (I differ here from Reinhart (1976) and agree with Sportiche (1988b) in not requiring that the relevant projection branch). The fact that head government requires m-command and antecedent government requires c-command appears to be an irreducible difference between government and binding (e.g., in NP's we want the head noun to govern its specifier for Case assignment, but a complement is unable to bind the specifier (see Giorgi 1985): government *per se* involves m-command, binding *per se* involves c-command; hence, antecedent government, which simultaneously involves government and binding, must refer to the more restrictive notion of c-command.

4. For instance, we need a hierarchical definition to block government of a prepositional object from a verb in a verb-final language:

(i) . . . [<sub>VP</sub> [<sub>PP</sub> P NP ] V ]

as well as in many other cases in which a linear definition would fail. If intervention is hierarchically defined in terms of c-command, we obtain the



result hat, as a specifier is not c-commanded by its head, it will never be protected from external government. On the other hand, if we had defined intervention in terms of m-command, a specifier would always be protected from external government, as its head would always intervene between the specifier and an external governor. Perhaps a mixed definition is in order. As far as the specifiers of nonlexical heads are concerned, we clearly need the definition in the text: the Spec of I, the subject, must be accessible to government from C, the Spec of C must be accessible to government from a higher V, and so on. On the other hand, in some cases the specifiers of lexical heads appear to be protected from external government; see subsection 2.3.2 and section 3.4. We will tentatively assume that this is the case in general; hence, intervention must be defined in terms of c-command for functional heads and in terms of m-command for lexical heads. This essentially amounts to building Longobardi's (1987) uniqueness constraint on government into Relativized Minimality. See also the end of section 2.6 below, appendix 2 of chapter 3 below, and Giorgi and Longobardi 1987.

5. Rigid minimality triggered by N<sup>0</sup> blocks adjunct extraction from complex NP's in the system of Chomsky 1986b (p. 43):

(i) \*How did John announce [a plan [ t' [PRO to fix the car t]]]

Relativized Minimality does not deal with this case. Cinque (forthcoming) points out that if sentential complements of nouns generally are intrinsic barriers (see note 6 below), the antecedent-government requirement on t' will inevitably fail for reasons independent from minimality.

6. Adjunct extraction gives rise to robust violations when it takes place from islands not involving A' specifiers—sentential subjects, sentential complements of nouns, adverbial clauses, and even very weak islands such as the complements of factive verbs:

(i) \*How do you believe that to solve the problem t should be possible

(ii) \*How do you believe the claim that he solved the problem t

(iii) \*How did you go to MIT to solve the problem t

(iv) \*How do you regret that he solved the problem t

Here Relativized Minimality does not seem to be relevant, because there is no obvious intervening potential A' governor for the adjunct trace. This suggests that minimality is not the only constraint on government, and there is an independent notion of barrier blocking government relations, as in Chomsky 1986b. In fact, this notion is kept in our definitions of head government and antecedent government. For our purposes, it is sufficient to assume the following minimal definition of barrier for government, adapted from Cinque (forthcoming):

(v) XP is a barrier if it is not directly selected by an X<sup>0</sup> not distinct from [+V].

(Here "select" means "s-select" (Theta mark) for lexical heads and c-select for functional heads; subjects are not directly selected by V<sup>0</sup>, but by VP; for

the case of factive verbs, we assume the analysis of Kiparsky and Kiparsky (1971) according to which the sentential complement is immediately dominated by an NP node, which protects it from direct selection from the verb; see Acquaviva 1989 for an improved approach.) Various refinements are needed, e.g. to make the boundaries of the subject of a small clause transparent for government (Chomsky 1986b, p. 85). See Cinque (forthcoming) for an insightful discussion of these cases, and of the possibility of formulating a partially unified theory of government and bounding based on such a simplified notion of barrier and Relativized Minimality. Following Cinque's discussion, we could assume that C<sup>0</sup> and I<sup>0</sup> are not distinct from [+V], and hence the XP's they select, IP and VP, never are intrinsic barriers; alternatively, it could be the case that IP and VP are intrinsic barriers, and their barrierhood can be selectively voided through the techniques discussed in Chomsky 1986b (with adjunction now applicable to IP). This alternative is left open here.

7. Browning (1989) points out that if an extended chain of agreement relations involving intervening heads is established in structures with derived subjects, as in (ia) below, it is not obvious how (ib) and other violations of the Head Movement Constraint could be explained by the ECP, as the trace of *have* would be antecedent governed by *must* in the extended chain.

(i) a They<sub>i</sub> must<sub>i</sub> have<sub>i</sub> been<sub>i</sub> arrested<sub>i</sub> t<sub>i</sub>

b \*Have they must t been arrested t

8. The fundamental cases requiring the inheritance clause of the definition of Barrier in Chomsky (1986b)—(18) and (26)—can thus be subsumed under Relativized Minimality, which makes the inheritance clause apparently dispensable for the theory of government.

Rigid Minimality can achieve the same effect as Relativized Minimality on (26) if it is assumed that an intervening empty C<sup>0</sup> suffices to trigger the principle. But this would have consequences for the analysis of the *that*-trace effect under Rigid Minimality. See section 2.2.

9. Obenauer gives several arguments showing that structures like (27b) are genuine violations of the Left Branch Constraint and cannot be derived through PP extraposition from structures like (27a). That is, the following representation is impossible:

(i) \*[Combien t] a-t-il consulté t [de livres]

This claim is supported by Kayne's (1985) analysis of past participle agreement: only when the whole direct object is moved do we find past-participle agreement, as is particularly clear with verbs in which agreement is audible:

(ii) Combien de voitures a-t-il conduites  
'How many of cars has he driven(plur)'

(iii) Combien a-t-il conduit de voitures  
'How many has he driven(sing) of cars'

If the only possible representation of (iii) is the one corresponding to (27b), then these facts follow from Kayne's analysis: the QP *combien* cannot be moved, because of structure preservation, through the VP-external NP posi-

tion which triggers agreement. This simple explanation would not be available if a representation like (i) was possible for (iii): the NP [*combien* t] should be allowed to pass through the VP-external position and trigger agreement. In turn, the impossibility of representation (i) can be attributed to the ECP, as the trace of *de livres* would not meet the head-government requirement (on which see subsection 2.3.3).

10. Obenauer shows that (28) and (29b) are closely related, and that the latter is, in a sense, parasitic on the former. See also chapter 3 of Kayne 1984; Milner 1978.

11. Following Emonds 1976 and Pollock 1989, I will assume that the inflected verb or auxiliary is moved to Infl in tensed clauses. This gives the order Aux—Spec of VP—V illustrated in (28). The hypothesis that *beaucoup* is the A' specifier of the VP is incompatible with the idea that the thematic subject is base-generated as the VP specifier, if each category has at most one specifier. It still is compatible with various versions of the "Subject in VP" hypothesis (Koopman and Sportiche 1988; Manzini 1988) according to which the thematic subject is adjoined to VP in a small clause configuration at D-structure. If floated quantifiers overtly manifest the basic position of the subject (Sportiche 1988a), the rigid order *tous beaucoup* in (i) provides evidence supporting this hypothesis, with the VP-adjoined subject position higher than the A' specifier of VP.

- (i) Ils ont tous beaucoup mangé  
'They have all a lot eaten'

The leftward-moved *tout* of Kayne 1975 appears to occupy the Spec of VP position, as is shown by its incompatibility with *beaucoup* and by the fact that it follows *tous* "floated" from the subject:

- (ii) Ils ont tous tout mangé  
'They have all everything eaten'

12. Notice that if the VP adjunction option is available, (30b) will have the following representation:

- (i) Combien a-t-il [ t { beaucoup résolu [ t' de problèmes]]

t' is not antecedent governed by t because of the intervening 'potential A' binder *beaucoup*, which c-commands t' but not t (according to our system of definitions).

The deviance of such examples as (30b) and (32b) is generally found less severe than the deviance of (31b). This is not surprising; the extraction from the indirect question involves an additional violation (perhaps of the Bounding Theory—consider the status of (31a)), and hence the cumulative effect can be expected to be stronger. Paradigms analogous to (31) have been occasionally noticed in other languages. For instance, Coopmans (1988) discusses a similar contrast determined by *wat voor* split in Dutch.

13. If the object moves to the object-agreement position and then *combien* alone is extracted, the resulting structure is ungrammatical:

- (i) \*Combien a-t-il [t de voitures] [ conduites t ]

In fact, the object-agreement position is not a Case position in French; therefore, it cannot contain phonetically realized NP's at S-structure, owing to the Case Filter. As the amelioration induced by *en* extraction is only slight for many speakers (i.e., (34) remains quite marginal), there must be some inherent cost in the derivational option illustrated in (36) for reasons that we will not explore here. Obenauer's (1984, p. 173) proposal for the improved status of (34) is that here the whole object containing the trace of *en* is moved to Comp:

- (ii) [combien t ] il en a [beaucoup aimé t]  
'How many he of-them-has a lot loved'

But notice that extraction of *combien* with stranded *en* from a *wh* island remains strongly deviant:

- (iii) \*Combien ne sais-tu pas [comment en résoudre]

This is unexpected if the whole direct object can be extracted in such cases. I believe that representations like (ii) are ruled out for the reasons discussed in subsection 2.3.3 below.

14. Compare the corresponding French paradigm, in which the nonargumental nature of the equivalent of *as* is syntactically transparent:

- (i) Pierre est ici, ce qu'ils savent / ne savent pas  
'Pierre is here, which they know / don't know'  
(ii) Pierre est ici, comme ils le savent / \*ne le savent pas  
'Pierre is here, as they know it / don't know it'

Here the clausal direct object is overtly pronominalized by *le*, and *comme* is a kind of manner adverbial ("Pierre is here, and things are the way in which they know them"). This suggests a similar analysis for the English construction, perhaps with null complement anaphora of the clausal object.

15. For the sake of simplicity, we will continue to phrase our representations in terms of IP, I<sup>0</sup>, etc. whenever the "split Infl" hypothesis is not crucial for the argument. An alternative possibility to the proposal in the text is that *pas* could fill the specifier position of an autonomous *neg* projection, present only in negative sentences (Pollock 1989; Moritz 1989).

Languages in which negation is represented by a clitic on the highest inflectional head (e.g. Italian) manifest identical Inner Island effects. I will assume that such clitics are A' specifiers of some inflectional projection, or that they are moved at LF to a Spec position, or construed with a null operator in a Spec position, in the spirit of the analysis of affective elements to be proposed later in this section.

16. Many other problems, which will only be hinted at here, are left open. Subject-aux inversion can be triggered in embedded clauses in some cases:

- (i) John said that in no case would he give up

This appears to require a (limited) recursion of CP's, perhaps along the lines of Chomsky 1977 (see Rizzi and Roberts 1989 for discussion). Inherently negative verbs seem to determine a weaker but detectable inner-island effect; compare the following:

- (iii) How did he say that he fixed the car
- (iv) How did he not say that he fixed the car
- (v) How did he deny that he fixed the car

Some speakers find (v) better than (iv) in the lower construal. This would be the immediate prediction of our system. If, on the other hand, the difference between (iv) and (v) is not significant, we are led to the conclusion that intrinsically negative verbs undergo movement in the syntax of LF, or that they are construed with a null negative operator. A similar approach would perhaps also account for the fact that modals in some cases appear to block embedded construals of preposed adjuncts (Travis 1984; D. Pesetsky, personal communication).

17. If an independent projection NegP is systematically available in negative sentences, and if this projection has an A' spec (Moritz 1989), an alternative possibility is that *no one* fills this position at LF. If the NegP is necessarily lower than the AgrP, the required lowering of *no one* in the syntax of LF could be analogous to the possible lowering of quantified NP's in raising constructions discussed in May 1977.

18. One cannot simply account for (65c) by stipulating that Affix Hopping requires adjacency because of Pollock's (1989, note 8) examples:

- (i) a \*John completely has lost his mind
- b John has completely lost his mind
- c John completely lost his mind

(ia) and (ib) show that *completely* cannot occur in pre-Inf position, but only between the highest inflectional head and the VP. But then in (ic) affix hopping must have taken place across the adverb; hence, it is not necessarily string-vacuous.

Negative adverbs such as *never* and *seldom*, which give rise to inner-island effects, apparently do not block Affix Hopping, contrary to negation:

- (ii) a John never arrived late
- b John seldom arrived late
- c \*John not arrived late

But notice that these elements can also appear in pre-Inf position contrary to *not*:

- (iii) a John never has arrived late
- b John seldom has arrived late
- c \*John not has arrived late

Therefore, (iiia) and (iiib) can have an LF representation in which the adverb does not intervene between the verbal trace and its A' antecedent; hence, no blocking effect is to be expected.

The alternation in (iv) cannot involve Affix Hopping of *to* across negation in the first case (Pollock 1989), as the resulting structure should be ruled out on a par with (65c).

- (iv) a He decided not to go
- b He decided to not go

We must, rather, assume that *to* can be generated under T<sup>0</sup> (as in (iva)), and may optionally raise to Agr<sup>0</sup> (as in (ivb)), a case of regular head-to-head movement not affected by an intervening negation.

19. If a head can only be moved to another head, as per Chomsky's (1986b) generalized structure-preserving constraint, then perhaps the LF movement of the tensed verb forming the required A'-chain involves adjunction to Agr<sup>0</sup>. Following Rizzi and Roberts 1989, I assume that all the familiar cases of syntactic head-to-head incorporation involve substitution, with adjunction possibly restricted to cliticization and, perhaps, to LF movement.

The order of elements in (65c) is possible in subjunctive clauses:

- (i) I demand that he not smoke

Following Emonds 1976 and Roberts 1985, one can assume that a null subjunctive modal is involved in subjunctive clauses. This correctly predicts that movement of an auxiliary to C<sup>0</sup> will be blocked in such cases, under the Head Movement Constraint:

- (ii) \*I demand that under no circumstance be he arrested

(compare *I said that under no circumstance should he be arrested*). On the possibility of directly moving V<sup>0</sup> to C<sup>0</sup> in the Continental Scandinavian Languages, apparently skipping a null inflection, see Holmberg and Platzack 1988.

## Chapter 2

1. One should further specify whether the choice of the canonical direction is unique in a grammatical system, and determined by the respective positions of verbs and objects, or whether the canonical direction can vary for different kinds of heads within the same language, and depends for each head on the position of the complement. On the former view, canonical government in German would be rigidly from right to left; on the latter view, canonical government in German would be from right to left for V<sup>0</sup> and I<sup>0</sup> and from left to right for C<sup>0</sup>.

2. In Stowell's approach, Theta assignment involves coindexation with the appropriate slot of the Theta grid of the assigner. A Theta-marked object is then coindexed with (and in an extended sense bound by) the Theta-marking verb.

3. In a previous version of this chapter it was assumed, on the basis of the ill-formedness of VP preposing with exceptional Case Marking structures, that the VP of infinitival sentences is ungoverned:

- (1) \* . . . and [know the answer] I believe Bill to t

This assumption is clearly too strong, in view of the at least marginal acceptability of VP preposing with control infinitives. The question why (i) is significantly more degraded will be left open.

4. In French, sentences corresponding to (14a) are acceptable on a literary stylistic register. I agree with Deprez (1988) that this kind of inversion involves a *pro*, not a trace in subject position. On the licensing of nonreferential *pro* subject in French, see also Pollock 1986.