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On the Properties of LF'  

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0. Introduction. The semantic of quantification in natural languages has been recently interpreted in terms of the rule of Quantifier Raising (QR) operating at an abstract level of representation called LF. (May 1978, Higginbotham, 1980, 1981, and Chomsky, 1981). The central intuition of this analysis is that quantifiers, unlike names, do not refer; they rather require that their scope be assigned by an operator functioning very much like the quantifiers of propositional logic. The surface position of a quantifier functions, then, as a variable bound by a c-commanding operator in such a way that the logic form of sentence (1) a is (1) b.

(1) a. Every candidate gave a talk in Vancouver  
   b. (a x, x a candidate) (x gave a talk in Vancouver)

The rule of QR has been interpreted as an instance of Move-Alpha, a rule placing the operator in a position adjoined to S (according to May, 1977) from where it assigns scope to the variable x. Both the motivations and the consequences of this analysis have been discussed by many writers (May, 1978, Higginbotham, 1980 a, 1980 b, Aoun, Hornstein and Sportiche, 1982, Huang, 1982, Koopman and Sportiche, 1981, etc.) and I will accept them in this paper without further discussion.

There are, however, types of quantification for which the strict analogy between "assign scope" and Move-Alpha seems to be too strong. For instance, quantifiers functioning in left dislocation position in Spanish cannot be subject to Move-Alpha, and behave in fact as referential quantifiers (RQ), as noted in Hurtado, in 1982. An example is (2), where A Algunos candidatos must have wide scope over the subject.

(2) a. A algunos candidatos, los i van a votar todos los electores.  
   To some candidates, to-them go to vote every voter
   Some candidates, every voter will vote for them
   b. (Ex, x a candidate; Ay, y a voter) (y will vote for x)
The sentence does not mean that every voter will vote for some (possibly different) set of candidates, but rather, that there exists some candidate who will receive votes from every voter. Since, within the present formulation of the G-B theory, the left dislocated phrase cannot be the result of a movement, I will assume that this case reflects the fact that the quantifier is behaving somehow as a name at the level of LF or it is getting its scope from the non-linguistic discourse at some further level of representation.

Other cases of RQ have been mentioned by Higginbotham (personal communication) and by Lappin (1982). These quantifiers, such as the one in (3) also seem to dispense with Move-Alpha.

(3) His father visits someone I know

One of the indications that someone I know in (3) is an RQ is that it freely violates weak crossover. The apparent violation only occurs if we assume that Move-Alpha has applied over the coreferential his; but if we assume that the RQ behaves as a name under certain conditions (for instance, when including any modification specifying reference), the quantifier need not to be assigned scope by Move-Alpha, with the consequent weak crossover violation.

In this paper I will study the apparent weak crossover violations involved in a construction I have dealt with in other papers: the so-called clitic "doubling" construction. By doing so, I expect to explore some aspects of the later levels of LF, called LF' and to provide further arguments to demonstrate that the notion of "nominal clitic doubling" is an instance of the notion of Predication clitic chain, discussed in Hurtado (1982).

In the first part I argue that the weak crossover effects obtained in constructions with and without the clitic in Spanish follow from the notion of predication clitic chain.

In the second part I critically examine the generalization formulated in terms of predication clitic chains, and I argue in favor of a hypothesis in terms of referential quantifier (RQ), covering additional apparent violations.
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In the third part I offer additional arguments for this hypothesis and propose that the Binding Theory applies to LF'. Some hitherto intractable problem such as the one involved in the binding of the possessive article and certain cases of PRO are shown to follow from this analysis.

1. Weak crossover effects. Colloquial English offers examples like (4) where his father may be understood as John's father

(4) His father invited John

Given that his does not c-commands John, John and his are allowed to correfer and John may be the antecedent of his. In these cases, any movement from the object position of (4) over his lead to ungrammaticality. For instance, if Move-Alpha were to apply in the syntax, it would lead to the ungramatical (5) a, if it were to apply at the level of LF, it would lead to the ungramatical (5)b or c.

(5) a. *Who, did his, father invite e.?  
     b. *His, father invited everyone  
     c. *His, father invited JOHN

All three sentences are ruled out in English with the coindexations indicated in the examples. The sentences cannot be interpreted as: "who was invited by his own father?"; for every x, x's father invited x"; and "John's father invited John" respectively.

The phenomenon is called "crossover effect", and its exclusion within the Government-Binding theory requires that who, everyone, and JOHN be interpreted as quantifiers; thus, if the operators have been moved into the c-commanding position, they cannot bind more than one variable in argument position. The grammar unit then contains some general principle excluding the binding of a pronoun when the operator is already binding a variable. This principle will exclude (5) a-c, as instances of (6).

(6) (Qx) (x's father invited x)
We may assume that this is obligatory, given two more general principles discussed in May (1978): the Condition on Proper Binding and the Condition on Quantifier Binding:

(7) **Condition on Proper Binding**

Every variable in an argument position of a predicate must be properly bound

(8) **Condition on Quantifier Binding**

Every quantifier phrase must properly bound a variable

The condition on Proper binding forces Move-Alpha in cases where the argument is considered to be a variable. The condition on Quantifier Binding is the elementary empirical requirement excluding "free quantifiers" in natural languages.

Notice that the three cases of (5) obey both conditions: assuming that proper binding requires c-command, both instances of \( x \) are c-commanded by the quantifier (Q in (6)), hence the Condition on Proper Binding is satisfied; as for the Condition on Quantifier Binding, Q in (6) properly bounds not only but two variables. Thus, something else is to be said in order to block (5).

Koopman and Sportiche (1981) have proposed to that effect, the Bijection Principle, which also covers the crossover situations.

(9) **Bijection Principle**

Every A-position is locally bound by at most one A-position
Every A-position locally bounds at most one A-position

The Bijection Principle excludes sentences with the structure of (6) since they contain a quantifier (Q) binding more than one position (the two instances of \( x \)).

It is clear that the Bijection Principle does not operate at LF', i.e. the sub-level where "external" non-arguments fix their relations to variables. An example is (10).

(10) A algunos candidatos, creo que su \( i \) edad los \( i \) perjudica \( e \) i

To some candidates, I believe that their \( i \) age to-them \( i \) hinders

Some candidates, I think that their age hinders them
Chomsky (1982), following ideas of Williams (1980) assumes that the left dislocated phrase and the sentence are related as "subject" and "predicate"; the sentence being interpreted as an "open" sentence predicated of the left dislocated constituent. In the same line of thought Hurtado (1982) has defined the complex (11) as a Predication clitic chain.

(11) **Predication clitic chain**

\[(\text{XP}) \quad _i (\cdots \text{clitic} \quad _i \cdots e \quad _i \cdots )\]

The Predication clitic chain is constituted by the "subject" of the predication (the XP) and the clitic chain (clitic...e).

We can now turn to (10). Assuming that the clitic chain counts as one variable, the relevant structure of (10) is (12) a and the interpretation (12) b.

(12) a. (A algunos candidatos) \quad _i (\cdots \text{su} \quad _i \cdots \text{los} \quad _i \cdots \text{e} \quad _i )

b. (Ex, \quad _i x \quad \text{a candidate}) (I believe \quad _i x\text{'s age hinders} \quad _i x)

Then, (13) follows.

(13) **Predication clitic chains escape crossover effects**

If the Bijection Principle were to operate at LF', (12) would be ruled out; if, however, the sentence is grammatical, then we conclude that the Bijection Principle cannot apply at LF'.

How can we account for the fact that the Bijection Principle applies to the LF representation and not to the LF' one? Chomsky (1982) has proposed a straightforward solution in terms of a Predication Rule. Let us assume that the Predication clitic chain is only formed at LF' by the Predication rule (14) applying to an LF structure like (15).

(14) **Predication Rule**

Coindex \(i = j\)

(15) \[(\text{XP}) \quad _i (\text{su} \quad _i \cdots \text{clitic} \quad _j \cdots e \quad _j )\]

After the application of (14), we have a structure like (12). Since the Bijection Principle applies before (12) has been formed, (13) follows. This takes care of the left dislocation cases; I will now turn to some other constructions.
1.1 Weak crossover in Spanish. Sentences such as (6) are less frequent in Spanish than in English, but by no means impossible:

\[(16) \ a. \ ? \ Su_{\text{i}} \ cómplice \ accușó \ a \ Juan_{\text{j}} \]
\[\quad \text{His_i accomplice accused John_j} \]
\[b. \ ? \ Su_{\text{i}} \ padre \ eligió \ a \ Juan_{\text{j}} \]
\[\quad \text{His_i father selected John_j} \]
\[c. \ ? \ Su_{\text{i}} \ madre \ reconoció \ a \ Juan_{\text{j}} \]
\[\quad \text{His_i mother recognized John_j} \]

While these sentences are only stylistically deviant (like their counterparts in English) but perfectly interpretable, the ones involving crossover violations are hopeless, as predicted by the Bijection Principle.

\[(17) \ a. \ * \ A \ quién_{\text{i}} \ acuso \ su_{\text{i}} \ cómplice \ e?_{\text{i}} \]
\[\quad \text{Who(m)_i did his_i accomplice accuse?} \]
\[b. \ * \ Su_{\text{i}} \ cómplices \ acusaron \ a \ todos_{\text{j}} \]
\[\quad \text{His_i accomplice accused everyone_j} \]
\[c. \ * \ Su_{\text{i}} \ cómplice \ acuso \ a \ JUAN_{\text{j}} \]
\[\quad \text{His_i accomplice accused JOHN_j} \]
\[d. \ * \ A \ quién_{\text{i}} \ eligió \ su_{\text{i}} \ padre?_{\text{i}} \]
\[\quad \text{Who did his father select?} \]
\[e. \ * \ Sus_{\text{i}} \ padres \ eligieron \ a \ todos_{\text{j}} \]
\[\quad \text{His_i parents selected everyone_j} \]
\[f. \ * \ Su_{\text{i}} \ padre \ eligió \ a \ JUAN_{\text{j}} \]
\[\quad \text{His_i father selected JOHN_j} \]
\[g. \ * \ A \ quién_{\text{i}} \ reconoció \ su_{\text{i}} \ madre?_{\text{i}} \]
\[\quad \text{Who(m)_i did his_i mother recognize?} \]
\[h. \ * \ Su_{\text{i}} \ madres \ reconocieron \ a \ todos_{\text{j}} \]
\[\quad \text{His_i mother recognized everyone_j} \]
\[i. \ * \ Su_{\text{i}} \ madre \ reconoció \ a \ JUAN_{\text{j}} \]
\[\quad \text{His_i mother recognized JOHN_j} \]
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Just as in English, the ungrammaticality of (17) a–i follows from the Bijection Principle (9) since Move-Alpha applies both at S-structure and LF in the two languages. The ungrammaticality is not due to meaning complexity, since the constructions are perfectly possible, with both variables bound, as long as clitic is present.

(18) a. A quién_i lo_i acusó su i aculpice_i ?
   To whom_i to-him_i accused his_i accomplice?
   Who(m)_i did his_i accomplice accuse?
b. Sus_i cómplices i los_i acusaron a todos_i
   Their_i accomplices to-them_i accused to everybody_i
   His_i accomplice accused everyone_i
c. Su_i cómplice lo_i acusó a JUAN_i
   His_i accomplice to-him_i accused to JOHN_i
   His_i accomplice accused JOHN_i
d. A quién_i lo_i eligió su i padre?
   To whom_i to-him_i selected his_i father?
   Who(m)_i did his_i father select?
e. Sus_i padres los_i eligieron a todos_i
   Their_i parents to-them_i selected to everybody_i
   His_i parents selected everyone_i
f. Su_i padre lo_i eligió a JUAN_i
   His_i father to-him_i selected to JOHN_i
   His_i father selected JOHN_i
8. A quién_i lo_i reconoció su i madre?
   To whom_i to-him_i recognize his_i mother?
   Who(m)_i did his_i mother recognize?
h. Sus_i madres los_i reconocieron a todos_i
   Their_i mother to-them_i recognized to everybody_i
   His_i mother recognized everyone_i
i. Su_i madre lo_i reconoció a JUAN_i
   His_i mother to-him_i recognized to JOHN
   His_i mother recognized JOHN_i
It is worth noting that the English translations of both (17) and (18) are ungrammatical, which suggests that the relevant distinction is connected with the notion of clitic chain, and specifically, the cases where a quantifier appears. We can then state that the generalization that we want to capture is (19):

(19) Quantifier clitic chains escape crossover effects

The problem of course, why?

1.2. The structure of nominal clitic chains. Suppose that nominal clitic chains have the following structure at S-Structure and LF:

(20) **Nominal clitic chains**

\[ \text{clitic}_i \ldots \text{(nominal)}_i \]

where the nominal is in argument position. A grammar containing (20) is committed to accept discontinuously filled positions, partly argumental and partly non argumental, partly \( \theta \)-roled and partly non \( \theta \)-roled. It must also relax the X-bar theory in order to interpret the clitic or the nominal as the "head" of the discontinuous construction. Furthermore, it must proceed to the outright exclusion of extractions from the nominal position in (20) through some kind of stipulation, parametric or other. Notably it must parametrize the violations to the Bijection Principle, since for all dialects there are crossover violations wherever there are clitic chains.\(^5\)

Suppose that the "double" of a clitic chain is in argument position, as required by (20), then, in order to allow for (18) it may be stipulated that Spanish allows weak crossover violations when a nominal is "doubled" by a clitic. For the proponents of an analysis such as (20) there is no principled way to derive the weak crossover violations, and to explain why the presence of the clitic favors these violations.

An alternative analysis has been proposed in Hurtado (1982) and (1983). This analysis, expressed in (21), interprets the "nominal" as an external element of the chain, excluding all possibility of movement in the "doubling" cases:

(21) **clitic** \[ \text{\ldots e}_i \ldots \text{nominal}_i \]
In other words, (21) interprets the clitic "doubling" as a predication chain like (11). This straightforwardly explains why crossover effects do not affect quantifier clitic chains, and provides two ways of stating the generalization: (13) and (19), repeated here for convenience.

(13) Predication clitic chains escape crossover effects
(19) Quantifier clitic chains escape crossover effects

It is easy to see that, under (21), both (13) and (19) express the same generalization, since the relevant cases of crossover will obtain when a quantifier is in the "subject" position of a predication construction.

Assuming then, (21), the "subject" of a Predication clitic chain is neither in comp, nor adjoined to S (as the LF quantifiers are), nor in an argumental position, it follows that we have two types of non-argumental positions in the grammar: the ones formed by Move-Alpha and the LF' "subjects", which are somehow "external", as indicated in the table (22).

(22)

<table>
<thead>
<tr>
<th>non-argumental positions</th>
<th>&quot;external&quot; non-argumental positions</th>
</tr>
</thead>
<tbody>
<tr>
<td>comp (by wh-move)</td>
<td>(left-/right-) dislocation</td>
</tr>
<tr>
<td>Adjoined to S (by QR)</td>
<td>nominal of clitic &quot;doubling&quot;</td>
</tr>
</tbody>
</table>

The Bijection Principle refers to non-argumental positions, not to LF' subjects which are "external" non-argumental positions; this explains why the contrast between (17) and (18) is consistent with the apparent crossover violations found in the dislocated cases. So, if the quantifiers in (18) are LF' "subjects", they cannot be quantifiers moved at LF; they may have then, some kind of reference; hence, they must be what we have called RQ's, in the introduction.
1.3. LF' "subject" as an external non-argumental position. It has been proposed by Chomsky (1982) that heads of relative clauses are also "subjects" of Predication constructions. This will explain why apparent crossover violations occur in relative clauses, as well as in dislocations and clitic "doubling" constructions (compare (23) with (10) above).

(23) Conozco algunos candidatos_1 que su_1 edad los_1 perjudica e_i
    I know some candidates, that their_1 age hinders them_1

In both cases, clitic chains are involved and the relation between the quantifiers and the variables is indirect, through the Predication rule (14); this is consistent with the interpretation of relative heads as an external non-argumental position, in addition to the ones mentioned in (22).

These non-argumental positions are "external" in three very precise senses:

(24) (1) The nominal is not in a Θ-position
    (2) The nominal is not in a case-assignment position
    (3) The nominal is not in an argument position

Notice that these constituents are not "external" in the same sense as the subject of S, which 1) may receive a Θ-role, 2) is in a case-assignment position (if INFL is present), and 3) is in an argument position.

1.3.1. LF' "subjects" and Θ-chains. Let us first examine the thematic properties of these non-Θ-positions. Though the coindexation at LF' requires selectional restrictions to be met, the "subject" of a predication construction is not in a Θ-chain with the clitic chain (or with the empty category if the relative clause is not subject to the resumptive pronoun strategy). This is of course independent of the "subject"'s possibility of receiving a Θ-role from sources other than the sentence: the head of a relative clause, for instance, (but not the left dislocated constituent) will receive the Θ-role of the whole relative clause assigned by the main verb. In this sense we may say that there is a reason to justify why the "subject" of a relative clause is more constrained than the dislocated "subject", namely that only the first may show the Θ-role of the whole clause. This perhaps justifies the existence of "left" and "right" dislocations and the non-existence of relative clauses with both "right" and "left" heads in the same language. So, whereas external subjects are not in a Θ-position, they may receive a Θ-role if they are heads of relative clauses. This Θ-marking does not invalidate (1) in (24).
1.3.2. LF' "subjects" and case. Both relative clause and dislocations (or clitic "doubling" nominals) differ in their possibility of being assigned case from outside the sentence predicated of them. Relative "subjects" are in permeable constructions, henceforth, the case of the upper NP is passed on to it, while the LF' subjects do not get the case of the whole predication construction, if it has one. Dislocation constructions are also "freer" in this respect than the corresponding relatives; for instance, while a left dislocated element may appear with or without the preposition a in some cases, such a possibility is unavailable for heads of relative clauses.6

1.3.3. LF' "subject" and argument positions. Finally, the fact that LF' "subjects" are not in argument position implies that they are not coindexed at S-structure or at LF by Move-Alpha, a rule assigning scope to argument positions; if they were, they should automatically be interpreted as Θ-chains or Case chains in the sense of Chomsky (1981). Furthermore, as argumental chains they should obey the locality conditions prescribed by the Bounding Theory (subjacency), which, as is well known, it is not the case. (Rivero 1980, Hurtado 1982).

Summing up, the "subjects" of these constructions may sometimes receive a Θ-role or case from sources other than the sentence which is predicated of them, but they are "external" with respect to these sentences, as defined in (24).

1.3.4. Conclusion on the definition of "external" non-argumental position. I claim that (24) suffices to characterize the notion of "external" LF subject, and that no phonetic specification is allowed to intervene in the LF or LF' representation of phrases; particularly, I claim that an "external" LF'"subject" need not be a dislocation and that there is no requirement prescribing that LF'"subjects" must be isolated by phonetically realized boundaries (expressed orthographically by commas).

Clearly, under this assumption, the difference between "dislocated" phrases and nominal "doubles" disappears: both are interpreted as "external" LF'"subjects", and their parallel behavior under crossover directly follows from an analysis like (21), where the surface position of the nominal is irrelevant.

Having specified the notion of "external", we can address ourselves to more complicated cases of crossover.
2. Other arguments showing the plausibility of the analysis. In this part I will offer more complicated examples involving apparent crossover violations. Let us examine the following examples, where the specified coindexation underlies a possible interpretation only when the clitic is present:

(25) a. ¿A quién los arruinaron e_1 las inversiones que e_1 hicieron?
To whom_1 ruined e_1 the investments that they_1 made
Who(m)_1 did the investments they_1 made ruin?

b. Las inversiones que e_1 hicieron T_0s_1 arruinaron e_1 a algunos_1
The investments that they_1 made to-them_1 ruined e_1 to some_1
The investments they made ruined some of them

c. Las inversiones que e_1 hicieron los_1 arruinaron e_1 a todos_1
The investments that they_1 made to-them_1 ruined e_1 to all_1
The investments they made ruined all of them

d. *¿A quién arruinaron las inversiones que e_1 hicieron e_1
To whom_1 ruined the investments that they made?
Who_1 did the investments they_1 made ruin?

e. *Las inversiones que e_1 hicieron arruinaron a algunos_1
The investments that they_1 made ruined some_1
The investments they made ruined some people

f. *Las inversiones que e_1 hicieron arruinaron a todos_1
The investments that they_1 made ruined everyone_1
The investments they_1 made ruined everyone_1
The analysis of the clitic "doubling" constructions presented in the first part of this paper predicts that "doubled" quantifiers, will not be subject to the Bijection Principle, and that the resulting sentences will be grammatical. On the other hand, quantifiers not "doubled" by a clitic will be subject to the Bijection Principle and the resulting sentences will be ungrammatical. This is exactly the pattern shown by (25) a-c and (25) d-f.

In (25) a, a quiénes has been base generated as a "subject" of the whole sentence which is predicated of it. As an "external" predication subject, it is not in an argument chain with any variable at S-structure or at LF. Within S the first empty category is in a chain with los and, independently, the second empty category is in a chain with AGR (not indicated in the example): e_i arruina__ON_i. -ON, the third person plural identifies the subject. Since the subject of hicieron is not bound by anything besides its chain, coreference as well as disjoint reference are possible.

In (25) b, a algunos is an RQ in non-argument position; though it is not dislocated at PF, it is the "external" LF subject of the predication construction which receives the same interpretation as a dislocated RQ.

The same interpretation holds for a todos in (25) c.

A quiénes, a algunos and a todos, in (25) a-c, respectively do not form an argumental chain crossing over the coreferential pronoun at the level of S-structure and LF, and so escape the Bijection Principle.

No such escape is available for sentences (25) d-f, where a quiénes binds an argumental variable in (25) d, and the position occupied by a algunos and a todos is interpreted as argumental in (25) c and f. They constitute the kind of representations the Bijection Principle is purported to rule out, which is perfectly consistent with the interpretation of a quiénes, a algunos, and a todos, not as RQ's, but as true quantifiers, undergoing Move-Alpha.

While a theory assuming that the "double" of the clitic "doubling" constructions is in argumental position would not predict this difference, the Predication chain analysis, which interprets the "double" as the "external" non-argumental subject of a predication construction, makes the right predictions without further stipulation. As we have shown in Hurtado (1982) and (1983) this analysis is required on independent grounds, and the satisfactory prediction of the crossover effects is to be taken as further confirmation of such an analysis.
2. Two Hypotheses. In this part, I will try to refine the formulation of the conclusion reached in the First part. The motivation of this study was the hitherto unexplained crossover violations by the Predication clitic chains. However, it is perhaps too restrictive to assume that only Predication clitic chains (i.e. left dislocations, relative clauses with resumptive clitic strategy, and "clitic doubling" constructions) should reveal this behavior. Notice that even if we assume that the grammar contains a principle like (26), it will be preferable to derive it from a more general principle, like, say, (27)

(26) Predication chains are referential
(27) Referential quantifiers (RQ's) do not obey the Bijection Principle.

First, I will argue that (26) is incorrect and certainly insufficient on empirical grounds. Second, I will suggest that (27) may be preferable, though not perfect.

2.1 Dative doubling. The Predication chain we have studied obeys (26). The subject of the predication is always referential, and the quantifier in this position has wide scope, as shown in (28)

(28) a. odos los electores votaron unos candidatos
   Every voter voted for some candidates
b. Todos los electores los votaron a unos candidatos
   Every voter to-them voted for some candidates

The quantification representation of (28) is (29)

(29)a. Ax, x a voter, Ex, y a candidate (x voted y)
b. Ey, y a candidate, Ex, x a voter (x voted y)

While in the a case every voter voted for some candidates, but not necessarily the same set of candidates, in the b case the second quantifier is specific and it has wide scope. If Predication chains are always referential, their subjects must be referential, henceforth the quantifiers found in the position of "subjects" of a predication construction must be RQ. This correctly predicts the pattern of (25 a-f), and confirms hypothesis (26).

Things are not so simple, however, as is shown by the possibility of ambiguous scope in the dative cases; where the quantifier associated with the clitic may have wide or narrow scope:

(30) a. Todos los candidatos les han dicho la verdad a algunos electores
   Every candidate to-them has told the truth to some voters
   Every candidate has told the truth to some voters
b. Ax, x a candidate, Ey, y a voter (x has told the truth to y)
c. Ey, y a voter, Ax, x a candidate (x has told the truth to y)
The same occurs when the quantifier is in a dislocated position:

(31) A algunos electores, todos los candidatos les han dicho la verdad
    To some voters, every candidate to-them has said the truth

The quantification representation is either (30) a or (30) b.

I do not have a principled solution for this ambiguity, probably related to the additional functions of the dative clitic in Spanish (see for instance Hurtado 1981 and below, Section 3); but sentences (30-31) indicate that, if the double of datives in Spanish is consistently interpreted as a "subject", the hypothesis expressed in (26) is too strong.

2.2. RQ's outside Predication clitic chains. We can also see that (26) is too weak because it fails to account for RQ's not belonging to predication clitic chains. The cases in point are related to the ungrammaticality of (25) e-f which become grammatical if some modification is added to the quantifier; so that (32) are grammatical.

(32)a.Las inversiones que \( e_1 \) hicieron, arruinararon a todos los que invirtieron\( i \)
    The investments they \( i \) made ruined every one \( i \) who invested
b.Las inversiones que \( e_i \) hicieron arruinaron a algunos de los que invirtieron\( j \)
    The investments they \( i \) made ruined some of the ones who invested

In both sentences, it is explicitly stated that there is total or partial correferance. If the quantifiers were to be interpreted like the ones in (25) e-f, the Bijection Principle should exclude both (32) a and (32) b. But, as Higginbotham (personal communication), Lappin(1982) and others have observed, the violability of crossover seems to increase with the complexity of the quantifier.

The complexity of the quantifier and not its participation in a Predicational clitic chain seems to be the cause of the violation in this case. Since, hypothesis (26) does not cover this case we may ask whether there is something in common between the "complex quantifier" cases and the predication "subjects". The common feature is clearly the referentiality of the quantifier: the fact that both the "subject" of a predication chain and the "complex quantifier" are in some sense referential quantifiers, i.e. RQ's. As a referential quantifier, a todos los que invirtieron and a algunos de los que invirtieron are not interpreted as quantifiers at the level of LF, and consequently, the crossover configuration does not obtain. Since there is no reason to believe that these are "external" in the sense of 1.3, the correct conclusion seems closer to hypothesis (27) than to hypothesis (26).

In fact, hypothesis (27) does not presuppose that every
"subject" of predication must be an RQ, permitting some "subjects" to have narrow scope, and does not require that every RQ be in a position of "subject" of a predication construction. Since the referential nature of this element seems to be responsible for its relative value with regard to the crossover violations, it is important to know more about the conditions under which an element is interpreted as a pure quantifier or as a more referential expression (as an RQ). In the next section, I will offer some initial characterizations of RQ's.

3. RQ's may be pronominally bound. Pure quantifiers do not behave as free elements which can be bound by a c-commanding R-expression. For instance, he can be a pronoun pronominally bound by the man in (33), but everyone and someone cannot.

(33) a. The man said that he was patient
   b. *The man said that everyone was patient
   c. *The man said that someone was patient

Spanish has at least one quantifier behaving in this manner: alguien 'someone'. The others, due perhaps to their plurality, may be "pronominally-bound":

(34) a. *El hombre dijo que alguien era paciente
   The man said that someone was patient
   b. Los hombres dijeron que todos esperarían
   The men said that all of them would wait
   c. Los hombres dijeron que algunos esperarían
   The men said that some of them would wait

Still, as we can see, todos (always plural) and alguno(s) (singular or plural) may function as pure quantifiers as in (25) d-f(17), etc.

Observe that these pronominal quantifiers or referential quantifiers may be bound by R-expressions in argument positions outside their governing domain. This leads us to the question whether the Binding Theory should not also be checked at LF'.
ON THE PROPERTIES OF LF’

3.1. The Binding Theory. I will assume Chomsky’s 1981 version of the Binding Theory. In Chomsky (1982) the suggestion of Williams that the Binding Theory holds for LF‘ is adopted. The argument is the following:

"Proceeding further, let us examine the properties of LF‘. Edwin Williams has observed that the binding theory seems to apply to such representations. Thus, consider the left-dislocation structure (ix):

(ix) \[ \text{John}_i, \text{he}_j \text{likes him}_k \]

Suppose that the Predication rule identifies \( i \) and \( k \); thus, we take the open sentence in (ix) to be (x), predicated of \( \overline{\text{John}} \).

(x) \[ \text{he likes } \]
Then the representation at LF‘ is (xi):

(xi) \[ \text{John}_i, \text{he}_j \text{likes him}_i \]

Suppose, however, that \( i = j \) at LF (that is, in (ix)), so that the sentence (ix) is interpreted as (xii):

(xii) \[ \text{for x = John, x likes x} \]
However, (xii) is not a possible interpretation for (ix), even though (ix) satisfies all conditions that hold at D- or S-structure or at LF. It must be, then, that the binding theory rules out (xi) at LF‘, where \( i = j \). Therefore, the binding theory holds at LF‘."

(Chomsky, 1982, n. 11, p. 94)

What this argument shows is that the Binding Theory holds at LF‘ in the domain of S. I would like to propose that some effects of the Binding theory are also apparent in the domain of the whole predication construction.

Some evidence comes from Principle C cases. If Principle C is part of the Binding Theory and the Binding Theory holds at LF‘, then the surface order of the following sentences finds an explanation:
Alfredo Hurtado

(35) a. A las mujeres, dicen que a ellas y las invitaron a todas.
   b. *A ellas, dicen que a las mujeres, las invitaron a todas.
   c. *A todas, dicen que a ellas las invitaron a las mujeres.
   d. *A todas, dicen que a las mujeres, las invitaron a ellas.
   e. *A ellas, dicen que a todas, las invitaron a las mujeres.

If we assume that the subject of a predication construction may bind the subject of another predication construction, and that this binding is subject to the Binding Theory, then a las mujeres cannot be bound by a c-commanding pronoun or RQ. This is the reason why (35) b–e are all ungrammatical, while a is grammatical. Then, the "governing category" at LF is not only S and NP but also the Predication construction. Since an R-expression is free in every domain, it is also free in the subject position of a Predication construction.

Let us turn now to Principle B. A pronoun (or RQ) in this position must be free, but it may be bound from outside its governing category, like a ellas (bound by the "c-commanding" external "subject" a las mujeres, in (35)a) and a todos (bound by the external "subject" a ellas in (35)e).

I am assuming that the right dislocated constituent c-commands all the rest, which lead us to the correct prediction that a right dislocation is possible if the R-expression is the most prominent "subject", i.e. if the right dislocated element in sentences analogous to (35) is a las mujeres like in (36)c and e. All other cases are excluded:

(36) a. *A las mujeres, dicen que a ellas y las invitaron a todas.
   b. *A ellas, dicen que a las mujeres y las invitaron a todas.
   c. A todas, dicen que a ellas y las invitaron, a las mujeres.
d. *A todas, dicen que a las mujeres las invitaron, a ellas.

e. A ellas, dicen que a todas las invitaron, a las mujeres.

This pattern follows from principles B and C of the Binding Theory.

3.1.2. RQ's in constructions without clitics. We can now turn to the formulation of (26). Sentences of this type all escape the Bijection Principle like in (37)

(37) A las mujeres, dicen que a ellas sus hijos las invitaron a todas

These women, it is said that, them, their sons invited them all.

We can see now that the most embedded predication construction is part of a Predication clitic chain, but there is no clitic directly chained to a ellas or a las mujeres, the relevant structure being:

(38) ((a las mujeres) (...(a ellas)(((clitic_e)...(a todas))

Still, the crossover effects may be attributed to the deepest Predication clitic chain.

Additionally, there exist constructions where no clitic is involved at any level as in the case where the "subject" contains a preposition other than a:

(39)a. En estos niños, yo confío en todos.

In these children, I have confidence in all

b. De esas niñas, Juana ya desesperó de todas.

About these girls, Joan has already given up about all

As far as the construction is possible, the pertinent crossover interpretation is possible (assuming that the article or the possessive may carry the relevant index):

(40) a. En esos niños dicen que su madre no confía en todos.

In these children, it is said that their mother does not have confidence in all (of them)

b. De esas niñas, dice Pedro que su madre ya desesperó de todas.

About these girls, Peter says that their mother already gave up about all (of them)
Since these Crossover "violations" seem to be of the same nature as the ones introduced by the clitic chains, it would be reasonable to propose that they are due to the same cause. This is another reason to suspect that hypothesis (26) is insufficient.

3.3. A further argument concerning Articles and PRO

3.3.1 Articles. The preceding examples contain the alternative su/la, and the inherent assumption is that both carry the relevant index for crossover to apply, at the level of LF. This is what the impossibility of (41) b and d indicates:

(41) a. *Sus\textsubscript{i} cómplices denunciaron a todos\textsubscript{i}  
    Their\textsubscript{i} accomplices denounced everyone\textsubscript{i}

b. *Los\textsubscript{i} cómplices denunciaron a todos\textsubscript{i}  
    Their\textsubscript{i} accomplices denounced everyone\textsubscript{i}

c. *Sus\textsubscript{i} amigos defendieron a algunos\textsubscript{i}  
    Their\textsubscript{i} friends defended some people\textsubscript{i}

d. *Los\textsubscript{i} amigos defendieron a algunos\textsubscript{i}  
    Their\textsubscript{i} friends defended some people\textsubscript{i}

Both examples become grammatical with predication chains with the crossover interpretation:

(42) Sus\textsubscript{i} cómplices los\textsubscript{i} denunciaron a todos\textsubscript{i}  
    Los\textsubscript{i} cómplices los\textsubscript{i} denunciaron a todos\textsubscript{i}  
    Sus\textsubscript{i} amigos los\textsubscript{i} defendieron a algunos\textsubscript{i}  
    Los\textsubscript{i} amigos los\textsubscript{i} defendieron a algunos\textsubscript{i}

Since we have a "subject" of a predication construction, the possessive or the article become coindexed with it and with the clitic chain as a whole at the level of LF. This is possible because the possessive or the article receive an index at S-structure and keep it at LF.

We expect then, that the corresponding left dislocations, with indexed article, be grammatical, ignoring the crossover effect. This is exactly the case:

(43) a. A todos\textsubscript{i}, los\textsubscript{i} cómplices los\textsubscript{i} denunciaron e\textsubscript{i}  
    To all of them, their\textsubscript{i} accomplices denounced them\textsubscript{i}
(43) b. A algunos_i los_i amigos los_i defendieron e_i
    To some of them_i, their_i friends defended them_i

The prediction chain A todos_i...los_i...e_i is coindexed with the
"possessive article" by virtue of the Predication Rule (14).
Since this coindexation takes place at the level of LF', the LF
structure does not violate the Bijection Principle. Then "clitic
control", in the sense of Hurtado (1981), is interpreted as
coidexation at LF'.

The analysis has other advantages. For instance, it explains
why questions containing a predication chain like (44) may violate
Subjacency,

(44) A quién_i se corrió la voz de que Juan le_i rompió la_i
cabeza?
Who was it spread the rumor that John broke his head
A quién_i se corrió la voz de que el_i padre le_i va a
romper la_i cabeza?
Who was it spread the rumor that his father is going
to break his head

The first example contains an apparent violation of the Bijection
Principle (1a); the second case covers two apparent violations
of the Bijection Principle (el_i...la_i). However, as proposed by
Hurtado (1981), there is no movement involved in these cases and
a quién is and RQ interpreted as the "subject" of a predication
clitic chain.

As the reader has surely observed, the analysis in terms of
Predication also cover cases of violation of the Bijection Principle
where no actual crossing is involved.

I will conclude by giving additional examples of this type.
Take examples (45)a and (45) b. In the first case, (45) a, the
"subject" is binding two variables at the level of LF', escaping
the Bijection Principle, a principle applying to LF chains. In
the second case, (45) b, there is a different type of coindexation:
the one corresponding to an as for... topic, involving a lesser
degree of connection with the sentence than the one held by a clitic
chain. The Bijection Principle is equally irrelevant in this case.
(45) a. A Pedro, su madre lo va a matar
   Peter, his mother is going to kill him
   b. (hablando de María) Su madre lo va a matar
      (speaking about Mary) her mother is going to kill him

Notice that we are dealing now with relations whose framework lies beyond sentence grammar, a level on which the actual phonetic presence of the "subject" is not required, allowing for sentence (46) to be ambiguous.

(46) Su madre lo va a matar

If the speaker is talking about the argument in object position, interpretation (45) a obtains; if not, an interpretation as in (45) b is assigned. This is what Huang (1982) calls a "phonetically null topic", a notion he appeals to in order to explain missing subjects in Chinese, a non pro-drop language. Since the "subject" of a predication clitic chain (a dislocated or "doubled" constituent) is the optimal antecedent of a variable coindexed at LF' (a possessive pronoun or article, and it can be phonetically null, the surface effect of the Predication rule (14) is the coindexation between the clitic chain and the variable. This analysis thus explains why sentences such as (46) present an apparent crossover violation:

(46) Los ojos les brillaban a todos
    The eyes to-them shine to everybody
    Everybody's eyes gleamed
    La cabeza les daba vueltas a todos
    The head to-them turns to everybody
    Everybody's head spun

At S-structure and LF, the variable is not coindexed with the Predication clitic chain; a todos is not interpreted as a quantifier at LF but as a pronoun; so no crossover violation occurs. If not overt "subject" appears, still the variable is free at LF and bound at LF', by virtue of the Predication rule (14)

(47) a. Los ojos les brillaban
    Their eyes gleamed
   b. La cabeza les daba vueltas
    Their heads spun
We do not need to say now that the clitic "controls" the article or the possessive at LF in these cases, but only that a LF' "subject" does. The original intuition of Hurtado (1981) was then substantially correct, since the clitic chain is a part of a Predication clitic chain formed at the level of LF'.

3.3.2. PRO. In most analysis of control of PRO, including the analysis trying to reduce the Theory of Control to the Binding Theory (see for instance Manzini (1982)), the PRO of an infinitive in a sentence subject must be considered free. Neither the Control Theory of Chomsky (1981) nor the Manzini theory could consider it "controlled" or "bound"; still, this PRO does not receive arbitrary interpretation. I will suggest that the PRO in these cases is indeed free at S-structure and LF, but that it may be bound at LF' in the manner as the variable associated to a possessive pronoun or an article.

It was noted in Hurtado (1981) that a PRO may be controlled even when the c-command requirement does not hold. For instance, in the following sentences, the PRO could not be interpreted as arbitrary

\begin{equation}
(48) \quad \text{PRO\textsubscript{1} trabajar mucho no le\textsubscript{1} gusta a María\textsubscript{1}}
\end{equation}

- Working much not to-her \textit{likes} to María
- María does not like working a lot

\begin{equation}
(49) \quad \text{PRO\textsubscript{1} llegar más temprano no lo\textsubscript{1} va a matar a Pedro\textsubscript{1}}
\end{equation}

- Arriving more early not to-him go to kill Peter
- Peter is not going to die by arriving earlier

Suppose that this PRO is c-commanded by a definition by the "subject" of a predication construction in which it participates, in such a way that, it is c-commanded by and coindexed with Marfa in (49) a at the level of LF'. This is equivalent to saying that the PRO of an infinitival in a sentential subject may have an accessible subject at LF'. The same is true for (49) b.

\begin{equation}
(49) \quad \text{a. A Marfa\textsubscript{1}, PRO\textsubscript{1} trabajar mucho no le\textsubscript{1} gusta}
\end{equation}

- To Mary, working a lot not to-her \textit{likes}
- Mary, she doesn't like working a lot

\begin{equation}
(49) \quad \text{b. A quién\textsubscript{1}, PRO\textsubscript{1} trabajar mucho no le\textsubscript{1} gusta?}
\end{equation}

- To whom, working a lot not to-him/her \textit{likes}?
- Working a lot does not please whom?
Then PRO is coindexed with the clitic chain by the Predication rule (14), just as the article or the possessive variable, as we have seen in the preceding section.

An additional argument supporting the contention that the LF' "subject" is the antecedent of PRO in sentential subjects is provided by the "unagreement effects". Unagreement has been shown to occur between non-argument positions and clitic-like elements including AGR (see Hurtado 1982 for details). While a third person plural subject in argument position must agree (with AGR in person, an LF' third person plural subject need not agree. It also accepts the first of the second person plural in AG or the associated clitic. Let us now turn to infinitives. Since PRO appears in clauses with no AGR, there seems to be no direct manner to test unagreement; nonetheless, an indirect way to test unagreement in infinitival clauses is available through reflexive pronouns. Lexical reflexives offer a reliable diagnosis for unagreement because they obligatorily express the grammatical person of the subject. For instance, a verb like preocuparse "to worry" in Spanish contains -se, a clitic inflected for person. This clitic is expected to agree with the argumental subject, but not necessarily with the non-argument "subject". Unagreement of the lexical reflexive clitic is evident in (50).

(50) a. A las mujeres, PRO_{i} preocuparnos_{i} no nos_{i} gusta
    To the women, worry-us not to-us Tike
    We women don't like to worry

b. PRO_{i} Retirarnos_{i} temprano no nos_{i} gusta e_{i} a los
    hombres_{i}
    To retire early not to-us like e_{i} to the men

Hence, the unagreement facts confirm that the "doubles" and the "dislocated" LF' "subjects" are accessible subjects for PRO.

We have then a solution for the problem of the missing antecedent of PRO in sentential subjects. The accessible subject of PRO in these cases is a discourse topic associated to a clitic chain, what we have called "subject" of a Predication clitic chain or LF' "subject". This "subject" may be present as in the case of dislocations, heads of relative clauses or clitic "doubled" non-argumental positions, or it may be absent, being recuperable from the context.

The essential point of Part 3 has been then to demonstrate that both the "possessive variable" and the "free" PRO are bound at the level of LF' by a non-argument: the "subject" of a predication construction. It has been shown that the solution becomes evident if it is assumed that the phenomenon of clitic
"doubling" is expressed in terms of Predication clitic chains.

4. Conclusion. The idea that the partition between quantifiers and pronouns is more subtle than what has been assumed by early studies on quantification is not new. Its relevance becomes interesting when the consequences of this difference are explored and evaluated, and it will be no surprise if what seems to be treated as a quantifier by the Bijection Principle is not treated as a quantifier by a different general principle of the Grammar. The content of this paper may be framed in that exploration: trying to use the notion of Referential quantifier (RQ) in the sense of a quantifier that does not undergo Move-Alpha at LF. I did not try to present a theory of late quantifiers because, for the moment, I do not have any intuitions about how it should be done.

The purpose of this paper has rather been to develop with some detail, the hypothesis that the additional force of these late quantifiers is what produces the apparent violations of weak crossover effects. In panish, there is a well developed device to distinguish pure quantifiers from RQ's: Predication clitic chains. We have argued elsewhere that, in general, clitic chains are not lexically filled by an NP in its argument position. The quantifiers appearing in these chains could not not be inter as "pure quantifiers" subject to Move-Alpha; they are non-quantifiers at LF.

A comprehensive number of apparent crossover violations are explained if this analysis is taken seriously. The predication analysis of Left Dislocation, Heads of relative clauses, and "nominal doubles" in clitic "doubling" constructions are sufficient to explain the differences between English and Spanish in cases like (18),(25), (34) (46) (47) and (49)

A good number of stipulations is required if these LF' "subjects" are interpreted as filling their alleged argument positions.

Finally, giving a new interpretation to the generalization found in Hurtado 1981, we have suggested that, the coindexation of the "possessive" variable and the "free" PRO both take place at the same level where unagreement is permitted, i.e. the subcomponent called LF'.

1. I would like to thank Noam Chomsky, Heles Contreras, Ken Hale, James Higginbotham, Howard Lasnik and Eric Reuland for their comments. They are not responsible, of course, for the eventual errors found in this paper. Part of the research was carried on during my stay at M.I.T. in 1982, under a Research Grant 410-82-0228 of the SSHRC of Canada.

2. Strictly speaking "sameness" (i.e. the property requiring that the candidates must be the same) is not indispensable to get the wide scope interpretation of (2)b. Sentences like (i) show the same properties as (2) without the implication that the candidates who were voted by many voters are the same.

   (i) a. A algunos candidatos, los van a votar muchos electores.
      Some candidates, many voters will vote for them

   b. (Ex, x a candidate; My, y a voter)(y will vote for x)

I am indebted to Heles Contreras for the observation.

3. As Chomsky (1982) and Huang (1982) among others have pointed out, the Bijection Principle present problems, but all agree that it reflects an important intuition in the effort to restrict the possibilities of Move-Alpha and other processes (see particularly Chomsky (1982)). What is essential for the purpose of this paper is that the relevant coindexations obtain at the first levels of LF.

4. Sentences in (18) and (25) are from Argentinian and Uruguayan colloquial Spanish. Object clitic "doubling" is also found, incipiently, in other varieties of Spanish, including Peninsular (see examples in Hurtado (1982, section 2.2.2 and note 6). The claim of the paper is valid for every dialect allowing for this type of construction regardless of the fact that may use lo, le (or both) for the accusative.

5. Jaeggli (1980), Borer (1981) and Aoun (1982), assume that the overt nominal in (20) is in the A-position corresponding to the direct or the indirect object.
6  See for instance (i)

   (i) (A) esa mujer, nadie la quiere
       (to) this woman, nobody loves her

Assuming that the preposition _a_ assigns Case, (i) seems to suggest that the Case filter does not apply at LF', a suggestion not without consequences for a theory subsuming the Case filter within the Binding Theory (as, for instance in Aoun, 1982). If, as we think, the Binding Theory does hold at LF', the filter must also hold; but if _a_ is optional, it does not, unless some stipulation is added: so, the Binding Theory cum Case Filter cannot hold at LF'. Arguments in favor of the relevance of the Binding Theory at the level of LF' are offered in Chomsky (1982). Howard Lasnik has also offered additional arguments that I am not going to try to formulate here.

7  Sentence (35)a does not have any English equivalent. The gloss is like in (i).

   (i)  a. To the women, it is said that to them (fem.pl.)
        to-them (fem.pl.) they invited all (fem.pl.)

The translation should be something like: (ii)

   (ii) As for the women, it is said that they invited
        them all.

The point is that only a configuration as (iii) is possible.

   (iii) (a las mujeres) (...(a ellas) (...(las)...(a todas)))

All other possibilities in (35) are excluded because _a_ las mujeres, an R-expression in LF' "subject" position, is not free.

8  (36) _c_ and _e_ may be translated as (35) a.

9  Sentences like (i) and (ii) are considered cases of non-
    obligatory control.

   (i)  PRO thinking of his wife in prison matured Peter
   (ii)  PRO trying to put everybody out of business delighted
           Mary
9 (cont'd) They do not, however, receive an arbitrary interpretation and reference between the object of mature and delight and the PRO in the sentential subject is obligatory. The claim of this paper is that the coindexation takes place at the level of LF, where Peter and Mary count as accessible subjects for PRO.

It is worth noting that quantification of the object is predicted to be possible under this analysis as, in fact, is (iii) PRO thinking of his wife in prison matures everyone (iv) PRO trying to put everybody out of business delights some people

Presumably, QR applied in both (iii) and (iv) but the Bijection Principle is not violated due to the fact that PRO and the quantifier are not coindexed at LF.

I will leave open the two obvious problems arising from the interpretation of (iii) and (iv): First, which is the nature of the coindexation between PRO and his in (iii)? And, second, how do quantifiers get their scope in sentential subjects like the one in (iv)?

10 Strictly speaking, "bound by a non argumental position".
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The Determination of Empty Categories in First Language Acquisition of Chinese

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The study of the properties of empty categories (ec) has been recognized as particularly critical in the sense that "the language learner can confront little direct evidence bearing on them, so that it is reasonable to assume that they reflect deeper principles of UG, the biologically determined endowment that will be the primary concern for those interested more in the nature of the human mind than in the arrangement of data in the environment" (Chomsky, 1982: 196).

This study is one in a series which have been designed to seek evidence on the 'biologically determined endowment' for human language by experimental study of the young child's initial hypotheses regarding the properties of empty categories.

1.0 Statement of the Problem

Empty categories (ec) by definition lack independent reference and require antecedents for their determination. The basic notions which account for the determination of empty categories (ec) in UG characterize these as 'bound' or 'free' (Chomsky, 1981: 184, 1982: 20) as in 1.

1. $\alpha$ is bound by $\beta$ if and only if $\alpha$ and $\beta$ are coindexed, $\beta$ and c-commands $\alpha$.

$\alpha$ is 'free' if it is not bound. When $\alpha$ is bound by $\beta$, it must be interpreted as coreferential with $\beta$. When $\alpha$ is free, it may or may not be coindexed with $\beta$ and thus may or may not be interpreted as coreferential with $\beta$.

As a consequence of 1, types of ec (bound and free) are complementally distinguished in terms of the configurational property of c-command. This distinction results in the facts that bound anaphors are obligatorily co-indexed with an antecedent, and insensitive to pragmatic context (PC); free anaphors are only optionally coindexed, and are sensitive to PC.
In this paper we test whether initial hypotheses of the language learner critically consult the property of configuration in establishing a distinction between bound and free anaphora. We test this issue through a study of first language acquisition of Chinese.

Chinese is critical to our study because of its lack of certain surface clausal features. It is well known, for example, that Chinese does not morphologically mark case or INFL. Determination of ec in Chinese can thus only be made by reference to the structural configurations in which these ec and their antecedents occur (Huang, 1982; Ross, 1981, 1982; Xu Liejiong and Langendoen, 1984). For example, 2 and 3 involve ec which are bound (the ec participate in obligatory coindexing). Four and 5 involve ec which are free (they participate in optional coindexing). This distinction between empty categories is nowhere morphologically signalled within the clauses in which the ec occur, and can only be made on the basis of the configurations in which the clauses occur. Sentence 3 involves a relative clause and a lexically filled head which functions as antecedent for the empty category in the relative clause. Sentences 4 and 5 do not involve lexically headed structures.

2. 
   shù (tā yào kàn tā) 
   book s/he want look tā 
   "The book, s/he wants to read (it)"

3. 
   (e: xiǎng huà huà) de xiǎo háizi, zháo-bu-zháo móbi 
   e: think paint painting de small child seek not attain brush 
   "The child who wants to paint cannot find a brush"

4. 
   zhāng Sān, xià-le kè yǐn hòu e: hui jǐ le 
   Zhang San dismiss-PERF class after eij return home ASP 
   "After Zhang San got out of class heij went home"

5. 
   Yǐnwei Xiǎohuá, yào kàn kātōngpian suǒyì e: kāi diànshǐ 
   Because Xiaohua want look cartoon therefore eij open TV 
   "Because Xiaohua wants to watch cartoon sheij turns on the TV"

These facts allow a critical test for the claim of UG regarding the theory in 1. For the Chinese child, the data underdetermine the properties of ec to an even greater degree than they do for the English, French, Spanish or Italian child. If young Chinese children do distinguish bound and free anaphora in structures such as 3 and (4 or 5), this can only be explained by postulating early sensitivity to the configurational differences between these structures in the human competence for language. If so, this will
provide evidence for one of the foundations of binding theory stated in 1: correlation of the configurational representation of domains with determination of empty categories.

In this paper, we present evidence that young Chinese children do make reference to configuration in the determination of ec, even in the absence of surface cues.

We also present evidence that children bring a general grammatical principle to bear on the determination of ec, which ranges over both bound and free anaphora types. This principle reflects parameter-setting for the grammar of the language being acquired. The parameter involves a generalization regarding the configurational structure of the language, viz., its Principal Branching Direction (Lust, 1981, 1983, Lust and Mangione; 1982; Lust and Chien, to appear). One consequence of this parameter-setting involves the establishment of linearity (directionality) for both bound and free anaphora types.

Chinese differs from languages like English in that as the examples show, the relative clause occurs to the left of its head in #3 and subordinate clauses like the 'after' clause in #4 occur to the left of the main clause in unmarked position. This characteristic of Chinese results in surface linearity relations between antecedent and ec, as in example 3, in which the ec precedes the antecedent with which it is coindexed. In current GB theory, this grammatical fact and consequent linearity relations are inconsequential to binding principles as stated in 1. We argue in this paper, however, that this grammatical fact and the linearity relations determined by it are connected in the child's initial theory of anaphora.

The theoretical consequences of these results are the following. (1) In the determination of ec, the binding principles (as reflected in 1), while supported, must be supplemented by a more general grammatical principle involving parameter-setting for the grammar being acquired. (2) The distinction between bound and free anaphora in the initial state may not be represented by a theory which treats 'bound' as grammatical, but 'free' as a non-grammatical (pragmatic) phenomenon, since children are found to apply a general grammatical principle (directionality) over both. (See Reinhart, to appear and 1983a,b for discussion of this issue).

1.1 Design

This experimental study tested the factors of Anaphora Type (Bound or Free), Direction (surface linear relations between lexical antecedent and anaphor), and Pragmatic Context (whether or not an initial antecedent was provided extra-sententially) in a factorial repeated measures design.

The two factors, Anaphora Type (bound or free) and Directionality (forward or backward) were varied, providing four anaphoric structures in stimulus sentences exemplified in table 1. Bound backward, bound forward,
free backward and free forward are shown in examples 1, 2, 3 and 4 respectively on this table.

Each of these sentences is grammatical and in no way violates any of the binding principles. In sentence 1, an empty category occurs in a relative clause. It is bound by either a highly abstract rule of the class of movement rules to which WH movement in English belongs; or it is bound by some other mechanism of binding which controls the interpretation of the ec without movement (Huang, 1982a,b). In either case, the relative clause in Chinese involves a left-branching structure in which the clause containing the ec is generated to the left of, or before, the head, and the ec is coindexed with the head. Due to the left branching nature of the relative clause, this structure involves backward anaphora. The lexical head c-commands the ec in the relative clause, and the ec is bound.3

Sentence 2 on table 1 also contains an ec in a relative clause. It is bound by the same mechanism which binds the ec in 1. This ec is co-indexed with the head of the relative clause in 2 as in 1. In 2, however, the relative clause head is also a null category. This head is itself bound by the initial topic NP, lǎoqīn’ér (old woman). (This binding has been described by Huang 1982 as 'variable binding' in which the initial NP has been moved to sentence initial topic position leaving behind a coindexed trace.) By virtue of this NP movement, the initial lexical NP in sentence 2 c-commands the ec which is in the relative clause head (as well as the ec within the relative clause). That is, the lexical antecedent precedes the ec's. Thus the sentence reflects forward anaphora, at the same time that it reflects bound anaphora.

The representations for sentences 3 and 4 are straightforward. The ec's are generated in place, and optionally coindexed in LF with the available antecedents, xiǎo'ài 'little brother' in 3, and gēge, 'older brother' in 4. In neither 3 nor 4 does the available lexical antecedent c-command the ec; these are not headed structures; thus both 3 and 4 represent free anaphora.
In each case the ec is optionally co-indexed with the non c-commanding lexical antecedent in the sentence, or it is assigned a referent available in pragmatic context. In sentence 3, the lexical antecedent precedes the ec; thus it reflects forward anaphora. In sentence 4, it follows, thus reflecting backward anaphora.

Each of the above four sentence types was experimentally administered four times (with varied lexical content) under controlled conditions in an elicited imitation task (see Lust, Chien and Flynn, to appear) wherein children were asked to repeat the stimuli as administered and children's relative success and errors were analyzed according to their maintenance or modification of structure.

A Pragmatic lead (PL) was administered to establish a PC for half the sentences in each condition. A PL meant that the sentence was preceded by a sentence like, "Now I am going to tell you a story about..." the lexical antecedent in the following sentence, e.g., "little child" (xiǎo hāizi) in sentence 1.
1.1.1 Experimental Design Control Sentences. The design control sentences of the type illustrated by 5 on table 1 were also administered. 5 contains a relative clause whose head is lexically empty. No lexical antecedent occurs in 5. To facilitate the interpretation of this sentence type, it was always administered with a pragmatic lead (+PL). This sentence type was included to control for the possibility that children had significant difficulty with relative clause structures which lacked a lexical head. If this were to have proved to be the case, this factor would have confounded the interpretation of the role of the factors of direction and anaphora type in evaluating the subjects' performance on sentences of the type exemplified by 2, since 2 involves an ec as head of a relative clause.

1.1.2 Subjects. There were 100 Ss in 5 6-month age groups from 3.0 to 5.6 (years, months) (Mean age 4, 3 (18)) who were acquiring Mandarin Chinese, as their first language.

1.2 Hypotheses

The above design then allows analysis of the Chinese child's sensitivity to the principles of Configuration (i.e., Anaphora Type distinguished as bound or free corresponding to configuration which was +/-Headed), Linear Order (i.e., Directionality between lexical antecedent and empty category, viz., forward or backward), and Pragmatic Lead (present or absent). It also allowed information on Age variation.

This design allowed us to test the following hypotheses. (1) If children consult configuration in the determination of binding domains in accord with the foundation of binding principles, they should distinguish headed from non-headed constructions, assigning properties of bound anaphora to the headed construction which involves a relation of c-command between lexical antecedent and ec, but properties of free anaphora to the non-headed construction which does not involve a c-command relation between lexical antecedent and ec. In particular, they should allow the interpretive relation between ec and lexical antecedent to be modulated by pragmatic context (PL) in the case of non-headed constructions, but should resist the effect of PL in the case of the headed constructions.

(2) If children consult the binding principles (BP) uniquely in the determination of binding domains, then there should be no significant effect of the design factor of surface linear order between lexical antecedent and ec on children's performance with our stimulus sentences. There should be no preference for either forward or backward linear orders in general. In particular, we saw above that a sentence like 2, with forward surface linear order between lexical antecedent and ec, is unmarked with regard to binding principles. Sensitivity to BP alone does not predict that this structure should be treated as marked by the child.
If acquisition of anaphora in Chinese resembles English, it might be possible that children would favor forward anaphora in Chinese acquisition. Surface linearity relations of precedence have been claimed by some (on the basis of English acquisition data) to critically determine first language acquisition of anaphora. Children acquiring English as a first language have evidenced a forward directionality constraint on anaphora (cf. Tavakolian, 1973, Solan, 1983, Lust, 1981). If children are sensitive to a Bound/Free distinction of Anaphora Types however, this forward direction effect might only be predicted to occur in cases of free anaphora, and not in bound, and would be assumed to reflect independent pragmatic principles which free anaphora is susceptible to.

On the other hand, if the child consults a grammatical parameter of PBD, as formulated above, in its acquisition of anaphora in Chinese, along with the binding principles, and if they derive a grammatical principle of anaphora directionality on the basis of PBD, then it would be predicted that the factor of linear order of lexical antecedent and anaphor would affect children's performance. In particular, since Chinese is LB, children acquiring Chinese would be predicted not to demonstrate the forward directionality effect found for acquisition of free anaphora in English, but to treat backward anaphora as unmarked in general. That is, they would be predicted to find backward unmarked for both free and bound, even where Pragmatic Context may allow and support a forward directionality principle, i.e., in free anaphora cases. In addition, if children consult PBD in conjunction with the Binding Principles, then sentence 2, which involves forward directionality in a bound domain would be predicted to be particularly marked, since in this case the inconsistency of surface linear order (forward) and directionality assigned by PBD (backward) can only be grammatically resolved. This result would confirm the integration of the grammatically derived directionality principle in the grammar for anaphora of the young child.

2.0 Results

2.1 Binding Principles (BP). Figures 1 and 2 summarize these results. They show amount correct imitation in each condition. There were no significant interactions with the factor of age in these data, so results of the whole group are discussed as main effects. Subjects did distinguish bound and free sentence constructions in principled ways, signalling that they were sensitive to the configurational distinction between them. As can be seen in a comparison of figures 1 and 2, presence of PL depresses amount of correct production of the bound structures, whether they are forward or backward. On the contrary, it has no effect on free anaphora structures where they are forward, but affects these only when they are backward. This difference suggests that children consult pragmatic context, and that PC is to a degree incompatible with bound anaphora, but compatible with free anaphora, particularly when this is forward. This result confirms that children distinguish between bound and free anaphora in a principled way in that they associate PC differentially across these two types of anaphora.
Analyses of children's errors also confirmed that children were differentiating bound and free constructions in that these constructions were differentially sensitive to PC. There were significantly more errors involving the ec and its antecedent, on the free construction (15.5% of items) than on the bound (4.25% of items), accounting for 40% and 5% of errors, respectively. In particular, there were significantly more permutations of the linear relation between lexical antecedent and ec in the free than in the bound cases; and most (78%) of these linear order permutations occurred in cases where after being given a PC, the child had been administered a sentence where the ec preceded the lexical antecedent and where these two constituents were not related in a (headed) bound construction. In the bound (headed) constructions, the pragmatic lead had only a small effect on ecs and their antecedents and near zero effect on linear order relations between them, even with pragmatic lead.

2.2 Principal Branching Direction (PBD). The data also provide evidence that children not only consult the configurational distinction between bound and free anaphora, but also consult a general directionality principle in keeping with the grammar of their language, and integrate their theory of anaphora with this general grammatical principle. This principle generalizes over the bound/free distinction.

As figure 1 shows, Chinese children do not demonstrate the forward directionality constraint on anaphora which had been found in English acquisition. Not only do Chinese children significantly favor the backward bound construction over the forward bound \( (F(1,95) = 32.01, p = .0001) \). Mean correct backward 1.26, forward .79.), but even in the free cases there is no significant difference between forward and backward directions \( (F(1,95) = 3.50, p = .06) \) mean correct backward 1.26, forward 1.42. The effect of directionality is thus general, ranging over both the bound and free domains. Critically, this is in spite of the fact that children recognize the distinction between bound and free anaphora with respect to PC as we saw in 2.1.

Moreover, as seen in figures 1 and 2, backward anaphora, whether free or bound, is treated uniformly by subjects, further documenting the generality of the directionality effect. Backward lexical antecedent-ec relations are treated as compatible with either bound or free constructions in Chinese, as shown by their similar means. These results suggest, then, that although children do differentiate bound and free constructions, they generalize over both of them in their facility with backward linear relations, unlike the child acquiring English.

Finally, figure 2 (compared to figure 1) shows that pragmatic context is treated as inconsistent with backward linear order relations in either headed or non-headed constructions and as inconsistent with the left-branching headed constructions in general. This result provides further evidence that the directionality effect generalizes over bound and free anaphora.
The figures also show that the most difficult construction is the bound forward condition exemplified by sentence 2 on table 1. Here, forward linear relations between lexical antecedent and ec are treated as inconsistent with the left-branching construction. This documents the child's integration of the directionality principle with configurational structure grammatically.

2.3 Experimental Design Control. The amount of children's correct imitations of the experimental design control sentences (which were sentences with relatives without lexically filled heads) is shown (by the square) on figure 2. As the figure suggests, as hypothesized, these control sentences were significantly easier for children to imitate than the experimental sentences with relatives with ec heads which also involved sentence internal lexical antecedents, and forward directionality. The control sentences were similar in ease to the relatives with lexically filled heads. Children's success on the experimental design control sentences confirms then that the factor which depressed the amount of correct imitation on the headed case with forward lexical antecedent-ec relations was not due to a general difficulty with relatives with ec heads. It supports the claim that it was precisely the conflict between forward lexical antecedent-ec relations and the left branching headed structures involved in these sentences that caused their difficulty.

3.0 Discussion

3.1 Interaction Between BP and Branching Direction. In recent papers Reinhart (1983a, b, and to appear) argues that all forms of bound anaphora, regardless of antecedent type, are semantically interpreted as bound variables and that the principles and conditions relevant to bound anaphora are in the grammar. All types of "intended coreference" which involve an antecedent-anaphor relation without c-command are argued to be determined by principles and factors independent of grammar. For Reinhart, intended coreference is in the domain of pragmatics.

When discussing our research, Reinhart takes issue with the proposed PBD parameter. She argues that in both left and right branching languages an adequate characterization of bound anaphora only needs to refer to c-command. For her the fact that in left branching structures there is backward anaphora while in right branching structures there is forward anaphora is irrelevant.

Reinhart goes on to point out that in our study of Chinese acquisition, preference for backward anaphora was only evidenced in the bound case. With intended coreference (free anaphora), children acquiring Chinese, like children acquiring English, evidence a forward preference. Reinhart argues that in both languages intended coreference is outside of grammar; it is independent of branching direction and children prefer to go forward as would be expected because it is pragmatically determined.
It is true that overall factors conflated, children acquiring Chinese
evidence a preference for forward anaphora in cases of intended coreference.
However, in evaluating this particular study's findings not only must the
overall performance be considered but also the two other factors which we
manipulated.

(1) For those sentences administered without a pragmatic lead there is
no statistically significant difference between the children's performance on
forward intended coreference and backward anaphora, both free and bound.
All three forms of anaphora are significantly easier than forward bound
anaphora.

This is in marked contrast to the results obtained from experiments
with children acquiring English. With or without pragmatic lead, children
acquiring English evidence a significance preference for forward anaphora.
If a language's PBD were irrelevant and intended coreference were governed
by factors independent of the grammar, one would predict that children
acquiring both Chinese and English would behave the same not only with
sentences introduced with a pragmatic lead but also with those without a
pragmatic lead. That the absence of a pragmatic lead brings about this
striking difference must be explained. The PBD parameter as formulated,
potentially offers a principled account of this contrast.

(2) For those sentences administered with a pragmatic lead, forward
intended coreference is significantly easier than either backward intended
coreference or backward bound anaphora. However, there is no significant
difference between the children's performance on the two backward cases.
These results are also important in evaluating Reinhart's criticism. If the
principles governing bound anaphora were totally independent of those
governing intended coreference, one would not predict that the two forms of
backward anaphora would pattern the same with respect to the presence or
absence of pragmatic lead. In order to account for this consistent patterning,
contrary to Reinhart's position, it seems reasonable to hypothesize that
children are sensitive to anaphoric direction as a factor independent of
whether the anaphora is bound or intended.

3.2 The place of PBD in a theory of linguistic competence. As shown
above, when examined in detail the results of our studies support the positing
of a PBD parameter. In considering the place of this parameter in a model
of linguistic competence it is important to note that it is a coherent theoretical
construct only if it is formulated within a grammar which includes a set of
phrase structure rules. There is no sense in which branching direction can
be discussed independent of the representation of structural relations in a
phrase structure tree or one of many notationally equivalent representations
of these relations. This dependence on phrase structure provides support for
the positing of the PBD parameter as part of the grammar.

This has direct bearing on Reinhart's view that intended coreference is
outside of grammar. The results of our study show that in a left branching
language bound and free backward anaphora pattern together in subtle ways
(which are only brought out clearly through the interaction of factors like pragmatic lead with anaphora direction). We have argued that these effects, especially in contrast to what has been observed in studies of the acquisition of English, can be accounted for by the PBD parameter systematically.

Given that free anaphora, Reinhart's intended coreference, is in part constrained in first language acquisition by the PBD parameter, a grammatical construct, it follows that it, like bound anaphora, cannot be handled solely by pragmatics. To the degree that free anaphora must in part be characterized by grammatical principles, it can be held to be a grammatical phenomenon.

3.3 General conclusions. Our results provide a confirmation of BP with regard to the role of structural configurations in distinguishing types of ec. These results are particularly significant since the only way children can characterize these different binding domains in Chinese is in terms of abstract syntactic relations which are not redundantly marked on the surface morphologically. In addition, our results support the positing of a PBD parameter whose value must be set, as either left or right, by a child early in first language acquisition, where this initial setting will have wide deductive consequences with respect to the child's first hypotheses regarding both free and bound anaphora.

In this paper we have provided support for a theory of UG which includes both BP and PBD. As the theory of UG is worked out in greater detail, the explicit nature of the relationship between BP and the PBD parameter should become clearer.
Footnotes

1 This research is supported by NSF grants BNS 7825115 and BNS 8318983.

2 Technically, in a relative such as 3, in current theory it may not be the lexical head which binds the ec, but an operator or trace in COMP; the head of the relative clause is coindexed at LF (e.g., Chomsky, 1981:185 and 1982:92, fn. 11). This distinction is not necessary to our argument in this study and deserves further study in Chinese.

3 It is not critical to our argument at this point to distinguish among the various definitions of 'c-command' which have been proposed (e.g., Reinhart, 1976; Chomsky, 1981; Aoun and Sportiche, 1981) since by any of these definitions, the lexical head c-commands the ec in the relative clause here (see also fn. 2).

4 Reinhart apparently believes that a theory of language acquisition which posits a PBD parameter rules out the possibility that children also make reference to binding principles in the acquisition of anaphora. We are unsure how she comes to this conclusion. Our view is that both the PBD parameter and the binding principles are part of the grammar of anaphora.
Sentence 5 was produced by the following pragmatic leads:

**EXPERIMENTAL DESIGN CONTROL**

Because older brother wants to eat candy, so he opens (the) box.

Because older brother want to eat candy, so open box.

The old lady who is reading a storybook sits on a chair.

Old lady, who is reading storybook - REL, sit on chair-top.

2. Look-potato, sit on grasshopper - REL, sit on grasshopper-top.

The (the) child (who) throws stonescrow's on top of (the) table.

Throw stone - REL, child - REL, crow - REL, table-top.

1. in table-top de (the) child (who) throws stonescrow's on top of (the) table.

Relation between Antecedent & EC

Types of Sentences Tested in Initiation Task

The Determination of Empty Categories in First Language Acquisition of Mandarin Chinese

Table 1
Interaction between/neighbor type (bound or free) and directionality of ec (forward or backward)

**Score range is 0-2 (based on Z items per type)
References


V-CHAIN ACCESSIBILITY*

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1. Introduction

The pronoun "he" in (1),

(1) *He loves every boy.

may not be interpreted as a variable bound by the Quantifier Phrase (QP) "every boy." Principle C of the Binding Theory (BT) of Chomsky (1981) accounts for this, as it does other cases of Strong Crossover (SCO). Assuming Quantifier Raising (QR), May (1977), the Logical Form (LF) representation of (1) is (2):

(2) every boy_i he_i loves t_i

and here, t_i, considered an R-expression with respect to Principle C, is not free.

Weak Crossover (WCO) cases do not fall under Principle C. Consider the array in (3),

(3) a. Every boy loves his dad.

b. ?Every boy's dad loves him.

c. *His dad loves every boy.
whose LF-representations are given in (4):

(4) a. every boy\(_i\) \(t_i\) loves his\(_i\) dad
    
   b. every boy\(_i\) [\(t_i\)'s dad] loves him\(_i\)
    
   c. every boy\(_i\) [his\(_i\) dad] loves \(t_i\)

The R-expression \(t_i\) is free, in the relevant sense, in (4) a, b, and c. Thus the distinctions indicated in (3) are unaccounted for.

In this paper we present an analysis of pronominal binding, one which accounts for data such as those above, based on recent proposals of Higginbotham. We adopt Higginbotham's (1983) notion of V-chains as well as a modified version of "accessibility" (Higginbotham (1980b)). In section 2 we will examine the notion of V-chains. In section 3 we present the analysis and consider relevant data. We compare our analysis with others in section 4. And in section 5 we point out some problems with our analysis and suggest lines of further research.

2. On V-chains

We define a formal variable (v) as an A-bound empty category (EC) in an argument position. \(t_i\) in the LF-representation below is thus a v:

(3) who\(_i\) \(t_i\) saw John

In (5), the LF-representation of (4),

(4) Which student's teacher left?

(5) [which student]\(_i\) [\(t_i\)'s teacher]\(_j\) \(t_j\) left

both \(t_i\) and \(t_j\) are formal variables. Notice that \(t_i\) is contained in the binder of \(t_j\). In a sense, as Higginbotham (1983) points out, \(t_i\) and \(t_j\) form a chain of formal variables whose "link," we could say, is \(NP_i\). In the LF-representation (7), of (6),

(6) Every boy on every street in some city is sad.

(7) [some city]\(_i\) [every street in \(t_i\)]\(_j\) [every boy on \(t_j\)]\(_k\)

\(t_k\) is sad

t\(_i\), \(t_j\), and \(t_k\) are all v's and again form a chain in that \(t_i\) is contained in the binder of \(t_j\) and \(t_j\) is contained in the binder of \(t_k\).
We now adopt the formal definition of V-chains given by Higginbotham (1983):

(8) A V-chain is a sequence \((v_1, \ldots, v_n)\) of formal variables such that each \(v_i\), \(1 \leq i \leq n-1\), is contained in the binder of \(v_{i+1}\).

The idea is that each formal variable in a well-formed chain is contained in the binder of the next formal variable to its right. Thus in (3), \((t_i)\) is a (single member) V-chain, in (5), \((t_i, t_j)\) is a V-chain, and in (7) \((t_i, t_j, t_k)\). Below we will refer to the leftmost formal variable as the first member of a chain and the rightmost (i.e., \(v_n\)) as the last.

3. V-chain Accessibility

We say that a pronoun \(P\) may be interpreted as a bound variable if it is accessible to a formal variable that is coindexed with a Quantifier-Phrase (cf. Higginbotham (1983)). Specifically, if a QP, a formal variable, and a \(P\) are coindexed (we assume free indexing of D-structure); \(P\) may be bound by the QP if it is accessible to the formal variable through some V-chain. Our version of accessibility is as follows:

(9) A pronoun \(P\) is not accessible to \(v\) if:

P or its container c-commands \(v_n\),

Otherwise \(P\) is accessible to \(v\).

The \(v\) referred to in (9) is our target formal variable; the formal variable coindexed with a QP and a pronoun. \(v_n\) is the last member of the V-chain of which \(v\) is a member. (Below we will refer to our analysis as V-chain accessibility (VA).)

Consider now the array in (10):

(10) a. *Who does he love?

b. *Who does his dad love?

c. ?Whose dad loves him?

d. *Whose dad does he love?

e. ?Whose teacher likes his idea?

f. ??Whose ideas does his teacher like?

The LF-representations of (10)b-f are given in (11)b-f respectively (we will examine (10)a in a moment):
(11) b. who_1 [his_1 dad]_k love t_1
   c. who_1 [t_1's dad]_j t_j loves him_1
   d. who_1 [t_1's dad]_j he_1 love t_j
   e. who_1 [t_1's teacher]_j t_j likes [his_1 idea]_k
   f. who_1 [t_1's ideas]_j [his_1 teacher]_k like t_j

In (11)b (t_1) is a single member V-chain. It is our target formal variable v in that it is coindexed with the pronoun "his." and the QP "who." It is also v_1 in that it is the last member of a single member chain. Thus if "his" is to be interpreted as bound by "who" it must be accessible to t_1. However, the container of "his_1", NP_k c-commands t_1(=v_n) and the representation is disallowed by (9).

In (11)c (t_1, t_2) is a V-chain. t_2 is our target v. t_j=v_n as it is the last member of the V-chain. The pronoun "him_1" (which has no container in this case) does not c-command t_1(=v_n), and the representation is allowed.

(t_1, t_2) is also the V-chain of (11)d. But in this case the pronoun "he_1" does c-command t_1(=v_n) and thus (11)d is rejected. The pronoun ["his_1"] may be interpreted as bound in (11)e but may not in (11)f. In the former neither the pronoun nor its container, NP_k c-commands t_1(=v_n), whereas in the latter NP_k does c-command t_j. For these data, then, (9) gives just the right results.

The LF-representation of (10)a is given below:

(11) a. who_1 he_1 love t_1

(t_1) is a single-member V-chain. Thus t_1=v=v_n. Since "he_1" c-commands t_1, the representation is correctly disallowed. As we have seen Principle C of the BT also rules this out. However, this does not mean that Principle C and (9) are equivalent. Principle C is needed independently to account for cases such as (12),

(12) *John likes John.

where the R-expression is not a quantifier trace. (9) is needed independently to account for WCO cases and also for certain cases of Sco such as (10)d about which Principle C has nothing to say. In 11(d), the LF-representation of (10)d, both t_i and t_j are free in the relevant sense. Thus Principle C would incorrectly allow (11)d. (9), as we have seen, disallows it.
To avoid the redundancy between (9) and Principle C (regarding examples such as (11)a) can't we say that quantifier traces are not R-expressions, (9) giving the prediction on all such cases? Given some of the differences Higginbotham (1983) points out between names and quantifier traces, the attempt to disassociate the two is not unwarranted. However, it is problematic (at least on our account of pronominal binding) in light of examples such as (13),

(13) *Seeing someone's father pleased him.

whose LF-representation is (14):

(14) someone_i [PRO_i seeing t_i's father]_j pleased him_i

If t_i is not an R-expression; there is no obvious way to rule out (14). Since "him_i" does not c-command PRO_i, which is the target formal variable v_in this case, the representation is allowed by (9). If t_i is an R-expression, on the other hand, then (14) is out by Principle C as t_i is bound by PRO_i. This suggests that some redundancy between'(9) and Principle C is unavoidable.2

In this section we have seen that V-chain accessibility (VA) accounts for certain core cases of weak and strong crossover straightforwardly. In the next section we will compare VA with other analyses.

4. VA and Other Analyses

In Higginbotham (1980b) a version of accessibility is developed. Here, accessibility constrains a reindexing rule, which reindexes (or more specifically "identifies" the index of) a pronoun with an empty category EC that is coindexed with a QP. If the QP is not accessible to the pronoun, then the reindexing rule may not apply. Informally,3 a QP is accessible to P if the trace of the QP or the trace of the container of the trace of the QP (and so on) c-commands P. Indexing (which occurs at S-structure) is constrained in that no non-anaphors are coindexed. Thus a pronoun may share an index with a QP only if the reindexing rule applies, and it can apply only if the QP is accessible to P. (Below we will refer to this analysis as Quantifier Phrase accessibility (QPA).)

The LF-representation of (10)b, given QPA's restriction on indexing, would be (15),

(15) who_i [his_k dad]_j love t_i

"his_i" may reindex to "his_k" only if "who_i" is accessible to that pronoun. It is not accessible, however, since the trace of the
QP, $t_i$, does not c-command "his$_k$". Thus the representation (11)b
repeated below,

(11) b. who$_i$ [his$_i$ dad]$_j$ love $t_i$

will never arise. The reindexing rule can apply to (16), the
relevant LF-representation of (10)c:

(16) who$_i$ [t$_i$'s dad]$_k$ t$_k$ loves him$_j$

"who$_i$" is accessible to "him$_j$" since the trace, t$_k$, of the contain-
er, NP, of the trace, t$_i$, of the QP, c-commands that pronoun.
"him$_j$" may reindex to "him$_i$" yielding (11)c, repeated below:

(11) c. who$_i$ [t$_i$'s dad]$_k$ t$_k$ loves him$_i$

Accessibility gives the right results for the other examples of
(10) as well.

It is argued that QPA overcomes limitations of the Leftness
Condition, Chomsky (1976), and the C-Constraint, Higginbotham
(1980a). Higginbotham shows, for instance, that the Leftness
Condition (which says that a variable cannot be the antecedent of
a pronoun to its left) does not adequately account for the dis-
tinction between (17) and (18):

(17) *Which picture of which man does he like?
(18) Which picture of which man pleases him?

whose LF-representations are (19) and (20) respectively:

(19) which man$_i$ [which picture of t$_i$]$_j$ he$_k$ like t$_j$
       NP

(20) which man$_i$ [which picture of t$_i$]$_j$ t$_j$ please him$_k$
       NP

To get a Leftness Condition (LC) violation in (19) we need to
"lower" NP$_j$. The result is (21):

(21) which man$_i$ he$_k$ like [which picture of t$_i$]$_j$

(21) is now disallowed. But the problem, according to Higgin-
botham, is that (21) is semantically incoherent. "For what has
been lowered . . . is not a referring expression, but rather an
expression of generality, to which QR is supposed to apply." To
make sense of (21), "we would have to propose a semantics in
which such expressions were interpreted in place." And that is
too high a price to pay to maintain the lowering mechanism.

QPA accounts for (17) and (18) straightforwardly. The rele-
vant LF-representations are (19) and (20). "which man$_i$" is not
V-CHAIN ACCESSIBILITY

accessible to "he\textsubscript{k}" in (19) since \( t_i \), the trace of the container of \( t_i \), does not \( c \)-command "he\textsubscript{1}". Reindexing may not apply. "which man\textsubscript{i}" is accessible to "him\textsubscript{1}" in (20); \( t_j \) does \( c \)-command the pronoun. Thus, reindexing may apply giving\textsuperscript{1} the bound interpretation.

The C-Constraint (CC) limits the application of the Reindexing rule (21):

(21) Given,

\[
\ldots e_i \ldots \text{pronoun}_j \ldots,
\]

reindex \( j \) to \( i \).

Specifically, (21) may not apply so as to produce the configuration in (22):

(22) \[
\ldots[e_i \ldots]_j \ldots \text{pronoun}_i \ldots e_j \ldots
\]

The CC, (22), also accounts for the (17)/(18) distinction. (21) may not apply to (19), the relevant LF-representation of (17), since if "he\textsubscript{k}" reindexed to "he\textsubscript{j}" (22) would result. It may apply to (20) since such is not the case. However, as Higginbotham points out, the CC is insufficiently general. It cannot account for the distinction below:

(23) *Which photo of which dog of which man does he like?

(24) Which photo of which dog of which man pleases him?

As the reader may verify, (21) may apply to the LF-representations of both (23) and (24) since in neither case will (22) result. Thus, (23) is incorrectly allowed. QPA, on the other hand, captures the distinction.

In more general terms, the examples given above motivated Higginbotham's change from a linear constraint on reindexing (i.e., (22)) to a structural one (cf. the \( c \)-commands relations required by Quantifier Phrase accessibility).

VA also accounts for the examples problematic to the LC and the CC. Consider (25) and (26), the relevant LF-representations of (17) and (18) respectively:

(25) which man\textsubscript{i} [which picture of \( t_i \)]\textsubscript{j} he\textsubscript{j} like \( t_j \)

(26) which man\textsubscript{i} [which picture of \( t_i \)]\textsubscript{j} \( t_j \) pleases him\textsubscript{i}

In (25) \( t_i, t_j \) constitutes a V-chain. \( t_i \) is our target \( v_i \), \( t_j = v_n \). Since the pronoun "he\textsubscript{i}" \( c \)-commands \( t_j (= v_n) \) it is not
accessible to $t_i (=v)$ and hence cannot be bound by the QP "which man." Since the pronoun "him," does not c-command $t_j (=v_n)$ in (26), it may be bound.

Consider now (27) and (28), the relevant LF-representations of (23) and (24) respectively:

(27) which man$_i$ [which dog of $t_j$]$_j$ [which photo of $t_j$]$_k$
     he$_i$ like $t_k$

(28) which man$_i$ [which dog of $t_j$]$_j$ [which photo of $t_j$]$_k$
     $t_k$ please him$_i$

$(t_i, t_j, t_k)$ is a V-chain in both (27) and (28). $t_i = v$ and $t_k = v$. Since the pronoun "he," in (27) c-commands $t_j (=v_j)$ it may not be bound. Since "him," does not c-command $t_k (=v_n)$ in (28) it may be bound. Thus we get just the right results in all cases and since neither the LC nor the CC does VA is preferable.

VA may have certain advantages over QPA as well. First, VA does not require a constraint on indexing. Indexing is completely free at D-structure. If a pronoun is coindexed with a QP it may be interpreted as bound only if the structure in which it occurs does not violate (9) at LF. VA has the advantage of simplicity in this respect.

Secondly, VA does not require the extension of QR which QPA does. Consider, for example, (29),

(29) ?Every boy's dad loves him.

QR, on May's (1977) account, would yield the LF-representation (30):

(30) every boy$_i$ [t$_i$'s dad]$_j$ loves him$_k$

In (30) the QP "every boy's" is not accessible to the pronoun "him," since the trace of the QP does not c-command the pronoun. The reindexing rule can thus not apply and the bound interpretation would never arise. In light of this problem Higginbotham proposes an extension of the domain of application of QR. Essentially QR would have to apply twice in cases such as (29). First it applies to the entire NP "every boy's dad" adjoining it to S. Thus, (31):

(31) [every boy$_i$'s dad]$_j$ $t_j$ loves him$_k$

It then applies to the determiner of NP$_j$. Thus (32):

(32) every boy$_i$ [t$_i$'s dad]$_j$ $t_j$ loves him$_k$
V-CHAIN ACCESSIBILITY

In (32) "every boy" is accessible to "him" since \( t_j \), the trace of the container of \( t_j \), does c-command that pronoun. Reindexing may apply and the bound interpretation result.

VA does not require this modification. The relevant LF-representation of (29) is (33):

(33) every boy\( _i \) [\( t_i \)’s dad]\( _j \) loves him\( _i \)

t\( _i \) is our target \( v \), and since \( (t_j) \) is a single member V-chain, \( t_j-v \) as well. The pronoun "him\( _i \)" is accessible to it (by (9)) and thus may be bound by "every boy\( _i \)". Note that if an extension of QR is motivated on independent grounds VA will still give the right results. If QR applied twice to the S-structure of (29), for instance, the relevant LF-representation would be (34):

(34) every boy\( _i \) [\( t_i \)’s dad]\( _j \) \( t_j \) loves him\( _i \)

In (34) \( (t_i, t_j) \) is a V-chain. \( t_i-v \) and \( t_j-v \). Since "him\( _i \)" does not c-command \( t_j (=v) \) it is accessible to \( t_i (\neg v) \) and thus may be bound. On this count too, VA is simpler.

Finally, VA accounts for certain cases not accounted for by QPA. Consider (35),

(35) Who did you punch after telling to leave?

whose LF-representation is (36):

(36) who\( _i \) did you punch \( t_i \) after PRO telling \( e_i \) to leave

In (36) \( e_i \) is a "parasitic gap." It has been argued, Chomsky (1982) and references therein, that such gaps are "licensed" only by a non-c-commanding trace. On this account, then, \( t_i \) in (36) does not c-command \( e_i \). Consider now (37):

(37) Who did you punch after telling him to leave?

where we have filled in the position of the parasitic gap with a pronoun. Given the indexing constraint of QPA the relevant LF-representation of (37) is (38):

(38) who\( _i \) you punch \( t_i \) after PRO telling him\( _j \) to leave

If the structure of (38) is the same as (36), a reasonable assumption, then \( t_i \) does not c-command "him\( _j \)." If that is the case then "who\( _i \)" is not accessible to "him\( _i \)"; the reindexing rule may not apply, and the bound interpretation will never arise.

For VA, on the other hand, the relevant LF-representation is (39):
(39) who$_i$ you punch t$_i$ after PRO telling him$_i$ to leave

(40) For a pronoun to have for its antecedent a formal variable v, it must be accessible to v, through a certain V-chain.

(41) P is accessible to v if v c-commands P; and P is not accessible to v if P c-commands v$_n$.

(42) If a pronoun P is dependent upon a formal variable v, then P is accessible to v.

Consider now (43), the relevant LF-representation of (10)d:

(43) who [t$_1$'s dad] he love t$_2$

In (43) (t$_1$, t$_2$) is a V-chain (note that these traces are subscripted only to distinguish them for expository purposes); t$_2$=v since it is the last member of that chain. The pronoun "he" is dependent on t$_1$ which is a formal variable. By (42), then, "he" is accessible to t$_1$. It is not accessible, however, since "he" c-commands t$_2$ (=v$_n$). This is a contradiction and hence the representation is disallowed.

Consider next (44), the relevant LF-representation of (10)b:

(44) who his dad love t$_1$

(t$_1$) is a single member V-chain; thus t$_1$=v$_n$. The pronoun "his" is dependent on t$_1$. But in this case it is somewhat more difficult to interpret (41). Since neither "his" nor t$_1$ c-commands the other then, according to (41), that pronoun is neither accessible nor not accessible to t$_1$. Whether this contradicts (42) and thus whether (44) is disallowed is unclear.

That VA easily accounts for examples such as (43), as we have seen, is not necessarily grounds for concluding that VA is preferable to LA. For (44) is a case of WCO and Higginbotham states that he is concerned only with SCO. A more substantive comparison of the two analyses would require a close examination of Linking, in the broader sense of its being a substitute for indexing. But that would take us too far afield here. Linking has many interesting properties and, in fact, (9), with some modification, could
be incorporated into the linking framework to account for WCO. We thus leave the issue open (but see Seely (forthcoming)).

5. Some Problems for VA

One problem with VA involves the definition of "container." So far it has been implicit that the container of x is an NP that dominates x. Thus, NP_i is the container of the pronoun "his" in (11)e and NP_i is the container of the trace t_i. We might, then, adopt definition (45):

(45) The container of x is any NP that dominates x.

A general definition such as (45) would seem to be needed given cases such as (46),

(46) *The man who he knows likes every teacher.

whose LF-representation is (47):

(47) every teacher_i [the man who he_i knows]_k likes t_i

(t_i) is the relevant V-chain. Since it is a single member chain and since it is coindexed with the pronoun "he_i," t_i=v=v_i. By (45) the container of "he_i" is NP_i. NP_i c-commands t_i. Thus the pronoun is not accessible to t_i and the representation is disallowed.

(45) may be too general, however, given examples such as (48), whose LF-representation is (49) (irrelevant details omitted):

(48) Some woman_i likes every man who she knows.

(49) some woman_i [every man who she_i likes] j t_i know t_j

Again the relevant V-chain is (t_i); so t_i=v=v_i. Parallel to (47) the container of the pronoun, "she_i," is NP_i. By (45). But since NP_j c-commands t_i the representation is incorrectly disallowed.

One way to avoid this problem is to appeal to V-chain interaction. For notice that in (49) there are two unique V-chains: (t_i) and (t_i). Note also that t_i does not c-command t_i. This motivates the following modification of (9):

(50) A pronoun P is not accessible to v if:

(i) P is inside the binder of v', v' in a unique V-chain and the last member of the V-chain of which v' is a member c-commands v_i; or,

(ii) P or its container c-commands v_i.
Given a general definition of "container" such as (45), (50) yields the right results. In (47) NP, is again the container of "he_i". This NP does not head a unique V-chain so (50)ii is the relevant subcase. As we have seen (t_i) is a V-chain; and t_i = v=v. NP c-commands t_i and the representation is correctly disallowed. In (49) the pronoun "she_i" is inside the binder, NP, of some v', in this case t_i, which is a member of a unique V-chain; the first member chain (t_i). (50)i is thus the relevant subcase. (t_i) is also a V-chain; t_i = v=v. Since t_i does not c-command t_i the pronoun "she_i" is accessible to t_i and thus may be bound.

Consider now (52) the LF-representation of (51):

(51) *Every man who she knows likes some woman.

(52) some woman_i [every man who she_i knows]_j t_j likes t_i

The pronoun "she_i" is inside the binder, NP, of a unique V-chain, the single member chain (t_i). But in this case t_i does c-command t_i (=v=v'). Thus "she_i" is not accessible to t_i and may not be bound. 5

Another complication for VA is that fact that for some dialects there is a distinction between (53) and (54):

(53) Which student's ideas does his teacher like.

(54) *His teacher likes some student's ideas.

The LF-representations are (55) and (56) respectively. 6

(55) which student_i [t_i's ideas]_j [his_i tacher]_k like t_j

(56) some student_i [his_i taecher]_j likes [t_i's ideas]

(t_i) is a single member V-chain in (56). Through familiar reasoning the pronoun "his_i" is not accessible to t_i and the representation is disallowed. The bound interpretation of the pronoun "his_i" is also disallowed in (55), since that pronoun is not accessible to t_i. Thus the distinction is unaccounted for. However, (9) can be modified, so as to allow (55) while disallowing (56), in the following way:

(57) P is not accessible to v if:

(i) P c-command v_n; or,

(ii) v=v_n, and P or its container c-commands it.
V-CHAIN ACCESSIBILITY

Since \((t_i)\) is a single member V-chain in (56) (i.e., since \(v=v_n\)) \((57)\) is the relevant subcase. The container of "his\(_i\)", NP, c-commands \(t_i\) and thus that pronoun may not be bound. \(^1\) In (56) \((t_i, t_j)\) is a V-chain; \(t_i=v\) and \(t_j=v_n\). In this case \(v\equiv v\) and thus \((57)\) is the relevant subcase. Since "his\(_i\)" does not c-Command \(t_j(=v_n)\) the representation is allowed.

6. Conclusion

VA is something of an eclecticism of recent ideas of Higginbotham. From QPA we adopt a structural account of pronominal binding rather than a linear one. From LA we have adopted the notion of V-chains. We have defined accessibility differently than Higginbotham and unlike LA we are operating within an indexing rather than a linking framework. As we have seen VA handles a good range of data. More research is needed, however, before its adequacy can be determined.

FOOTNOTES

\(^1\) We can think of (9) as sort of an LF-filter. A pronoun may be coindexed with a QP (and we include here Wh-phrases) at D-structure. In most cases the QP will move; either by syntactic Wh-movement, LF Wh-movement or QR (Wh in situ constructions and "resumptive pronoun" languages, wherein Wh-phrases might be base generated in COMP, will not be considered here). At LF, then, the QP, its trace (which will be our target formal variable \(v\)), and the pronoun will be coindexed. The pronoun will then be "checked" to see if it is accessible to \(v\). If the pronoun is accessible to \(v\) it may be interpreted as a bound variable. If not, the structure will be rejected. Note that (9) could be alternatively stated as (i):

\[(i) \text{ P is accessible to v iff:}\]

\[\text{It is not the case that } P \text{ or its container c-commands } v_n.\]

\(^2\) We could account for (14) without Principle C by treating "PRO\(_i\)" as a pronoun with respect to (9). \(t_i\) is our target formal variable \(v\) in this case, and since "PRO\(_i\)" is not accessible to it, the representation is disallowed. However, this is problematic in light of examples such as (i),

\[(i) \text{ Seeing his dad pleased every boy.}\]
whose LF-representation is (ii):

\[(ii)\] every boy \[PRO_i \text{ seeing his }_i \text{ dad }\] pleased \text{ NP}_i

If "\text{ PRO}_i" is the relevant pronoun here, and if its container is \text{NP}_j (we will see some evidence that such is the case in section 5), then the representation will be incorrectly disallowed, as \text{NP}_j c\text{-commands } t_i (\text {NP}_j).

3 As we have oversimplified matters here (for expository purposes), we run the risk of being somewhat misleading. The reader is referred to Higginbotham (1980b) for the formal details.

4 The discussion of the Leftness Condition presented here is taken from Higginbotham (1980a). The details are as follows. First, the Reindexing Rule (i) is assumed:

(i) In a configuration:

\[...e_i...\text{pronoun}_j...

reindex \text{j} to \text{i}.

In essence (i) is equivalent to the Leftness Condition in that the pronoun may not reindex to \text{e}_i if the pronoun is to the left of \text{e}_i. Consider now (ii):

(ii) *Whose dad does he love?

whose LF-representation would be (iii):

(iii) who\_i [t_i 's dad]_{j} he_{k} love t_{j}

According to (i) "he_{k}" may reindex to \text{t}_i. Thus we should be able to obtain the bound interpretation indicated in (ii). To avoid this problem the "lowering" operation is appealed to. Essentially, lowering moves \text{NP}_j back to its D-structure position. Thus (iv):

(iv) who\_i he_{k} love [t_i 's dad]_{j}

The Reindexing Rule may now not apply (assuming that lowering occurs before (i)) since the pronoun "he_{k}" is to the left of \text{t}_i. (ii) is now correctly disallowed.

(21) is parallel to (iv). We have lowered \text{NP}_j, "which picture of \text{t}_i," in order to avoid the bound interpretation indicated in (17) (i.e., in order to disallow application of (i)). However, "which picture of \text{t}_i" is the kind of expression that we expect to have a scope assignment at LF, given QR. To lower it is to deprive it of its LF "function." And this Higginbotham finds objectionable.
V-CHAIN ACCESSIBILITY

5. There are many other complicating factors here which given space limitations we will not be able to consider. Suffice it to say that a good deal more research is needed before the adequacy of (50)i can be determined.

It is not clear to us how Higginbotham (1983) would account for these examples. Consider the LF-representation of (51), for instance, in the Linking framework:

(i) some woman [every man who she knows] t likes t'

The pronoun "she" is dependent on t', in that "she" is linked to t'. By (42), then, "she" is accessible to t'. t' is a single member U-chain so t'=v=v. "she" does not c-command t'(=v) and t' (=v) does not c-command "she." Thus, as with (44), it is not clear whether "she" is accessible to t'. See Seely (forthcoming) for a more detailed examination of these issues.

6. Note that (53) would not be allowed by the Bijection Principle. Dialects that allow it seem to be in the minority.

7. Note that for (57) to work out right we must not adopt Higginbotham's proposed extension of QR. See section 4.

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PREFACE

The Second Cornell Conference on Government and Binding Theory, organized by Robert Freidin, Wayne Harbert and Carlos Piera, was held on June 17-18, 1983 at Cornell University. The program consisted of eleven thirty-minute papers. A list of conference participants follows the table of contents.

The organizers wish to extend their thanks to the participants for their stimulating papers, to Iris Alemán, Yiwei Chang, Ileana Comorovski, Ared Misirliyan and Linda Ragland for assisting with numerous details of organization during the conference, and to Stephanie Doucett and Sheila Haddad for their help in preparing the manuscript.
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CASE CONFLICTS AND THEIR RESOLUTION:  
A CONTRIBUTION TO EST CASE THEORY

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1. Introduction.

A case conflict arises when a lexical or phrasal category is simultaneously in the domain of two case assigning strategies. Since a category can have only one case assigned to it in a given sentence, and an unresolved case conflict results in an illformed structure, case theory (see Chomsky 1981, 1982) must provide a principled way to resolve these conflicts. I argue below on the basis of case agreement in Russian quantified noun phrases (i.e. [...[QP N']_N"...]]_Nm) that case conflicts are resolved by a small set of precedence relations. These precedence relations form a case hierarchy, which can be viewed as a set of wellformedness conditions on the representation of a noun phrases's case structure. The case hierarchy proposed below for Russian makes it possible to demonstrate that the putative anomalous case structure of noun phrases containing prepositional quantifiers is in fact entirely regular and predictable (see Babby 1984b; Pesetsky 1982).

2. Heterogeneous vs. homogeneous case distribution.

In modern Russian there is a crucial difference in the NP-internal distribution of case between direct (i.e. NOM and ACC) vs. oblique noun phrases if they contain a QP: the case distribution in the former is heterogeneous, while in the latter it is homogeneous, e.g.:
2.1 NOM and ACC Quantified NPs. The internal structure of (1a) can be represented by (3); the case marking of each phrasal category is indicated by a lower case letter (e.g., N' in (3) is marked genitive (N':g), N'' accusative (N'':a), etc.):

(3) Internal structure of (1a):

```
\[
\begin{array}{c}
N^m:a \\
AP:a \\
poslednie \\
ACC \\
pjat' \\
ACC \\
inostannyx \\
GEN \\
knig \\
GEN \\
\end{array}
\]
```

The case distribution in (3) can be characterized as heterogeneous because the head N° and its N' modifier are marked GEN, while all the other lexical and phrasal categories are marked ACC (cf. illformedness of (1b)).

NOM and ACC are configurational cases, i.e., they are assigned to N^m on the basis of its syntactic environment. In Babby 1984c I argue that transitive verbs in Russian are not lexical case assigners and that i) a noun phrase that is governed by a lexical category that is not a lexical case assigner is marked ACC (e.g. direct objects, certain nominal adverbs, and the objects of 'transitive' prepositions); ii) a noun phrase that is not
CASE CONFLICTS AND THEIR RESOLUTION

governed by a lexical category is assigned the NOM case (e.g. subjects, topics, predicate nominals, vocatives, and citation forms). This explains for example why prepositions do not 'take' nominative objects.¹

The heterogeneous case distribution in (1a)/(3) can be accounted for as follows: If N' in Russian is c-commanded by QP, it is assigned the GEN case.² The ACC case assigned to Nm percolates to [poslednie]Ap and [pjet']Qp, but the GEN marking on N' blocks ACC from percolating to the head noun and the other constituents of N'. Thus N' in (3) is the locus of a case conflict: GEN in the scope of QP (hereafter GEN(QP)) vs. ACC percolation from Nm. The wellformedness of (1a) (vs. *(1b)) indicates that in addition to assigning GEN and ACC, the grammar of Russian must also specify that GEN(QP) takes precedence over NOM and ACC whenever these cases come into conflict. This precedence relation can be represented as follows:

(4) GEN(QP) > NOM/ACC

2.2 Oblique Quantified Noun Phrases. The internal structure of (2a) can be represented in (5) (the preposition s 'with' is a lexical case assigner that assigns the INST (instrumental) case to its complement). Note that the X-bar structure of (1a)/(3) and (2a)/(5) are the same despite the fact that they have different case distributions (cf. Pesetsky 1982 for a different analysis).³

(5) Internal structure of (2a):

\[
\begin{array}{c}
P^m \\
P \\
P_m:i \\
AP:i \\
N'':i \\
QP:i \\
N':i \\
AP:i \\
N'^{o}:i
\end{array}
\]

s poslednimi pjet'ju inostrannymi knigami
INST INST INST

N' in (5) is c-commanded by QP just as it is in (3), yet it cannot be assigned GEN (cf. illformedness of (2b)), and, therefore, all the phrasal and lexical categories have the same INST
case marking. The homogeneous case distribution in oblique quantified NPs like (2a)/(5) can be accounted for in terms of another type of case conflict: N' is simultaneously in the domain of GEN(QP) and percolation of INST, which is a lexical case, and, in Russian, lexical case always takes precedence over GEN(QP) (cf. (2a) vs. (*2b)), i.e.:

(6) LEXICAL CASE $\Rightarrow$ GEN(QP)

Since (4) and (6) have a common term, they can be combined into a single set of principles for resolving case conflicts:

(7) Case Hierarchy in Russian

LEXICAL CASE $\Rightarrow$ GEN(QP) $\Rightarrow$ NOM/ACC

We shall see in section 4 that three-way case conflicts do indeed occur in Russian.

The case hierarchy in (7) makes the claim, which I believe to be a universal principle of case theory, that lexical case takes precedence over all other types of case marking, and all other types of case marking take precedence over configurational case (see Freidin and Babby). ⁴

3. Prepositional Quantifiers.

I have argued above that i) the resolution of case conflicts is to be accounted for in case theory by a small set of case precedence relations arranged in a case hierarchy; ii) the striking fact that case distribution is heterogeneous in direct case quantified noun phrases and homogeneous in oblique case quantified noun phrases follows automatically from the Russian case hierarchy proposed in (7). I will demonstrate below that (7) accounts for a great many other case distribution patterns in Russian, many of which were previously thought to be irregular or anomalous. ⁵

3.1 There is a small class of prepositions in Russian that can occur as constituents of QP, where they function semantically as quantifiers (e.g. okolo + GEN 'around, about' means 'approximately' when in QP; the English prepositions around and about also function as quantifiers). As we shall see below, these prepositional quantifiers provide a great deal of information about the principles governing NP-internal case distribution and the resolution of case conflicts. There is one formal property which they all share that is particularly revealing, namely, prepositional quantifiers in Russian can occur in NOM and ACC noun phrases only (see section 5.1 for further discussion; see Babby 1984b for a detailed analysis of prepositional quantifiers). Consider the case
distribution in the direct object noun phrase in the following examples (the verb dali is transitive; the prepositional quantifier po is a DAT case assigner with distributive meaning and is therefore glossed 'each' below):

(8) Oni nam dali:
    they:NOM us:DAT gave
   a. [[[po pjati ]QP [inostrannyx
    each five:DAT foreign:GEN
    books:GEN
    'They gave us five foreign books each'
    foreign:ACC books:ACC
    'They gave us foreign books'
    five:ACC foreign:GEN books:GEN
    'They gave us five foreign books'
   d. [[[około pjati ]QP [inostrannyx
    around five:GEN foreign:GEN
    books:GEN
    'They gave us approximately five foreign books'

(9) Passive of (8a):

Nam bylo dano [po pjati inostrannyx
    us:DAT was given each five:DAT foreign:GEN
    knig ]N^m:n
    books:GEN
    'We were given five foreign books each'

The internal structure of (8a) is represented in (10) ((8b)–(8d) and (9) are given for comparison).

(10) Internal structure of (8a)
The noun phrase in (8a)/(10) differs from (1a)/(3) in two significant ways: i) (8a)/(10) contains two two-way case conflicts, and ii) the ACC case assigned configurationally to N^m in (8a)/(10) has no morphological realization (in (1a), ACC is realized on [pjat']_QP). I will demonstrate below that, given the case hierarchy in (7), the DAT-GEN-GEN agreement pattern in direct objects like (8a) is entirely regular.\(^6\)

The first two-way case conflict in (10) involves pjati, which is simultaneously c-commanded by the prepositional quantifier po (which is a DAT case assigner) and is in the path of ACC percolation from N^m. (7) correctly predicts that the DAT will take precedence over the ACC (Lexical Case ≻ NOM/ACC). The second two-way conflict is centered on N', which is both c-commanded by QP (cf. (1a)) and is in the path of ACC percolation from N^m. N' is assigned GEN in the scope of QP since, according to (7), GEN(QP) ≻ NOM/ACC. In (8c), ACC can percolate to pjat' because there is no case conflict in the QP; an ACC-GEN-GEN agreement pattern results. In (8b) there is no QP node and, therefore, no case conflicts; ACC here is able to percolate to the head and its N'-modifiers, giving the ACC-ACC agreement pattern.

(8a) is an example of a NP in which the "abstract" (see Chomsky 1981) ACC case on N^m has no morphological realization. The reason for claiming that N^m in (8a) is in fact ACC rather than DAT or GEN is that (8a) behaves like an ACC NP with respect to a number of case sensitive syntactic processes. For example, sentences with oblique objects do not as a rule passivize in Russian, but, as (9) demonstrates, sentences like (8a) have perfectly natural passives (see Babby 1984c for additional discussion).

The NP-internal structure of (8d) is essentially the same as (8a). The only significant difference is that in (8d) the prepositional quantifier okolo 'around' is a GEN case assigner. Note that even though (8d) has homogeneous case agreement, i.e., all the inflected lexical categories have the same case marking, it cannot be characterized as having homogeneous case distribution, since not all the phrasal categories are GEN.

4. Three-way Case Conflicts.

The strongest single piece of evidence supporting the Russian case hierarchy proposed in (7) is found in noun phrases like (11a), which contain a three-way case conflict.

(11) Oni nam dali:
they:NOM us:DAT gave
CASE CONFLICTS AND THEIR RESOLUTION

a. [[[po]QP [inostrannoj knigie ]N',N'']N''m:a
    each foreign:DAT book:DAT
    'They gave us one foreign book each'
b. *[[[po]QP [inostrannoj knigi]N',N'']N''m:a
    GEN GEN
    'They gave us a strange book each'
c. *[[[po]QP [inostrannuju knigu]N',N'']N''m:a
    ACC ACC
    'We gave each other a strange book'
d. Nam bylo dano [po inostrannoj knige ]N''m:n
    us:DAT was given each foreign:DAT book:DAT
    'We were given one foreign book each'

The internal structure of (11a) is represented in (12).

(12) **Internal structure of (11a).**

```
N':d
  AP:d
    po inostrannoj
    DAT
    knige
    DAT
```

Note that according to (12), (11a) is an ACC direct object NP all of whose inflected lexical categories are marked DAT (cf. (8a)). This analysis seems correct because (11a) can passivize (see (11d)), whereas sentences containing object noun phrases with homogeneous DAT case distribution cannot. In the following example, the verb *zavidovat* 'envy' is a DAT case assigner.

(13)a. Bednye vsegda zavidujut bogatym poor:NOM always envy rich:DAT 'The poor always envy the rich'
b. *Bogatyje vsegda zavidujutsja bednymi
    rich:NOM always are-envied by-the-poor:INST 'The rich are always envied by the poor'

The partial morphological realization of ACC in (8a) and the total nonrealization of ACC in (11a) are the result of case conflicts, and, therefore, follow automatically from (7).

The case distribution in (11a)/(12) can be accounted for as follows: in (8a)/(10) the prepositional quantifier *po*
c-commands the number \( \text{pjati} \) 'five' and assigns it the DAT case; note that both \( \text{po} \) and \( \text{pjati} \) are constituents of QP (the head of \( N^m \) and its \( N' \)-level modifier are marked GEN in the scope of the QP node). In (11a)/(12), however, the relations between \( \text{po} \), QP, and \( N' \) are different, and, therefore, so are their case relations: \( \text{po} \) in (11a)/(12) is the only constituent of QP. This means that here \( \text{po} \) c-commands \( N' \) and its constituents and, therefore, assigns its lexical DAT case to the head noun \( \text{knige} \) 'book' and its modifier \( \text{inostrannoj} \) 'foreign'.

\( N' \) in (11a)/(12) is in the domain of three case assigning strategies, i.e., \( N' \) is: i) in the path of ACC percolation from \( N^m \); ii) c-commanded by the QP node and is therefore in the domain of GEN(QP); iii) c-commanded by the prepositional quantifier \( \text{po} \), which is a lexical case assigner. As the wellformedness of (11a) demonstrates (cf. (*11b) and (*11c)), the case hierarchy in (7) correctly predicts that the lexical DAT takes precedence over the configurational ACC and GEN(QP).

(11a)/(12) is a crucial example because it is literally the exception that proves the rule. The only thing exceptional about noun phrases like (11a) is the fact that there is no numeral in QP (if \( \text{odin} \) 'one' is present, it is a constituent of \( N' \), not QP (see note 7)); everything else follows the rules: \( \text{po} \) assigns the DAT case to the nominal category that it minimum c-commands, just as it does in all the other noun phrases we have considered above. Thus the DAT marking on all the inflected lexical categories in ACC direct object noun phrases like (11a) is entirely regular; the only anomaly in (11a) is lexical and involves the categorial status of \( \text{odin} \).

5. Irresolvable Case Conflicts.

The sentences in (14) and (15) are synonymous, yet (14) is wellformed and (15) is not. I will argue below that this fact also follows directly from the case hierarchy proposed in (7).

\begin{align*}
(14) & \quad \text{Oni vse znajut [po inostrannomu they: NOM all know each foreign: DAT jazyku]}_m^m \text{a language: DAT} \\
& \quad '\text{They all know one foreign language each'}
\end{align*}

\begin{align*}
(15) & \quad *\text{Oni vse vladejut \{[po inostrannomu jazyku]_m^m [\{DAT DAT \}} \\
& \quad \text{they: NOM all know [po inostrannym jazykom]_m^m INST INST} \\
& \quad '\text{They all know one foreign language each'}
\end{align*}

The internal structure of the object noun phrase in (15) is represented in (16) (the structure of (14) is essentially the same.
as (11a)/(12)).

(16) Internal structure of (15):

```
  VP
   \  /  \\
  V    N^m
      / \  \\
     N'   QP
        /   \  \\
       AP    N^o
         \     \\
          \  / \\
           \ / \\
            \ / \\
             \ / \\
              vladejut po (inostrannomu DAT jazyku DAT
                             \                      \               \)
                             \    (inestrannym jazykom INST
                              \        INST)
```

The verb znat' 'know', like dat' 'give' in (8) and (11), is transitive, i.e., it does not assign a lexical case to its NP complement; the ACC case on the direct object NP in (14) is therefore configurational (see section 2.1 above). The case hierarchy in (7) resolves the three-way case conflict in (14) in favor of the lexical DAT assigned by po, just as in (11a), and (14) is therefore perfectly wellformed.

The verb vladet' 'posses; know', however, is a lexical case assigner that assigns the instrumental (INST) case to the noun phrase complement it governs. This fact is the key to accounting for the illformedness of (15)/(16): the head noun jazyku and its N'-level modifier in (15) are simultaneously in the domain of two lexical case assigners, i.e., N' is c-commanded by both the verb vladejut + INST and the prepositional quantifier po + DAT. Since the Russian case hierarchy in (7) does not provide a principled way of resolving a case conflict between two lexical case assigners, the object noun phrase in (15) contains an irresolvable case conflict, and is therefore illformed.10

5.1 It was pointed out above in section 3.1 that prepositional quantifiers in Russian are found in NOM and ACC noun phrases only. Sentences like (14) and (15) demonstrate that this curious fact turns out to follow automatically from (7): NOM and ACC are configurational cases, and it is therefore only in noun phrases with NOM and ACC marking that prepositional quantifiers do not create
irresolvable case conflicts. Thus the restriction of GEN(QP) to 
N' in NOM and ACC noun phrases and the restriction of preposition-
al quantifiers to QP in noun phrases with NOM or ACC marking are 
instantiations of the same universal principle, namely, lexical 
case takes precedence over all other types of case marking when 
they come into conflict (see section 6 for restrictions on the 
ocurrence of the genitive of negation).

5.2 The sentence in (17) is also ungrammatical, but native 
speakers are in complete agreement that it is considerably 
better than (15).\textsuperscript{11}

\begin{verbatim}
(17) *Oni vse vladjeut [[[po pjati }_Q\ P [inostrannymi 
they all know five:DAT foreign:INST 
jazykami ]_N',_N'']_N':i 
 languages:INST 'They all know five foreign languages each'
\end{verbatim}

It might seem at first glance that (17) should in fact be gram-
matical since its object noun phrase does not appear to contain 
an irresolvable case conflict: po assigns DAT to pjati in QP, 
and the verb vladjeut assigns INST to the head and its N'-level 
modifier (cf. (*15)). But the object noun phrase is illformed 
for the following reason: The noun phrase complements of lexical 
case assigners must have homogeneous case distribution (see 
section 2 and 2.2), i.e., all their lexical and phrasal categories 
in the path of percolation must be marked with the same oblique 
case.\textsuperscript{12} This fact follows from (7), i.e., lexical case takes 
prededence over other types of case. The object in (17) therefore 
does in fact contain an irresolvable case conflict: pjati 
'five'-DAT is a modifier and should therefore be marked INST, 
which is the case assigned to the object noun phrase's maximal 
projection by the lexical case assigning verb vladjeut. But 
pjati has been assigned the DAT in (17) by the prepositional 
quantifier po. Thus (17) has an illformed object noun phrase for 
the same reason that (15) does, namely, it contains an irresolvable 
lexical case conflict.

If we replace the DAT pjati with the INST in (17), the NP is 
even worse:

\begin{verbatim}
(18) *Oni vse vladjeut po pjat'ju inostrannymi 
they all know five:INST foreign:INST 
jazykami. languages:INST
\end{verbatim}

The object NP in (18) has a homogeneous case distribution, but it 
is nevertheless illformed because there is still an irresolvable 
case conflict (pjat'ju in (18) is still in the domain of both po
The clear preference of native speakers for sentences like (17) over (15) is most likely related to the fact that in the former, the lexical case conflict is peripheral, i.e., it involves a modifier of the head ([...pjad...Iq]), while in the latter it involves the head noun itself. We can assume that irresolvable case conflicts involving the head are in some sense more "serious" violations of the constraints on case wellformedness because they necessarily involve the head’s maximal projection Nm and, therefore, obscure the noun phrase’s relation to the rest of the sentence to a greater degree than peripheral conflicts, which do not involve Nm (see Babby 1984c: note 25).

5.3 A construction containing two prepositions both of which are lexical case assigners is also ruled out by (7). For example, an English sentence like (19) cannot be translated into Russian by a sentence in which approximately corresponds to okolo + GEN and each corresponds to po + DAT (see (20a); (20b) and (20c) are for comparison).

(19) They gave us approximately five books each.

(20) Oni nam dali:
they:NOM us:DAT gave
  a. *[okolo po pjati knig ]
      about each five:DAT/GEN books:GEN
  b. [okolo pjati knig ]
      about five:GEN books:GEN
  c. [po pjati knig ]
      each five:DAT books:GEN

But a construction containing two adjacent prepositions is fully grammatical in Russian if one of them 'takes' the ACC case, e.g. (bez 'without' assigns the GEN):

(21) Oni priexali v bez pjati vosem'.
    they:NOM arrived at without five:GEN eight:ACC
    'They arrived at five minutes to eight'

We can account for the wellformedness of (21) by assuming that prepositions whose objects are marked ACC are the prepositional equivalent of transitive verbs, i.e., these prepositions govern their object noun phrases, but do not assign them a lexical case. Thus the ACC case in (21) is configuralional, and there is therefore no irresolvable case conflict here as there is in (20a).14


The analysis of NP-internal case agreement proposed above accounts for the assignment and distribution of lexical case,
GEN(QP), and configurational case, which can be referred to collectively as Syntactic Case, i.e., case whose assignment is uniquely determined by some other category or categories and, therefore, does not figure in the sentence's semantic interpretation. It has been argued recently (see Freidin and Babby, Mel'čuk 1975) that in addition to Syntactic Case, case languages like Russian have Semantic Case, i.e., case whose assignment is not determined by any other categories, and, therefore, does make a direct contribution to the sentence's semantic interpretation (see Babby 1984c for details).

Semantic Case in Russian can be illustrated by the genitive of negation (GEN(NEG)), which is restricted to noun phrases that i) are in the scope of sentence negation (see Babby 1980b), and ii) would be assigned NOM or ACC if the sentence were not negated. The following example illustrates that GEN(NEG) is not obligatorily assigned to a noun phrase in the scope of negation, even if all the structural conditions on its assignment are satisfied (ne is the primary marker of negation, and est 'eat' is a transitive verb).

(22)a. Brat: est: mjaso.
   brother:NOM eats: meat:ACC
   'My brother eats meat / is eating the meat'

   brother:NOM NEG eats: meat:ACC
   'My brother is not eating the meat'

   brother:NOM NEG eats: meat:GEN
   'My brother doesn't eat meat'

(22b) and (22c) have identical X-bar structures and, therefore, the direct object noun phrases in both sentences are in identical syntactic environments. The assignment of GEN(NEG) vs. ACC cannot therefore be accounted for in terms of a difference in government (in the sense of Chomsky 1981), c-command, or any other structural relation defined on trees. Thus GEN(NEG) vs. ACC (and GEN(NEG) vs. NOM) does not constitute a case conflict since either of the two cases can be assigned to the direct object noun phrase, producing a wellformed structure. If the GEN (NEG) is selected, the direct object noun phrase normally has an indefinite, nonreferential interpretation (see (22c)). If the GEN(NEG) is not marked on a direct object noun phrase in the scope of negation, the ACC is assigned to it configurationally, just as it is in affirmative sentences, and it normally receives a definite, referential interpretation (see Babby 1980b: section 7.4; Babby 1984c: section 11.5, where the unmarked semantic status of NOM and ACC is discussed).

In negated intransitive sentences, the subject noun phrase can be assigned either GEN(NEG) or the NOM case, which is also normally associated with a difference in semantic interpretation.
(23)a. V tot den' poslednij urok sostojalsja.
   'On that day the last lesson did take place'
   on that day last:NOM lesson:GEN took-place
b. V tot den' poslednij urok ne sostojalsja.
   'On that day the last lesson did not take place'
   on that day last:NOM lesson:GEN NEG took-place
c. V tot den' poslednego uroka ne sostojal's'.
   'On that day there was no last lesson'
   on that day last:GEN lesson:GEN NEG took-place

Semantic Case can be assigned only to those noun phrases that would otherwise be assigned configurational case. It therefore has essentially the same restriction on its distribution as GEN(QP) and prepositional quantifiers; the latter, however, are in noun phrases that have been assigned NOM or ACC, while GEN(NEG) is assigned to a noun phrase instead of NOM or ACC. These distributional facts all have the same explanation, namely, lexical case takes precedence over all other types of case. In other words, Semantic Case, GEN(QP), and prepositional quantifiers are normally found in subject and direct objects because it is only in these noun phrases that a conflict with lexical case is averted. The case hierarchy proposed in (7) must now be reformulated to include Semantic Case as well as Syntactic:

(24) LEXICAL CASE > SEMANTIC CASE > GEN(QP) > NOM/ACC

The extended case hierarchy proposed in (24) correctly predicts that a noun phrase cannot be assigned GEN(NEG) if it is the object of a verb that is a lexical case assigner (cf. (14) vs. (15)). In the following examples, vladet + INST is a lexical case assigner, while znaet is not.

   he:NOM NEG know many:GEN foreign:GEN languages:GEN
   'He doesn't know any foreign languages'
b.*On ne vladet nikakix inostrannyx jazykov.
   he:NOM NEG know any:GEN foreign:GEN languages:GEN
   'He doesn't know any foreign languages'
c. On ne vladet nikakimi inostrannymi
   he:NOM NEG know any:INST foreign:INST
   languages:INST
   jazykami.
   'He doesn't know any foreign languages'

The object noun phrase in (25b) is illformed because (24) has been violated, i.e., Semantic Case has been assigned in the domain of a lexical case assigner.

7. Conclusions

Case conflicts are a natural consequence of language's
hierarchical structure and are found in all human languages. An adequate theory of case must therefore incorporate an explicit representation of the principles that govern the resolution of these conflicts. I have argued above that the highly diverse surface case agreement patterns found in modern Russian noun phrases are the direct result of case conflicts and that case precedence hierarchies like (7) and (24) are the appropriate way to represent their resolution.

The approach to case conflicts and their resolution proposed in this paper seems promising because it has enabled us to demonstrate that there is a small set of regular principles underlying the surface case diversity alluded to above. In other words, given the case hierarchy in (24), the case distribution in all the quantified noun phrases discussed in this paper is regular and predictable; this includes noun phrases like (11a), which involve a lexical anomaly (see notes (7) and (9)).

I have also argued that the universally recognized fact that the subject and direct object behave differently from other noun phrases can be explained in terms of case assignment. Subject and direct object are the only two noun phrases whose case is normally not lexically assigned, and, therefore, they are syntactically "freer" than lexically governed noun phrases, which are syntactically "inert." It is therefore not a coincidence that it is precisely the subject and direct object that: i) enter into voice relations, which as a rule involve a change of grammatical relations and case marking among the subcategorized noun phrases (e.g. passive); ii) can be "raised", which, like voice, entails a change of grammatical relations and case marking; iii) exhibit relatively wide variation in type of case marking cross-linguistically and within a given language (e.g. languages with NOM/ACC vs. ergative/absolute configurational marking on the subject and direct object; mixed ergative languages, where case marking on subject and direct object vary depending on "external" factors like tense); iv) permit types of NP-internal case assignment that are excluded in oblique noun phrases (e.g. the distribution of GEN(QP) and prepositional quantifiers in Russian); v) can be assigned Semantic Case (e.g. the genitive of negation and the partitive genitive on subject and direct object; INST vs. NOM on predicate nominals in Russian); vi) behave differently when they are topicalized (e.g. -ga and -o, which mark subject and direct object in Japanese, are absent when -wa is added to a noun phrase under topicalization vs. presence of oblique case markers + -wa). See Babby 1980a: part II for details.

Current versions of EST case theory are inadequate because they: i) do not provide explicitly for the resolution of case conflicts; and ii) assume that all case is assigned by other categories in the same sentence and, therefore, have not recognized
the existence of Semantic Case, which figures so prominently in case languages like Russian.

NOTES

1 Government in EST is a structural relation defined on trees (see Chomsky 1981), and a lexical case assigner is a lexical category that assigns a specific oblique case to its complement (e.g. the preposition k 'to' assigns the DAT and the verb vladet' 'to possess' assigns the INST to their complements). Lexical case can be represented as a selectional property of the NP subcategorized by the lexical case assigner (see Babby 1980a, 1980b, 1984b, and 1984c for arguments that NOM and ACC are not lexical cases). In Russian, prepositions, verbs, nouns, and adjectives may be lexical case assigners.

2 Note that government by INFL (Chomsky 1981) is not needed to account for NOM case assignment to subject in Russian (see Babby 1984c:note 2). Case assignment to the subject in terms of INFL runs into what appears to be insurmountable difficulties in Turkish, and in ergative and mixed ergative languages.

3 A node A c-commands a node B if B is dominated by the first branching node dominating A, and A does not contain B. If A c-commands B, then B is in the domain of A (Rouveret and Vergnaud 1980:97).

4 I argued in Babby 1984c that the differences in case distribution found in Russian quantified oblique vs. direct (NOM/ACC) case noun phrases can all be accounted for if lexical case is assigned to N⁰ and obligatorily projected up to N⁰, while configurational case is assigned to N⁰ and percolated down to N⁰. It now appears, however, that the case hierarchy proposed below may make it unnecessary to claim that there are different loci of case assignment within the noun phrase and, therefore, different directions of case distribution.

5 In addition to NOM/ACC, ergative/absolute appear to be configurationally assigned cases (see Comrie 1973, Babby 1980a for discussion). The putative principle underlying the organization of (7) is discussed in Anderson 1982 (see Babby 1984c:section 9.1).

6 In addition to lexical case, GEN(QP), and configurational case, which are Syntactic Cases, languages in which case has regular morphological realization normally have Semantic Case,
which also figures in the case hierarchy (see discussion of the genitive of negation in section 6.).

6 I am using the traditional term 'case agreement' to refer to the inflected case marking on lexical categories; 'case distribution' refers to the case assigned to phrasal as well as lexical categories.

7 The prepositional quantifier po is the sole constituent of QP in (lla)/(l2) because the number odin 'one', which is normally omitted when po is present, is a lexical anomaly: it is the only Russian numeral that is syntactically a N'-level adjectival modifier, and, therefore, is never a constituent of QP (see Mel'Yuk 1982 for different analysis of odin), e.g.:

i) Oni nam dali [[[odnu
they us gave  one:ACC/FEM/SG
knigu     ]N'N"N"]N':a
book:ACC/FEM/SG
'They gave us one book'

ii) *Oni nam dali [[[odnu]QP
one:ACC/FEM/SG
[knigi   ]N'N"N"]N':a
book:GEN/FEM/SG
Odin can occur when po is present, but sentences like (lla) are more natural than sentences like (iii):

iii) Oni nam dali [[[po]QP [odnoj
one:DAT/FEM/SG
knige      ]N'N"N"]N':a
book:DAT/FEM/SG
'They gave us one book each'

Odin can be omitted when po is present because it is redundant: the constituents of N' are marked DAT only when po is the sole constituent of QP, and this happens only with the number odin.

8 It should be pointed out that noun phrases like (i) below not only occur, but are in fact preferred in colloquial Russian.

i) [[[po pjal'']QP [inostrannyx knig   ]N'N"N"]N':a
five:ACC foreign:GEN books:GEN
'five foreign books each'

Note that (i) is not an example of a wellformed noun phrase in which ACC, a configurational case, takes precedence over DAT, a lexical case, thereby violating the Russian case hierarchy proposed
above. What has happened in colloquial Russian is this: po is teasing to be a lexical case assigner when used as a quantifier. Since po is not a lexical case assigner in (i), the ACC on pjal' is assigned configurationally, and there is in fact no violation of (7) involved here. (Po still requires the DAT on N' in colloquial Russian when the number is odin 'one').

9 Other numerals also have anomalous properties in standard Russian. For example, dva/dve 'two', tri 'three' and šetyre 'four' require that the head of the NOM and ACC noun phrases they are constituents of be genitive singular rather than plural. There are diachronic reasons for this.

In standard Russian tysjača 'thousand' is a FEM SG noun which is the head of Nm; like all Russian nouns, it takes adnominal genitive complements. In the following example, tysjača is the head and rublej GEN PL 'roubles' is its adnominal complement:

i) [s [[[tysjačej [rublej ]N',N'N',N';i]PP
    with thousand:INST roubles:GEN Nm,N',N',N';i]PP
    'with a thousand roubles'

In colloquial Russian, however, tysjača can occur as a constituent of QP, in which case it agrees in case with the head of Nm. In the following example, rubljami INST 'roubles' is the head of Nm.

ii) [s [[[tysjač'ju]QP [rubljami ]N',N'N',N';i]PP
    with thousand:INST roubles:INST Nm,N',N',N';i]PP
    'with a thousand roubles'

Note that in (ii) tysjača has changed its declension. This can be explained as the influence of numbers like pjal' 'five', šest' 'six' etc., which must always be constituents of QP and whose instrumental form is pjal'ju, šest'ju, etc. See Grazdina, Icković, and Katalinskaja 1976:284; Vinogradov 1947:315 for discussion.

10 The Principle of Lexical Satisfaction proposed in Freidin and Babby also correctly accounts for the illformedness of noun phrases containing conflicted lexical cases. But the case-hierarchy approach appears to be preferable because it leaves open the possibility that some languages or dialects may supplement their case hierarchies with locality principles to resolve these conflicts (Lexical Satisfaction explicitly predicts that this cannot happen). For example, when a nominal category is in the domain of two lexical case assigners, the 'closer' one might take precedence over the more remote one, degree of closeness being determined by the X-bar level of the c-commanding case assigners. Sentences like the following suggest that speakers of
nonstandard Russian do in fact make use of this kind of locality principle when lexical case conflicts occur ((i) is a subjectless sentence):

i) V proxode razrešaetsja stojat' ne svyže in aisle be-allowed to-stand NEG more-than 25 čelovek. people:GEN/PL 'Not more than 25 people are allowed to stand in the aisle'

The verb razrešaetsja 'allows' is a DAT case assigner, and svyže 'more than, beyond' in modern Russian is a quantifier that assigns the GEN case. Čelovek 'people' is GEN PL, which means that the DAT vs. GEN lexical case conflict in (i) is resolved in favor of svyže + GEN, which is 'closer' to N' than razrešaetsja + DAT. This sentence is taken from Rozental' 1965:271, where it is cited as an example of substandard usage (see also Raxmanova 1974).

11 Compare (17) to (i) below, which is wellformed. The only significant difference is that znajut 'know' is not a lexical case assigner, while vladejut is (cf. (8a)/(10)):

i) Oni vse znajut [[[po pjati ]QP [inostrannyx they all know five:DAT foreign:GEN jazykov]N', ]_N'^N''_N''_N''_N''_a languages:GEN 'They all know five foreign languages each'

12 Only the head noun and its determiners and modifiers are in the path of percolation; complements of the head noun and complements of its modifiers are never assigned case by percolation from N^M (see Bowers 1984; Babby 1984c). The same facts are accounted for in Freidin and Babby in terms of maximal projections being absolute barriers to percolation. But this approach runs into difficulties when case is assigned to adjective phrases and quantifier phrases that are constituents of noun phrases: they must be maximal projections (i.e. A^M and Q^M), yet their case is assigned by percolation from N^M.

13 If the INST in (17) is replaced by DAT, the resulting sentence is as bad as (18):

i) *Oni vse vladejut po pjati inostrannym they all know five:DAT foreign:DAT jazykam. languages:DAT 'They all know five foreign languages each'
There is no way to resolve lexical case conflicts in standard Russian (cf. note 10).

14 I would like to thank the participants in the Seminar on Case Theories (Slavic Linguistics Marathon, Russian Research Center, Harvard University, May 23, 1983) for bringing sentences like (21) and their significance for case theory to my attention. I am especially grateful to Catherine Chvany (organizer), Olga Yokoyama, Ted Lightner, and Hugh Olmsted for their comments on my paper.

15 One of the major assumptions of EST case theory is that case is assigned to a noun phrase by the category that governs it. While this may work for a language like English, it is patently inadequate for languages in which case is morphologically realized.

16 Only subject noun phrases in negated existential sentences are normally marked GEN in modern Russian. See Babby 1980b for an explanation of this fact. Chvany 1975 and Pesetsky 1982 propose a different analysis.

17 Note that topicalized noun phrases, predicate nominals, and certain nominal adverbs are also not normally assigned lexical case. The theory of case proposed above correctly predicts that these noun phrases also permit 'case competition', i.e., they can be marked with either a Semantic Case or the appropriate configurational case. A corollary of (7) is that noun phrases in the domain of lexical case assigners do not permit case competition; they can be marked only by the case determined by their lexical case assigner and are therefore syntactically 'inert'.

REFERENCES


ON THE AUTONOMY OF INFLECTIONAL MORPHOLOGY

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0.0 Introduction

The primary focus of research in linguistic theory during the past ten years has been the attempt to formulate principles of universal grammar that are, on the one hand, rich enough to accommodate the existing variety of natural languages and, on the other hand, restrictive enough to account for the fact that language is in the normal course of events acquired in a relatively short time on the basis of a limited amount of primary linguistic data. In order to achieve the second goal, it has become evident that grammars of natural languages must be broken down into relatively independent subparts (or modules), each with its own internal structure and principles of organization. Accordingly, a great deal of effort in recent years has gone into justifying the claim that the structural properties of language can best be described in terms of the interaction of a number of different components, or levels of representation, each of which is autonomous, in the sense that its basic units and principles of organization are not reducible to those of any other component. Thus the theory of universal grammar proposed in Chomsky (1982), for example, contains at least the following subcomponents: (i) lexicon, (ii) categorial component, (iii) transformational component, (iv) logical form (LF), (v) phonetic form (PF). Other theories make similar distinctions, though they may differ substantively in the number of levels permitted and in the form of the representations allowed at each level.
Given this tendency toward modularization in linguistic theory, it is somewhat surprising to find that in the area of inflectional morphology, not only has the modular character of morphological representations been neglected, but it has even, one might argue, been systematically ignored. In recent versions of Extended Standard Theory (EST), for instance, inflectional morphology is handled by means of a variety of different and seemingly unrelated mechanisms. Verbal categories such as person, number and tense are standardly represented as features attached to an actual syntactic node INFL. In order to produce the morphological forms of verbs, there must be a special rule to adjoin these features to the verb (Chomsky (1982)), the modern equivalent of affix hopping. Case features, on the other hand, are assigned under government to maximal projections of N and subsequently "percolated" down onto lower phrase categories, as well as onto those NP-internal categories that agree with the head. Thus it must be stipulated that case features percolate onto adjectival modifiers and determiners, for example, but not onto subcategorized elements. (For discussion, see Chomsky (1982), Babby (1980a, b).)

1.0 The Autonomy of Morphology

Evidently, such approaches are quite unconstrained, since inflectional features can be generated in a variety of different places in syntactic representations of the categorial component and may be related to actual morphological forms in ways that are quite indirect. Analyses such as those mentioned above, permit, in effect, no principled distinction at all to be made between syntax and morphology. In order to remedy this defect, I would like to propose here a maximally restrictive theory of inflectional morphology. The strongest claim that can be made is the following:

(1) Morphology is autonomous.

In other words, morphology (inflectional morphology, in particular) constitutes an independent module whose basic units and principles of organization are distinct from those of any other component of the grammar. In the case of derivational morphology, this claim is relatively uncontroversial, the lexicalist hypothesis proposed in Chomsky (1970) having been adopted by theoreticians of virtually every persuasion. What I hope to show here is that the lexicalist position is also correct for morphological categories such as case, number, gender, person, tense, and so on, which are frequently treated as though they were syntactic categories of the base component.

Let us discuss briefly some of the immediate consequences of the claim that inflection belongs to an autonomous morphological component. From the point of view of a language learner, the advantages of an autonomous morphology are obvious. What it would
entail is that the morphological categories of a language can be determined on the basis of morphological data alone, without having to consider the interaction of morphological categories with rules in other components. Something like this view is presumably implicit in traditional grammars that present the morphological forms of a language as paradigms that simply have to be learned, regardless of what their syntactic and semantic functions may happen to be. More specifically, it follows from (1) that inflectional forms must be developed in an autonomous morphological component and inserted in their actual shapes into base trees in positions where items of the relevant lexical category are permitted. This in turn immediately rules out the use of a syntactic node such as INFL whose tense and agreement features are transferred to the main verb by a syntactic rule. Rather, inflected forms of the verb must be inserted directly beneath the lexical category V. Similarly, any form of the percolation theory of case marking is ruled out by principle (1), since case forms of the sort we are considering here are inflected forms of the noun and must therefore be inserted directly into base forms beneath the category N.  

The theory of autonomous morphology thus restricts quite narrowly the kinds of representations that are allowed in the grammars of natural languages. In particular, it rules out base structures in which categories properly belonging to the morphology of a language are encoded as syntactic nodes or as features associated with non-lexical categories. If nothing more were said, then obviously such a theory would overgenerate wildly, since any morphological form of a verb or noun would be allowed to occur in any position where V and N, respectively, are generated in the base. In fact, of course, the occurrence of inflected forms is not free at all, suggesting that there must be independent principles from which the observed restrictions can be derived. The burden of my argument, therefore, will be to show that this is indeed the case and that all instances where the facts apparently require interpenetration between the morphological and syntactic components of the grammar can be derived from independently needed principles of the theory of grammar.

2.0 Morphology and X-Bar Theory

Consider first the fact that the phrasal projections of lexical categories are characteristically restricted in their distribution in ways that depend on the inflectional category to which the head belongs. Thus NPs, for instance, can only occur in subject position in many languages if the head noun is in the nominative case. Similarly, clauses whose main verb is tensed can occur as complements to certain verbs, but not others. In short, phrasal projections of lexical categories act as though
they themselves belonged to the inflectional categories associated with the head. Related to this is the fact that assignment of inflectional categories is consistent within a given phrase. It is not generally possible to have a NP which acts like a nominative whose head is in the dative case. Nor is it possible to have a tensed clause whose head is an infinitival form of the verb.

How can such observations be accounted for? The answer, I claim, is provided by X-bar theory. Consider a morphological form such as Latin amo 'I love'. To what category does this form belong? It is, of course, a verb. But it must also be assigned to the inflectional categories 'first person', 'present tense', 'singular number'. Following a suggestion in Chomsky (1970), suppose we regard categories as sets of features. It follows immediately that the form amo is a member of the category specified by a feature matrix of the form: \([+V, -N, +pres, 1\text{ person}, +sing]^0\).

Now, according to X-bar theory, higher phrase categories are projections of basic categories. It follows that the higher phrase categories to which amo belongs are simply: \([+V, -N, +pres, 1\text{ person}, +sing]^1\), \([+V, -N, +pres, 1\text{ person}, +sing]^2\), ..., \([+V, -N, +pres, 1\text{ person}, +sing]^n\), where n is the maximal projection of V. Similarly, consider a nominal form such as Latin puellam 'girl (acc.)'. This form is a member of the inflectional category \([+N, -V, +acc, +sing, +fem]^0\). It follows immediately that the phrase categories to which puellam belongs must be of the general form: \([+N, -V, +acc, +sing, +fem]^1\), where i ranges between 0 and the maximal projection n of N.

Given X-bar theory, then, it is possible to maintain the strong claim that inflectional morphology is autonomous and at the same time account for the fact that phrasal projections act as though they belong to those categories that are associated with their heads. It is therefore no accident that the same set of morphological categories that is used to classify the words of a language is also used to classify phrases derived from those words. Given X-bar theory, it could not be otherwise. The theory of autonomous morphology, then, together with the principles of X-bar theory, explain facts that can only be regarded as accidental properties of the base in a less constrained theory.

3.0 Government and Agreement

We have just seen that X-bar theory provides an explanation for the fact that purely morphological features such as case, number, gender, tense, etc., are available at the phrasal level in the base component. The next step, then, is to provide explicit mechanisms for stating cooccurrence restrictions based on the presence of these morphological properties. I would like to propose that there are just two such mechanisms universally available: (1) government; (2) agreement. I take these up in turn.
3.1 Government. The paradigm instance of case assignment under government is assignment of case by the particular members of some category to the elements they subcategorize. So, for example, in Russian the verb zavidovat' 'envy' requires that its object be in the dative case; the verb vladet' 'possess' requires that its object be in the instrumental case; the preposition s 'with' takes an object in the instrumental case; and so forth. But now notice that this possibility is actually already provided for by the theory of autonomous morphology. The reason is simply that subcategorization conditions, by definition, prescribe the local environment of heads of phrases in terms of categories. But categories are, by hypothesis, nothing more than complexes of features. Hence lexical heads of phrases, according to the theory proposed here, must be subcategorized in terms of categories such as, e.g. [+N, -V, +acc]N, [+N, -V, +dat]N, etc. Thus to specify that a particular verb requires the dative case is simply to assign it a subcategorization condition of the form: _____+[+N, -V, +dat]N. Hence case assignment reduces to a special case of subcategorization. (See also Babby (forthcoming).)

For analogous cases in the domain of verbal morphology, consider the fact that verbs characteristically require their complements to be either finite or non-finite. If S is the maximal projection of V (as it must be, according to the theory proposed here), this amounts to the statement that verbs subcategorize for the categories [+V, -N, +tense]N, exactly what we expect to find.

The question arises whether all instances of case-assignment reduce to subcategorization. I return to this question in connection with the Russian data discussed in Section 4, where I shall suggest that for lexical case-assignment, at any rate, assignment of case by the head of a phrase is at least the unmarked case. We shall also explore the possibility that certain instances of case-assignment may be carried out on the basis of syntactic configuration.

3.2 Agreement. In the paradigm cases of government discussed above, some lexical element requires that the phrases it subcategorizes belong to a certain morphological category. Typically, the morphological category in question is not one which the governing element itself belongs to, though it may. Thus verbs, which impose case on the NPs they subcategorize, do not normally inflect for case themselves. Nouns, on the other hand, which also require subcategorized elements to belong to a certain case, are themselves inflected for case. Notice, however, that even in the latter instance the case marking assigned to the subcategorized element is independent of the case marking of the head. In instances of agreement, in contrast, a modifying category is required to have the same morphological features as the head it modifies.
The paradigm example is agreement of adjectival modifiers and determiners with the nominal phrases they modify.

Let us assume tentatively that a phrase modifies its head if it is not subcategorized by it, i.e. a phrase A modifies its head \( X^i \) if and only if it occurs in a rule of the form:

\[
(2) \quad x^{i+1} \rightarrow \begin{cases} 
\ldots A \ldots X^i \ldots \\
\ldots X^i \ldots A \ldots 
\end{cases}, \quad i > 0
\]

Hence non-heads either modify their heads or are governed by them. The general principle of agreement is then simply the following:

(3) Modifiers agree with their heads.

It follows that descriptive adjective phrases, demonstratives and other determiner elements must agree in all the relevant features (usually case, number and gender) with the head \( N^i \) they modify. Since, as we have already seen, all higher \( N^i \) categories must have the same case, number and gender features as their head \( N^0 \), this means that modifiers will in effect agree with the lexical heads of phrases.

Notice that subject-verb agreement, looked at from this point of view, is simply a special case of agreement. Suppose that \( V^3 \) is the maximal projection of V and the relevant inflectional features are person and number (there may be others, e.g. gender, concord class, etc.). Since these features are projected from the lexical category \( V^0 \) to all the higher phrase categories, the PS rule for \( V^3 \) will be as follows:

\[
(4) \quad [+V^3, -N, \alpha \text{person}, \beta \text{number}]^3 \rightarrow \\
[+N^3, -V, \gamma \text{person}, \delta \text{number}]^2 \quad [+V, -N, \alpha \text{person}, \beta \text{number}]^2
\]

Principle (3) then implies that \( \alpha = \gamma \) and \( \beta = \delta \). Thus, it follows from the general principle of agreement, combined with X-bar theory, that subjects must agree in the relevant inflectional features with the verb that is the head of the sentence containing them.

4.0 Structural Case

I have argued in the preceding sections that the theory of autonomous morphology, combined with the principles of X-bar theory and the principles of government and agreement, is sufficient to explain most of the observed restrictions on the occurrence of morphological categories in structures of the base component. However, the theory just outlined leaves open the possibility that the distribution of inflectional categories might be restricted by syntactic
conditions other than those permitted by government and agreement. Do such cases exist? It has been argued by Babby (1980a) that nominative and accusative case in Russian are not assigned under government as in GB theory, but rather are configurationally determined, nominative being assigned to subjects and accusative to objects. If Babby's arguments are valid, this statement could be incorporated into the base rules for Russian as follows:

\[(5) \text{a. } [+V, -N]^3 \rightarrow [+N, -V, +\text{nom}]^3 \quad [+V, -N]^2 \]

\[b. \quad [+V, -N]^1 \rightarrow [+V, -N]^0 \quad [+N, -V, +\text{acc}]^3 \]

Similarly, Babby (1980a) has shown that certain occurrences of genitive case in Russian are conditioned by (1) the presence of a negative element; (2) the syntactic position of the NP (basically, subject or object position). The assignment of genitive case to the "subjects" of nominals is another instance of configurationally determined case that comes to mind, and there are doubtless many other cases of this sort.

I would now like to discuss in some detail the extremely interesting data concerning "homogeneous" and "heterogeneous" case distribution in Russian presented in Babby (this volume). I will first show that the data can be accommodated rather naturally in the framework of autonomous morphology and then demonstrate that the case hierarchy proposed by Babby follows from the principles discussed above. I will then argue that the facts of Russian can only be explained adequately if it as assumed, as Babby proposes, that nominative and accusative cases in Russian are structurally assigned cases.

4.1 "Homogeneous" vs. "Heterogeneous" Case Distribution in Russian. Basically, the facts in Russian are as follows. If a NP containing a quantifier is in a position where nominative or accusative case would normally be assigned, then the N\(^1\) phrase associated with the quantifier takes genitive or dative case, depending on the particular quantifier. If, on the other hand, such a NP occurs in a position where any other (oblique) case is required, then the N\(^1\) phrase takes the case normally required for an NP in that position. The former is what Babby called "heterogeneous" case distribution; the latter is "homogeneous" case distribution. The two patterns are illustrated by the following examples:

\[(6) \text{a. te } pjat' staryx ženśčin}
\[\text{these five old women}

\text{nom. pl. nom. gen. pl. gen. pl.}
\]

\[b. *te pjat' starye ženśčiny \]
Babby has argued persuasively that despite the different patterns of case distribution, the internal structure of these phrases must be the same, thereby precluding the possibility of predicting the case marking configurationally, as was suggested earlier for nominative and accusative case marking of subjects and objects. Babby's solution to this problem is as follows. Assume that an N phrase in Russian is marked with the genitive case by a c-commanding QP phrase. Assume in addition that case marking is subject to the following hierarchy:

\[(8) \text{LEXICAL CASE} \rightarrow \text{GEN(QP)} \rightarrow \text{CONFIGURATIONAL CASE (NOM/ACC)}\]

Since lexical case assignment takes precedence over all others, we get the homogeneous case pattern (7a) whenever case is lexically assigned. If, on the other hand, the NP is marked nominative or accusative, the genitive of quantification takes precedence over configurational case marking in the c-commanded N phrase. At the same time, nominative or accusative is still assigned to any elements that are not c-commanded by the QP. Hence the heterogeneous distribution of (6a).

Note, first of all, that the first part of the hierarchy (8), i.e. precedence of lexical case over all others, is an automatic consequence of autonomous morphology. The reason is simply that subcategorization conditions, by definition, must be met. Since government, in the theory proposed here, reduces to a special case of subcategorization, and since subcategorization conditions must always be met when a lexical item is inserted, it follows immediately that the case-marking conditions required by government must always take precedence over syntactically defined case-marking conditions. Furthermore, the agreement pattern within the NP in such cases follows from the general principle of agreement (3). Thus the homogeneous agreement pattern (7a) can be derived in the manner indicated below:
By the definitions proposed earlier, the adjectival quantifier \textit{pjat'u}\textsuperscript{6} is a modifier of the head \textit{N}\textsuperscript{1} and must therefore agree with it in all relevant features. Likewise, \textit{temi} is a modifier of \textit{N}\textsuperscript{2} and hence must agree with it. The features [+instr, +pl] are of course projected from the lexical category \textit{Yenëšënimami} to all the higher phrase nodes by X-bar theory. Since instrumental case is lexically governed (i.e. subcategorized) and since subcategorization conditions must be met, a phrase of the form (9) must always occur in a position where instrumental case is required.\textsuperscript{9} The homogeneous agreement pattern thus follows from the principles of X-bar theory and agreement, under the assumption that morphology is autonomous.

Consider next the heterogeneous agreement pattern of (6a). It was noted earlier that in the paradigm case modifiers agree with their heads. Let us assume that this is indeed the unmarked case, but that in certain marked instances a modifier can govern the head, as defined in X-bar theory, thus becoming in effect the head of the phrase in question.\textsuperscript{10} Under what conditions can this happen in Russian? According to Babb's analysis, it is the special class of quantifiers that have this property. Let us assume that quantifiers belong to the reduced category [-V]. (We shall show in the next section that this proposal is independently motivated.) In particular, the nom/acc case forms of numerals such as \textit{pjat'u}\textsuperscript{1} must belong to this category. The (marked) rule \textit{GEN(AP)} can now be stated as follows: a phrase of the category [-V]\textsuperscript{1} requires a following phrase of the category [+N, -V, +gen, +pl]\textsuperscript{1}. Hence the heterogeneous case-marking pattern (6a) will be derived in the manner indicated below:11
Not only does this analysis describe correctly the heterogeneous case marking pattern, but it also permits us to eliminate the rest of the case-marking hierarchy (8). The reason that GEN(QP) takes precedence over configurationally assigned nom/acc case is simply that the quantifier phrase has become, in effect, the (marked) head (or perhaps co-head) of the phrases in question. On the other hand, the reason that lexical case takes precedence over GEN(QP) is that the marked case-assignment pattern characteristic of the latter only occurs in configurationally marked NPs, not in lexically governed NPs. Why should this marked government pattern only be allowed to occur in configurationally marked NPs? The answer to this question is, I shall suggest, provided by the data concerning the so-called "prepositional quantifiers" such as po, oko, do, and a number of others. (See Babby (forthcoming), Babby (this volume), for discussion.)

4.2 Prepositional Quantifiers. The prepositional quantifiers are distinguished from those discussed earlier in a number of respects. First of all, they are, as the name suggests, closely related to certain members of the category P. Second, they can modify quantifiers such as pjet'. Third, they are lexical case-assigners. In particular, the distributive quantifier po, assigns dative case, oko 'around, about' assigns genitive case, do 'up to' assigns genitive case, etc. Consider now the case-marking patterns that occur with po:

(12) Oni nam dali
they us gave
nom. dat.
(12) a. po inostrannoj knige
    each foreign book
dat. dat.
'they gave us one foreign book each'
b. po pjeti inostrannyx knig
    each five foreign books
dat. gen. gen. pl.
'they gave us five foreign books each'

The patterns observed in (12) can be accounted for quite neatly if we assume (i) that prepositional quantifiers, like the nom/acc forms of quantifiers such as pjet', belong to the reduced category [-V]; (ii) that they subcategorize a following N phrase. The first assumption is entirely natural, since [-V] is the only feature shared by the categories N and P. Since numerals such as pjet' were historically nouns, we can explain the emergence of the class of quantifiers in Russian as nothing more than the falling together of certain nouns and prepositions into the reduced category [-V], the numerals losing the feature [+N] and the prepositions the feature [-N]. The second assumption simply follows from the autonomy of morphology.

Consider now example (12a). Since po is a lexical case-assigner with the subcategorization condition [___ [+N, +dat]1], we can derive this phrase in the following manner:

(13)

\[
\begin{array}{c}
\text{[+N, -V, +dat]}_1 \\
\text{agreement} \\
\text{[+N, +A, +dat]}_2 \\
\text{government} \\
\text{[+N, -V, +dat]}_1 \\
\text{[+N, -V, +dat]}_0
\end{array}
\]
Consider next example (12b). Here we have assignment of dative case to the following numeral by po. However, the phrase thus formed belongs to the category \([-V]^3\) and must therefore assign genitive plural to the following \(N^1\) by GEN(QP). We therefore have a derivation of the following form:

\[
(1k) \quad \text{[-V]}^3 \\
\quad \quad \text{[-V]}^2 \\
\quad \quad \quad \text{[-V]}^1 \longrightarrow [+N, -V, +gen, +pl]^1 \\
\quad \quad \quad \quad \text{GEN(QP)} \\
\quad \quad [+N, +dat]^1 \quad [+N, +A, +gen, +pl]^2 \quad [+N, -V, +gen, +pl]^1
\]

Both derivations are thus perfectly regular under the assumption that morphology is autonomous, together with the assumption that Russian has a couple of marked government patterns, in addition to the un-marked homogeneous case-marking pattern discussed earlier.

But now observe that in neither of these derivations is there a case feature that can be transmitted from the head to the maximal projection. The result is that phrases containing po and other prepositional quantifiers have no case at all associated with their maximal projections. How is this possible? Clearly, it is only possible if nominative and accusative are structural, rather than lexical, cases. Suppose, for instance, that a verb such as dat' 'give' had the contextual feature \([____[-V, +acc]^3...\). Then examples such as (12a and b) would be ruled out, since they would fail to meet the subcategorization conditions for such verbs. The only way to escape this conclusion would be to permit an abstract case feature \([+acc]\) to occur in the maximal projection, violating both X-bar theory and the autonomy of morphology.

If, on the other hand, nominative and accusative case are assigned configurationally, then there is no obstacle to generating
NPs without case, provided we relax the condition mentioned earlier which requires that subjects be nominative and objects accusative. Such a condition, it now appears, is too strong. The most that we can say, perhaps, is that accusative marked NPs are prohibited in subject position and nominative marked NPs are prohibited in object position. But now notice that this relaxation of the structural conditions governing the distribution of nominative and accusative case is independently necessary in any case to account for such phenomena as the genitive of negation, mentioned earlier (cf. p. 10). Furthermore, it is necessary just to account for the fact that verbs in Russian can govern cases other than the accusative, under the assumption that these are structural objects. Finally, there is a completely independent piece of evidence in support of the view that there can be arguments lacking a case category, namely, the fact that infinitive complements in Russian can only occur in subject and object position, i.e. in just the positions where case is assigned structurally.

In conclusion, then, it appears that the facts of Russian can only be explained adequately if (i) morphology is autonomous, and (ii) nominative and accusative are structural cases. Only if both these conditions are met can heterogeneous case assignment in Russian be accounted for without resorting to 'abstract' case, on the one hand, or some device such as a case hierarchy, on the other.

5.0 Concluding Remarks: Toward a Universal Theory of Case.

An obvious question to ask, in the light of the Russian data just discussed, is why nominative and accusative case should be picked out as structural cases. There is really only one possible answer to this question: it must be that nominative is the unmarked case for subjects and accusative the unmarked case for objects. In a sense, this is precisely what it means to say that nominative and accusative case are structurally assigned. Suppose that at some level—it doesn't particularly matter for our purposes here what level—languages universally distinguish subject and object. Suppose furthermore that in the unmarked situation case marking corresponds in a one-to-one fashion with grammatical function. Then "nominative" is just the name conventionally given to the unmarked case form corresponding to subject and "accusative" is the name conventionally given to the unmarked case from corresponding to object.

Going back now to the Russian data, let us assume that assignment of nominative and accusative case to subjects and objects is taken care of by universal markedness principles of the sort just discussed, so that there need be no language specific rules assigning these case forms. In contrast, any verb that requires a case form other than nominative in subject position and
accusative in object position will have to contain this information in its lexical entry. We can now explain why NPs with prepositional quantifiers can occur only in positions where nominative and accusative are permitted. Consider a verb that requires some other case in one of these positions, say a verb that requires an instrumental object. This fact has to be included in the lexical entry for that verb, since it isn't predictable from universal principles. But it follows from the autonomy of morphology that NPs with prepositional quantifiers will never meet this language specific lexical condition, since, as was shown in the preceding section, there is no way for the appropriate case feature to get transmitted to the maximal projection of N. For verbs that take the unmarked case form for objects, on the other hand, there is nothing to prevent NPs with prepositional quantifiers from occurring in object position, since the language-specific lexical entry for such verbs doesn't need to specify any case form at all. Hence NPs with prepositional quantifiers will meet the relevant subcategorization condition, despite the fact that they have no case marking at all associated with their maximal projection. The universal markedness principles for case-marking, on the other hand, state only that if an object-NP has any case marking at all, then it must be accusative. Hence it will not rule out the possibility of an object-NP with no case-marking at all, e.g. NPs with prepositional quantifiers. The reason the universal markedness principles must allow for this possibility is simply that not all languages have case systems. Hence it would be impossible to require that all languages universally assign accusative case to objects, unless we are willing to allow "abstract" case (i.e. case that is never realized morphologically, cf. footnote 3), contrary to the modularity hypothesis.

In conclusion, then, it appears that the modularity of inflectional morphology, together with a universal theory of markedness for case systems, jointly predict the unusual and quite elaborate distribution of data found in the Russian case system. The facts thus lend strong support to the modularity hypothesis, on the one hand, and to the claim that nominative and accusative are universally the unmarked case forms for subjects and objects, respectively, on the other.
FOOTNOTES

1 The idea that only fully inflected words should be inserted into phrase markers is by no means a new one. See, for example, Halle (1973), Lapointe (1980), Bresnan (1982), Gazdar and Pullum (1982) and Jensen (1983).

2 Namely, syncretic case forms in which the case marking is encoded in words. The term "case marker" is sometimes used in an extended sense to encompass any sort of marker of grammatical function, e.g. postpositions such as wa, ga, ni, de, etc. in Japanese. Note, however, that case-markers of this sort have quite different properties from morphological case in Latin, Russian, etc. In particular, the former are associated with whole phrases, whereas the latter is associated with words. One consequence of the claim that morphology is autonomous is that "case-markers" of the sort found in Japanese may not be developed in the lexicon and inserted in base trees, but rather must be generated in the base component. This is not to deny, of course, that these rather different syntactic and morphological devices may exhibit considerable overlap in grammatical function and it is important to determine at what level of structure such generalizations are to be represented. Attempts to reduce one type of morphological or syntactic device to another at the level of syntax are, I would argue, rather pointless and merely obscure the real grammatical differences between them. Note that there are languages (e.g. Swahili, Duala, etc.) in which the syntactic functions of NPs are marked by affixes on the verb. Should these be called "case-markers" also?

3 The theory of case proposed here therefore rules out in principle the use of "abstract" case features of the sort familiar in GB theory. As I hope this paper will make clear, real morphological case has only the most tangential connection with "abstract case". The latter is a purely abstract property that in effect requires NPs to be phonetically non-null in certain syntactic positions. Using the term 'case' to denote this property is at best suggestive, a handy mnemonic, and at worst highly misleading. Perhaps a different term altogether should be used, e.g. 'visibility'. The property of visibility would then be assigned to NPs in certain positions, but not in others, just as abstract case is at present. Likewise, the 'Visibility Filter' would rule out sentences containing phonetically non-null NPs lacking the property of 'visibility'; NPs not assigned the visibility property would permit phonetically null NPs; and so forth.

4 Certain apparent exceptions to this statement in Russian will be dealt with in Section 4.2.
5 It was noted earlier (p. 2) that in the "percolation" theory of case-assignment it must be stipulated that case features percolate onto adjectival modifiers and determiner elements, but not into subcategorized elements. This fact follows automatically in the theory proposed here, without stipulation.

6 We shall weaken this claim shortly and assert only that this is the unmarked case, cf. Section 4.1.

7 For exactly the same reason the principle of "Lexical Satisfaction" proposed in Freidin and Babby (this volume) also follows automatically from the theory of autonomous morphology. Note also that Freidin and Babby's principle of Inertness (namely: a NP can only be case-marked once in a derivation) is also an automatic consequence of the autonomy of morphology and therefore need not be stipulated.

8 I assume that these numerals belong to the reduced category [+N]. Some support for this assumption can perhaps be derived from the fact that they are only inflected for case in modern Russian, not for either number or gender.

9 It could also appear in positions where semantic case is permitted, a topic I shall not discuss here. See Babby (this volume) for some discussion of semantic case.

10 This accords well with the historical facts, since these numerals were in fact heads of NPs at a previous stage of the language. See Babby (this volume), for proof that this is so. Evidently, the structure of these quantified NPs has changed, leaving a marked government pattern behind, just as phonological change sometimes leaves "crazy rules" in its wake.

11 Note that the node immediately dominating the quantifier in (11) is most likely a composite node, taking features from both the nodes it immediately dominates. In particular, the feature [+p1] must be transmitted from the N^1 node, in order to get the correct form of the demonstrative. See Karttunen (1984), for discussion of a formalism for amalgamating feature complexes that may be applicable here. The discussion of doubly headed nodes in Williams (1981, 1982) is also relevant.

12 Even this may be too strong a claim if predicate nominals (which may occur in the nominative in Russian) are analyzed as structural objects. As for the subject position, note that there are languages such as Icelandic in which accusative marked NPs
are demonstrably subjects (Andrews (1982), Zaenen and Maling (1983)). Also, there are ergative case-marking systems, as is well known, in which the subject of an intransitive sentence may appear in the same case as the object of a transitive sentence. Hence it appears that the restrictions in the text are specific to Russian.

13 I am indebted to Len Babby for pointing this out to me.

14 See Zaenen and Maling (1983), who independently propose a universal condition on case assignment similar to mine within the framework of LFG.
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Government of the Subject:  
A Solution to the Problem of Non-configurational Languages

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The structural definition of subject assumed in the theory of government and binding has been criticized for various reasons. Still, this definition together with the structural definition of government enables the theory to account successfully for numerous subject-object asymmetries, such as the phenomena associated with the Empty Category Principle. However, non-configurational languages like Modern Standard Arabic remain a problem for the theory. In Standard Arabic, a VSO language, the subject and object appear to be indistinguishable with respect to the governing properties of the verb as defined in Chomsky (1981, 1982). Yet Aoun (1981) has observed that the empty category principle seems to hold in Standard Arabic. The definition of subject that I will present and motivate in this paper makes it possible to distinguish subjects in a way that is primarily structural. This definition of subject, together with a simple modification in the definition of government guarantees that subjects are not governed by verbs, even in non-configurational languages.

The definition of subject that is proposed comes from a theory of the base component that I call relational base theory (Condon, 1982). It is necessary to explain the basic principles of the theory in order to clarify the definition of subject that is
adopted. The theory focuses on cross-categorial generalizations in the spirit of Jackendoff's (1977) X-bar conventions, but, instead of expressing these generalizations in phrase structure rules, structural configurations are defined using well-formedness conditions. Most of the well-formedness conditions are stated in terms of cross-categorial relations like head and complement.

I. Basic Principles of the Theory

Figure 1 is an overview of the organization of relational base theory. As the figure indicates, the theory consists of universal dominance and labelling conditions plus conditions on constituent relations. Constituent relation is the term that will be used to refer to relations like head and complement. It is assumed that most principles of the base component operate to specify the possible constituent relations in a given language. Therefore,

Figure 1: Organization of Relational Base Theory

I. Universal Structural Conditions

A. Labelling
   (e.g. \( X_{+\text{lex}} \) dominates a lexical item)

B. Dominance
   (e.g. In the unmarked case, branching is binary)

II. Conditions on Constituent Relations

A. Universal Structural Conditions
   1. Cross-categorial Conditions
      (e.g. \text{COMPLEMENT-OF-X} is a sister of a constituent which is \text{HEAD-OF-X})
   2. Category-specific Conditions
      (e.g. S must dominate a noun phrase which is \text{SPECIFIER-OF-S})

B. Language-specific Conditions
   1. Structural Conditions
      (e.g. \text{HEAD-OF-X} precedes \text{COMPLEMENT-OF-X})
   2. Lexical Conditions
      (e.g. If \text{find} is \text{HEAD-OF-V}, then \( V_{+\text{max}} \) must dominate a noun phrase which is \text{COMPLEMENT-OF-V})
the conditions on constituent relations range in specificity from universal conditions which are cross-categorial and structural to the specific conditions associated with individual lexical items in the lexicon. Since many of the conditions on constituent relations are structural, as opposed to purely lexical, the possible configurational structures in a given language can be derived from the conditions on constituent relations. In this manner the theory gives substance to Chomsky's (1981) suggestion that the categorial component of the base can be reduced to a minimum of language-specific requirements such as 'head first' or 'head last'.

An Example of the structures that will be assigned to untransformed sentences in the theory is given in (1).

(1)

In the structure of (1), there is no INFL or AUX node included as the head of S, contrary to Chomsky's assumption that INFL is the head of S. Instead, V is assigned the relation HEAD-OF-S in the structure of (1). The theory does not require that V be the head of S, but many principles in the theory can be stated much more simply if V is taken to be the head of S. For most of the discussion that follows, it will be assumed that V is the head of S and that auxiliaries and modals are main verbs, as Baker (1981),
Pullum & Wilson (1977) and others have proposed. However, when the discussion turns to the definition of government, it will be demonstrated that the definition can be modified to ensure that subjects are governed by INFL, if INFL is taken to be the head of S.

In (1), the X-bar notation has been placed with a feature system that utilizes two features: [+maximal] and [+lexical]. In the projection of the verb in (1), a node labelled V with the feature [+lexical] dominates the lexical terminal symbol saw. The labelling conditions require that all lexical items be dominated by a node with the feature [+lexical]. Next, the node that dominates the [+lexical] V-node is a V with the features [-maximal, -lexical]. These features will be assigned to all projections of each category except the maximal projection1. The labelling conditions are like Jackendoff's (1977) X-bar conventions in that they establish conditions on how the projection of the head is labelled in phrase structure. But unlike X-bar theory, relational base theory does not limit the projections of a particular category to any specific number of occurrences of non-maximal nodes. It simply provides a way to distinguish the lexical and maximal nodes from each other and from all other nodes in the projection. In addition, the feature system includes a fourth possibility: nodes may be labelled with the features [+maximal, +lexical]. This possibility is illustrated in the nodes dominating the, his, and Rome in (1).

Each node except the root node also includes a designation of a constituent relation. Three constituent relations, HEAD, SPECIFIER (=SPEC), and COMPLEMENT (=COMP), are distinguished in the theory. Each relation consists of ordered pairs (y,z) where y is a constituent and z is the category that immediately dominates y. For example, in (1) the label SPEC-OF-N on the node dominating the indicates that the relation SPECIFIER holds between the maximal D-node and the maximal N that dominates D. For convenience I say that the maximal D is SPECIFIER-OF-N instead of saying that the relation SPECIFIER holds between D and N. The label HEAD-OF-P on the node dominating at indicates that the HEAD relation holds between that constituent and the maximal P-node which dominates it. The maximal N that dominates his house is labelled to indicate that the relation COMPLEMENT holds between the noun phrase and the maximal P-node which dominates it. The entire prepositional phrase is labelled to indicate that the relation COMPLEMENT holds between the phrase and the V-node which dominates it.

A universal condition on phrase structure representations requires that every constituent be HEAD-, SPECIFIER-, or COMPLEMENT-OF-X if that constituent is immediately dominated by some category X. The root node is not affected by this requirement, of
course, since it is not dominated by any other node. In order for a constituent to be HEAD-, SPECIFIER-, or COMPLEMENT-OF-X, the constituent must satisfy various conditions on the relations. As Figure 1 indicates, some of these conditions are universal, cross-categorial, and structural. In the cross-categorial structural conditions, I have tried to capture the structural properties that always seem to be satisfied when linguists refer to heads and complements. Even in non-configurational languages, the head is a daughter of the maximal node and complements are sisters of that head. Therefore, I incorporate these properties in the conditions on the relations HEAD and COMPLEMENT. These conditions and the condition on the SPECIFIER relation are given in (2):

(2) a. HEAD-OF-X is a non-maximal daughter of X.
b. COMPLEMENT-OF-X is a sister of a node which is HEAD-OF-X:
c. SPECIFIER-OF-X is a daughter of $X_{\text{max}}$.

The condition in (2a) assigns the relation HEAD-OF-X to every node which forms the projection of X except the maximal node X. This is illustrated in the projection of the verb saw in (1). Each non-maximal V-node is labelled HEAD-OF-V. In order to permit V to be HEAD-OF-S, it will be necessary to include a principle which expresses this possibility among the universal category-specific structural conditions. The category-specific conditions might also include statements such as 'N can be COMPLEMENT-OF-P' or 'ADJ can be COMPLEMENT-OF-N'. If a feature system is employed instead of category labels, these generalizations can be stated very efficiently.

The cross-categorial conditions in (2) represent the most general well-formedness conditions on constituent relations. Together with the branching and labelling conditions, these constitute the most general conditions on constituent structures. While the conditions on HEAD and COMPLEMENT are straightforward, the introduction of the SPECIFIER relation may seem an unnecessary complication. Although Chomsky (1970) uses the term to describe subjects, he does not make the definition explicit. And, unlike the HEAD and COMPLEMENT relations, the SPECIFIER relation does not match any intuitive notions that linguists commonly use when they discuss general properties of constituent structures. Therefore, it is the SPECIFIER relation that will be motivated in the next section by observing the attractive consequences of distinguishing a SPECIFIER relation in addition to HEAD and COMPLEMENT. In particular, I will focus on the consequences of defining subject as SPECIFIER-OF-S.
The universal, cross-categorial requirement on SPECIFIER-OF-X distinguishes it from COMPLEMENT-OF-X because SPECIFIER-OF-X must be a daughter of the maximal X-node, while COMPLEMENT-OF-X can be the daughter of any projection of the category X. This condition combines with the conditions on branching to ensure that each maximal constituent X dominates only one constituent with the relation SPECIFIER-OF-X. Therefore, the theory assigns two basic properties to the SPECIFIER relation. First, SPECIFIERS are daughters of maximal constituents, and second, each maximal constituent X may contain at most one constituent with the relation SPECIFIER-OF-X.

As soon as we define subject as SPECIFIER-OF-S, we capture two universal properties of subjects. Subjects are daughters of the maximal S and each S contains at most one subject. Notice that just as subjects have these two properties in sentences, determiners and demonstratives exhibit the same properties in noun phrases in English. As the example sentence in (1) illustrates, determiners such as the are assumed to be SPECIFIERS-OF-N. By identifying determiners and demonstratives as SPECIFIERS-OF-N, the theory places them with subjects in the same natural class of constituent relations and predicts that they will share properties associated with that natural class. When we make this connection, a number of properties which are shared by determiners and subjects can be observed in addition to the two basic properties just mentioned.

One property shared by subjects and determiners can be found in the work of semanticists using set-theoretical frameworks. Dowty (1978) has argued that subjects can be identified as the 'last argument' that is added to the semantic composition of the verb. We can observe that fragments of semantics for English that have been described by researchers like Montague (1973), Dowty, Wall and Peters (1981), and Thomason (1976) all make determiners the 'last argument' in semantic composition of the noun phrase. In addition to this kind of semantic property, other semantic and pragmatic properties might be associated with the SPECIFIER relation. For example, determiners play a crucial role in establishing reference in discourse. Similarly, subjects are often associated with referential notions like topic or givenness.

A part of the grammar in which we might expect to find additional motivation for distinguishing SPECIFIER and COMPLEMENT is in the language-specific precedence conditions that are required of each constituent relation. When Chomsky suggests that precedence relations can be stated in terms of principles like 'head first', he probably had in mind facts like the ones that Greenberg (1963) presents regarding word order universals. Table 1 is a reproduction of some of Greenberg's results.
Since direct objects are identified as COMPLEMENTS-OF-V and subjects are SPECIFIERS-OF-S-with-V-HEAD, sentential word orders such as SOV, SVO, and VSO represent the precedence relations between HEAD-OF-X and COMPLEMENT-OF-X as well as between HEAD-OF-X and SPECIFIER-OF-X. The arrangement of data in Table 1 shows how consistent the HEAD-COMPLEMENT order is in the 30 languages of Greenberg's sample for three different categories: P, N, and V. With only three exceptions, prepositions appear in VSO and SVO languages in which HEAD precedes COMPLEMENT in the sentential word order. Postpositions appear in SOV languages in which COMPLEMENT precedes HEAD in the sentential word order. Similarly, relative clauses follow their HEAD's in SOV languages.

<table>
<thead>
<tr>
<th>Sentential Word Order</th>
<th>VSO</th>
<th>SVO</th>
<th>SOV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(HEAD COMP)</td>
<td>(HEAD COMP)</td>
<td>(COMP HEAD)</td>
</tr>
<tr>
<td>Prepositions = HEAD COMP</td>
<td>6</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Postpositions = COMP HEAD</td>
<td>0</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>Noun-Relative = HEAD COMP</td>
<td>6</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Relative-Noun = COMP HEAD</td>
<td>0</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Both Orders Possible</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Noun-Adjective = HEAD COMP</td>
<td>6</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Adjective-Noun = COMP HEAD</td>
<td>0</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

This parallelism is predicted by X-bar theories using phrase structure rules, and it is predicted in relational base theory without phrase structure rules by the fact that the conditions on constituent relations include cross-categorial precedence conditions on the HEAD and COMPLEMENT relations. For example, most of the ordering relations in English can be captured by the three
statements in (3).

(3) a. SPECIFIER-OF-X precedes HEAD-OF-X.
   b. COMPLEMENT-OF-X follows HEAD-OF-X in the unmarked case.
   c. If COMPLEMENT-OF-N is ADJ, then it precedes HEAD-OF-N.

Of course, there are several lexical classes such as numerals and words like far or enough which require additional investigation to determine whether they are HEAD, SPECIFIER or COMPLEMENT of the maximal phrase in which they appear.

The most important consequence of distinguishing SPECIFIER and COMPLEMENT with respect to precedence relations is the prediction that there are two types of non-HEADS and therefore two types of precedence relations possible in any maximal category. The theory predicts that in addition to SOV and VSO languages, in which all non-HEADS either precede or follow the head, there will be SVO languages in which the SPECIFIER precedes but the COMPLEMENT follows the head. This word order, which may be the most common word order among the languages of the world, is not predicted by a theory which distinguishes only HEADS from non-HEADS.

Greenberg's results provide additional evidence for distinguishing the SPECIFIER and COMPLEMENT relations in his first universal. He says that the dominant sentential word order is almost always one in which the subject precedes the object. Because this tendency distinguishes between the two non-HEADS subject and object, it suggests that there is a basic difference between the two. Relational base theory captures this difference by distinguishing SPECIFIER and COMPLEMENT. Greenberg further observes that subjects tend to be the initial constituent in the sentence. SVO and SOV word orders are most common in the languages of the world, and languages with the next most common word order, VSO, usually have SVO as an alternative word order, according to Greenberg's sixth universal. It is tempting to associate these properties only with the grammatical relation subject, but Greenberg's data includes evidence that they are actually properties of the more general constituent relation SPECIFIER.

Greenberg's results allow comparison between SPECIFIER-OF-N and SPECIFIER-OF-S because he includes facts about demonstratives, which are assumed to be SPECIFIERS-OF-N. Greenberg does not present figures which compare sentential word order with the relative order of demonstratives and nouns. Instead, he compares the order of demonstratives and nouns with the order of adjectives and nouns. Table 1 demonstrates that, in the languages of Greenberg's sample, the order of adjective and noun does not reflect the dominant order of HEAD and COMPLEMENT as consistently as does the order of verb and object or noun and relative clause. English is a familiar example of this problem, since it was necessary to in-
clude an extra condition among the precedence conditions for English in (3) to account for the fact that the adjective complement precedes the noun in English, though all other complements, such as prepositional phrases and relative clauses, follow the noun.

But we can still observe in Table 2 the predicted difference between the order of SPECIFIER and COMPLEMENT with respect to HEAD-OF-N. In 12 of the 30 languages, the demonstrative precedes the noun, but the adjective follows. The single possibility in Table 2 which is not realized by any languages in Greenberg's sample is the one in which the adjective precedes the noun, but the demonstrative follows. This pattern would be parallel to OVS sentential word order, which is also very rare. Furthermore, Greenberg's universal 20 states that when demonstratives and adjective both precede the noun, the demonstrative always precedes the adjective. Greenberg did not observe the order adjective-demonstrative-noun. This is COMPLEMENT-SPECIFIER-HEAD order and is parallel to another rare sentential word order, OSV. Therefore, like subjects, demonstratives tend to precede all other constituents of the maximal category in which they appear, and there does seem to be evidence from precedence conditions for attributing at least some of the properties we associate with subjects to a more general structural relation that may occur in all types of constituents.

<table>
<thead>
<tr>
<th>Demonstrative (D) - Noun (N) Order:</th>
<th>D N</th>
<th>N D</th>
</tr>
</thead>
<tbody>
<tr>
<td>(SPEC HEAD) (HEAD SPEC)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Noun-Adjective = HEAD COMP | 12 | 11 |
| Adjective-Noun = COMP HEAD  | 7  | 0  |

III. The Definition of Government

At this point I have presented several different types of evidence for distinguishing the relation SPECIFIER from the relation COMPLEMENT and for identifying subjects as SPECIFIERS-OF-S. These arguments have all been based on cross-categorial generalizations. Now some theory-specific consequences of defining subject
as SPECIFIER-OF-S can be assessed by presenting the solution this
definition of subject provides for the problem of distinguishing
subject from object in non-configurational languages. The identi-
fication of subject as SPECIFIER-OF-S and object as COMPLEMENT-OF-V
partially solves the problem, but at least one additional principle
must be added to the theory. This principle is Chomsky's extension
of the projection principle, which requires that all sentences have
subjects. The requirement can be stated in relational base theory
as the condition that S dominate a noun phrase with the relation
SPECIFIER-OF-S. The requirement will be a universal category-
specific condition on S. With this requirement, even in non-config-
urational languages, at least one noun phrase daughter of S will
be picked out as SPECIFIER-OF-S and will be distinguished from the
other daughters of S.

The principles described up to this point will guarantee that
one daughter of S is SPECIFIER-OF-S and another daughter of S is
HEAD-OF-S. In the dominance conditions, binary branching is taken
to be the unmarked case and any daughters in excess of the two un-
marked ones must satisfy certain additional conditions, which may
vary from language to language. For example, non-configurational
languages which prohibit discontinuous constituents will have the
requirement that additional daughters of X be COMPLEMENTS-OF-X and
additional daughters of S be COMPLEMENTS-OF-V. Therefore, all noun
phrases in the non-configurational structure of S will be COMPLE-
MENT-OF-V except for the subject, which is SPECIFIER-OF-S.

Now all that is needed to ensure that subjects are not
governed by their verbs is an additional requirement on the defini-
tion of government. Suppose that we take INFL as the HEAD-OF-S and
that we want to be able to say that INFL governs the subject but V
does not. In this case, we add the requirement in (4) to the defi-
nition of government.

(4) For A to govern B, if A is HEAD-OF-X, then B must be
SPECIFIER- or COMPLEMENT-OF-X.

Since the subject is SPECIFIER-OF-S-with-INFL-HEAD, it can be
governed by INFL. It cannot be governed by V because it is not
SPECIFIER- or COMPLEMENT-OF-V. Intuitively, this appears to be a
natural requirement, since the prototype cases of government, such
as government by verbs and prepositions, are situations in which A
is HEAD-OF-V or HEAD-OF-P and B is COMPLEMENT-OF-V or COMPLEMENT-
OF-P. In fact, it is possible to capture this core case of govern-
ment if we give up the idea that INFL must govern the subject and
take V as the HEAD-OF-S. If we do this, we can simply add to the
definition of government the requirement that for A to govern B, if
A is HEAD-OF-X, then B must be COMPLEMENT-OF-X.
There is little difference between elements which are governed according to Chomsky (1981, 1982) and constituents which are COMPLEMENTS in relational base theory. Recall that for a constituent to be COMPLEMENT-OF-X, it must be a sister of a constituent which is HEAD-OF-X. Some motivation for associating government with the COMPLEMENT relation instead of with both SPECIFIER and COMPLEMENT can be found in Kayne (1983). He suggests that there is an unmarked right or left direction for government in languages. This directionality is not captured by the c-command requirement on government. But since the relational base theory includes precedence conditions on COMPLEMENT-OF-X, the association of government with the COMPLEMENT relation predicts that government will exhibit the same precedence properties that are associated with COMPLEMENT-OF-X in a given language.

Although he takes INFL to be HEAD-OF-S, Kayne has moved away from the notion that subjects are assigned case via government by INFL. Suppose that nominative case is assigned to SPECIFIER-OF-S-with-tensed-V-HEAD. Then nominative case is still assigned structurally in the sense that noun phrases which do not satisfy the structural conditions on the SPECIFIER relation cannot be assigned nominative case, although the case is not assigned by virtue of the structural relation between the noun phrase and a governing head. If we adopt this assumption, then is is possible to state another cross-categorial generalization about SPECIFIER-OF-N and SPECIFIER-OF-S in English. It is assumed that possessive nouns in English like Jeff in Jeff's daughter are SPECIFIERS-OF-N. They are in complementary distribution with other possible SPECIFIERS-OF-N, such as determiners and demonstratives, and they exhibit the precedence relations associated with SPECIFIER-OF-X in English. It is generally assumed that genitive case is assigned to possessive nouns by virtue of their structural relations to their head nouns, though it is not assumed that the head noun governs the possessive. In relational base theory, this structural relation is the relation SPECIFIER-OF-N. Therefore, we can state the cross-categorial generalization that case is not assigned via government to SPECIFIER-OF-X in both N and S.

The obvious problem with giving up the notion that subjects are governed by INFL is the consequence that the subject position is always ungoverned, except when it occurs in the complements of exceptionally governing verbs, such as believe. It may be possible to avoid this problem by adopting Stowell's (1981) idea that tense is generated in the Comp-position and assuming that the subject is governed from the Comp-position, but this possibility also has problems which must be resolved.
IV. Summary

To summarize, most of the universal principles of relational base theory have been described, and some motivation for defining the constituent relations, HEAD, SPECIFIER, and COMPLEMENT, has been presented. It has been suggested that the relations provide a framework in which we can define a universal base component that expresses the essential structural properties shared by both configurational and non-configurational languages. The distinction of two non-HEAD constituent relations, COMPLEMENT and SPECIFIER, was motivated by showing that several cross-categorial similarities between SPECIFIERS-OF-N and SPECIFIERS-OF-S can be identified in English and in the languages of the world. It was demonstrated that the definition of subject as SPECIFIER-OF-S, together with other principles of relational base theory provide an essentially structural definition of subject that distinguishes subjects from objects even in non-configurational languages. The definition of government was modified to prevent government of the subject by the verb while allowing government of the subject by INFL in both configurational and non-configurational languages. However, it was suggests that an important property of government, the fact that it seems to be directional, can be captured if we take the verb as the HEAD-OF-S and adopt a different structural environment for assigning nominative case to subjects.

V. Afterthoughts

As a result of some interesting discussion with John Bowers and Jim Gair at the conference, I believe it is important to make a distinction between relational base theory and theories like lexical-functional grammar (LFG) which employ primitive functions analogous to constituent relations. A significant difference between the two is that relations in relational base theory are not independent of structure. It would never be possible in relational base theory, as in LFG, for constituent relations to hold without the constituents actually being present in the configurational structure. Another significant difference between the two is the fact that grammatical functions are not assumed to be cross-categorial in LFG.

Finally, an important development which should be reported here results in part from the extensive discussion of case percolation at the conference. There is another simple, but essential, difference between SPECIFIERS and COMPLEMENTS that we can observe: like HEADS and unlike COMPLEMENTS, SPECIFIERS can contribute properties to the maximal phrase. Definiteness in the noun phrase is a good example, since the definiteness of the entire noun phrase depends not on the HEAD noun but on the definiteness of the SPECIFIER. The examples in (5) demonstrate that the definiteness
contributed by a SPECIFIER to one noun phrase can even be transmitted to a higher noun phrase, provided that the first noun phrase is itself the SPECIFIER of the second noun phrase. The judgements in (5) are for the existential reading of there, which requires an indefinite noun phrase:

(5) a. *There was the pamphlet on the table.
    b. There was a pamphlet on the table.
    c. *There was the organization's pamphlet on the table.
    d. There was some organization's pamphlet on the table.

This is a clear and significant difference between SPECIFIERS and COMPLEMENTS.

FOOTNOTES

1 The theory includes a principle prohibiting a category X from taking a maximal node X as its head. Therefore, it is impossible to get a maximal X-node dominating another maximal X-node with the relation HEAD-OF-X, though such structures can be well-formed if the maximal daughter is COMPLEMENT-OF-X or SPECIFIER-OF-X. Therefore, the term maximal projection is used to represent the topmost X-node which dominates zero or more X-nodes with the relation HEAD-OF-X.

2 In Condon (1982) it is suggested that generalizations such as 'N can be COMPLEMENT-OF-P' or 'ADJ can be COMPLEMENT-OF-N' can be represented as category features of N and ADJ.

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Entailments of the CED

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1. Background Huang (1982) examines Kayne's (1981) suggestion that Subjacency be reduced to the ECP. What Huang finds is that the ECP and Subjacency must be kept separate, since they apply at different syntactic levels. Consider, for example (1) and (2).

(1) * What do you like books that criticize t
(2) Who t likes the books that criticize what

In the ungrammatical string (1), what has been moved in the syntax. This syntactic movement violates the Subjacency Condition, since two bounding nodes--N' and S--have been crossed. Compare this with the well-formed sentence (2), where what is not moved in the syntax but rather in LF, yielding (3).
(3) [ what [ who ] ] t likes books that criticize t 
C 2 C 1 1 2

Note that although S and N are crossed, the LF movement does not violate the Subjacency Condition. Huang concludes, then, that the Subjacency Condition must be satisfied only in the syntax, not in LF.

However, as Kayne argues, the ECP must apply at LF. Compare (4) and (5).

(4)  'Who bought what?'
SS: [ [ who ] [ t bought what ] ]
S' C 1 S 1 2

LF: [ [ what [ who ]] [ t buy t ] ]
S' C 2 C 1 S 1 2

(5)  'What did who buy?'
SS: [ [ what ] [ did who buy t ] ]
S' C 2 1 2

LF: [ [ who [ what ]] [ t buy t ] ]
S' C 1 C 2 S 1 2

Huang goes on to argue that there are other phenomena which cannot be subsumed under either Subjacency or the ECP.

(6)  *What movie did you cry during t

(7)  During what movie did you cry t

To account for the difference in grammaticality between constructions like (6) and (7), Huang proposes an additional constraint: the Condition on Extraction Domain (CED).

(8)  CED (Huang 1982: 505(18))
A phrase A may be extracted out of a domain B only if B is properly governed.

ENTAILMENTS OF CED

(9) Proper Government (Huang 1982: 471)
A properly governs B iff A governs B and
(a) A is lexical [i.e., [\#N, \#V]]; or
(b) A is coindexed with B.

Under this definition extraction out of S and V" would
be impossible. Consider, for example, the derivations in (10) and (11).

(10)  'Who left?'

i. [ [ who INFL-AGR [ leave]]
   S'  S  1  V"

ii. [ who [ t INFL-AGR [ leave]]
    S'  1  S  1  V"

(11)  'What did John see?'

i. [ [ John INFL-AGR [ see what ]]]
   S'  S  V"  1

ii. [ what [ John INFL-AGR [ see t ]]]
    S'  1  S  V"  1

In (10) who is moved from subject position to COMP;
this movement is an extraction out of S. In order for
this extraction to satisfy the CED, the extraction
domain S must be properly governed. Although it may
be that COMP governs S, COMP is (presumably) not
lexical, and so S is not properly governed under
condition (a) of the proper government definition.
Since S is not governed by an antecedent, S is not
properly governed under condition (b) either.
Extraction out of S should therefore be impossible.

The derivation in (11) is doubly problematic. Here
what is moved from object position to COMP. This
movement is an extraction out of V" as well as an
extraction out of S. In order for this extraction to
satisfy the CED, the extraction domain V" must also be
properly governed. V" is governed by INFL. However,
Huang (p. 471) claims that INFL is not lexical. This
means that
V" is not properly governed under condition (a).
There is no antecedent of V" governing it, so neither
is V" properly governed under condition (b). Thus the
derivation in (11) should also be impossible.


3. Phrase Structure and Proper Government I will argue that Huang's formulation of the CED is in fact correct, and that the problems illustrated in (10) and (11) arise from a faulty definition of proper government rather than from the CED itself.

Suppose that we adopt the definition of lexical government given in (12), which is based on a suggestion made by Chomsky (1981: 274).

(12) Lexical Government
A lexically governs B iff A is X0 (i.e., a head) and B is a sister of A.

With this definition of lexical government, extraction from S or V" will be allowable under the CED only if the S or V" appears as the complement of some head.

How could S be a complement? Again following a suggestion of Chomsky's (ibid.), S could be the complement of COMP, where COMP is the head of S'.

(13) \[
\begin{array}{c}
\text{COMP}' \\
\text{COMP} \\
S
\end{array}
\]

\(\text{COMP}' = S'\)

If this is the case, then extraction from S will conform to the CED since S is lexically governed by COMP.

How could V" be a complement? As Stowell (1981) and Pesetsky (1982) argue, S can be considered the maximal projection of INFL. The head INFL would then have V" as its complement (with N" as specifier of INFL').

(14) \[
\begin{array}{c}
\text{INFL}'' \\
\text{N}'' \\
\text{INFL}' \\
\text{INFL} \\
V''
\end{array}
\]

\(\text{INFL}'' = S\)

Extraction from V" will then conform to the CED since V" is lexically governed by INFL.

Notice that besides eliminating problems with extraction from S and V", the revised definition of lexical government and the treatment of S' and S as maximal projections have the desirable consequence that S' and S fall within X'-theory. S' is a maximal
category headed by COMP, perhaps with TOPIC as specifier; and S is a maximal category headed by INFL, with N" as specifier.

In addition, this treatment forces a rethinking of such problems as the formulation of antecedent government and Exceptional Casemarking. These two problems will be discussed in some detail in the next sections.

4. Antecedent Government Consider the S-structures resulting from the derivations given in (10) and (11).

(15)

\[
\begin{array}{l}
\text{COMP}' \\
\quad \text{COMP} \\
\quad \quad \text{INFL}'' \\
\quad \quad \quad \text{who} \\
\quad \quad \quad \quad 1 \\
\quad \quad \quad \quad t \\
\quad \quad \quad \text{INFL'} \\
\quad \quad \quad \quad \text{V}'' \\
\quad \quad \quad \text{AGR} \\
\quad \quad \quad \text{leave} \\
\end{array}
\]

(16)

\[
\begin{array}{l}
\text{COMP}' \\
\quad \text{COMP} \\
\quad \quad \text{INFL}'' \\
\quad \quad \quad \text{what} \\
\quad \quad \quad 1 \\
\quad \quad \quad \text{John} \\
\quad \quad \quad \text{INFL} \\
\quad \quad \quad \quad \text{V}'' \\
\quad \quad \quad \quad \text{AGR} \\
\quad \quad \quad \quad \text{V}' \\
\quad \quad \quad \quad \text{N}'' \\
\quad \quad \quad \text{see} \\
\quad \quad \text{t} \\
\end{array}
\]

In order for these structures to be well-formed with respect to the ECP, the WH-trace in each case must be properly governed. In (16) the trace is lexically governed: the trace and the head of V" are sisters. However, in (15) there is no lexical government: the trace is not a sister of an Xo category. In order for this trace to be properly governed, it must be antecedent governed.

Does (15) conform to antecedent government as defined in (9)? Consider the relevant part of the definition, repeated below.
(17) A [antecedent] governs B iff A governs B and ... A is coindexed with B.

If S is taken to be a nonmaximal projection, antecedent government will obtain in structures like (15): the WH-phrase in COMP both governs its trace and is coindexed with it. If S is taken to be a maximal projection, though, antecedent government between the WH-phrase and its trace would not obtain: the maximal category INFL" would block government.

So, analyzing S as a maximal projection entails that the trace in a structure like (15) is not governed by its antecedent. This might seem to be a serious problem, but in fact it is a desirable consequence. Consider, for example, a structure like (18).

(18)

```
INFL"
   /
 N"  INFL'
   /    /
 John INFL V"
   /
 AGR   /  \
 V'    /   \
     /
 V    \
     /
 know COMP' INFL"  \
    /    \
  who  INFL'   \
     /    \\
 1 PRO INFL V" \
    /  \\
 V'    \\
     /     \\
 N"  \\
 see t  \\
```

'J. knows who to see'

In embedded infinitival questions, such as [who PRO to see], PRO must be ungoverned. However, if WH-phrases may govern their traces in structures like (15), then I see no way to prevent the WH-phrase in (18) from governing PRO; in all relevant respects there is no structural difference between (15) and (18).

On the other hand, if S is a maximal projection, then PRO in (18) will be ungoverned as desired. But
then, to account for the well-formedness of (15), a redefinition of antecedent government is in order.

The first step would be to eliminate government from the definition of antecedent government, since by hypothesis government does not obtain in (15). Simply removing government from (17) will not be sufficient, though.

(19) A [antecedent] governs B iff A is coindexed with B.

With a definition like (19), classic ECP violations like (20) would be predicted to be well-formed.

(20) ∗ [why [did John wonder 1 [who [ t left t ]]]] 2 2 1

To discover what more is needed, let us first examine closely the antecedent government configuration.

First suppose, following Lasnik and Saito (to appear), that COMP is coindexed with its "head" (i.e., the category which COMP dominates). The configuration for antecedent government would then be (21).

(21) COMP
    | 1 |
COMP INFL"
    | 1 |
WH N"
    1 |1 |
t

Here not only is the WH-phrase coindexed with the trace, but so too is COMP. Suppose then that in a configuration like (21) it is COMP, not the WH-phrase, that is the antecedent governor of the trace. Notice that this COMP is a lexical governor: COMP lexically governs INFL". Assuming that this observation is important, we might define antecedent government as (22).

(22) Antecedent Government
    A antecedent governs B iff A is coindexed with B, and A lexically governs a container of B.
(23) A is a container of B iff A is the minimal INFL" dominating B.¹

Antecedent government (22) and lexical government (12) can then be combined in a single recursive definition.

(24) Proper Government
A properly governs B iff A is X₀ and
(i) B is a sister of A; or
(ii) B is coindexed with A and A properly governs a container of B.

To see how this definition fares in more complex structures, consider examples of well-formed long-distance movement, such as (25) and (26).

(25)[ [ who ] [ do you think
C' C 1 1 I"               [ [ t ] [ t left ] ] ]
               C' C 1 1 I" 1

(26)[ [ why ] [ do you think
C' C 1 1 I"               [ [ t ] [ John left t ] ] ]
               C' C 1 1 I" 1

In both cases, the trace in the embedded INFL" is antecedent governed by the embedded COMP, just as in (21). The trace in COMP must also be properly governed, and in fact it is: the matrix COMP antecedent governs the trace in the embedded COMP. The relevant configuration is (27).
The trace $t$ is not lexically governed. However, $t$ is coindexed with the matrix COMP, and this COMP lexically governs the matrix INFL. The matrix INFL is the minimal INFL dominating $t$ and so is a container of $t$. The trace in the embedded COMP is therefore antecedent governed by the matrix COMP.

Now consider an example of illicit movement, such as (28).

(28)  "Why did who leave?"

SS: [ [ why ] [who INFL-AGR leave t ]]
C' C 1 1 2 1

LF: [ [ who [ why ] ] [t INFL-AGR leave t ]]
C' C 2 C 1 1 2 1

Following Lasnik and Saito (to appear), assume that there is only one position in COMP. The LF movement of who in (28) must therefore be an adjunction to COMP. This COMP has already received the index of its "head", why. After adjunction of who, the complex COMP retains its original index, the index of why.

With this LF, the trace of why will be antecedent governed by the complex COMP, since the two are coindexed and COMP lexically governs a container of the trace. Notice, however, that the trace of who is not antecedent governed, since the complex COMP does not share an index with this trace. Neither is this trace lexically governed. Thus, the ECP is violated and (28) is ruled out at LF.

Lastly, let us examine examples of illicit long-distance movement, such as the ones in (29).

(29)a. [ [ who ] [ do you wonder
C' C 1 1 I"
[ [ t [ what ] ] [ t' saw t ]]]]
C' C 1 C 2 2 2 I" 1 2

b. [ [ why ] [ do you wonder
C' C 1 1 I"
[ [ t [ who ] ] [ t left t' ]]]]
C' C 1 C 2 2 2 I" 2 1

In both cases $t'$ is not lexically governed: neither subject position nor the position of an adjunct is the
sister of any head. Neither is \( t' \) antecedent governed. The matrix COMP is coindexed with \( t' \), but this COMP does not lexically govern the minimal INFL" containing the \( t' \) (i.e., the embedded INFL"). The matrix COMP does lexically govern the matrix INFL" which is a container of the embedded INFL" , but the matrix COMP and the embedded INFL" are not coindexed; thus the matrix COMP does not antecedent govern a container of \( t' \). Since the matrix COMP neither lexically governs nor antecedent governs a container of \( t' \), this COMP does not antecedent govern the trace. So, illicit long-distance movement is correctly ruled out."

**Exceptional Casemarking** In English, sentences like (30) are well-formed.

(30) We believe [[John to be intelligent]]

In most other languages, the equivalent of (30) is ungrammatical. To account for this difference, Chomsky (1981, and elsewhere) proposes a language-specific rule of S'-deletion.

(31) \( S' \rightarrow S \)

In a language like French, where the analogue of (30) is ill-formed, the subject of the infinitive is separated from the matrix verb by an S' node and an S node. The maximal projection S' blocks government and so the matrix verb cannot assign Case to the subject of the infinitival. A violation of the Case Filter results, so the string is ruled ungrammatical. In English, on the other hand, (31) applies. Since S is not a maximal projection, government is not blocked and Case is assigned to the subject of the infinitival.

This analysis cannot be maintained, however, under the INFL" treatment of S. Since INFL" is a maximal projection, an operation like S'-deletion (specifically, \( \text{COMP}' \rightarrow \text{INFL}" \)) will not permit government of the subject of an infinitival. How, then, can the grammaticality of (30) be accounted for?

Suppose Belletti and Rizzi (1981) are correct that government of a maximal category entails government of that category's head. Now consider the S-structure of (30) after "S'-deletion" and pruning.
(32) [we INFL-AGR believe
     I"
     [John INFL be intelligent]]
     I"

Here believe governs the embedded INFL" and so, by hypothesis, governs INFL. Assume that the governed INFL" receives Case from believe and that this Case feature percolates to the head, INFL. Now suppose that INFL transfers this Case feature to its specifier, much as INFL-AGR assigns Case to the subject (i.e., specifier) of a tensed clause.

(33)a. Exceptional Casemarking

```
V'               V'
/ \              / \                  
V    INFL"      V    INFL"
     [obj]       [obj]
    /     \      /     \            
  N"    INFL'  N"    INFL'
     [obj]       [obj]
      /       / \
     INFL    INFL
     [obj]       [obj]
```

b. Nominative Casemarking

```
INFL"
[nom]
N"    INFL'
[nom]  [nom]
    /     \       /     \   
   INFL    AGR  INFL    AGR
   [nom]       [nom]       [nom]
```

In addition to accounting for the English data, this analysis also provides a means of accounting for the well-formedness of French sentences like (34a), where the subject of an infintival is questioned.
(34)a. [ qui [ crois-tu
C' I"
[ t [ être intelligent]]]
C' I"

b. * [ tu crois [ Jean être intelligent]]
I" C' I"

Since there is no "S'-deletion" in French, Jean in (34b) remains Caseless: Case is assigned to COMP', not to INFL", so there is no way to transfer Case to the subject of the infinitival. However, in (34a) the WH-phrase moves from the Caseless infinitival subject position to the embedded COMP. Because the embedded COMP' is assigned Case, the head COMP also has Case (by feature percolation). The Case feature may then be acquired by the phrase in COMP--perhaps as an instance of Case inheritance, since COMP and the category which it dominates are coindexed. Movement of the Casemarked WH-phrase to the matrix COMP then yields a well-formed structure.

6. Conclusion In order to make the CED workable, it was necessary to treat S' as the maximal projection of COMP and S as the maximal projection of INFL. This treatment has the desirable result of including S' and S in the set of categories falling under X'-theory.

The analysis of lexical government presented here also has consequences affecting the treatment of antecedent government and Exceptional Casemarking.

It was suggested that antecedent government is a kind of lexical government--specifically, lexical government of the container of a coindexed element. This definition of antecedent government was then combined with that of lexical government to form a single recursive definition of proper government.

Exceptional Casemarking was also reanalyzed. Since INFL" is a maximal projection, even a rule of "S'-deletion" will not allow government of the subject of an embedded infinitival clause. What was suggested is that in Exceptional Casemarking a verb assigns Case to the INFL" it governs. The Case feature then percolates to INFL, the head of INFL", and is then transferred to the N" specifier. This Case transfer is similar to nominative Case assignment, where Case is assigned to the N" specifier of a tensed clause.
FOOTNOTES

1 "Container" probably should be defined as the minimal INFL or N", in order to prevent antecedent government in structures like the French example below.

(1) *(Un rouge en a été cassé')
         [un t rouge] en -INFL avoir été cassé t₂
₃₁       ₂₁

For purposes of brevity, I will not discuss this in any detail here.

2 Lasnik and Saito argue that lexical government into COMP is impossible. This is consistent with the present analysis. Under definition (12) the contents of a COMP would not be lexically governed: only COMP', not its contents, would be lexically governed by a governing verb.

3 Note too that the trace in the embedded COMP does not antecedent govern t₁'. See the discussion of (28).

4 It might seem that this analysis would incorrectly rule out the well-formed analogue of (29a) in Spanish, or Italian (with no trace in the embedded COMP). Although I will not justify the proposal here, I would like to suggest that in the Romance languages—but not in English—the rule adjoining AGR to V may apply in the syntax (cf. Chomsky 1981; 257). Application of this rule in the syntax will leave the subject trace ungoverned. Adopting the Binding Theory of Davis (1982), this will mean that the trace is subject to Control. Given a proper theory of Control, the WH-trace in COMP will Control the ungoverned trace; the structure would then be well-formed.

5 Another possibility is that there is no general Case inheritance process but coindexation of COMP and its "head" entails feature agreement.
REFERENCES


ON THE INTERACTION OF LEXICAL AND SYNTACTIC PROPERTIES:  
CASE STRUCTURE IN RUSSIAN*

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"The more outré and grotesque an incident is the more carefully it deserves to be examined, and the very point which appears to complicate a case is, when duly considered and scientifically handled, the one which is most likely to elucidate it."


Beginning in the early 1960s with the formulation of the A-over-A Condition, the study of transformational syntax has focused on two major areas of research: (i) rule systems, and (ii) systems of principles which determine the form and function of rules of grammar and the wellformedness of the representations they generate. During the past several years, work on principles has shown that as the system of principles becomes more highly articulated, the system of rules can take on a more general formulation--approaching in the limit the optimal rule system, consisting solely of a set of elementary operations which apply freely and whose interaction is fixed according to how they are organized in a grammar (see Freidin (in preparation)). As a result, there has been a shift of emphasis in grammatical studies from rule systems to principle systems. The analysis of grammatical phenomena no longer focuses primarily on the rules of a grammar. Instead, analysis concentrates on the system of principles which account
for the abstract properties manifested in grammatical phenomena. Thus the grammatical/ungrammatical distinction is largely determined in terms of general principles of grammar rather than language particular rules.

Initially, principles were formulated as conditions on the application of rules or, more generally, on derivations. With the development of trace theory, it has been possible to simplify the system of principles by interpreting some of these as conditions on representations—i.e., as filters which define well-formedness for the various levels of representations generated by the rules of grammar (see Freidin 1978; Freidin and Lasnik 1981 for discussion.) Whether this interpretation holds for the entire system of principles remains to be determined—though most current proposals are at least compatible with this interpretation. In any case, this interpretation also contributes to the shift in focus from rule systems to principle systems. It emphasizes representations rather than rules, and thereby virtually eliminates the role of derivational history in determining grammaticality.

The system of principles developed to date (cf. Chomsky 1982 for a recent discussion) divide naturally into two major types: (i) principles based on syntactic properties, and (ii) principles based on lexical properties. Conditions on bounding (e.g. Subjacency) and binding belong to the first category, while Chomsky's Projection Principle—which says essentially that lexical properties (e.g. subcategorization) may not change during a derivation (cf. Chomsky 1982)—and the Q-criterion belong to the second. Thus grammatical wellformedness is determined by principles governing the syntactic properties of a sentence in conjunction with principles governing lexical properties of the specific lexical items occurring in the sentence.

The study of case distribution in Russian which follows falls within the general framework sketched above. It demonstrates how the properties of case structure in Russian follow from general principles of grammar and therefore need not be stipulated in terms of the rule system which assigns case to lexical items.

In Russian, syntactic case marking comes in two varieties: (i) configurational case marking, which is determined by syntactic configuration, and (ii) lexical case marking, which is determined by the lexical properties of case-assigning categories (i.e. verbs, adjectives, prepositions, and certain nouns). In addition, there is a process by which subjects and direct objects are assigned a case which is determined by neither syntactic configuration nor lexical properties of case assigning predicates and which, unlike syntactic case marking, contributes to semantic interpretation. For the purposes of discussion we shall desig-
nate this process "semantic case marking". With both syntactic and semantic case marking, case is assigned to a phrasal category and distributed to its lexical constituents by a mechanism of case percolation. The interaction of the various types of case marking with percolation generates complex surface case patterns. We will demonstrate that the set of permissible case patterns characteristic of modern Russian is determined by general principles of grammar.

This paper is organized as follows. Section 1 contains a brief statement of the theoretical framework assumed. Section 2 presents the properties of Russian case structures—distinguishing configurational, lexical, and semantic case and introducing the mechanism of percolation. The interaction of the various types of case marking and percolation, and potential conflicts among these processes are described in section 3, where we show how general principles resolve these conflicts. Some empirical predictions of our theory are discussed in section 4. Section 5 contains some concluding remarks about the general theory.

1. Theoretical framework.

The following discussion presupposes the general framework of the Extended Standard Theory as developed in Chomsky 1980, 1982. More specifically, it is assumed that the theory of grammar involves systems of rules and representations organized as in (1), where rule systems are indicated by braces, and levels of representations, by boxes.¹

(1) \[
\begin{align*}
\text{i. categorial rules} & \quad \rightarrow \quad \text{D-Structure} \\
\text{ii. lexical insertion} & \\
\end{align*}
\]

\[
\begin{align*}
\{ \text{i. Assign Case} \} \\
\{ \text{ii. Move } \alpha \} \\
\end{align*}
\]

\[
\begin{align*}
\text{S-Structure} & \\
\end{align*}
\]

\[
\begin{align*}
\{ \text{i. Delete} \} & \\
\{ \text{ii. Local movement} \} & \quad \quad \quad \{ \text{i. Construal} \} \\
\{ \text{iii. Phonological rules} \} & \quad \quad \quad \{ \text{ii. Wh-interpretation} \} \\
& \quad \quad \quad \{ \text{iii. Quantifier raising} \} \\
\end{align*}
\]

\[
\begin{align*}
\text{Phonetic Form (PF)} & \\
\text{Logical Form (LF)} & \\
\end{align*}
\]
D-structures are generated by categorial rules plus lexical insertion and mapped onto other representations by various rules as indicated in (1). Note that the rule "move \( \alpha \)" is actually an abbreviation for two distinct elementary operations, 'substitute \( \alpha \) for \( \beta \)' and 'adjoin \( \alpha \) to \( \beta \)', where \( \alpha, \beta \) are syntactic categories. Representations at each level have properties which are distinct from those of other levels. Such properties are specified in part by wellformedness conditions, i.e., filters, which hold for representations at each level. For example, representations in LF must meet conditions on proper binding (see Chomsky 1980; and Freidin and Lasnik 1981 for discussion).

In particular, we assume the Case Filter (2), which accounts for both the obligatoriness of the rule Assign Case given in (1) and also the nonoccurrence of NPs containing phonetic material in positions which are not assigned case (see Chomsky 1980, 1982; and Lasnik and Freidin 1981 for discussion). 2

\[
(2) \quad \text{*NP, where NP contains phonetic material and is not marked for case.}
\]

Following Lasnik and Freidin 1981, we assume that (2) is a wellformedness condition on representations in PF—although this assumption does not bear directly on our analysis of Russian. Alternative assumptions are discussed in Chomsky 1982.

We assume that Assign Case and Move \( \alpha \) are both optional and unordered with respect to one another. This accounts for how a Wh-phrase in COMP is case marked in terms of another NP-position in S which it binds, without resorting to special mechanisms like Case Inheritance (see Chomsky 1982). If case is assigned to the set of features which constitute the category NP (rather than the index of NP as in Chomsky 1982), there will be a derivation in which a wh-phrase is assigned case before it moves to COMP (see Lasnik and Freidin 1981:fn. 10). If WH-movement applies before Assign Case, the wh-phrase would not be marked for case and violates the Case Filter (2). In this way the Case Filter imposes an ordering on Assign Case and Move \( \alpha \) with respect to WH-movement. Thus the proper order of application of these rules follows from the Case Filter and need not be stipulated.

For NP-movement, the application of Assign Case before Move \( \alpha \) has the following effect as illustrated in the derivation of passives.

\[
(3)a. \quad [\text{NP } e \text{ was } \beta \text{ arrested } \text{NP Sam}] \\
\text{b. } [\text{NP } e \text{ was } \beta \text{ arrested } \text{NP Sam}] \\
[\text{NOM}]
\]
(3c. [\(\text{NP}_1\) Sam] was [\(\beta\) arrested [\(\text{NP}_1\) e]]
\[\text{NOM}\]

(3a) is mapped onto (3b) by Assign Case; and (3b) is mapped onto (3c) by Move \(\alpha\). Case assignment to the NP complement of the passive participle is blocked by passive morphology (see Babby and Brecht 1975; Chomsky 1982 for discussion). If the Case Filter accounts for the obligatoriness of NP-preposing in passive constructions, this analysis must hold regardless of the categorial status of \(\beta\) — i.e., whether \(\beta\) is a projection of \(V\), or a projection of \(A\) (as discussed in Freidin 1970, 1975; Chomsky 1975, 1982; and Babby 1978).

Because there are instances where case is relevant to semantic interpretation, Assign Case must apply in the derivation from D-structure to S-structure so that case marking is indicated in LF representations.

We take the categorial rules to be defined in terms of \(\lambda\)-theory (see Chomsky 1970, 1982) where a phrasal category is treated as a projection of the lexical category which constitutes the head of the phrase. In addition we assume with Chomsky that categories are not atomic, but analyzable in terms of categorial feature complexes. For example, the lexical categories \(N\), \(V\), \(A\), \(P\) and their phrasal projections are analyzed in terms of the features [\(+N\)] and [\(+V\)] as follows: \(N = [+N, -V]\), \(V = [-N, +V]\), and \(P = [-N, -V]\). This feature analysis is essential for our analysis of case percolation (see section 3).

2. Properties of case assignment in Russian.

2.1 Syntactic case marking: lexical vs. configurational case. Certain lexical items in Russian assign a specific case to their NP-complements as a lexical property. We designate this type of case as lexical case. These lexical items include verbs, adjectives, prepositions, and certain nouns (especially derived nominals) as in (4).

\[(4)\text{a. Verb}
\begin{align*}
\text{i. } & \text{Oni [VP podražajut našim metodom]} \text{ they-NOM copy our-DAT methods-DAT} \\
& \text{ 'They copy our methods.'}
\end{align*}
\begin{align*}
\text{ii. } & \text{Vv \text{umeete [VP upravljet' avtomobilem]}} \text{ you-NOM able to-drive car-INST} \\
& \text{ 'Do you know how to drive a car?'}
\end{align*}
\]
(4)b. Adjective
i. Priošestvie, [AP podobnoe štomu],
event-NOM similar (to)-NOM this-DAT
bylo v prošлом godu.
was in last year
'Something like this happened last year.'

ii. Vse ulicy [AP polny narodom]
all-NOM streets-NOM AP full people-INST
'The streets are full of people.'
c. Preposition
i. Ola podošla [pp k oknu]
she-NOM went to window-DAT
'She went to the window.'

ii. Ja sobirajus' segodnja [pp s nim]
I-NOM plan with him-INST
obedat'
to-eat
'I plan to have dinner with him today.'
d. Derived nominal
i. [NP Podražanie greškim poštam]
imitation-NOM Greek-DAT poets-DAT
'imitating Greek poets'

ii. [NP upravlenie gosudarstvom]
management-NOM government-INST
'running of the government'

Note that the derived nominals in (4d) are related to the verbs given in (4a).

Lexical case in Russian is limited to the NP-complements of lexical heads of phrases. Therefore subjects, which are never complements of lexical heads, never receive lexical case marking. However, as we show in the next paragraph, the relation between a lexical head and its NP-complement doesn't always involve lexical case marking.

Configurational case is assigned purely in terms of syntactic configuration. The relevant examples are given in (5).3

(5)a. Nominative:
subject: [S NP INFL ]
(NOM) [+tense]
Devuška obožaet glubinnuju strukturu
girl-NOM loves deep-ACC structure-ACC
'The girl loves deep structure.'

b. Accusative:
i. V-complement: [ V NP ]
[ACC]
Devuška čitala knigu
girl-NOM read book-ACC
'The girl was reading the book.'
ii. A-complement: [\(\alpha\) \(A\) \(NP\) ]
\[A\] [ACC]
Devuška, čitajuščaja knigu, sidela
girl-NOM reading-NOM book-ACC sat
v ugлу
in corner
'The girl reading the book was sitting
in the corner.'

c. Genitive:
\[N\] [NP] \[\(\gamma\) \(N\) \(NP\) ]
\[N\] [GEN]
Devuška čitala novyj sbornik
girl-NOM read new-ACC collection-ACC
statej
articles-GEN
'The girl was reading a new collection of
articles.'

Nominative case distinguishes NPs which are not complements of
lexical heads. Note that in (5b) and (5c) the NP is a comple-
ment of the head of the phrase containing it. This extends to
(5a) under the assumption that INFL is the head of \(S\) (see Chomsky
1982; Sušer 1982; Freidin 1983). It should be noted that ad-
jectives as in (5b.ii) are restricted to active particles related
to transitive verbs. Non-derived adjectives generally assign lexi-
cal case to their NP-complements as in (4b) above. We return to
this analysis of adjectives below.

The behavior of nominative case provides the paradigm ex-
ample of configurational case assignment because nominative case
is never assigned to a NP which is in a position that could be
assigned lexical case. Accusative case cannot be considered a
lexical case because it patterns like nominative rather than lexici-
al case, as demonstrated in section 3.1.2. For example, only
NPs that would be marked nominative or accusative in affirmative
sentences can be marked genitive in negated sentences (see Babby
1980a and section 4).

2.2 Semantic vs. syntactic case. In Russian there are
instances of case assignment to subjects and objects where the
case assigned is associated with a particular interpretation.
For example, instrumental case marking on the subject NP in the
(i)-examples of (6) imparts an explicit adverse meaning—in con-
trast to the (ii)-examples where the subject is marked nominative
(see Babby 1980a: chapter 2 for discussion of the status of
"oblique subjects").
(6)a. i. Našla spički, odnu vetrom
found-FEM matches-ACC one-ACC wind-INST
zatušilo.
extinguished
'She found some matches; the wind blew
one out.'
ii. Našla spički, odnu veter zatušil
wind-NOM
b. i. Včera Mašu sbilo mašinoj
yesterday Masha-ACC knock-down car-INST
'A car hit Masha yesterday.'
ii. Včera Mašu sbila mašina
car-NOM

Instrumental case on the subject indicates that the speaker
interprets the consequences of the action denoted as adverse,
whereas nominative case is neutral. For the purposes of dis-
cussion we designate instrumental marking of subjects as
'semantic case' to distinguish it from syntactic case—i.e. con-
figurational and lexical case—as discussed in the previous
section. Semantic case differs from lexical case because it
alters with configurational case, while lexical case is ob-
ligatory and therefore in complementary distribution with all
other case types. Semantic case also differs from configurational
case with respect to its distribution in quantified NPs as
discussed below in section 3.1.2. Thus it constitutes a distinct
case-type.

Another instance of semantic case is the partitive genitive,
which occurs on both subjects and direct objects, as illustrated
in (7) where the (i)-examples contain the partitive genitive forms
and the (ii)-examples give their configurational case counterparts
(word order irrelevant).

(7)a. i. Xolodnyj vozdux popal v rot.
cold-NOM air-NOM fell into mouth-ACC
'The cold air got into his mouth.'
ii. V rot popalo xolodnogo vozduxa.
cold-GEN air-GEN
'Some cold air got into his mouth.'
b. i. Nalej sebe moloko iz kuvšina.
pour yourself-DAT milk-ACC from pitcher-GEN
'Pour yourself the milk from the pitcher.'
ii. Nalej sebe moloka iz kuvšina
milk-GEN
'Pour yourself some milk from the pitcher.'

The partitive genitive indicates an unspecified quantity and is
therefore always interpreted as indefinite (see Babby 1980a:79
for additional discussion), in contrast to the corresponding nom-
inative and accusative forms which are neutral in this respect.
In (6) and (7), semantic case (e.g. instrumental and genitive) is assigned to NPs in syntactic configurations where they would otherwise be marked nominative or accusative. Given case alternatives as in (7), semantic case cannot be associated with properties of lexical items since lexical case is obligatory and thus does not alternate with configurational case.

2.3 The outré incident. In Russian there is one NP construction, given in (8), where genitive case is assigned to the constituents of N* as in (9), where N* stands for N_{max-1}.

(8) \([_{NP} Q N^*]\)

(9) \([_{NP:\text{NOM}} Q pjat' [N^*:\text{GEN} krasivyx devushek]] \text{priexali. five-NOM pretty-GEN girls-GEN arrived}\)

This is a special instance of case assignment because it involves case marking on a nonmaximal projection of N (i.e. N*), independently of the maximal projection of N (=NP), unlike all other instances in Russian.\(^5\)

The assignment of genitive to N* in these constructions could not alternate with some other configurational case as is characteristic of semantic case (e.g. genitive of negation or partitive genitive) as discussed above in section 2.2. Secondly, it does not affect the interpretation of these constructions. As will be discussed in section 3.1.2, it is unlikely that genitive N* in these constructions results from configurational case assignment, and, furthermore, there is some motivation for considering this instance of genitive marking as lexical.\(^6\)


There are two processes for assigning case to lexical items. The rule Assign Case (as in (1)) marks the maximal phrasal projection of N (henceforth N_{max} (=NP)) for case. A second operation, which we will designate as 'percolation', distributes the case marking to the constituents of N_{max}. In the following discussion we will treat percolation as an independent rule, Percolate Case, rather than as a convention.

The rule Assign Case applies to NP (or N* in the special construction noted above) in the following configurations.

(10)a. Configurational case:
1. Subject of finite clause: \([NP \text{ INFL } \ldots]\)
   - [tense]
2. N-complement: \([_{N} \ldots N \text{ NP}]\)
3. V-complement: \([V \text{ V NP}]\)
4. A-complement: \([A \text{ A NP}]\)

b. Lexical case:
1. V-complement: \([V \text{ V NP}]\)
2. P-complement: \([P \text{ P NP}]\)
3. A-complement: \([A \text{ A NP}]\)
4. N-complement: \([N \text{ N NP}]\)

Semantic case can be assigned to NPs in the configuration (10.a.1), (10.a.3), and (10.a.4) where A is an active participle. In general, semantic case can only be assigned to NPs which would be otherwise marked nominative or accusative.

Configurational cases are assigned as given in (5). Prepositions and nonderived adjectives usually impose lexical case on their NP-complements. When a verb does not impose lexical case on its NP-complement, that NP is assigned configurational case (ACC) as in (5b). However when a verb does impose lexical case, its NP-complement must be assigned that case.

The rule Percolate Case distributes the case marking on \(N^{\text{max}}\) to all [+N] constituents of \(N^{\text{max}}\). For example, Percolate Case maps (11a) onto (11b), where \(\alpha\) designates a case.\( \text{\textsuperscript{6}} \)

\[(11)\text{a. } [\text{NP DET } [\text{NP} [\text{AP} [A] \text{ A}] \text{ N}]] \]
\[ \text{b. } [\text{NP } \alpha \text{ DET}\alpha [\text{NP } \alpha [\text{AP } \alpha [A\alpha A\alpha] \text{ N}]]] \]

(12) provides two concrete instantiations of this process, involving configurational case in (a) and lexical case in (b).

\[(12)\text{a. } \text{\textsuperscript{et}}-\text{u krasiv-ujju devušku- u this-ACC pretty-ACC girl-ACC} \]
\[ \text{b. } \text{\textsuperscript{et}}-\text{oj krasiv-oj devušk-oj with this-INST pretty-INST girl-INST} \]

This analysis assumes that all constituents which receive case by percolation are [+N]. Given this, percolation accounts for the phenomenon of case agreement, and therefore no special rule of Case Agreement is necessary (see Babby 1975:222). Further, we will show below (footnote 17) that case agreement has different properties than gender and number agreement, a fact which follows from our analysis. Note further that this analysis predicts that the maximal projection of [-N] categories (e.g. PP and \(S\)) is a barrier to percolation.

The operation Percolate Case is limited to the local domain of the \(N^{\text{max}}\) projection to which it applies. The domain of the
$N_{\text{max}}$ projection $D$ is the set of categories dominated by $N_{\text{max}}$. Thus some $D_i$ may contain other instances of $N_{\text{max}}$, e.g. $(D_j, ..., D_d) \subseteq D_i$, where $(i < j < d)$. Given this, the local domain of the $N_{\text{max}}$ projection $L(D_i)$ can be defined as $(D_i - (D_j, ..., D_d))$, i.e. the domain of the $N_{\text{max}}$ projection excluding any $N_{\text{max}}$ projection domain contained in it. It follows from this definition that $N_{\text{max}}$ is a barrier to percolation. The barrier effect on percolation can be seen in the derivation of adnominal genitive constructions as in (13).

(13)a. Bol'šinstvo studentov čitalo gazetu.  
    majority-NOM students-GEN read newspaper-ACC  
    'Most of the students were reading the paper.'  

b. *Bol'šinstvo studenty čitalo gazetu.  
    -NOM -NOM -ACC

The underlying structure of (13) is (14) (details aside).

(14)

Given that Assign Case is optional, there is a derivation in which NOM is assigned to $NP_i$, but GEN is not assigned to $NP_j$. If case were allowed to percolate beyond the local domain of the $N_{\text{max}}$ to which it is assigned, we would derive the illformed (13b). This is excluded by our analysis of percolation.

This analysis of percolation bears on the categorial status of participles in Russian. Note that the participle carries the same case as the head of its $N_{\text{max}}$—e.g. as in (15), details aside.

(15)a. [♀_N [♀_N dežuška [♀_A [♀_A čitajuňšaja [♀_N knigu ]]]]  
    girl-NOM reading-NOM book-ACC  
    'girl reading the book'  

b. [♀_N [♀_N dežuške [♀_A [♀_A čitajuňšej [♀_N knigu ]]]]  
    girl-DAT reading-DAT book-ACC

If there is no rule of Case Agreement, the distribution of case to the participle must follow from percolation. Therefore the participle must be analyzed as [+N] in order to attract the case assigned to its $N_{\text{max}}$. Given the theory of case presented above
such participial phrases must be analyzed as APs. Note that in (15) the NP complement of the participle is marked accusative. This shows that the configuration for assigning the configurational case ACC can be generalized as (16).

(16) [___ [+V] NP] [+V]

Recall that nonderived adjectives in Russian impose lexical case on their NP complements. Participles derived from verbs which require lexical case on their complements also require lexical case as in (17), where the participial form in (b) is derivationally related to the verb in (a).

(17)a. [G devuška [VP upravljaet mašinoj]]
   girl-NOM drives car-INST
b. [NP devuška [AP upravljaščaja mašinoj]]
   girl-NOM driving-NOM car-INST

Thus the instances where an adjective assigns ACC to its complement are limited to those instances where participles are derived from verbs which take configurational case (i.e. ACC) on their complements.11

The rule Percolate Case applies in the same component as Move $\times$ and Assign Case; and like the latter, it is optional and unordered with respect to the rules of this component. Nevertheless, Percolate Case must apply so that case is distributed to all [+N] lexical items. To account for this, we propose a reformulation of the Case Filter (2) as (18).

(18) * [+N], where [+N] has phonetic content and is not marked for case.

As reformulated, the Case Filter now also applies to predicate adjectives, which are not constituents of NP. In (19) for example, the predicate adjectives are marked nominative.12

(19)a. Devuška krasivaja
   girl-NOM pretty-NOM
   'The girl is pretty.'

b. On prišel domoj golodnyj
   he-NOM came home hungry-NOM
   'He came home hungry.'

Given this, we can generalize the configuration in which nominative case is assigned (cf. (10.a.1)) as (20).13
The term $[+N]_{\text{max}}$ in this configuration picks out subject NP, predicate nominal, predicate adjective, and topic, all of which are marked NOM in Russian. Therefore we are assuming that the predicate adjectives in (19) are assigned nominative case because they are both immediate constituents of S (see footnote 4). Under this analysis it is the hierarchical relation between INFL and $[+N]_{\text{max}}$ that is significant, and not their linear order.\textsuperscript{14}

3.1. Assign case and misgeneration.

3.1.1. Assignment of case to $N_{\text{max}}$. As stated above, the rule Assign Case accomplishes configurational, lexical, and semantic case marking and does not distinguish these as separate operations. Therefore in structural configurations where either lexical or semantic case might be assigned, there is a potential for misgeneration. For example, in the configuration for V-complements (see (10)) the following four possibilities arise:

(21)a. V requires lexical case
   i. assign the appropriate lexical case
   ii. assign some other case (*)

b. V does not require lexical case
   i. assign the appropriate configurational or semantic case
   ii. assign some other case (*)

(21.a.i) and (21.b.i) yield wellformed case structures, whereas (21.a.ii) and (21.b.ii) do not. "Other case" in (21.a.ii) includes semantic case; configurational case, and any other (and hence inappropriate) lexical case; whereas in (21.b.ii) this designation includes an inappropriate semantic case and any lexical case.

There is no need to complicate the rule Assign Case to account for the misgeneration noted in (21), as this follows from general principles. Recall that lexical case is assigned as a lexical property of certain words (see section 2.1); and we assume the following general principle governing lexical properties.

(22) The Principle of Lexical Satisfaction:
      lexical properties must be satisfied.

Principle (22) ensures that an NP complement of a lexical case assigner must always be marked with the required lexical case. Thus (21.a.ii) violates this principle since the lexical property of such verbs is not satisfied (see Pesetsky 1982 for
an alternative analysis). In addition to lexical case assignment, (22) holds for other lexical properties, as will be discussed below.

Turning to (21.b.ii), we note that there are two distinct subcases: (i) lexical case assigned; and (ii) the inappropriate configurational or semantic case is assigned. The first subcase is excluded under the assumption that lexical case must be lexically governed—i.e. in construction with a predicate that requires lexical case. The second subcase is excluded because it does not meet the configurational requirement for the configurational or semantic case assigned. We assume that the configurational cases nominative and accusative occur in the following configurations and only these.

(23)a. NOM: governed by INFL [+tense]
   b. ACC: governed by [+V]

(23) gives structural conditions on the occurrence of configurational case. There are also structural conditions on the occurrence of semantic case as in (24).

(24) INST and DAT: governed by INFL [+tense]

By contrast, objects of verbs do not occur in the instrumental or dative case unless the verb lexically case marks its object instrumental or dative. Note that the distribution of the semantic genitive is constrained only by the Principle of Lexical Satisfaction.

This analysis of misgeneration by the rule Assign Case generalizes to configurations containing N-complements or A-complements where, depending on the case assigner, configurational or lexical case marking is possible. Given the Principle of Lexical Satisfaction (22) and necessary structural conditions on the occurrence of configurational and semantic case (i.e. (23) and (24)), the rule Assign Case can be maintained in its optimally simple formulation."

As it stands, our analysis of Russian case has resulted in the following typology:
INTERACTION OF LEXICAL AND SYNTACTIC PROPERTIES

(25)

\[
\begin{array}{ccc}
\text{syntactic} & \text{semantic} \\
\text{configurational} & \text{lexical} \\
\hline
\text{NOM} & + & - & - \\
\text{ACC} & + & - & - \\
\text{GEN} & + & + & + \\
\text{INST} & - & + & + \\
\text{DAT} & - & + & + \\
\text{LOC} & - & + & - \\
\end{array}
\]

Because locative case in modern Russian occurs only with prepositions, it can be considered only as a lexical case. Nominative and accusative are unique in that they never function as lexical cases. This fact serves as the basis for the traditional distinction between oblique vs. nonoblique case (i.e. DAT, INST, GEN, and LOC vs. NOM and ACC).

3.1.2. The interaction of case assignment to $N^\text{max}$ and $N^\#$. NPs in which case is assigned to $N^\#$ independently of its $N^\text{max}$ projection illustrate a more complex system of case distribution. Consider the following paradigms:

(26) a. Lexical Case
i. Ivan govoril s temi pjat'ju
Ivan-NOM spoke with those-INST five-INST
krasivymi devuškami.
pretty-INST girls-INST
'Ivan was speaking with those five pretty
girls.'

ii. *Ivan govoril s temi pjat'ju
krasivyx devušek.

b. Configurational Case
i. Te pjat' krasivyx devušek
those-NOM five-NOM pretty-GEN girls-GEN
xolodny
are-cold
'Those five pretty girls are cold (= unfriendly
or cold to the touch)'

ii. *Te pjat' krasivye devuški xolodny.

c. Semantic Case
i. Tem pjati krasivym devuškam
those-DAT five-DAT pretty-DAT girls:DAT
xolodno
cold:NEUT/SG
'Those five pretty girls are cold (= feel cold).'
The case pattern of NPs marked for lexical case differs from that of NPs marked for configurational case, while NPs marked with semantic case pattern exactly like those with lexical case marking. With lexical and semantic case marking there is 'case agreement' among the lexical constituents of NP; whereas with configurational case, 'case agreement' does not occur.15

The distribution of lexical case in this construction is a direct consequence of the Principle of Lexical Satisfaction (22). The illformed (26.a.ii) would be derived if genitive case is assigned to N* in (27) before instrumental case percolates to the head of NP.

\[(27) \quad [\text{NP} \text{ DET Q } [N^* \text{ A N }]] \quad \text{[INST]}\]

Once genitive (or any other case) is assigned to N*, instrumental case cannot percolate across N* to N (cf. the principle of inertness in Babby 1980a, 1980b), and therefore only DET and Q could be marked instrumental by percolation from NP. In addition, genitive would have to percolate to A and N in N* because of the Case Filter (18). However, this case structure violates principle (22) under the assumption that lexical properties of verbs etc. which involve complement NPs are only satisfied by the lexical head of the complement. This seems a reasonable assumption given that it holds as well for selection, an analogous lexical property.16 For example, the English verb annoy selects an animate object as in (28a)—in contrast to (28b).

(28)a. The play annoyed the mathematician.  
b. *The play annoyed the book.  

This lexical property of annoy is not satisfied in (28c) even though the object contains an animate noun because that noun is not the lexical head of the NP complement of annoy.

One effect of the Principle of Lexical Satisfaction (22) is to ensure that the percolation of lexical case from N^max to its head is not blocked. In contrast, the paradigm for configurational case marking (26b) shows that percolation from N^max to N* must be blocked by the assignment of genitive to N*.17 As noted above, the assignment of genitive to an N* which is in construction with a quantifier constitutes a special instance of the rule Assign Case because it involves case assignment to a non-maximal projection of N—in contrast with all other applications of Assign Case in Russian where only N^max is affected (cf. footnote 15).
interaction of lexical and syntactic properties

In NPs where Q is in construction with N* (e.g. (26.b.i)), genitive case on N* marks the scope of the quantifier. Thus there is an intrinsic semantic relation holding between Q and N*, suggesting that in these constructions genitive functions are semantic case in spite of what might be considered as the salient characteristic of semantic case—namely, that it alternates with configurational case (but see footnote 6). This in turn suggests an explanation for the illformedness of the case structure (29) (cf. (26.b.ii), where both α and β are nonoblique configurational cases (i.e. NOM or ACC)).

(29) \[ \text{NP}_\alpha \quad Q \quad \text{N}_\beta \]

Where there is an obligatory interpretive connection between an operator and a projection of N, configurational case marking on this N-projection is inappropriate because it fails to express this connection.

What seems to be at issue here is that syntactic case merely establishes syntactic dependencies, whereas semantic case establishes a specific interpretive function (e.g. partitive genitive vs. accusative case on the NP-complement of a verb). Where interpretive dependencies are obligatory—as in the example under discussion, they take precedence over structural dependencies. However, where lexical properties are involved (as in (26.a.i)), these take precedence over both syntactic and semantic dependencies. With respect to case, these observations provide the following case hierarchy:

(30) lexical > semantic > configurational

As we have shown, the precedence of lexical case over other case types follows from the Principle of Lexical Satisfaction, which establishes the priority of lexical properties over all others.

With respect to semantic vs. syntactic case, the hierarchy in (30) is motivated solely by the phenomenon of quantified N* constructions discussed above. Given the marked character of the rule which assigns genitive case to N* and its limited applicability (i.e., that it can apply only when N* is in construction with a quantifier and the maximal projection from N* is marked with configurational case), it seems unlikely that there is a general principle of grammar governing the application of Assign Case to N* or its output. The question remains: why must N* in construction with a quantifier be marked genitive when the maximal projection from it is marked with nonoblique configurational case? That is, why is (29) also illformed where α is NOM or ACC and β is DAT or INST (where these are taken as instances of semantic rather
than lexical case? One answer that suggests itself is that in Russian interpretive dependencies between logical operators (e.g. Q or the negative particle) and projections of N require genitive case marking on the latter. In general, genitive case is appropriate here because it is the case of quantification in Russian (see Babby 1980a: chapter 4 and the references cited there). However, genitive case marking on \(N^*\) does not pattern with other instances of semantic case assignment as mentioned above (see section 2.3). Given our typology of case (see (25)), if genitive \(N^*\) is not an instance of semantic case, there are two other possibilities: lexical or configurational case.

The problem with analyzing genitive \(N^*\) as an instance of configurational case is that it does not conform to the properties of configurational case assignment: (i) assignment is to \(N^{\text{max}}\), and (ii) the constituent assigned configurational case is governed by a head of a projection (i.e. N, V, A, or INFL). Another non-trivial problem with such an analysis is accounting for the barrier effect on percolation with respect to \(N^*\). It seems a reasonable assumption that the local domain of the \(N^{\text{max}}\) projection is determined solely in terms of \(X\) structure and does not depend on case marking of constituents.

The case pattern of (29) where \(\preceq\) represents nonoblique configurational case as in (26.b.i) is unique in modern Russian, and moreover did not exist in Old Russian as illustrated schematically in the NP paradigms below.

(31) Old Russian
\[
\begin{align*}
\text{a. } & \text{toj } \text{pjat\i } \text{krasivyx } \text{devušek} \\
& \text{that-DAT/SG five-DAT pretty-GEN girls-GEN} \\
\text{b. } & \text{ta } \text{pjat\i' } \text{krasivyx } \text{devušek} \\
& \text{that-NOM/SG five-NOM pretty-GEN girls-GEN}
\end{align*}
\]

(32) Modern Russian
\[
\begin{align*}
\text{a. } & \text{tem } \text{pjat\i } \text{krasivym } \text{devuškam} \\
& \text{those-DAT/PL five-DAT pretty-DAT girls-DAT} \\
\text{b. } & \text{te } \text{pjat\i' } \text{krasivyx } \text{devušek} \\
& \text{those-NOM/PL five-NOM pretty-GEN girls-GEN}
\end{align*}
\]

In Old Russian \(\text{pjat\i'}\) is a feminine singular noun (cf. agreement with the determiner in (31) vs. (32)) and \(\text{krasivyx devušek}\) is its NP complement, marked as an adnominal genitive regardless of the case marking on \(\text{pjat\i'}\). In Modern Russian \(\text{pjat\i'}\) is a quantifier—it has no inherent number or gender and the determiner does not agree with it (cf. (31))—and \(\text{devušek}\) in (32) is the lexical head of the NP. Thus the change from Old Russian to Modern Russian involved a radical reanalysis of the internal structure of NP for such constructions: \(\text{pjat\i'}\), a noun in Old Russian, is reanalyzed as a quantifier; and the head of the Old Russian adnominal genitive \(\text{devušek}\) is reanalyzed as the
lexical head of the entire phrase. This change resulted in the creation of the syntactic category Q in Modern Russian (see Lightfoot (1979) for a discussion of similar phenomena in the history of English). Thus compare the internal structure of (31b) as given in (33) with that of (32b) as given in (34).

(33) Old Russian

```
<table>
<thead>
<tr>
<th>NP:NOM</th>
</tr>
</thead>
<tbody>
<tr>
<td>DET</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>N*</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>N</td>
</tr>
</tbody>
</table>

- ta
  - this-NOM/FEM/SG
- pjąt'
  - five-NOM/FEM/SG
- krasivyx
  - pretty-GEN/PL
- devušek
  - girls-GEN/PL
```

(34) Modern Russian

```
<table>
<thead>
<tr>
<th>NP:NOM</th>
</tr>
</thead>
<tbody>
<tr>
<td>DET</td>
</tr>
<tr>
<td>Q</td>
</tr>
<tr>
<td>N*</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>N</td>
</tr>
</tbody>
</table>

- te
  - this-NOM/PL
- pjąt'
  - five-NOM
- krasivyx
  - pretty-GEN/PL
- devušek
  - girls-GEN/PL
```

In modern Russian then (32a) illustrates the real innovation—i.e. the head of the adnominal complement has become the head of the entire construction.

This historical change shows that though the quantifier loses its status as a head, it retains its ability to properly govern configurational case (i.e. adnominal genitive) when it is itself marked for configurational case. However since Q is no longer the lexical head of the N_{max} projection containing it, it
cannot assign configurational case structurally. Instead, a Q
which is marked for configurational case imposes GEN on its N*
complement as a lexical property. Thus the historical change from
Old to Modern Russian involves the encoding of a configurational
property of a class of lexical items (i.e. Qs) as a lexical prop-
erty holding for a subset of this class—namely, quantifiers marked
with configurational case. Under this analysis, the impossibility
of percolating configurational case from Nmax to N* and thus to N
in these constructions follows from the Principle of Lexical
Satisfaction. Given the existence of quantified N* constructions
in which both Q and the lexical constituents of N* are marked
with the same lexical case, it is clear that this lexical property
of Q does not hold for Q marked with lexical case.

This lexical property of Qs does not hold when Q is marked
for semantic case either. Thus in paradigm (26c) where Nmax is
marked for semantic case, percolation to the lexical head cannot
be blocked by assigning GEN to N*. Although this derivation
follows the same pattern for lexical case (cf. (26a)), we cannot
appeal to the Principle of Lexical Satisfaction to explain the
paradigm for semantic case. In fact, this paradigm is more
general: in (29) where α represents semantic case, β cannot
differ from α regardless of the interpretation of β as configura-
tional, lexical, or semantic case. If β differs from α, then the
uniform interpretation of Nmax with respect to the semantic case
on α is not expressed.

Where α and β in (29) are different semantic cases, the ill-
formedness of the resulting case structure can be predicted from
another general principle—i.e. (35).

(35) The Principle of Uniform Interpretation:
In the local domain of an Nmax projection,
L(D1), lexical terms must have a uniform
feature specification.

(See section 3 for the definition of L(D1)). We assume that
feature specifications are uniform where the semantic features
of the lexical items involved are nondistinct for each semantic
feature F1. For example, when α and β in (29) are distinct
semantic cases, we would expect that Q and N* receive different
interpretations and therefore the L(D1) of (29) violates the
Principle of Uniform Interpretation. This principle extends
naturally to agreement phenomena. Where there is a one-to-one
 correspondence between syntactic and semantic number/gender
 (which is not always the case in Russian20), agreement
phenomena follow from (35). Thus (35) predicts the illformedness
of the English examples in (36) where for example the determiner
these is semantically [+plural] and boy, the noun it modifies, is
semantically [-plural].
(36)a. *these boy  
b. *a girls  
c. *each apples  
d. *all book

The analysis extends naturally to (36b-d) as well. We have an explanation for the fact that quantified N* structures in Modern Russian do not allow semantic case on Q with genitive N*, if the Principle of Uniform Interpretation holds strongly for any L(D).

It appears that the grammar of Modern Russian has a special rule of genitive case assignment to N* which is structurally conditioned by the presence of Q.

(37) \[ Q \quad N^* \quad \rightarrow \quad Q \quad N^* \quad [\text{GEN}] \]

This rule is optional like Assign Case. Where Q is marked for semantic case, the application of (37) results in a violation of the Principle of Uniform Interpretation (35). Where Q is marked for lexical case, its application violates the Principle of Lexical Satisfaction (22), unless the lexical case on Q is also genitive. When Q is marked for configurational case (e.g. NOM), its failure to apply results in a violation of principle (22) also, as discussed above.

3.2 Percolate Case and Misgeneration. In section 3.1 we demonstrated that the rule Assign Case will misgenerate a wide range of case structures and we provided an account of this misgeneration in terms of conditions on case structure representations. The same set of illformed case structures can also be generated by applying the rule Percolate Case from N^max to another N^max which it dominates. As an illustration, consider the paradigm in (38) where the internal structure of NP is given in (38c).

(38)a. Lexical Case
   i. s podražajuščimi inostrannym metodom
      with imitating-INSTR foreign-DAT methods-DAT
      rabočimi workers-INSTR
   ii. *s podražajuščimi inostrannymi metodam
       -INST -INST -INST
       rabočimi -INST

b. Configurational Case
   i. podražajuščie inostrannym methodam
      imitating-NOM foreign-DAT methods-DAT
      rabočie workers-NOM
Given (38c), NP₁ in (38a) has been assigned the lexical case instrumental by the preposition s. The illformed (38.a.ii) can be generated by percolating the instrumental case from NP₁ onto NP₂ and its constituents. The resulting case structure is illformed because the participle podražajušćimi requires that the head of its complement (NP₂) bear a different lexical case (i.e., dative). Therefore (38.a.ii) is illformed because it violates the Principle of Lexical Satisfaction (22). A similar analysis holds for (38b) where NP₁ is assigned nominative and this case marking percolates improperly to NP₂. Where the head of AP in (38c) is not a lexical case assigner, NP₂ and its constituents will be marked configurationally as accusative (cf. (15)). Should nominative case percolate from NP₁ onto NP₂, the resulting case representation would be illformed because NP₂ is not governed by tensed INFL as required for nominative case (see (32a)).

The examples under discussion show that the barrier effect on percolation (see section 3) follows from independently motivated conditions on case representations. Note that the case representations generated by improper percolation could also be generated by the rule Assign Case where it assigns an improper case—e.g., assigning nominative to NP₂ in (38c). Both derivations, by improper percolation of nominative to NP₂ and by improper assignment of nominative to NP₂, are prohibited by the same condition on case representations. This kind of analysis extends to all other instances of improper case percolation prohibited by the barrier effect.

Given our analysis, the barrier effect for percolation could be violated where the resulting case structure is wellformed. Consider (39), for example, which also has the structure given in (38c).

(39) s upravljačimi inostrannymi avtomobiljami with driving-INST foreign-INST cars-INST
devuškami girls-INST
'with girls driving foreign cars'

(39) could be derived by percolating instrumental case from NP₁ onto NP₂ and its constituents. In contrast to (38.a.ii), the case structure in (39) is wellformed because the participle upravljačimi itself lexically governs the instrumental case whereas the participle podražajušćimi does not. Thus (39) has wellformed case structure because it does not violate any condition on case representation. The mode of derivation is not
relevant in determining wellformedness of case structures and therefore the barrier effect on case percolation need not be stipulated because it is superfluous.21


By the Principle of Lexical Satisfaction, and NP complement of a word that imposes lexical case must express that lexical case. From this it follows that such NP complements are not subject to any grammatical process which affects their case marking. In Russian, passivization provides a concrete illustration of such a process.

Passivization in Russian involves a morphological change in the active predicate and a corresponding linking of the grammatical subject, which occurs in the nominative, to the NP complement position of the predicate. Thus in an active sentence the NP complement is marked accusative, while in the corresponding passive sentence it is marked nominative and enters into verb agreement (see Babby and Brecht 1975 for details)—as illustrated in (40) (the word order is not significant).

(40)a. active: Ivan čitaet knigu
       Ivan-NOM reads book-ACC
       'Ivan is reading the book.'

b. passive: Kniga čitaetsja (Ivanom).
       book-NOM is-being-read Ivan-INST
       'The book is being read (by Ivan).'

This NP in passive constructions cannot be marked accusative in Russian.

(41)a. *Knigu čitaetsja (Ivanom).
       book-ACC is-being-read Ivan-INST

b. *Čitaetsja knigu (Ivanom).

The illformedness of (41) is accounted for under the assumption that passive morphology 'absorbs case' and hence blocks case assignment to the NP complement position, as in English (see Chomsky 1982:124f. for discussion).22

In general, predicates which impose lexical case on their NP complement do not occur with passive morphology.

(42)a. Rabotnik podražaet inostrannym metodam.
       worker-NOM copies foreign-DAT methods-DAT
       'The worker is copying foreign methods.'

b. *Inostrannye metody podražajutsja rabotnikom.
       foreign-NOM methods-NOM are-copied worker-INST
       'Foreign methods are being copied by the worker.'
(42b) is illformed because the lexical property of podražajet which imposes dative case on its NP-complement is not satisfied. Given that passive morphology blocks 'case assignment' to the NP complement of the passive predicate, (22) predicts that lexical case assigning predicates do not have wellformed passive counterparts.

The Principle of Lexical Satisfaction also predicts that semantic case cannot be assigned to the object noun phrase of verbs that are lexical case assigners. A case in point is the genitive of negation, which may be assigned to the object of negated verbs or the subject of negated intransitive verbs (see Babby 1980b: chapter 3 for details), e.g.:

(43)a. Pticy bol'že ne pojavljalis'.
   birds-NOM any-more NEG appeared
   'The birds didn't come again.'

b. Pticy bol'že ne pojavljalo's'
   birds-GEN any-more NEG appeared
   'No birds came again.'

(44)a. i. Oni ne odobrjavat inostranne metody.
    they-NOM NEG approve-of foreign-ACC methods-ACC
    'They do not approve of (the) foreign methods.'

ii. Oni ne odobrjavat inostranny metodov.
    they-NOM NEG approve-of foreign-GEN methods-GEN
    'They do not approve of foreign methods.'

b. i. Oni ne podražajut inostrannym metodam.
    they-NOM NEG imitate foreign-DAT methods-DAT
    'They do not imitate foreign methods.'

ii. *Oni ne podražajut inostrannym metodov.
    they-NOM NEG imitate foreign-GEN methods-GEN

In. i. Oni ne upravljačut inostrannymi mašinami
    they-NOM NEG drive foreign-INST cars-INST
    'They do not drive foreign cars.'

ii. *Oni ne upravljačut inostrannym mašin.
    they-NOM NEG drive foreign-GEN cars-GEN

The paradigm for noun phrase complements of verbs given in (44) shows that while the genitive of negation can occur instead of the accusative (44a), it cannot occur instead of the dative and instrumental, which are lexical cases (see (44b) and (44c)).

An analogous paradigm holds for the partitive genitive, i.e., the partitive genitive cannot be assigned to the noun phrase complement of verbs that are lexical case assigners.

5. Concluding remarks.

In the previous section we proposed that Russian case structure can be accounted for in terms of three syntactic
conditions on the occurrence of specific cases (i.e. (23)-(24)) plus the requirement that lexical case be governed by a lexical case assigner, and two general principles, the Principle of Lexical Satisfaction (22) and the Principle of Uniform Interpretation (35). Suppose that the syntactic conditions apply to representations at S-structure. It remains to be determined at which level(s) of representation the two principles apply.

There is some plausibility in assuming that the Principle of Uniform Interpretation holds at LF—though there is no reason we know of why it could not hold at S-structure. Fixing the level(s) of representation at which the Principle of Lexical Satisfaction applies is somewhat problematic.

The lexical properties of subcategorization and selection which are expressed at D-structure must be satisfied at D-structure, and by the Projection Principle (see Chomsky 1982:38 for discussion) at S-structure and LF as well. However since case is not expressed in D-structure (see (1)), the Principle of Lexical Satisfaction with respect to lexical case can hold only at S-structure and LF. That is, the lexical property which determines lexical case assignment cannot be projected from LF or S-structure to D-structure. Thus the Projection Principle cannot be taken as a general principle governing all lexical properties, but rather those discussed in Chomsky 1982. Alternatively, we might consider replacing the Projection Principle with the Principle of Lexical Satisfaction—given that the latter holds for those levels of representation at which the various lexical properties are expressed. Note that the Projection Principle of Lexical Satisfaction, predicts that lexical properties once fixed do not change in the course of the derivation (i.e. from one level of representation to another)—noting the appropriate caveats regarding reanalysis and restructuring. Thus if this replacement is feasible, it should be the case that this constraint on derivations with respect to lexical properties follows from other considerations. For example, it may be that the rules of grammar are so constrained in both form and organization that this constraint on derivations follows as a consequence. Of course a concrete demonstration is required to validate this proposal. However this is not our purpose here—but rather to show how the analysis of case systems continues to provide a fruitful avenue for the exploration of general principles of grammar and their interaction.

FOOTNOTES

*We are indebted to Wayles Browne, Steve Franks, Morris Halle, Wayne Harbert, Howard Lasnik, and Gil Rappaport for their generous and insightful comments on an earlier version of this

1 For discussion of local movement, see Emonds 1976; Fiengo 1980; and Freidin (in preparation). On Wh-interpretation, see Freidin and Lasnik 1981 and the references cited.

2 See section 3 where the Case Filter is reformulated to account for the obligatoriness of case percolation.

3 When INFL is [-tense]--in which case S is infinitival--nominative case is not assigned to the subject NP. Thus for example, structures like the following are excluded by the Case Filter (2) since the complement subject contains phonetic material but is not marked for case. ((ii) is the Russian sentence corresponding to (i)).

(i) *Ivan persuaded Boris [S Masha to leave]
(ii) *Ivan ubedil Borisa [S Maša uexat']

4 Predicate nominals in Russian are also marked nominative. This would follow if the predicate nominal is not the complement of the copula byt' ('be'), but rather an immediate constituent of S. See Babby 1980a:171-172. Note that topic NP is marked nominative for the same reason.

Implicit in this analysis is the assumption that the predicate nominal is not assigned nominative case by an agreement rule: both the subject and predicate nominal are assigned the same case because they are in the same syntactic configuration. Given our analysis, there is in fact no motivation for case agreement rules (see Babby 1983a); agreement phenomena are handled by the rules Assign Case and Percolate Case only.

5 The prepositional quantifier po, which has a distributive meaning close to 'each' in English and is a dative case assigner, also assigns case to N*, independently of N\text{max} when used with Odin 'one' (see Babby 1983a and 1983b for details) (cf. footnote 18).

6 There are two kinds of semantic case. The first is assigned to NPs that are arguments of the verb (subject and direct object) and is the kind we have been looking at here. The second is assigned to NPs that are not arguments, and these are interpreted adverbially, e.g.:
INTERACTION OF LEXICAL AND SYNTACTIC PROPERTIES

(i) On Žel lesen
    he-NOM walked forest-INST
    'He was walking through (by way of) the forest.'
(ii) On prišel utrom
    he-NOM arrived morning-INST
    'He arrived in the morning.'

7 There are, however, certain exceptions. For example, when the following adjectives are used 'impersonally', their NP-complements have accusative case marking: zametno 'noticeable', vidno 'visible', slyšno 'audible', nužno 'necessary', bol'no (colloq) 'painful':

(i) Nam slyšno golosá
    Us-DAT audible-NEUT/SG voices-ACC
    'We can hear voices.'
(ii) Golovu bol'no
    head-ACC/FEM/SG painful-NEUT/SG
    'My head hurts.'

See note 15 for prepositions with ACC marking on their complements.

8 The X-analyses in (11) and elsewhere are left open regarding the number of projection levels occurring in N^max and other maximal projections. We have also made little attempt to fix the internal structure of maximal projections as this is not crucial for our analysis of case structure.

9 Conjoined NPs show that the barrier condition as formulated above must be sharpened so that D_i contains a lexical head. Thus in (i), percolation from NP_1 onto NP_2 and NP_3 is allowed, as it must be, because NP_1 does not constitute a D_i.

(i)

NP_1

NP_2 and NP_3

10 The limitation on percolation would not have to be stipulated if Assign Case were obligatory, since NP_1 would be obligatorily marked GEN, blocking percolation of NOM' from NP_1. However, making Assign Case obligatory is redundant with respect to the Case Filter (2), and furthermore would not prevent NP_1 from being marked NOM independently of NP_1 (section 3.2 for further discussion).

11 Note that examples like (15) and (17b) constitute significant counterevidence to Stowell's Case Resistance Principle:
Case may not be assigned to a category bearing Case-assigning features. (Stowell 1981:146)

Note that Russian adjectives have two sets of inflectional endings, called "long form" (LF) and "short form" (SF) in the traditional literature. An adjective used attributively must be in the long form and 'agrees' in case with the noun it modifies, whereas a predicate adjective can occur in either form as illustrated below.

(i) a. attributive LF: krasivaja devushka 'a pretty girl'
b. attributive SF: *krasiva devushka
(ii) a. predicate LF: Devushka krasivaja '(the) girl is pretty'
b. predicate SF: Devushka krasiva

If the long form is marked for case, while the short form is not (see Babby 1973, 1975), then the short form would be a [+N] category which is not marked for case in S-structure and would therefore constitute a problem for our statement of the case filter in (18). But if we assume, as does traditional grammar, that the short forms are nominative, then the problem disappears (see footnote 4 for structure of predicate nominals).

13 We adopt here the definition of the relation 'governs' given in Aoun and Sportiche 1981:(10):

(i) x governs y iff $\forall \phi$, a maximal projection, $\phi$ dominates x iff $\phi$ dominates y.

This requires that VP is the maximal projection of V. Otherwise, if the maximal projection of V were taken to be S or $\bar{S}$ as has been proposed (see Jackendoff 1977 and Marantz 1980), V would govern its subject (see Freidin 1983 for an independent argument that S and $\bar{S}$ are not projections of V). Alternatively we could specify the relationship holding between tensed INF and [+N]$^{\text{max}}$ in terms of sisterhood (see Lasnik and Freidin 1981).

14 This analysis presupposes that Assign Case may apply to $A^{\text{max}}$ (A=AP) as well as N$^{\text{max}}$. However this raises a problem with respect to the independent case marking of an attributive AP (i.e. within an NP, in contrast to predicate AP) as in (i) where $\alpha$ and $\beta$ indicate different case markings.

(i) [NP$^{\alpha}$ N [AP$^{\beta}$ A NP ]]

This yields an ill-formed case structure; in such constructions N and A always bear the same case (see (15) and (17b)), as predicted by our analysis of percolation. Therefore if AP is subject to the rule Assign Case, the application of the rule must be restricted to predicate AP, excluding attributive AP as in (i). In other words, only APs that are not immediately dominated by a [+N] category are subject to Assign Case. Alternatively, predicate APs might be analyzed as NPs with an empty head (cf. Babby 1973) for discussion), in which case there would be no need to allow the rule Assign Case to apply to AP.

While in general prepositions assign lexical case to their NP complements, there are prepositions whose complements are marked ACC. This cannot, however, be considered as an instance of lexical case assignment because these quantified noun phrases pattern like configurational rather than lexical case (see 26b), e.g.:

(i) Ivan opozdal na pjat' časov. / *časy.
   Ivan-NOM was-late on five-ACC hours-GEN hours-ACC
   'Ivan was five hours late.'
(ii) s pjat'ju časami / *časov.
    with five-INST hours-INST hours-GEN
    'with five hours'

We therefore assume that ACC case marking on complements of prepositions is an instance of configurational case (see Babby 1980b: footnote 6).

Note further that a preposition in Russian cannot be stranded no matter what case is assigned to its complement. Therefore, the Hornstein and Weinberg 1981 proposal that preposition stranding is prohibited by an oblique case filter as in

(iii) *[NP e ]
    oblique

does not generalize to the Russian data presented above.

Although no verb in Russian imposes lexical case on its subject, this phenomenon occurs in other languages—which is to be expected if this lexical property of verbs is similar to selection. In Icelandic for example, subjects of certain verbs must be marked for a specific case other than nominative (see Andrews (1982)); and in Malayalam there is a class of verbs which require dative subjects (see Mohanan (1982)).

(26.b.i) demonstrates that case agreement, which results from percolation under our analysis, has different properties
than number and gender agreement. In this example the case
marking on certain modifiers differs from the case marking on the
noun they modify—which is not easily accounted for in terms of
copying rules, whereas number and gender marking of modifiers al-
ways coincides with that of the noun they modify.

18 Note that constructions involving the prepositional
quantifier po, as in (i), diverge from the case pattern for
quantified N* as discussed above.

(i) po pjati gruš upalo s každogo devera
   per five-DAT pears-GEN fell from each tree
   'five pears fell from each tree'

In this construction po imposes dative case on the quantifier
as a lexical property. Significantly po does not impose dative
case on the head N of quantified N*. This (i) would be illformed
if the genitive form gruš were changed to the dative form grušam.
This suggests that po and the quantifier form a constituent inde-
dependently of the head N. See Babby 1983a and 1983b for a detailed
discussion of these constructions.

19 For discussion of INFL as the head of the 5 projection,
see Chomsky (1982) and Freidin (1983).

20 There is a small class of nouns in Russian like djadja
 'uncle' that are semantically masculine, but belong to the
'second declension' (-a declension), which is normally reserved
for nouns which are semantically feminine. Most semantically
masculine nouns belong to the 'first declension'. When a noun
like djadja is modified, the adjective picks out its semantic
gender, not its declension type, and has a 'masculine' ending,
i.e., ending appropriate for 'first declension' nouns because
'first declension' endings are naturally associated with semantic
masculine gender, e.g.:

   (i) moj syn 'my son (I-declension/MASC)'
   (ii) moja doška 'my daughter (II-declension/FEM)'
   (iii) moj djadja 'my uncle (II-declension/MASC)'
   (iv) *moja djadja

Note that this paradigm follows from the Principle of Uniform
Interpretation proposed above.

21 See Freidin 1978 for a parallel discussion involving the
strict cycle.

22 Note that under our analysis, passive morphology must
mask the [+V] feature of the passive predicate in some way so that an NP-complement of a passive predicate which is marked accusa-
tive violates the syntactic condition on the occurrence of accusa-
tive case (32b). Alternatively, we might conceptualize case
absorption by passive morphology as an erasure of case marking on
the NP-complement of a passive predicate. Some support for this
alternative comes from the fact that certain participles in
Russian take complements in the accusative case (see (15) and the
discussion which follows). Therefore the case absorption phenomenon
cannot be merely a consequence of the adjectival status of pas-
sive predicates—as can be claimed for English where adjectives
never occur with case marked NP-complements (unless a case assign-
ing element (e.g. of) intervenes as in (i)).

(i) [A proud of him]

This suggests that the ability of a lexical head to assign case
to its complement cannot be attributed solely to the [-N] feature
of the head (i.e. verbs and prepositions) and has been assumed
(cf. Chomsky 1980; Lasnik and Freidin 1981). Rather, in English
(as compared with Russian) there is an extra condition on the
lexical head which appropriately governs accusative case—namely
that it is [-N] as well as [+V]. In this respect German is like
English, except that some German adjectives assign lexical case
dative or genitive) to their NP-complements (see van Riemsdijk
(1981) where these facts are discussed and a rather different
analysis from ours is proposed).

23 This principle also predicts that where the genitive
is assigned lexically, the noun phrase complement of the negated
verb will not have the semantic properties of the genitive of
negation. We will not pursue this here because the judgments
are extremely subtle.

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THE SSC AND EMPTY CATEGORIES

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0. I will be concerned here with the question of whether there is any clear evidence that the SSC (or the SSC effect of Principle A of the Binding Theory) plays a role in regulating the distribution of empty categories. At least two types of empty category--traces arising through movement out of caseless NP positions and the EC's of clitic constructions--have commonly been held to be anaphors, hence subject to the SSC. Recent developments in the theory, however, suggest a need for reexamination of the evidence for according them this status. On the one hand, the rich set of grammatical principles currently assumed, e.g., in Chomsky (1981), appears to reduce the independent effect of the SSC for caseless traces to at least near vacuity. On the other hand, alternative accounts of clitic constructions have been advanced in recent studies by Jaeggli (1981) and Chomsky (1982) which require that the locality restriction on the clitic-EC relationship, previously attributed to the SSC, be assigned instead to some other principle. In the following, therefore, I will reexamine the evidence concerning the status of these two types of empty elements, caseless traces and clitic EC's, with respect to Binding Theory, and I will introduce some new evidence bearing on this issue.

1. The original motivation for assigning to certain instances of empty categories the status of anaphor was the observation that the domain to which passive and like movements are restricted is essentially identical to the domain of interpretive processes relating overt anaphors to their antecedents. Both can operate
in the constructions in (1)-(3), for instance, while both are prevented from operating in (4) and (5).

1. a. **John** [\( \text{VP} \) helped [\( \text{NP} \) himself]]
    b. **John** [\( \text{VP} \) was helped [\( \text{NP} \) \( \text{e} \)]]

2. a. **John** [\( \text{VP} \) voted for **himself**]
    b. **John** [\( \text{VP} \) was voted for [\( \text{NP} \) \( \text{e} \)]]

3. a. **John** expected **himself** to win
    b. **John** was expected [\( \text{S} \) [\( \text{NP} \) \( \text{e} \)]] to win

4. a. *\( \text{John} \) expected [\( \text{S} \) \( \text{Mary} \) to help **himself**]
    b. *\( \text{John} \) was \{likely \} for [\( \text{S} \) \( \text{Mary} \) to help [\( \text{NP} \) \( \text{e} \)]]

5. a. *\( \text{They} \) expected [\( \text{each other} \) would win]
    b. *\( \text{They} \) were \{likely \} [\( \text{NP} \) \( \text{e} \)]] would win

One of the fundamental insights of early EST was the observation that such apparent parallel restrictions on movements and interpretive processes could be captured in a general way rather than requiring mention in two separate components of the grammar, by assuming that the empty categories left behind by movement share properties of interpretation with overt elements. In particular, it was claimed in Chomsky (1976), for example, that traces are anaphors, and therefore subject to the same binding conditions that apply to reflexives and other overt anaphors, including some version of the SSC. Thus, both (4a) and (4b) for instance were held to be excluded because they involve SSC violations. In each case, an anaphor is free in the domain of a subject.

In more recent versions of the theory, however, the ill-formedness of (4a) and that of (4b) are no longer held to result from the same principle of grammar. In the typology of empty categories currently assumed, e.g., by Chomsky (1981:321), traces in case-marked positions such as the one in (4b) are no longer considered to be anaphors but variables. Consequently, (4b) is excluded not because it violates Principle A, but because it violates Principle C, which prohibits R-Expressions, i.e., names and variables, from being bound by antecedents in argument positions. The violation in (4b) is therefore not parallel to (4a), but to (6).

6. *\( \text{He} \) expected for [\( \text{Mary} \) to help **John**]

This change in the theory was occasioned by the discovery in
certain Romance languages, where the obscuring effects of subjacency are removed, that traces of WH-movement, which always occur in case positions, are not in fact subject to the SSC. The assignment of variable status to case-marked traces has the further merit of explaining why WH-movement should be movement to the nonargument COMP position, and it also yields the strong crossover facts.

It is clear that this development sharply reduces the responsibility of the SSC for restricting the distribution of traces. If case-marked traces are taken to be variables rather than anaphors, then only the output of movement from caseless positions remains potentially subject to the SSC effect. The caseless NP positions for English are generally held to be subject of infinitive and complement of a lexical category not specified as [-N] (i.e., complements of nouns, adjectives and passive participles). Attempted movement from these positions across a subject does in fact yield ungrammatical results. Consider the ill-formed examples in (7).

7. a. *He was \{likely \{expected \} \} [for Mary to try $\_t$ to win]
    b. *He was \{likely \{expected \} \} [for Mary to be certain $\_t$ to win]
    c. *He was \{likely \{expected \} \} [for it to be certain $\_t$ to win]
    d. *He was \{likely \{expected \} \} [for Mary to be hurt $t$]

However, a close inspection reveals that the effect of the SSC in these examples is superfluous, given the other principles envisioned in the theory. We find that each of the constructions in (7) is independently excluded by principles of grammar other than Principle A of the Binding Theory. (7a)-(7c) all involve subjacency violations, taking S to be a bounding node for subjacency in English, since movement has taken place across two S-boundaries. (7a) is further prohibited by the Empty Category Principle, since the trace is not properly governed. (I assume, contrary to Acun (1981), that the ECP is an independent principle of grammar and not an effect of Binding Theory). (7b) and (7d), moreover, violate the \(\Theta\)-criterion, since Mary occurs in a non-\(\Theta\)-position and cannot inherit a \(\Theta\)-role from a trace, $t$ being the trace of he.

More generally, in order to establish that caseless traces are in fact subject to the SSC, one must demonstrate that there exist ill-formed constructions of the form given in (8) whose ill-formedness is not attributable to violation of any principle of grammar other than the SSC. This turns out to be hard to do, at least.
8. \[ ^{*}\text{NP}_i \ldots [_{S}\text{NP}_j \ldots [_{NP}_i e] \ldots ] \]

[-case]

Ruled out as candidates for such a demonstration are first of all all constructions like (8) in which \([_{NP}e]\) is subject of an infinitive. The ECP rules out all cases of this type in which \([_{NP}e]\) is subject of an infinitive and shielded by \(S\) from external government, as in (7a). If \([_{NP}e]\) is subject of infinitive and not so shielded, by virtue of \(S\)-deletion, then the \(\Theta\)-criterion rules out all cases of (8) where \(\text{NP}_j\) is a lexical \(\text{NP}\) since predicates which control \(S\)-deletion and do not assign case to the subjects of their complements invariably fail to assign \(\Theta\)-roles to their own subjects. Consider again (7b). (The case in which \([_{NP}e]\) is the object of a passive participle and \(\text{NP}_j\) is lexical is similarly ruled out by the \(\Theta\)-criterion. Consider again (7d)). The remaining instance of caseless trace in subject position, represented in (7c), where the complement has undergone \(S\)-deletion and \(\text{NP}_j\) is not lexical but a pleonastic \(it\), is ruled out by subjacency.

Thus it is evident that the SSC effect for caseless traces is at least largely redundant on other principles. Bouchard (1982:199) goes so far as to state that "there does not seem to be a case where an \(\text{NP}\) trace violates the SSC effect without also violating another principle of grammar;" he assumes that the effect nonetheless does hold for \(\text{NP}\) trace, if only vacuously. However, it turns out that, contrary to Bouchard's statement, we are not required to take on faith the assertion that the SSC holds for \(\text{NP}\) traces; two of the possible instances of (8) remain to be examined. Consider first the case in which \([_{NP}e]\) is the complement of \([+N]\), i.e., of an adjective or noun. Examples are given in (9) in which extraction across a subject has been attempted from such a position.

9. a. \(^{*}\text{John} \) was expected for \([_{S}\text{Mary to burn }_{NP} \text{pictures} \text{t}]\)

b. \(^{*}\text{John} \) was expected for \([_{S}\text{Mary to be }_{AP} \text{proud }\text{t}]\)

Consider (9b); first of all, it is apparently well-formed with respect to \(\Theta\)-theory. The trace is also properly governed, and, assuming \(AP\) is not to be a bounding node, subjacency has not been violated. Moreover, the trace is caseless since governed by \([+N]\). (I provisionally adopt the standard assumption that if-insertion is optional, enforced by the Case Filter only for lexical \(\text{NP}\) complements of \([+N]\)'s). Thus, (9b) satisfies the structure in (8), and apparently does not violate any principle except for the SSC effect of Principle A, under the assumption that caseless traces are in fact anaphors. The same holds for (9a). Note, in particular, that we cannot attribute the ungrammaticality of (9a) to
subjacency, even though movement appears to have taken place across both an NP and an S boundary, since WH-movement is possible in analogous constructions, as in (9c).

9. c. Who was it expected for \( S_{\text{Mary}} \) to burn \\
\( NP_{\text{pictures of t}} \]

The reanalysis which must be assumed in order to prevent subjacency from being violated in (9c) is presumably also available in the case of (9a). Thus, in the context of standard assumptions, it appears that the ungrammaticality of (9a) and (9b) can be due only to the SSC.

Naturally, however, these examples lose their significance for the SSC if we characterize of-insertion as obligatory where applicable, as Bouchard does on independent grounds. (9a) and (9b) are then ruled out simply because obligatory of-insertion has failed to apply. (If it were to have applied in these examples, the traces would become case-marked, and their occurrence would then be regulated by Principle C.)

This brings us to a final possible instance of (8). Consider the D-structure in (10a).

10. a. \( NP \) was \{likely \{expected \} for \( S_{NP} \) to be \\
hurt John\]

Both of the subject positions in (10a) are non-\( \Theta \)-positions and are accordingly lexically empty; John occurs in a \( \Theta \)-position, as required by the \( \Theta \)-criterion. Thus, this is a well-formed D-structure. Since the object position is caseless, however, the Case Filter requires that John be moved. John is subjacent to two \( \Theta \)-positions, either of which is therefore suitable as a landing site for such a movement. If movement is to the innermost of these positions, the outermost will be filled with the pleonastic it, yielding the grammatical sentence in (10b).

10. b. \( NP_{it} \) was \{likely \{expected \} for \( S_{NP John} \) to be \\
hurt t\]

On the other hand, if movement is to the outermost NP position, then the innermost NP position should be capable of being filled by the pleonastic it, as in (10c).

10. c. \(*NP_{John} \) was \{likely \{expected \} for \( S_{NP it} \) to be \\
hurt t\]
Thus, there does seem to be at least one case, after all, in which the SSC constrains the distribution of NP-trace, independent of other principles of grammar, and we must conclude therefore on empirical grounds that such traces are in fact anaphors, subject to Principle A. Still striking, however, is the marginality of the independent content of this claim. Aside from the SSC effect, which is clearly nonsuperfluous only for the construction in (10c), the content of Principle A is irrelevant for caseless traces; their sensitivity to the PIC effect cannot be evaluated, since the position of subject of tense—the only position independently covered by that effect—is a case-marked position. Nor, for that matter, is it even necessary to label caseless traces anaphors in order to insure that they will be coindexed with antecedents in argument positions, since this requirement may be derived from the Q-criterion.

I will turn next to the problem of apparent SSC effects involving the second type of empty category under consideration: the empty category occurring in clitic constructions. Apparent SSC effects for clitic EC’s are exemplified in the Portuguese sentence in (11b), from Chomsky (1976). Similar phenomena are found in a number of languages, and from the earliest EST accounts they have been explained by assuming that an operation of clitic movement leaves behind an anaphoric trace, subject again to the same binding conditions which regulate overt anaphors. Compare (11b) with (4a), to see that this is a reasonable assumption.

11. a. Paulo [\(\psi_{NP}\) nos viu [\(S\) [\(\psi_{NP}\) examinar a garota]]]
   Paulo cl. saw examine the girl
   'Paulo saw us examine the girl.'

b. *Paulo [\(\psi_{NP}\) nos viu [\(S\) o especialista [\(\psi_{VP}\) examinar
   \(\psi_{NP}\)]]]]
   Paulo cl. saw the specialist examine
   ('Paulo saw the specialist examine us.')

These empty categories differ from the traces of passive and like movements in two respects. First, they occur in normally case-marked positions, for example, as objects of verbs. Second, the positions in which their clitic antecedents occur are nonargument positions. Thus, treating them as anaphors requires a two-fold elaboration of the theory. First it entails a more complex typology of anaphors with respect to requirements for antecedents; a distinction must be drawn between anaphors which require argument
antecedents and those which require $\bar{A}$-antecedents. Second, it requires either the positing of an auxiliary mechanism of case absorption, to ensure that the position of the EC will be a caseless one, or modification of the claim that anaphoric traces are necessarily caseless.

Now, it is in principle possible that the locality condition holding between a clitic and the associated empty category, the locality condition reflected in (11), for instance, is in fact independent of the SSC, and that the apparent parallel between (11b) and (4a) is illusory, as the parallel between (4b) and (4a) has turned out to be. Two alternative analyses of clitic constructions have in fact been suggested in recent literature which seem to entail such a conclusion. In the analysis of Jaeggli (1980) and Chomsky (1981:276), the EC in clitic constructions like (12) is held to be not trace but PRO.

12. \[ \text{VP}_{cl.} \text{ V } [_{NP}^e] \]

PRO is able to appear in a structurally governed position (object of a verb) because the government of the verb is 'absorbed' by the clitic co-occurring with PRO in VP. Under such an analysis, PRO would also be allowed to occur as subject of infinitive in (11a), for example, even though structurally governed by viu, because there is a clitic present within the same lowest maximal projection, VP, to 'absorb' government in the relevant sense. The local nature of the relationship between the clitic and the empty category is insured under this analysis, and (11b) is excluded, by the requirement that the two elements (clitic, PRO) be structurally governed by the same verb (i.e., occur in the same minimal VP) in order for the clitic to be able to 'absorb' verbal government, leaving the EC ungoverned.

In Concepts and Consequences, Chomsky (1982:87) suggests briefly a possible alternative analysis, under which the empty category in clitic constructions is little pro; he proposes that opacity effects of the sort reflected in (11b) may be derived under this assumption from the local determination requirement for pro, taking government by a clitic to be necessary for local determination by that clitic.

Both of these analyses, then, appear to share in common the claim that the locality condition which has been violated in (11b) is not a binding condition (more particularly, not the SSC). Rather, the clitic must simply co-occur with the EC in the same minimal VP, either in order to absorb government, if we take the EC to be PRO, or in order to serve as a local determiner, under the assumption that the EC is pro. Under either of these analyses, the apparent parallel between (11b) and (4a) is to be considered accidental, since two different conditions are involved.
In the following I will present two arguments, one cross-linguistic and one diachronic, against these alternatives and in support of the position that constructions like (11b) do in fact reflect a true SSC effect. In each case I will first show that there are circumstances under which the SSC effect is selectively suspended for overt anaphors. I will then show that the locality condition regulating the relationship between clitics and the associated empty categories also fails to hold under identical circumstances. If we maintain that the locality conditions operating in the two cases are in fact distinct, then it is impossible to account for these striking similarities in a general way.

The first argument involves the German sentences in (13), from Reis (1976), and the French sentences in (14), from Aoun (1981).

13. a. **Hans lässt [S Fritz ihn/*sich töten]**
   Hans₁ lets Fritz him₁/*self₁ kill (Reis 1976:29)

   b. **Der Chef lässt [S die Leute für sich/him arbeiten]**
   the boss₁ has the people for self₁/him₁ work (Reis 1976:27)

   c. **Nur mit Unbehagen liess Fritz [S den Reporter aus ihm/*sich einen Helden machen]**
   Only with reluctance let Fritz₁ the reporter out-of him₁/*self₁ a hero make (Reis 1976:31)

14. a. **Marie a laissé [V lire ces romans][S à Paul**
   Marie aux let read these novels to Paul
   V dans la cuisine]
   in the kitchen
   'Marie let Paul read these novels in the kitchen.'

   b. **Marie y₁ a laissé [V lire ces romans ] [S à Paul V t₁]**

   c. **Jean fera [V mettre ce livre] [S à Pierre V**
   Jean will-make put this book to Pierre
   sur l'étagère]
   on the shelf
   'Jean will make Pierre put this book on the shelf.'

   d. **Jean y₁ fera [V mettre ce livre] [S à Paul V t₁]**
The German facts, somewhat oversimplified for convenience of exposition in the brief time that we have, are basically these: As illustrated by (13a), the SSC holds in German for overt anaphors in causative constructions. A reflexive occurring as direct object of the complement in such a construction cannot have the higher subject as its antecedent. However, the SSC effect is selectively 'suspended' for reflexives (although not for pronouns) in constructions of this kind, just in case those reflexives occur within nonsubcategorized prepositional phrases in the complement, as in (13b). As (13c) shows, reflexives within PPs which are subcategorized by the complement predicate are not available for binding to complement-external antecedents.

In Harbert (1983a) I present an account of the contrast between (13b) and (13c), based on proposals adopted from Aoun (1981). I claim that the difference between them is due to the role played by argument structure in the definition of accessible SUBJECT for purposes of Principle A. The account goes roughly like this: it is assumed that predicates assign argument indices to the phrases they subcategorize. Thus, the PP in the complement of (13c) receives an argument index from the complement predicate. By hypothesis, that index in turn percolates both to the preposition heading PP and to its object. The PP in the complement of (13b), on the other hand, receives no argument index, since that PP is not subcategorized. Hence, the prepositional object within that PP receives no index by percolation. Verb Raising, for which I assume a formulation like that of Evers (1975) then raises the verb of the complement; the complement subject consequently becomes an argument of that verb, and is thus eligible to receive an argument index from it. Finally, I assume, following Aoun (1981), that argument structure plays a role in the definition of accessible subject for purposes of Principle A of the Binding Theory, such that, if a subject bears an argument index it constitutes an accessible subject only with respect to those elements in its domain which share that index. Thus, the complement subject in (13c) constitutes an accessible subject for the reflexive, since they share an index, and the reflexive may consequently not be free in the complement. The complement subject in (13b), on the other hand, is not an accessible subject for the reflexive, which does not share its argument index, and the reflexive may therefore be free in the complement.

The precise mechanics of the analysis are not as important for present purposes as the simple observation that there is an asymmetry between subcategorized and nonsubcategorized PPs in causative complements in German—the SSC effect is suspended just for overt anaphors occurring in the nonsubcategorized ones—and that a strikingly similar asymmetry is found in French causative constructions, involving the locality condition which regulates the relationship between clitics and the associated empty categories. As illustrated by (14b), it is possible for a preposi-
tional clitic in a causative construction in French to occur outside of the complement containing the associated empty category, just in case the complement has undergone V-preposing and the position occupied by the EC is not a subcategorized position. Compare (14b) with the ungrammatical (14d), in which the propositional clitic occurring outside the complement is associated with an EC in a subcategorized position.

In conclusion, then, there is a locality condition, the SSC, which holds between overt anaphors and their antecedents and which is suspended in causative constructions in German just in case the anaphor occurs in a phrase not subcategorized by the complement verb. Provisionally, we have accounted for this by incorporating reference to argument structure into the definition of accessible subject. There is also a locality requirement holding between clitics and associated empty categories in French (as well as other languages), and this condition, too, is suspended in causative constructions just in case the EC occurs in a nonsubcategorized position. Now, if we suppose that the locality condition in question here is in fact the SSC, then we can account for the asymmetry between (14b) and (14d) in the same way as the one between (13b) and (13c)—i.e., by making Principle A sensitive to argument structure under certain circumstances. (This is essentially Aoun's account.) On the other hand, if we maintain that the locality requirement for clitic ECs results from some principle distinct from the SSC, as under the accounts of Chomsky and Jaeggli, the convergence of (13) and (14) remains a mystery.

The second argument in favor of the claim that clitic EC's are subject to the SSC is a diachronic one, drawn from the history of German. The logic of this diachronic argument is essentially the same as that of the preceding argument. Namely, that there are certain highly specific similarities between the distribution of clitic EC's and the distribution of overt anaphors—in the present instance, similarities in the way that the distribution changes in the course of time—and these similarities can be captured satisfactorily only by assuming that both elements fall under the same principle of binding theory.

Overt anaphors in German, i.e., reflexives, are subject to SSC effects, with the exception just discussed. Further illustrations of the SSC effect for overt anaphors are given in (15).

15. a. Er bat seinen Freund \[\text{PRO}_{j} \text{ihr/*sich zu helfen}\]
he_{i} asked his friend_{j} him_{i}/*self_{i} to help
'He asked his friend to help him.'

b. Lassen Sie [mich Ihnen/*sich helfen]
Let you_{i} me you_{i}/*self_{i} help
'Let me help you.'
Now, significantly, in earlier stages of German this was not the case. As illustrated by the Middle High German and Early Modern German examples in (18), reflexives in complement direct object position at one time could be bound to higher clause antecedents across a complement subject, in violation of the SSC.

16. a. er_{i} lie [die clären sich_{i} verhern]
   he let the beauties self_{i} conquer
   (Konrad, Trojanerkrieg 1477)

b. diu künegin_{i} den_{j} [PRO_{j} sich_{i} külsen] bat
   the queen_{i} that-one_{j} self_{i} to-kiss asked
   (Wolfram, Parzival 806:28)

c. der Teufel_{i} lest [ein Weib sich_{i} zwingen]
   the devil_{i} lets a woman self_{i} compel
   (H. Sachs, cited in Grimm 1898:743)

That is, for overt anaphors (and apparently for pronouns as well) the SSC appears not to have held in early German. Comparative evidence from other Germanic languages, including Gothic and Icelandic, confirms this. So we have evidence for a syntactic change in the history of German, from an initial stage at which subject NPs did not induce opacity effects to a stage at which they do. (I have discussed these developments for German and similar ones for other languages in Harbert (1983b, 1983c).)

Now, consider the following facts about clitic placement in German. In both Modern German and Middle High German, the normal relative order for non-pronominal objects was Dative (Indirect Object)-Accusative (Direct Object). (With respect to this claim for Modern German see Thiersch (1978).) For Middle High German see Paul (1968)) However, in the case of pronominal objects, in both languages this basic Dative-Accusative order is maintained only when the accusative object is stressed, as in (17a), (17c).

17. a. Er gab mir das
   He gave me-Dat that-Acc (stressed)

b. Er gab es mir
   He gave it-Acc (unstr.) me-Dat

c. ze ware sagen ic dir daz
   in truth say I you-Dat that-Acc (unstr.)
   (Rolandslied 7465)

d. ze ware sagen ic ez iu.
   in truth say I it-Acc (unstr.) you-Dat.
   (Rolandslied 267)
18. a. *Lass dich [mich___sehen]
   Let you me see
   'Let me see you.'
   
   b. *Sie bat sich ihn; [PRO___zu küssen]
   she asked self him to kiss
   'She asked him to kiss her.'

When the accusative pronoun is unstressed, as in (17b) for Modern German and (17d) for Middle High German, it occurs to the left of the dative object. This leftward displacement of unstressed accusative pronominal objects appears to be essentially identical to the leftward displacement of object clitics that one finds in Romance languages and I will assume without further argument that the unstressed pronominal forms in (17b) and (17d) are in fact clitics, which occur as the leftmost elements in VP in underlying structure—that is, prior to the operation of the verb-second rule—and that they are associated with empty categories in the direct object position—the position occupied by das in (17a). This is essentially the analysis of Thiersch (1978), although his analysis involves clitic movement.

Now, in Modern German, as in other languages, the relationship between the clitic pronoun and the associated DO position is subject to a locality condition which prevents an unstressed accusative clitic pronoun from occurring outside the complement which contains the associated direct object EC. Consider the examples in (18). By the way, I have selected examples in which the element separating the two—e.g., the complement subject in (18a)—is itself pronominal, in order to avoid the complicating effects of possible stylistic rightward movement.

Thiersch (1978) in a traditional EST approach under which the EC associated with clitics is taken to be an anaphoric trace, interprets the restriction reflected in (18) as an SSC effect. As we have seen, however, other interpretations of the locality condition in question are possible, and have been suggested in connection with other languages.

Thus, to establish with confidence that the condition reflected in (18) is in fact the SSC effect, it will be necessary to adduce further evidence, showing that the apparent parallels between these examples and the examples in (15) cannot be attributed to coincidence. Diachrony provides us with an important potential source for such evidence. We have observed that the SSC effect did not hold in earlier stages of German for overt reflexives or pronouns, but that it does hold for them in Modern German. Now, if we are correct in construing the locality condition in (18) as the SSC effect, then we should expect to find that it was suspended here, too, in earlier stages of German. That is, we should expect Middle High German and Modern German to
differ with respect to possibilities for clitic placement, just as they differ with respect to possibilities for reflexive binding. Under this analysis it is predicted that Middle High German constructions corresponding to the ungrammatical Modern German sentences in (18) should have been grammatical, just as the Middle High German constructions corresponding to the ungrammatical reflexive versions of (15) were grammatical.

These predictions in fact appear to be borne out. In each of the pre-Modern German sentences in (19), a pronominal direct object of the complement verb occurs to the left of the complement subject—in apparent violation of the SSC. In each case, this order is impossible in Modern German, as (18) shows. Additional examples of the order of elements found in (19) are provided by Grimm (1898:747ff.), who characterizes it as the normal order in such constructions in pre-Modern German.

19. a. lâ dich [mich___ezzen]
    let you me eat
    'Let me eat you.'
    (Kaiserchronik 949. Massmann emends to mich dich!)

b. Ich lass mich [dich___nicht pochen]
    I let me you not beat
    'I won't let you beat me.'
    (Uhland 1:24, cited in Grimm 1898:742)

c. du sollt dich [in___sehen] lân
    you should you him see let
    'You should let him see you.'
    (Herzog Ernst 5153. A second ms. has in dich)

d. nu lât si <ch>[mich___sehen]
    now let her me see
    'Now let me see her.'
    (Nibelungenlied (Ca) 1201:4. sich is presumably to be emended to si. Other mss. have mich si)

e. Ernst sich inj [FROj___küßen] bat
    Ernst self him to-kiss asked
    'Ernst asked him to kiss him.'
    (Ern 3430; cited in Grimm 1898:387)

In conclusion, then, pre-Modern German appears to have differed from Modern German not just with respect to the distribution of overt anaphors but also with respect to the distribution of clitic EC's. Under the assumption that the same locality condition, the SSC, regulates the distribution of both elements, the co-occurrence of these two differences is not surprising. It is unexpected, however, under analyses in which clitic EC's and overt anaphors do not fall under the same locality principle.
FOOTNOTES

1 That variables are case-marked follows from the assumption that case has the property of making arguments visible at LF, the level of logical representation. See Aoun (1981) for an account under which case-marked traces are still held to be (A)-anaphors, which are, however, immune to normal SSC effects because of their concurrent status as R-expressions.

2 Responsibility for the apparent NIC effect for case-marked traces was transferred to a principle separate from binding theory—the ECP. Recent alternative accounts, however, e.g., that of Aoun (1981), have attempted to reduce the ECP to an effect of Binding Theory once again.

3 However, as the following example shows, pleonastic subjects result in only a rather weak SSC effect in the case of overt anaphors. See Freidin and Harbert (1983) for discussion.

i) ?They expect [it to be reported to each other [that John is crazy]]

It is not clear why (i) and (10c) should contrast so sharply with respect to grammaticality, if both involve parallel SSC violations.

4 For a discussion of other factors influencing the relative acceptability of reflexives and pronouns in such constructions, see Reis (1976).
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