Maximal extended projections as domains for movement*

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The empirical claim of this paper is that contrary to Chomsky (1986) there is no asymmetry between extraction out of subjects, objects and adjuncts. Instead, extraction out of subjects, objects and adjuncts is allowed or disallowed depending on the position the subject, object or adjunct occurs in. My proposal makes three empirical predictions that diverge from Chomsky (1986): 1. There are objects that do not allow subextraction. *That*-clauses co-occurring with object expletives, the complements of manner of speech verbs and the complements of nouns are examples of this kind. 2. There are subjects that allow subextraction. Subjects in SpecCP (Torrego 1985) are an example. 3. My proposal also predicts that adjuncts in SpecCP allow subextraction.

I propose that maximal extended projections such as DP, CP and AgrOP are potential barriers — AgrOP is sandwiched between two VP-shells. Extraction out of DPs and CPs is possible if they move into the specifier of a maximal extended projection. Hence extraction out of objects in SpecAgrOP is possible but extraction out of objects in SpecVP or SpecNP is not possible. Also, extraction out of subjects in SpecCP is possible but extraction out of subjects in SpecVP or SpecIP is not possible. Finally, adjuncts are base-generated in the specifier of a non-maximal extended projection. Hence extraction out of adjuncts in base position is not possible but extraction out of adjuncts in SpecCP is possible.

The difference between local and non-local movement (otherwise known as A- and A′-movement) is also defined in terms of maximal extended projections: Movement within maximal extended projections is local movement. Movement out of a maximal extended projection is non-local movement. This definition predicts contrary to Chomsky (1981) that CP-internal subject movement to SpecCP has the properties of A-movement (see also Déprez 1989). This accounts for the *that*-trace effect and the distribution of weak pronouns in German (Travis 1984, Déprez 1991). My proposal also predicts that DP-internal movement to SpecDP has the properties of A-movement. This accounts for quantifier scope in Italian (Longobardi 1991).

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The structures I am proposing are compatible with Kayne's (1994) antisymmetry proposal.

1 Introduction

Chomsky (1986) claims that there is an asymmetry between extraction out of objects on the one hand and extraction out of subjects and adjuncts on the other hand. Extraction out of objects is possible whereas extraction out of subjects and adjuncts is not possible. The data in (1) is taken to verify this claim. In (1a) extraction out of a sentential object is grammatical, in (1b) extraction out of a sentential subject is ungrammatical and in (1c) extraction out of a sentential adjunct is ungrammatical.

(1) a. who$_i$ do you think [that John likes t$_i$]
b. *who$_i$ does [that Mary likes t$_i$] bother you?
c. *what$_i$ did Mary leave [after he explained t$_i$]

In order to account for the data in (1) Chomsky (1986) establishes a correlation between extractability and theta-marking under c-command. Roughly, maximal projections allow subextraction[1] if they are theta-marked under c-command. Objects are theta-marked under c-command, hence they allow subextraction. Subjects are theta-marked but not under c-command, hence they do not allow subextraction. Adjuncts are not theta-marked at all, hence they do not allow subextraction.

My claim is that there is no asymmetry between subjects, objects and adjuncts with respect to subextraction. I argue that the cases in (1) are only one side of the coin and that that the other side of the coin also exists, namely that there are cases in which objects do not allow subextraction and that there are cases in which subjects and adjuncts allow subextraction. Subjects, objects and adjuncts have in common that they allow subextraction if they are in the specifier of a maximal extended projection and they disallow subextraction if they are in the specifier of a non-maximal extended projection. All the syntactic structures I propose are compatible with Kayne's (1994) antisymmetry proposal, in particular I do not assume any right-adjunction.

The data: I discuss various cases in which extraction out of objects is not possible. One example are *that*-clauses co-occurring with object expletives as in (2b).

[1] I use the term *subextraction* in the following way: An XP allows *subextraction* if extraction out of XP is possible.

(2) a. who$_i$ do you believe [that John likes t$_i$]
b. *who$_i$ do you believe *it* [that John likes t$_i$]

I propose that the *that*-clause is in SpecVP and that the expletive is in SpecAgrOP. It follows from the bounding theory I am proposing that subextraction out of objects in SpecVP is not allowed. If the expletive is not present the *that*-clause moves to SpecAgrOP and subextraction is possible.

The complements of manner of speech verbs as in (3) constitute another example in which subextraction out of an object is ungrammatical.

(3) ?*who$_i$ did you whisper [that you saw t$_i$]

I propose that *that*-clauses selected by manner of speech verbs remain in SpecVP because AgrOP is not projected. Again, the bounding theory proposed in this paper accounts for the lack of extractability.

Sentential objects of nouns are another example in which subextraction out of objects is not allowed. Contra Stowell (1981) I propose that not only the infinitival clause in (4a) but also the *that*-clauses in (4b–c) are in the syntactic object position of the noun.

(4) a. ??who$_i$ did John see an attempt [to portray t$_i$]?
b. ?*who$_i$ did John challenge the claim [that Bill saw t$_i$]?
c. *who$_i$ did John acknowledge the fact [that Bill saw t$_i$]?

Again, the bounding theory proposed in this paper accounts for the lack of extractability if the object stays in SpecNP. I also discuss the wh-island effect as in (5a) and the possessor island effect as in (5b).

(5) a. ?*what$_i$ do you wonder [when Bill fixed t$_i$ t]
b. *who$_i$ do you like [John's picture of t$_i$]

In both cases extraction is ruled out because the respective specifier position is filled. It follows from my proposal that extraction out of DP proceeds through SpecDP as an escape hatch as much as extraction out of CP proceeds through SpecCP as an escape hatch. And I discuss extraction out of DPs with prenominal genitives as in (6).

(6) a. *[what bread]$_i$ did John eat [Bill's loaf of t$_i$]
b. [which theory]$_i$ did you read [Kripke's proof of t$_i$]

Pustejovsky (1985) notes that the prenominal genitive in (6a) is not part of the theta grid of the noun whereas the prenominal genitive in (6b) is part of the theta

grid of the noun. My proposal accounts for the contrast in (6) if the following structure is assumed: The prenominal genitive in (6a) is in SpecDP. Hence extraction out of DP is blocked. The prenominal genitive in (6b) is in SpecNP. Hence SpecDP can serve as an escape hatch for movement out of DP. I also discuss the *that*-trace effect as in (7).

(7) *who$_i$ do you think [that t_i came]

In my analysis the ungrammaticality of (7) does not follow from bounding theory but from agreement requirements in English. According to my proposal subject movement out of CP proceeds through SpecCP as an escape hatch. Subject movement to SpecCP is local movement. In English, local movement triggers Spec head agreement in CP and overt complementizers violate Spec-head agreement (Pesetsky 1982).

Furthermore I discuss cases in which subextraction out of subjects is possible. Spanish subjects in SpecCP (Torrego 1985) as in (8a) are an example. They contrast with subjects in SpecIP as in (8b) which do not allow subextraction.

(8) a. [de que autora]$_i$ no sabes [que traduciones t_i] han ganado
'By what author don't you know what translations have won

premios internacionales.
international awards?'

b. *esta es la autora [de la que]$_i$ [varias traduciones t_i] han
'this is the author by whom various translations have

ganado premios internacionales
won international awards.'

It follows from the bounding theory proposed in this paper that subextraction out of subjects in SpecCP is grammatical.

Next I discuss subextraction out of adjuncts. My proposal predicts that subextraction out of adjuncts in SpecCP as in (9a) is grammatical. This prediction is not borne out. I restrict the proposal in such a way that the ungrammaticality of (9a) is accounted for.

(9) a. *this is the man [who$_i$ you were wondering [[which picture of t_i]$_j$ John was doing the laundry [in t_j]]]

b. *this is the man [who$_i$ you thought [that John was doing the laundry [in a picture of t_i]]]

In the second part of the paper I introduce the distinction between local movement and non-local movement. Local movement does not leave any maximal extended projections, non-local movement is movement out of a maximal extended projection. Local movement has the properties of A-movement, non-local movement has the properties of A′-movement.

According to the definition of local movement CP-internal subject movement to SpecCP is local movement. I discuss two cases that support this claim: the *that*-trace effect (Déprez 1989) and weak pronouns in German (Travis 1984, Déprez 1991). In German, weak subject pronouns occur in SpecCP whereas weak object pronouns do not occur in SpecCP. (German *es* 'it' is a weak pronoun.)

(10) a. *Es* hat den Wein getrunken.
it-nom has the-acc wine drunk
'it drank the wine.'

b. **Es* hat der Mann getrunken.
it-acc has the-nom man drank
'The man drank it.'

The contrast in (10) is accounted for if weak pronouns are restricted to local movement. Subject movement to SpecCP is local whereas object movement to SpecCP is non-local. The object leaves AgrOP.

It also follows from the definition of local movement that DP-internal movement to SpecDP is local. This accounts for quantifier scope in Italian (Longobardi 1991). In (11), the wh-phrase takes wide scope over the universal quantifier.

(11) [Di quanti studenti]$_i$ consigli [t_i la presentazione t_i [ad ogni
of how many students do you recommend the introduction to every

nuovo professore]]?
new professor

The wide scope of the wh-phrase over the universal quantifier is accounted for if the wh-phrase reconstructs into SpecDP rather than into its NP-internal base position. This follows from my proposal. Movement into SpecDP is local and does not exhibit any reconstruction effects. Movement out of SpecDP is non-

local and exhibits reconstruction effects. Notice that it also follows from my proposal that extraction out of DP obligatorily proceeds through SpecDP as an escape hatch.

Finally I discuss passive and raising. It follows from my proposal that object movement to SpecIP is local if AgrOP or the subject VP-shell or both are not projected. My analysis incorrectly predicts that raising is non-local movement. This problem is avoided by adopting Hyde's (1997) proposal that raising is a control phenomenon and not a movement phenomenon.

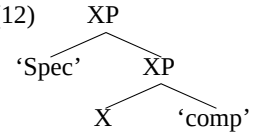
2 Maximal extended projections as potential barriers

Bounding theory specifies the constraints that restrict movement. Before I introduce the movement constraint and the definitions of *barrier* and *escape hatch* it is useful to specify what kind of constituent structure I adopt.

2.1 Constituent structure

I adopt Kayne's (1994) antisymmetry proposal. According to Kayne (1994) specifiers are adjoined to maximal projections. Projections have at most one Spec position and one complement position. Additional adjunction to maximal projections is ruled out — in particular, right-adjunction to XP is ruled out. The linear order within a maximal projection is universally Spec-head-comp.

(12)

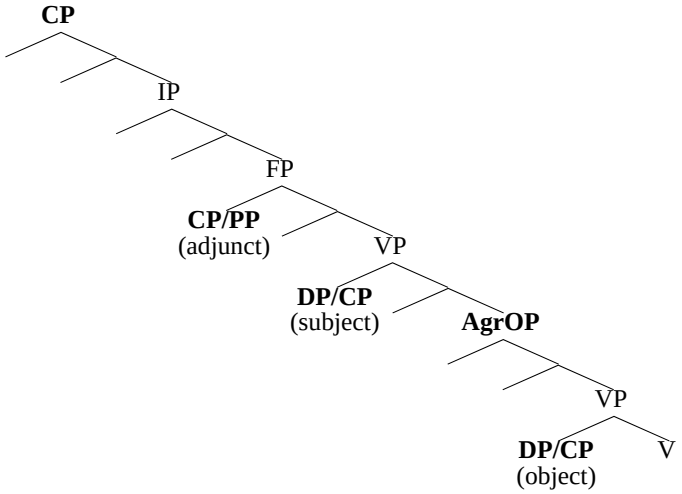


I also adopt the VP-internal subject hypothesis (Kuroda 1988, Sportiche 1988). Subjects are base-generated in SpecVP. And I adopt a modified version of Larson's (1988) VP-shell hypothesis. I assume that the objects of verbs are base-generated in the specifier of a VP-shell. This allows for uniform theta role assignment. Theta roles are features that are checked off in Spec head configurations.[2] Additionally I assume that AgrOP is sandwiched between the VP-shell that hosts the subject and the VP-shell that hosts the object. I assume that sentential modifiers are base-generated in the Specifier of the functional

[2] Larson assumes that non-sentence-final objects are base-generated in SpecVP whereas sentence-final objects are base-generated in complement position.

projection FP which dominates the upper VP-shell as in (13).[3] Maximal extended projections are in bold face. They are defined in the next section.[4]

(13)



The sentence-final position of phrasal adjuncts is achieved by moving the upper VP-shell into the specifier of an additional functional projection that directly dominates FP as in (14).

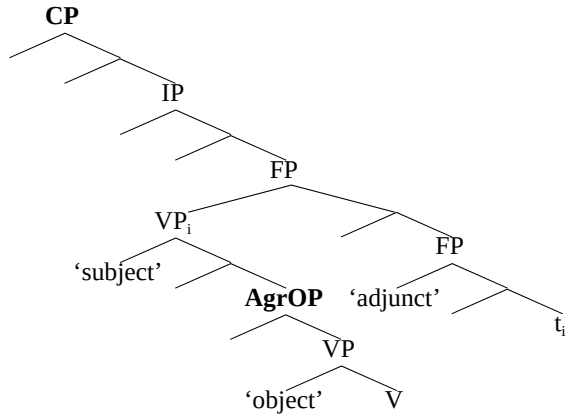
[3] Assuming that adjuncts are in SpecFP does not account for bound variable readings. In (i) the quantificational object *nobody* can bind the pronoun *he* inside the adjunct.

i. I invited *nobody* [before *he* met you]

The availability of the bound variable reading of *he* is an indication that *nobody* c-commands *he*. Bound variable readings are only possible if the quantifier c-commands the pronoun (Reinhart 1976). Based on these binding facts Larson (1988) proposes that adjuncts are base generated in the complement position of the lower VP-shell. In the section on *manner of speech verbs* I show that I cannot adopt VP-internal adjuncts if certain verbs do not project AgrOP. If AgrOP is not projected extraction out of VP-internal adjuncts is incorrectly predicted to be well-formed.

[4] More precisely IP consists of AgrSP and TP (split INFL hypothesis, Pollock 1989). However in this paper I ignore the split INFL hypothesis because it is irrelevant for the constraints on movement.

(14)



The assumption that the sentence-final position of sentential adjuncts is achieved by leftward movement of the VP is similar to Larson's (1988:347) analysis of heavy NP-shift. Larson argues that heavy NP shift does not involve rightward movement of the heavy NP but leftward movement of the light predicate. In Larson's analysis the light object and the predicate form a V′-constituent which moves leftward. Hence, a better name for heavy NP-shift is heavy NP-stranding or light predicate raising.

(15) Max [$_{V'}$ sent to me]$_i$ *the longest letter anyone had ever seen* t$_i$

The position of adjuncts also depends on their heaviness. Sentential adjuncts do not occur in preverbal position because they are heavy. Light adjuncts such as lexical adverbs occur in both preverbal and sentence-final position in English.

(16) a. He *slowly* left the room.
b. He has *slowly* left the room.
c. He has left the room *slowly*.

Manner adverbs such as *slowly* are presumably base-generated in the head of the functional projection that is sandwiched between the upper VP-shell and AgrOP. Their sentence-final position is achieved by moving AgrOP into the specifier of FP. In the case of lexical adverbs no second functional projection is needed.[5]

(17) a. He [FP slowly [AgrOP left the room]].

[5] I have heard (Kayne class lectures at Rutgers, spring 1997) that Sjef Barbiers has made the very same proposal for lexical adverbs in a talk given at CUNY. However I was not able to obtain any further information on Sjef Barbiers' work.

b. He has [FP slowly [AgrOP left the room]].
c. He has [FP [AgrOP left the room]$_i$ slowly t_i].

2.2 Maximal extended projections

Extended projections are defined in terms of categorial features (Grimshaw 1991). The idea is that functional projections are extended projections of lexical projections. Functional projections share the categorial features of the projection in complement position. Hence DP is an extended projection of NP, AgrOP is an extended projection of the lower VP-shell and CP and IP are extended projections of the upper VP-shell. Also, every projection is an extended projection of itself.

(18) Extended projection:
α is an extended projection of α or
α is an extended projection of β iff
a. β is the complement of α and
b. α and β share categorial features and
c. if α is a lexical projection, β is a lexical projection.

Condition (c) of definition (18) ensures that the upper VP-shell is not an extended projection of AgrOP. At the same time it ensures that the upper VP-shell is an extended projection of the lower VP-shell if AgrOP is not projected.

(19) Maximal extended projection:
α is a maximal extended projection iff
α is not dominated by an extended projection of α.

According to the definition in (19) and the constituent structure in (13) subjects, objects and adjuncts are maximal extended projections. AgrOP and the matrix node of a sentence are also maximal extended projections.

2.3 Barriers

Barriers are defined in terms of maximal extended projections. Maximal extended projections are potential barriers. Hence, CPs, DPs and AgrOP are potential barriers.

(20) Barrier:
α is a barrier for β iff
a. α is a maximal extended projection,

b. at least one segment of α dominates β,
c. β is not an escape hatch for movement[6] out of α.
(*escape hatches* are defined in the next section.)

(21) Constraint on movement:
Move α cannot target K[7] iff K dominates β and β is a barrier for α.[8]

The constraint in (21) enforces that subjects, objects and adjuncts move successive-cyclically. I discuss subjacency effects in the section on parallels between extraction out of CP and DP.

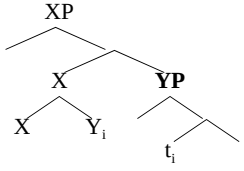
2.4 Escape hatches

The notion of *escape hatch* determines which maximal extended projection allows subextraction. Specifiers of maximal extended projections are potential escape hatches. However, not every subject, object or adjunct with an empty specifier position allows subextraction. The position of the maximal extended projection is also relevant for the definition of escape hatches. Let us look at subjects, objects and adjuncts in their canonical position first. Subjects in SpecIP and adjuncts in SpecFP do not allow subextraction, whereas objects in SpecAgrOP allow subextraction. In terms of maximal extended projections the canonical subject position and the canonical adjunct position have in common that they are the specifier position of a non-maximal extended projection, namely IP and FP respectively. The canonical object position differs from the canonical subject and the canonical adjunct position in that it is the specifier position of a maximal extended projection, namely AgrOP. With respect to extractability the following generalization emerges: the specifier of a maximal

[6] α moves out of β iff
a. α is in a position that is dominated by at least one segment of β and
b. α moves to a position that is not dominated by any segment of β.

[7] The notion of target K is taken from Chomsky (1994:256). Roughly, if Move α targets K, K is projected.

[8] The constraint on movement does not block head movement out of maximal extended projections because the head that is targeted does not dominate the maximal extended projection. This accounts for the fact that verb movement out of AgrOP is possible.



extended projection is an escape hatch if the maximal extended projection is in the specifier of a maximal extended projection. This captures the fact that extraction out of objects in SpecAgrOP is possible and that extraction out of subjects and adjuncts in SpecIP and SpecFP is not possible. It also makes the novel prediction that extraction out of objects in SpecVP is not possible and that extraction out of subjects and adjuncts in SpecCP is possible.

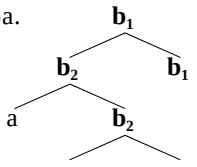
Hence my proposal makes the (surprising) prediction that extraction out of objects in base-position, namely SpecVP, is not possible. The same holds for subjects and adjuncts. Since all three are base-generated in the specifier of a non-maximal extended projection they only allow subextraction if they move to the specifier of a maximal extended projection. Before I provide the definition of escape hatch I have to introduce the notion of *transitive specifier*.

(22) Transitivity of the Specifier relation:
If α is the Specifier of β and β is the Specifier of γ, then α is the Specifier of γ.

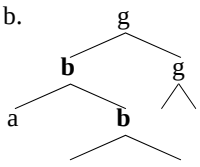
(23) Escape hatch:[9]
α is an escape hatch for movement out of β iff
a. α is the (transitive) specifier of β and
b. β is a maximal extended projection and
c. there is no γ, α is the (transitive) specifier of γ and γ is not a maximal extended projection.

In (24a) *a* is an escape hatch. Assuming that *b1* and *b2* are maximal extended projections, *a* is an escape hatch for movement out of *b1* and *b2* because *a* is the transitive specifier of *b1* and *b2* and *a* is not the transitive specifier of a non-maximal extended projection. In (24b) *a* is not an escape hatch for movement out of the maximal extended projection *b* because *a* is the transitive specifier of *g* and *g* is not a maximal extended projection. (Maximal extended projections are in bold face.)

(24)a.



b.



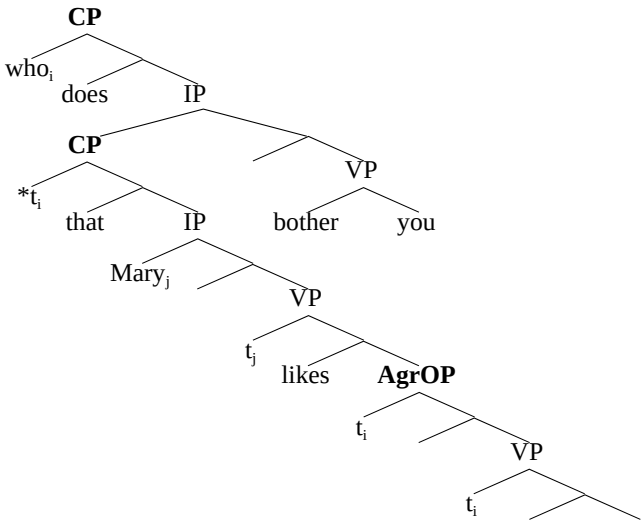
[9]Unlike Chomsky's (1986) barriers system, the bounding theory proposed in this paper is compatible with Chomsky's (1994) minimalist program because it does not make use of the notion of c-command.

Before I discuss the differences between Chomsky (1986) and my proposal I want to illustrate how the definitions in (18)–(23) account for extraction out of subjects, adjuncts and objects in their canonical position as in (1) repeated as (25).

(25) a. *who$_i$ does [that Mary likes t$_i$] bother you
b. *what$_i$ did she leave [after he explained t$_i$]
c. who$_i$ do you think [that he likes t$_i$]

(26a) is the structure for (25a). The wh-phrase *who* first moves from its base position in SpecVP to SpecAgrOP. AgrOP is a maximal extended projection and SpecAgrOP is an escape hatch for movement out of AgrOP because SpecAgrOP is not the transitive specifier of a non-maximal extended projection. Hence the trace in SpecAgrOP is licit.

(26)a.

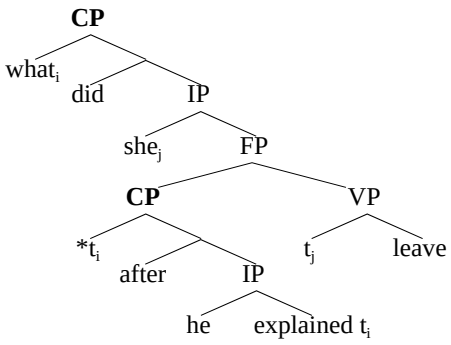


However, the trace in the specifier of the embedded CP is not licit. (*t represents an illicit trace.) The specifier of the embedded CP is not an escape hatch for movement out of CP because SpecCP is the transitive specifier of a non-maximal extended projection, namely IP.

Extraction out of adjuncts in SpecFP as in (26b) is ruled out because the trace in the specifier of the embedded CP is illicit. The specifier of the embedded CP is not an escape hatch for movement out of the embedded CP because it is the transitive specifier of a non-maximal extended projection,

namely FP. (In the following structure, there is one movement step missing. VP moves to the Specifier of a functional projection between IP and FP in order to achieve the sentence final position of the adjunct clause. I leave this step out for the sake of clarity. It is irrelevant for the constraints on movement.)

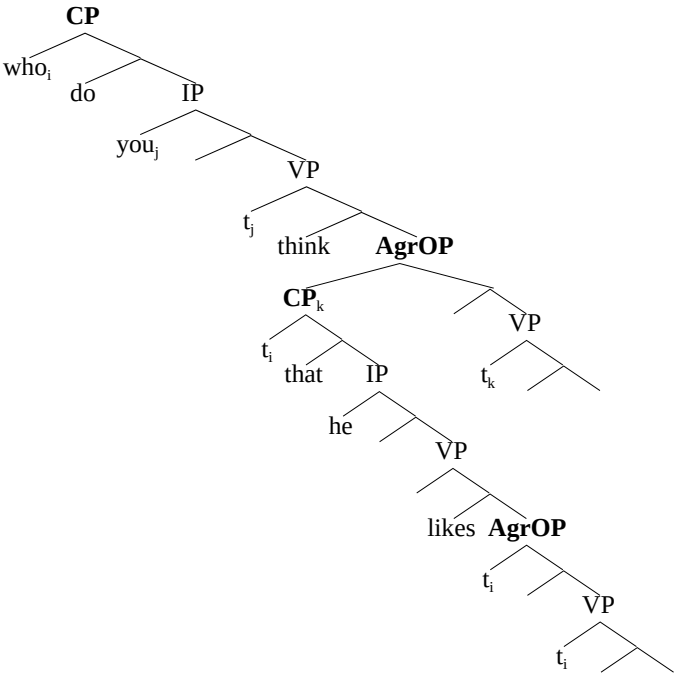
(26)b.



Extraction out of objects as in (26c) is grammatical because the specifier of the object in SpecAgrOP is an escape hatch for movement out of CP and out of the matrix AgrOP. It is the transitive specifier of CP and AgrOP and it is not the specifier of a non-maximal extended projection. The trace in the specifier of the embedded AgrOP is also licit because SpecAgrOP is an escape hatch for movement out of AgrOP.[10]

[10] This analysis presupposes that not only DPs but also CPs move to SpecAgrOP. DPs move to SpecAgrOP in order to check Case. It is unclear whether CPs check any features in SpecAgrOP. The analysis leaves it open whether CPs stay in SpecVP if there is no subextraction.

(26)c.



2.5 Predictions

According to the definitions in (18)–(23) there is no asymmetry between subjects, objects and adjuncts with respect to subextraction. All three are maximal extended projections and extractability depends on the position of the subject, object or adjunct.

My proposal makes three predictions that diverge from Chomsky (1986):

1. There are objects that do not allow subextraction. *That*-clauses that co-occur with object expletives, *that*-clauses that are selected by manner of speech verbs and sentential complements of nouns exemplify this case.
2. There are subjects that allow subextraction. Spanish subjects in SpecCP (Torrego 1985) confirm this prediction.
3. There are adjuncts that allow subextraction. Adjuncts in SpecCP should allow subextraction. This prediction is not confirmed by the data. I propose a modification of the definition of escape hatches that accounts for extraction out of adjuncts.

2.6 Subextraction out of objects and Case

2.6.1Object expletives

That-clauses co-occurring with the object expletive *it* as in (28b) do not allow subextraction:

(27) a. She believes *it* [that Mary likes John].
b. *Who$_i$ do you believe *it* [that Mary likes t_i]?

If the object expletive is not present, extraction out of the *that*-clause is possible:

(28) a. She believes [that Mary likes John].
b. Who$_i$ do you believe [that Mary likes t_i]?

I propose that *that*-clauses co-occurring with object expletives stay in SpecVP. The expletive *it* is in SpecAgrOP. See (29a). Extraction out of the *that*-clause in SpecVP is ruled out because SpecCP is not an escape hatch. SpecCP is the transitive specifier a non-maximal extended projection, namely VP. If the expletive is missing as in (29b), the *that*-clause moves to SpecAgrOP. The embedded SpecCP is an escape hatch because it is not the transitive specifier of a non-maximal extended projection.[11]

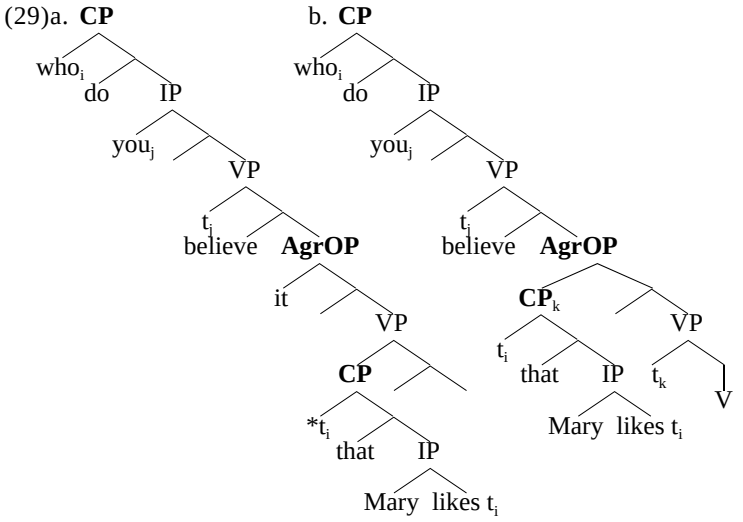
[11] My analysis does not straightforwardly account for adverb placement in English. In English, adverbs can occur between the verb and the *that*-clause but not between the verb and a nominal object.

i. Paul said *quietly* [that she wanted to drive].
ii. *Mary opened *quickly* [the door].

Stowell (1981) proposes that *that*-clauses extrapose to IP-adjoined position. Thus, they follow adverbs that are right-adjoined to VP. *That*-clauses cannot stay in complement position because of the Case Resistance Principle. NPs on the other hand remain in complement position. Therefore they precede adverbs.

iii. Paul said t_i *quietly* [that he wanted to drive]$_i$
iv. Mary opened the door *quickly*.

In my analysis, DP-objects and CP-objects move to the same position, namely SpecAgrOP. Hence my analysis does not straightforwardly account for the fact that adverbs follow DP-arguments but precede CP-arguments.



An analysis in the vein of Chomsky (1986) assumes that in (27b) the expletive is in object position and that the *that*-clause is in adjunct position. This accounts for the lack of extractability. According to Chomsky (1986) extraction out of adjuncts is not possible because they are not theta-marked. Adjuncts are sisters of I′: [$_{IP}$ I′ 'adjunct'].[12] If the expletive is missing as in (28b), the *that*-clause is in object position and extraction is possible. According to Chomsky (1986) categories in object position are theta-marked under c-command and hence they allow subextraction (unless they are CPs with a filled Specifier position).

There are three arguments against a Chomskian (1986) analysis of *that*-clauses co-occurring with object expletives. Condition C effects and bound variable readings of pronouns indicate that complement clauses remain inside VP even if an object expletive is present.[13] Unfortunately these tests are not applicable to English because the relevant English sentences are ungrammatical for independent reasons.[14]

[12] Chomsky's (1986) analysis is not compatible with the antisymmetry proposal. The antisymmetry proposal disallows specifiers to the right of a head. Hence, the *that*-clause cannot be the right-hand sister of I′.

[13] The tests are taken from Mahajan (ms). He uses them to argue that extraposed complement clauses in Hindi are not sisters of I′ but inside VP. He argues for a Kaynian (1994) analysis of extraposed clauses in Hindi.

[14] Mahajan's (ms) tests presuppose that the following sentences are grammatical, unfortunately this is not the case in English:

i. *I said (it) to *him* [that *John* is invited]
ii. *I said (it) to *everybody* [that *he* is invited]

I recast the arguments with German data. German exhibits the same extraction phenomena as English: Subextraction out of *dass-(that)*-clauses is ungrammatical if the object expletive *es* (it) is present. If the object expletive is missing, subextraction out of *dass*-clauses is possible.

(30) wen_i hast du (*es) gesagt [dass du t_i magst]
who have you (*it) said that you like
'who did you say (*it) that you like?'

Condition C effect: In the following sentences, coreference between the indirect object *ihm* (him) and *John* is not possible independent of whether or not the object expletive is present.

(31) Ich habe (es) *ihm* gesagt [dass *John* eingeladen ist]
I have (it) to-him said that John invited is
'I have told him that John is invited.'

The fact that coreference between the indirect object *ihm* (him) and *John* is impossible is accounted for if the indirect object c-commands the *dass*-clause. According to Condition C of the binding principles referential expressions such as *John* must be free, i.e. they cannot be coreferent with a c-commanding expression. If the *dass*-clause is the sister of I′ as in Chomsky (1986) the indirect object does not c-command the r-expression *John* inside the *dass*-clause and the prohibition against coreference does not follow from the binding principles.

Bound variable readings of pronouns: The following sentences have a reading in which the quantificational indirect object *jedem* (everybody) binds the pronoun *er* (he). Again, this is independent of whether or not the object expletive is present.

(32) Ich habe (es) *jedem* gesagt [dass *er* eingeladen ist]
I have (it) to-everybody said that he invited is
'I have told everybody that he is invited.'

It is generally assumed (Reinhart 1976) that bound variable readings of pronouns are only possible if the quantifier c-commands the pronoun. Hence this is another indication that the quantificational indirect object c-commands the *dass*-clause.[15] Again, in a Chomskian (1986) analysis the quantificational

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For some reason, English bridge verbs do not allow indirect objects to be realized as *to*-PPs.

[15] In the German examples the verb immediately precedes the *dass*-clause. According to my analysis *dass*-clauses are in different positions depending on whether or not an object expletive is present. Hence the verb (and the indirect object) have to move

indirect object does not c-command the pronoun and hence the condition for bound variable readings is not fulfilled.

Semantic selection: An analysis in the vein of Chomsky (1986) is forced to assume that there is a mismatch between syntax and semantics. The *that*-clause is semantically an argument of the verb. However, if an object expletive is present the semantic argument is syntactically realized as an adjunct.

According to my proposal there is no mismatch between syntax and semantics: The *that*-clause is syntactically and semantically an argument of the verb independent of whether or not an object expletive is present. In both cases the *that*-clause is base-generated in SpecVP. If the object expletive is not present, the *that*-clause can move to SpecAgrOP. My analysis also accounts for the binding phenomena and the condition C effects.

The syntactic structures I am proposing are in accordance with Kayne's (1994) antisymmetry proposal. Hence the definitions in (18)–(23) provide a bounding theory for a Kaynian (1994) analysis of complement clauses co-occurring with object expletives.

2.6.2Manner of speech verbs

Manner of speech verbs disallow subextraction out of *that*-clauses even though no object expletive is present.[16]

(33) ?*Who$_i$ did you whisper [that you saw t_i]?

I propose that object-movement to SpecAgrOP is ruled out because manner of speech verbs do not project AgrOP. This is supported by the fact that manner of speech verbs can be intransitive whereas the verbs that allow extraction out of *that*-clauses are transitive.

(34) I whispered./ *I said.

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accordingly. If the object expletive is present the verb is lower than AgrO. If the object expletive is not present and the CP moves to SpecAgrOP the verb is higher than AgrO. Verb movement is similar to heavy NP-stranding. The light verb moves just enough to leave the heavy CP in sentence final position.

[16] If a subject expletive is present, there is a contrast between subextraction out of finite and non-finite *that*-clauses:

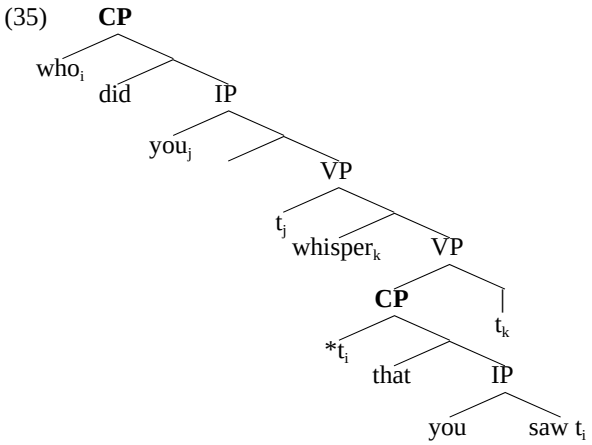
i. who$_i$ would *it* please you [PRO to have dinner with t_i]?

ii. *who$_i$ would *it* please you [that I had dinner with t_i]?

This contrast does not follow from my theory. See the section on *subextraction out of the arguments and adjuncts of nouns* for more examples of the impact of tense.

It then follows from the definitions in (18)–(23) that subextraction out of the CP in SpecVP is ruled out. SpecCP is not an escape hatch because SpecCP is the transitive specifier of a non-maximal extended projection, namely VP.[17]

(35)



Again, an analysis in the vein of Chomsky (1986) (e.g. Doherty 1993) is forced to assume that the *that*-clause is syntactically an adjunct in order to account for the lack of extractability. Again, in my analysis *that*-clauses selected by manner of speech verbs are both syntactically and semantically arguments of the verb.

We have seen that some sentential objects do not allow subextraction. According to my analysis subextraction out of objects is ruled out if the object stays in SpecVP. There are two reasons why sentential objects stay in SpecVP rather than move to SpecAgrOP:

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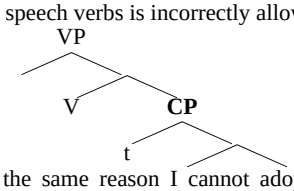
[17] It is important for the analysis of manner of speech verbs that CP-objects are base generated in SpecVP and not as sisters of V. If CP is the sister of V, SpecCP is an escape hatch if AgrOP is not projected and subextraction out of the complements of manner of speech verbs is incorrectly allowed.

i.



For the same reason I cannot adopt Larson's (1988) proposal that adjuncts are sisters of V. My analysis incorrectly predicts that extraction out of CP-adjuncts in complement position is well-formed if AgrOP is not projected as in (ii).

ii. *what$_i$ did John laugh [after you explained t$_i$]

iii. *what$_i$ did John fix the car [after you explained t$_i$]

1. SpecAgrOP is filled, e.g. by an object expletive.
2. AgrOP is not projected because the verb does not assign Case.[18]

Up to this point my proposal predicts that there is a correlation between Case assignment and extractability. If a predicate assigns Case extraction out of the object of the predicate is possible, given that no object expletive is present. This correlation is called into question in the section on the bridge effect.

2.6.3Parallels between extraction out of DP and extraction out of CP

Extraction out of embedded questions is only marginally acceptable. This is the so called wh-island effect, see (36a). Likewise extraction out of DPs modified by a prenominal possessor is ungrammatical as exemplified in (36b).

(36) a. ?*Who$_i$ did you wonder [when he saw t_i]?
b. *Who$_i$ did you see [John's picture of t_i]

Both cases have in common that the specifier position of the respective object (CP or DP) is filled: SpecCP is filled by the wh-phrase and SpecDP is filled by the possessor. Subextraction is possible if the embedded CP is not headed by a wh-phrase and if the nominal object is not preceded by a possessor-phrase.

(37) a. Who$_i$ did you say [that she likes t_i]?
b. Who$_i$ did you see [a picture of t_i]?

My proposal captures the parallels between extraction out of DP and extraction out of CP. Both CP and DP are maximal extended projections. Hence subextraction out DP has to proceed through SpecDP as an escape hatch as much as extraction out of CP has to proceed through SpecCP as an escape hatch.[19,20]

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[18] My proposal also predicts that overt extraction out of DPs is disallowed if DP moves to SpecAgrOP covertly, which is the case if Case is a weak feature.

[19] My analysis does not account for the fact that extraction out of definite DPs is worse than extraction out of indefinite DPs:

i. ?who$_i$ did you see [the picture of t_i]
ii. who$_i$ did you see [a picture of t_i]

[20] In English, possessor-phrases cannot be extracted out of DPs. This is accounted for if the possessive marker *'s* (se) is base generated in D and if a constraint at PF requires that the possessor and the possessive marker cannot be separated.

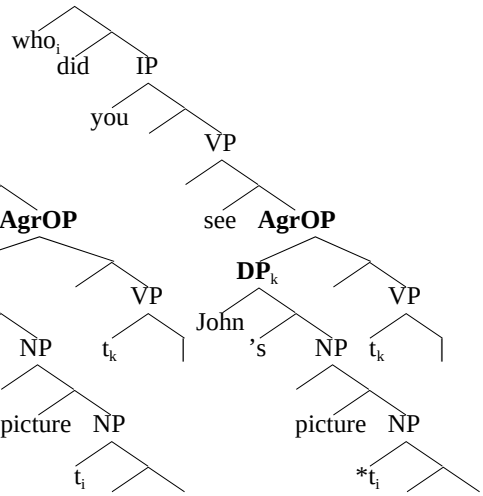
i. *whose$_i$ did you see [t_i picture]
ii. *who$_i$ did you see [t_ii se picture]

The structure in (38a) illustrates extraction out of DP as in (37b). DP is a maximal extended projection and SpecDP is an escape hatch because DP is not the transitive specifier of a non-maximal extended projection.

(38b) is the structure for (36b). Extraction out of DP is blocked because SpecDP is filled by the possessor *John*. The trace in SpecNP is illicit because SpecNP is not an escape hatch for movement out of DP and AgrOP. It is not the transitive specifier position of DP or AgrOP. The constraint on movement (21) rules out movement from the NP-internal position to SpecCP because two barriers are crossed, DP and AgrOP.[21]

(38)a. **CP**

b. **CP**



Pustejovsky (1985) observes that certain prenominal genitives do not block subextraction out of DPs. Consider the following contrast, taken from Safir (1987):

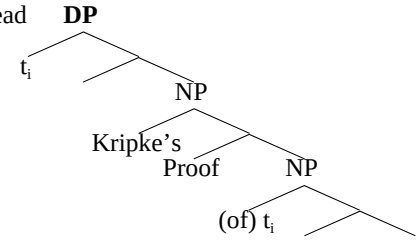
(39) a. *[what bread]$_i$ did John eat [Bill's loaf of t$_i$]
b. [which theory]$_i$ did you read [Kripke's proof of t$_i$]

[21] I leave the preposition *of* out of the structure. It is important for my analysis that *of* does not project a category which is a maximal extended projection. There are several ways to accomplish this. Either *of* is the head of an NP that is sandwiched between two NP-shells or *of* is the head of an AgrO-projection which dominates all the NP-shells. In the second case the noun has to move to the head of a functional projection that is higher than *of* in order to achieve the correct word order.

Pustejovsky (1985) notes that extraction out of DPs is possible if the prenominal genitive is assigned a theta role by the noun. In (39b) *Kripke* is the agent of *proof*. Hence extraction out of DP is possible. In (39a) on the other hand *Bill* is not assigned a theta role by *loaf*. Hence extraction out of DP is not possible.

I assume that prenominal genitives that are assigned a theta role by the noun as in (39b) are in SpecNP. Hence in (39b) SpecDP serves as an escape hatch for movement out of DP, see (40).

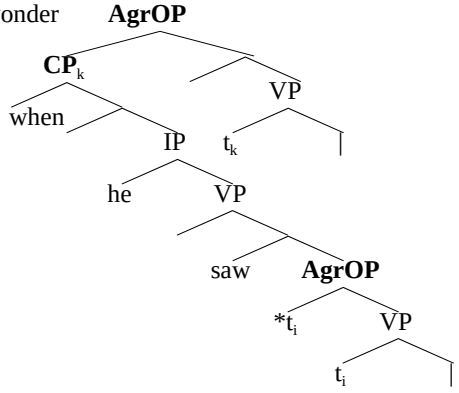
(40)[which theory]$_i$ did you read



Prenominal genitives that are not assigned a theta role by the noun as in (39a) are in SpecDP. They block extraction out of DP, see structure (38b).

Wh-island violations have a parallel structure to (38b). The only difference is that the object is a CP instead of a DP. The specifier of the object-CP cannot serve as escape hatch because it is filled by the wh-phrase *when*.

(41) who$_i$ did you wonder



The offending trace is in SpecAgrOP of the embedded CP. SpecAgrOP is not an escape hatch for movement out of CP and the matrix AgrOP because it is not the transitive specifier of the embedded CP and the matrix AgrOP. Movement from SpecAgrOP to the matrix SpecCP is ruled out by the constraint on movement (21). Two barriers are crossed.

In Chomsky (1986) extraction out of object-CPs proceeds through SpecCP as an escape hatch because CP inherits barrierhood from IP. Hence extraction out of object CPs is ruled out if SpecCP is filled as in (36a). However, Chomsky (1986) does not account for possessor islands as in (36b). He assumes that nominal objects are NPs rather than DPs because his analysis antedates the DP-hypothesis (Abney 1987). Object-NPs do not inherit barrierhood because they do not directly dominate a blocking category. Hence extraction out of NPs is predicted to be grammatical independent of whether or not SpecNP is filled.

The ungrammaticality of extraction out of possessive islands can be accounted for in Chomsky's (1986) barriers system if the DP-hypothesis (Abney 1987) is adopted and if NP has the same status as IP. In that case DP inherits barrierhood from NP and extraction out of DP has to proceed through SpecDP as an escape hatch.

Subjacency effects: In my proposal subjects, objects and adjuncts move successive cyclically. They move through SpecCP in order to move out of CP. This does not account for the fact that object movement out of a wh-island is less ungrammatical than adjunct movement out of a wh-island:

(42) a. ??what$_i$ did you wonder [when he fixed t_i]
b. *how$_i$ did you wonder [when he fixed the car t_i]

In Chomsky (1986) sentence (42a) is a mild subjacency violation. (42b) is an EPC violation. In order to account for the difference in (42) one can adopt Rizzi's (1990) distinction between referential and non-referential expressions. Referential expressions can cross one barrier. Non-referential expressions cannot cross any barriers. The difference between strong and weak islands can be defined in terms of the positions they occur in: weak islands such as wh-islands are in the specifier of a maximal extended projection. Subextraction is ruled out because the specifier is filled. Strong islands such as subject islands and adjunct islands are not in the specifier of a maximal extended projection. Subextraction is ruled out because the specifier is not an escape hatch.[22]

[22] Strong islands disallow any kind of subextraction. Weak islands allow object extraction but disallow adjunct extraction. Wh-islands are not the only weak islands. Other weak islands are negative islands, factive islands and extraposition islands.

negative island:

i. ?I wonder which car Ann can't fix.

ii. *I wonder how Ann can't fix the car.

factive island:

iii. ?I wonder which car Mary regrets that Ann can fix.

iv. *I wonder how Mary regrets that Ann can fix the car.

extraposition island:

Summary: Given the constituent structure I am assuming, subjects, objects and adjuncts are base-generated in the specifier of a non-maximal extended projection. Hence extraction out of subjects, objects or adjuncts in base position is not possible. Extraction is only possible if the subject, object or adjunct moves into the specifier of a maximal extended projection.

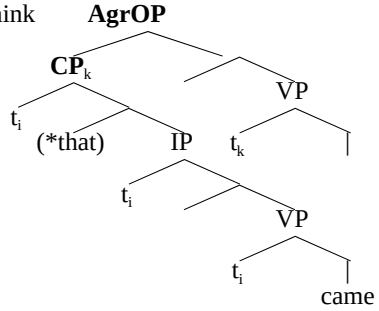
2.6.4The that-trace effect

In English, overt complementizers are not allowed if the subject is extracted out of a complement clause. The phenomenon is called the *that*-trace effect.

(43) a. Who$_i$ do you think [t$_i$ came]
b. *Who$_i$ do you think [that t$_i$ came]

According to the definitions in (18)–(23) subject movement out of CP proceeds through SpecCP as an escape hatch as much as object movement does. (44) is the structure for (43a) and (43b).

(44) who$_i$ do you think



Movement through the embedded SpecIP is necessary for Case reasons. Movement through the embedded SpecCP is necessary because SpecCP is an escape hatch for movement out of CP and AgrOP. The ungrammaticality of subject extraction out of a *that*-clause does not follow from the bounding theory that I have proposed. The only difference between (43b) and (43a) is the presence of *that.* But the presence of *that* in C is irrelevant for the bounding

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v. ?I wonder which car it matters that Ann can fix.
vi. *I wonder how it matters that Ann can fix the car.

For a semantic analysis of weak islands see Szabolcsi & Zwarts 1993, Rullmann 1995 and Comorovski 1996.

theory proposed in this paper. Hence the ungrammaticality of (43b) has to follow from some other module of the grammar.

Let us recapitulate the facts: subject extraction out of CP disallows *that* in C whereas object extraction out of CP allows *that* in C.

(45) a. Who_i do you think [CP t_i (*that) [IP t_i came]]
b. Who_i do you think [CP t_i (that) [IP I met t_i]

It is commonly assumed (Pesetsky 1982, Déprez 1989, Rizzi 1990) that the lack of an overt complementizer in (45a) is the result of Spec-head agreement within CP. The zero form of the complementizer is the agreeing form. The presence of an overt complemementizer signals a lack of Spec-head agreement. In the theories of Déprez (1989) and Rizzi (1990) the trace in SpecIP is not licensed unless there is Spec head agreement in CP. Hence Spec head agreement interacts with their bounding theory and the lack of spec head agreement in (43b) triggers a violation of the principles of bounding theory.

I propose to separate bounding theory from the conditions under which Spec head agreement is obligatory. (43b) is not ungrammatical because the trace in SpecCP is illicit but simply because subjects in SpecCP obligatorily agree with C and *that* is not the agreeing form of the complementizer. This raises the question why CP-internal Spec head agreement is obligatory if the subject is in SpecCP but optional if the object is in SpecCP.

I adopt Déprez' (1989:381ff, 1991) proposal that A-movement triggers spec-head agreement whereas A′-movement does not trigger Spec head agreement. This follows trivially from her definition of A-positions. In her proposal spec positions are A-positions and adjoined positions are A′-positions. It follows from her bounding theory that CP-internal subject movement takes SpecCP as landing site.[23] Subject movement to SpecCP is A-movement because SpecCP is an A-position. It also follows from her bounding theory that objects

[23]Déprez' (1989, 1991) bounding theory works as follows: 1. all non-L-marked XPs are barriers, this includes IP and VP. 2. any maximal projection can be adjoined to. This includes IPs, arguments and and adjuncts. 3. Improper movement: movement from A′- to A-position is illicit. 4. Transparency: coindexing of functional categories induced by Spec-head agreement voids barrierhood. 5. Chain uniformity: in a non-uniform chain intervening A′-traces are deleted at LF. 6. Conjunctive ECP: traces are head governed and antecedent governed. 7. Head government is defined in terms of c-command. Hence SpecIP is not head governed by INFL. Subjects move to SpecCP because coindexing between CP and IP voids the barrierhood of IP. C head governs SpecIP.

do not move to SpecCP. Instead, they adjoin to CP.[24] Object movement to the CP-adjoined position is A′-movement. It does not trigger spec head agreement.

(46) a. [who$_i$ do you think [CP$_i$ t$_i$ [IP$_i$ t$_i$ came]]]
b. [who$_i$ do you think [CP t$_i$ [CP that [IP t$_i$ [IP I saw t$_i$]]]]]

In Déprez' (1989) analysis A-movement triggers Spec head agreement because specifier positions are A-positions. A′-movement does not trigger Spec head agreement because spec is not a possible landing site for A′-movement.

According to the antisymmetry proposal (Kayne 1994) it is not possible to distinguish adjoined positions from specifier positions. Kayne (1994) only allows one adjoined specifier position. Hence if Kayne's proposal is right it is not possible to adopt Déprez' (1989) definition of A-positions and A′-positions.

In the section on local and non-local movement I propose to distinguish the two types of movement in terms of the domain in which movement takes place. Movement is local if it does not leave any maximal extended projections. Movement is non-local if it leaves a maximal extended projection. According to this definition CP-internal subject movement to SpecCP is local movement. There is no maximal extended projection that intervenes between the base position of subjects in SpecVP and their landing site in SpecCP. Object movement to SpecCP is non-local movement because it is movement out of AgrOP which is a maximal extended projection.

In order to account for the *that*-trace effect I assume that local movement triggers Spec-head agreement in CP whereas non-local movement does not (obligatorily) trigger spec-head agreement in CP. In English, the agreeing form of the complementizer is the zero form.[25,26]

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[24] Object movement to SpecCP is ruled out because objects adjoin to IP first in order to void the barrierhood of IP. Movement from the IP-adjoined position to SpecCP is ruled out by the constraint on improper movement: The IP-adjoined position is an A′-position and SpecCP is an A-position. Adjunction of objects to CP is licit. The CP-adjoined position is an A′-position. The trace in SpecIP is not head governed. However it is deleted at LF.

[25] Local movement does not necessarily trigger Spec head agreement. The section on quantifiers in Italian shows that movement to SpecDP is local movement but there is no Spec head agreement in DP.

[26] Doherty (1993) and Grimshaw (1997) propose that *that*-less clauses are IPs rather than CPs. This proposal is not compatible with my bounding theory. If *that*-less clauses are IPs, IP is a maximal extended projection and SpecIP is an escape hatch. This correctly predicts that subjects can move out of *that*-less clauses but it incorrectly predicts that objects cannot move out of *that*-less clauses. The subject in SpecIP blocks movement of any other category out of IP.

i. who$_i$ do you think [IP I saw t$_i$]

2.7 Subextraction out of subjects

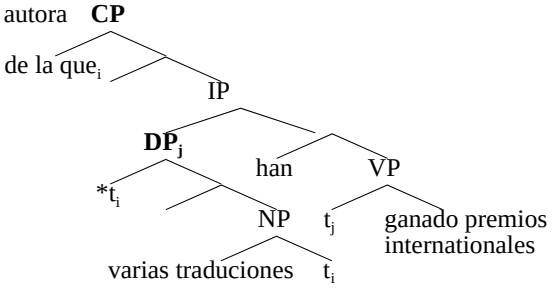
It is well known that extraction out of subjects in SpecIP is ungrammatical. This phenomenon is called the subject island effect. However, in Spanish extraction out of subjects is possible if they move to SpecCP (Torrego 1985 as quoted in Chomsky 1986).

(47) a. *esta es la autora [de la que]$_i$ [varias traduciones t_i] han
'this is the author by whom various translations have
ganado premios internacionales
won international awards.'

b. [de que autora]$_i$ no sabes [que traduciones t_i] han ganado
'By what author don't you know what translations have won
premios internacionales.
international awards?'

The definitions in (18)–(23) account for the contrast in (47): (48a) is the structure of (47a). The subject is in SpecIP and SpecDP is not an escape hatch for movement out of DP because SpecDP is the transitive specifier a non-maximal extended projection, namely IP.[27]

(48) a. esta es la autora



[27] English like Spanish exhibits a contrast between subextraction out of subjects in SpecCP as in (i) and subextraction out of subjects in SpecIP as in (ii).

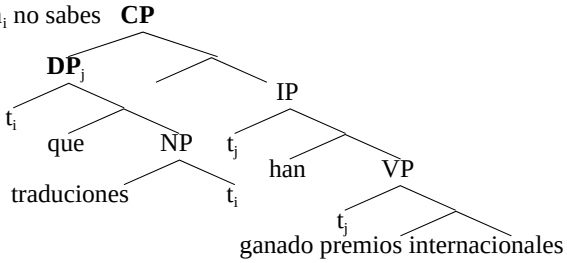
i. ??who$_i$ do you wonder [CP [which pictures of t_i] are on sale]

ii. *who$_i$ do you think [that [IP [pictures of t_i] are on sale]

However, in English subextraction out of subjects in SpecCP is not fully grammatical. I don't have an analysis for the marginality of (i) but it might be related to the fact that in English preposition stranding is obligatory.

(48b) is the structure for (47b). The subject is in SpecCP and SpecDP is an escape hatch for movement out of DP and CP because SpecDP is not the transitive specifier of a non-maximal extended projection.

(48) b. de que autora$_i$ no sabes



According to Chomsky (1986) extraction out of DPs in SpecIP is ruled out because DP is not theta-marked under c-command. In order to account for the grammaticality of extraction out of subjects in SpecCP Chomsky (1986:26) stipulates that the matrix verb L-marks the DP in SpecCP. This is a stipulation because L-marking is defined as theta-marking under c-command but the matrix verb does not theta-mark the subject in SpecCP.

My proposal does not need any extra stipulations in order to account for the grammaticality of subextraction out of subjects in SpecCP. To the contrary, my proposal makes the prediction that subextraction out of subjects in SpecCP is possible because CP is a maximal extended projection.[28]

2.8 Subextraction out of adjuncts

Movement out of sentential adjuncts in sentence final position is ungrammatical:

(49) *What$_i$ did she leave [after he explained t$_i$]

Extraction out of CPs in SpecFP as in (50) is ruled out because SpecCP is not an escape hatch for movement out of CP. SpecCP is the transitive specifier of a non-maximal extended projection, namely FP. Again, there is one movement step missing. VP moves to the Specifier of a functional projection between IP and FP in order to achieve the sentence final position of the adjunct clause. I

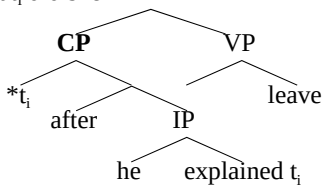
[28] My proposal accounts for the fact that subject extraction out of small clauses is possible:

i. who$_i$ do you consider [t$_i$ intelligent]

The small clause is in SpecAgrOP and the specifier of the small clause is an escape hatch for movement out of the small clause.

leave this step out for the sake of clarity. It is irrelevant for the constraints on movement.

(50) what$_i$ did she



My proposal predicts that subextration out of adjuncts is possible if they move into the specifier of a maximal extended projection. Thus, it is predicted that extraction out of adjuncts in SpecCP is grammatical or at least better than extraction out of adjuncts in base position. This prediction is not confirmed. First, consider PP-adjuncts.

(51) a. *this is the man [who$_i$ you were wondering [[which picture of t$_i$]$_j$ John was doing the laundry [in t$_j$]]]

b. *this is the man [who$_i$ you thought [that John was doing the laundry [in a picture of t$_i$]]]

(51a) is not discernibly better than (51b). DP-adjuncts do not yield a contrast in extractability either. Extraction out of DP-adjuncts in SpecCP as in (52a) is not more grammatical than extraction out of DP-adjuncts in base position as in (52b).

(52) a. ??[which weeks]$_i$ did you wonder [[how many days of t$_i$]$_j$ she would be there t$_j$]

b. ??[which weeks]$_i$ did you think [that she would be there [three days of t$_i$]]

Thus, the prediction that extraction out of adjuncts in SpecCP is grammatical is not confirmed by the data.[29] The ungrammaticality of (51a) and (52a) might be due to reasons independent of bounding theory but I am not able to identify them for the time being. If there are no independent reasons for the ungrammaticality of (51a) and (52a) the definition of escape hatch has to be

[29] In Spanish extraction out of adjuncts in SpecCP is also ungrammatical (Eric Bakovic, p.c.).

changed in such a way that only immediate specifiers of theta-marked maximal projections serve as escape hatches.

(53) Escape hatch:
α is an escape hatch for movement out of β iff
a. α is the immediate specifier of a theta-marked maximal projection,
b. α is the (transitive) specifier of β and
c. β is a maximal extended projection and
d. there is no γ, α is the (transitive) specifier of γ and γ is not a maximal extended projection.

2.9 Subextraction out of arguments and adjuncts of nouns

Subextraction out of NP-internal CPs exhibits several degrees of ungrammaticality:

(54) a. ??who$_i$ did John see an attempt [to portray t_i]?
b. ?*who$_i$ did John challenge the claim [that Bill saw t_i]?
c. *who$_i$ did John acknowledge the fact [that Bill saw t_i]?
d. *what$_i$ do you know the girl [that fixed t_i]?

Stowell (1981:197ff) argues that the infinitival clause in (54a) is an argument of the noun whereas the *that*-clauses in (54b–c) are adjuncts. He provides two tests that distinguish the infinitival clauses of action nouns such as *attempt* from the *that*-clauses that accompany nouns such as *claim*. (Stowell does not discuss the noun *fact*.) The tests show that the *that*-clause in (54b) denotes the proposition which is the content of the noun *claim* whereas the infinitival clause in (54a) denotes an event that is an argument of the noun *attempt*.

Test1:
(55) a. John's claim was [that he would win]
b. ??Jack's attempt was [to finish on time]

Test2:
(56) a. John witnessed Jack's attempt [to finish on time]
b. *Bill witnessed John's claim [that he would win]

Chomsky (1986) adopts Stowell's proposal that NP-internal *that*-clauses are adjuncts rather than arguments of the noun because it accounts for the lack of extractability in (54b–c). According to Chomsky (1986) adjuncts do not allow

subextraction. The slight ungrammaticality of (54a) is a problem for Chomsky (1986). According to Stowell's criteria for argumenthood the infinitival clause in (54a) is an object of the noun. The objects of nouns are theta-marked under c-command. Hence Chomsky (1986) predicts that extraction out of the objects of nouns is as grammatical as extraction out of the objects of verbs.

Apart from the problem with infinitival clauses Chomsky's (1986) analysis of *that*-clauses is also not compatible with Kayne's (1994) antisymmetry proposal because it uses an adjunct position which is to the right of N′. This position is not available in the antisymmetry proposal.

In order to be compatible with the antisymmetry proposal I assume that the DP-internal structure is parallel to the CP-internal structure. I assume that sentential objects of nouns are base-generated in SpecNP and that sentential adjuncts are base-generated in the Specifier of a functional projection. The postnominal position of adjuncts is achieved by moving the highest NP-shell into the specifier of an additional functional category that directly dominates FP.

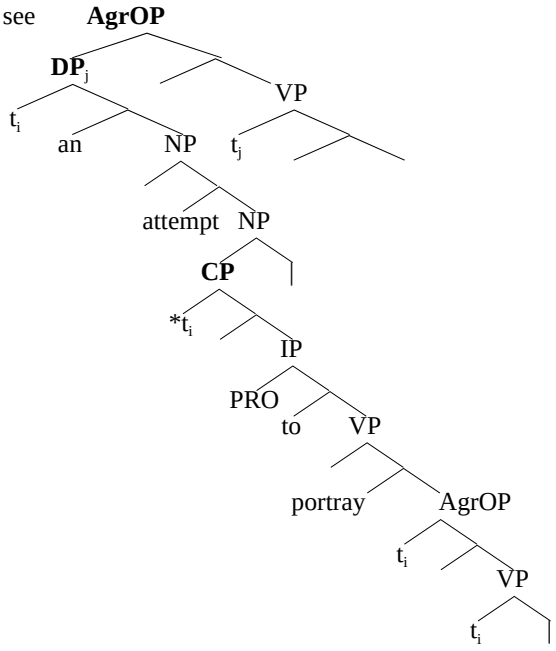
In my proposal subextraction out of the sentential objects of nouns is not possible because ArgOP is not projected. This is what distinguishes nouns from (transitive) verbs. Transitive verbs assign Case, nouns do not assign Case.

(57) a. Caesar destroyed the city.
b. *Caesar's destruction the city.

Subextraction out of the objects of nouns is ruled out because the sentential object does not move to the specifier of a maximal extended projection. Objects of nouns stay in their base position in SpecNP. The specifier of the object in SpecNP is not an escape hatch because it is the transitive specifier of a non-maximal extended projection, namely NP.[30] In (58) the trace in SpecCP is illicit. (58) is the structure of (54a).

[30] My analysis predicts that subextraction out of the arguments and adjuncts of nouns is possible if they move to SpecDP. English does not allow CPs in SpecDP. For a discussion of movement of possessive phrases out of DP see the footnote in the section on parallels between extraction out of DP and out of CP.

(58) who$_i$ did John see



The structure in (58) is parallel to the structure projected by manner of speech verbs. In both cases no functional category intervenes between the two lexical shells, NP-shells and VP-shells respectively.

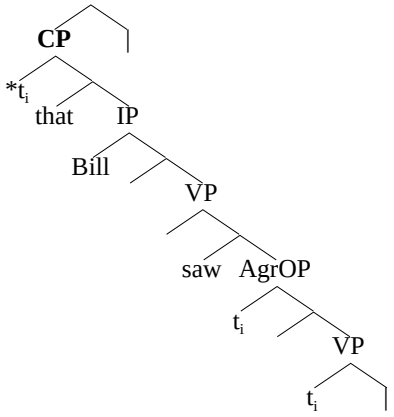
My proposal opens up the possibility that the *that*-clauses in (54b–c) are objects rather than adjuncts of the noun. After all Stowell's tests show that there is some semantic difference between infinitival clauses and *that*-clauses but it is unclear whether these tests indicate a difference between arguments and adjuncts. In my analysis subextraction out of *that*-clauses in object position is ruled out as much as subextraction out of infinitival clauses in object position is ruled out. In both cases there is a CP in SpecNP and subextraction is ruled out because NP is not a maximal extended projection.[31]

[31] My analysis does not account for the fact that extraction out of infinitival object clauses is slightly better than extraction out of *that*-clauses. However, it is a general phenomenon that extraction out of untensed islands is slightly better than extraction out of tensed islands. (i–iv) illustrate the impact of tense on extraction out of wh-islands and adjunct islands. I do not have an analysis for the impact of tense. See also the first footnote in the section on *manner of speech verbs.*

i. what$_i$ did you wonder [how to fix t$_i$]?

ii. ?*what$_i$ did you wonder [how he fixed t$_i$]?

(59) *who$_i$ did John know the fact NP



I follow the common assumption that relative clauses as in (54d) are adjuncts rather than arguments of the noun. I propose that relative clauses are base-generated in SpecFP. Subextraction out of relative clauses is ruled out because they are not in the specifier of a maximal extended projection. [32]

2.10 The bridge effect

So far I have assumed that there is a correlation between extraction out of objects and Case assignment. Predicates that assign Case allow extraction out of their objects unless an object expletive is present. Predicates that do not assign Case do not allow extraction out of their objects.

Nouns and Adjectives do not assign Case (see 60). Hence the Case correlation predicts that extraction out of the objects of Nouns and Adjectives is not possible. The Case correlation also predicts that extraction out of the nominal objects of verbs is possible, because nominal objects are assigned Case by the verb.

---

iii. ?*what$_i$ did he leave [after explaining t$_i$]

iv. *what$_i$ did he leave [after she explained t$_i$]

[32] There is some evidence that relative clauses are not c-commanded by (prepositional) objects of the noun:

i. the present for him$_i$ [that John$_i$ likes].

ii. the present for John$_i$ from himself$_i$.

In (i) coreference between *him* and *John* is possible. This indicates that *him* does not c-command the relative clause. (ii) indicates that *John* c-commands *himself* even though the DP *John* is embedded in a PP.

(60) a. *destruction the city/*proud Mary
b. destruction of the city/proud of Mary

Contrary to what the Case correlation predicts there are nominal predicates that allow subextraction out of their objects as in (61). And there are also adjectival predicates that allow subextraction out of their objects as in (62a). And there are verbs that do not allow subextraction out of their nominal objects as in (63). The following data is taken from Goodluck & Rochemont (1992), they attribute the data to Erteschik (1973).

Nouns:

(61) a. what were you appalled by the ??notion/*fact that she stole?
b. what did you hear a ?rumor/*comment that she stole?

Adjectives:[33]

(62) a. what is it likely/certain that Bill ate?
b. *what is it questionable/tragic/interesting that Bill ate?

Verbs:

(63) a. who did you write/*destroy a book about?

The verbs that allow subextraction out of their objects are called bridge verbs. But the phenomenon can also be found with nouns and adjectives. Even in (64) it is unclear whether Case assignment is the property that distinguishes the verbs in (a) from the verbs in (b).

Verbs:

(64) a. what did she think/say that Bill ate?
b. *what did she whisper/exclaim/comment that Bill ate?
c. ??think a thought/say a prayer
d. ?whisper the answer/*comment the game

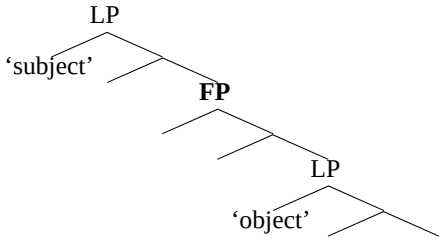
A modification of the constituent structure and an incorporation analysis of non-bridge predicates allows to account for the bridge effect. According to the modified constituent structure every lexical projection (LP) is directly

[33] Other adjectives that allow or disallow subextraction out of CPs are the following: (The data is taken from Doherty 1993.)

i. what were you (*thankful, surprised* ...) that he did t?
ii. *what were you (*overwhelmed, offended,* ...) that he did t?

dominated by a functional projection (FP). In particular, subject-shells and object-shells are always separated by a functional projection.[34]

(65)



The objects of bridge predicates move into SpecFP. Therefore they allow subextraction. The objects of non-bridge predicates cannot move to SpecFP, because SpecFP is filled by the trace of material that incorporates into the predicate. The idea is that verbs such as *whisper* are derived from *say in a whisper* and that *in a whisper* is in SpecFP and incorporates from there into the matrix predicate *say* via head movement.[35]

[34] This modification was suggested to me by Ken Safir, p.c.

[35] PPs are also maximal extended projections. They are either extended projections of DP or they project their own categorial features. Some PPs allow subextraction:

i. which room$_i$ did Napoleon sleep in t_i?

(i) is accounted for if the PP is the sister of the verb. If an additional direct object is present as in (ii) and (iii) my proposal does not straightforwardly account for extractablility because the direct object is presumably in SpecFP, blocking subextraction out of FP.

ii. which picture$_i$ did you see Bill in t_i?

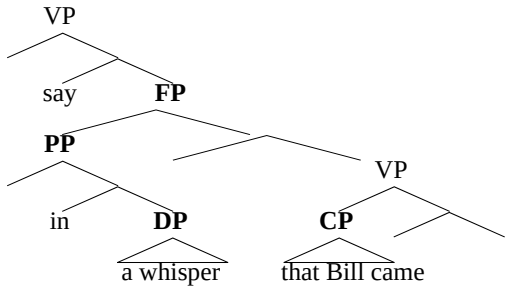
iii. which student$_i$ did you give the book to t_i?

In order to account for (ii) and (iii) I assume that FP projections are recursive (one FP-projection per object) and that both the direct object and the prepositional object are in SpecFP and that the lower SpecFP counts as the specifier of FP as much as the upper SpecFP does.

PPs that do not allow subextraction are base generated in the same position as sentential adjuncts. They are in the specifier of an FP that is not a maximal extended projection. Hence subextraction is ruled out.

iv. *which curtain$_i$ did Paul stand behind t_i?

(66)



The incorporation analysis of non-bridge predicates is similar to Hale & Keyser's (1993) analysis of verbs such as *shelve*. They propose that *she shelved her books* is derived from *she put her books on the shelf* and that the surface form is derived by head movement.

The incorporation analysis of non-bridge predicates raises several questions such as: is there independent evidence that non-bridge predicates are derived via incorporation? It is also unclear why the material that incorporates into the main verb is in SpecFP. Is it base-generated in SpecFP or does it move there? Other questions are: which feature is projected by FP and how does FP interact with the projection of Case. In order to account for **who did you destroy a picture of?* FP dominates the Case-projection. But this means that object expletives are in SpecFP rather than in SpecAgrOP in order to account for **who did you believe it that John saw?*. I have to leave the analysis of non-bridge predicates with these tentative remarks.

3 Maximal extended projections as domains for local movement

It is commonly assumed (Chomsky 1981) that there are two kinds of movement. They are distinguished in terms of the properties they exhibit. The movement that is commonly called A′-movement licenses parasitic gaps and exhibits reconstruction effects. The movement that is commonly called A-movement does not license parasitic gaps and does not exhibit reconstruction effects.

Chomsky (1981) defines the difference between the two types of movement in terms of the properties of the landing sites. Movement to an A-position is A-movement. Movement to an A′-position is A′-movement. A-positions are positions that are potentially assigned a theta-role. Complement positions and SpecIP are A-positions, given that the subject is base-generated in SpecIP. SpecIP is an A-position even if it is not actually assigned a theta-role. This is the case if the main verb is passive or unaccusative. SpecIP is an A-position if it is potentially — that is sometimes — assigned a theta role.

With the advent of the VP-internal subject hypothesis SpecIP does no longer qualify as an A-position. If the subject is base-generated in SpecVP, SpecIP is never assigned a theta-role. Hence SpecIP is no longer an A-position.

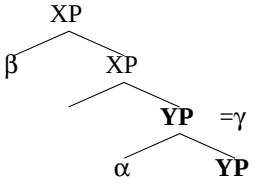
I propose to define the difference between the two types of movement not in terms of the properties of the landing sites but in terms of the domains in which movement takes place. Local movement is movement that does not leave any maximal extended projections. It has the properties of A-movement. Non-local movement is movement out of a maximal extended projection. It has the properties of A′-movement.

(67) Local movement versus non-local movement:
Movement from α to β is non-local movement iff
there exists a γ, γ is the highest segment (definition see below) of a maximal extended projection and γ dominates α but γ does not dominate β.
otherwise, movement from α to β is local movement.

(68) α is the highest segment of a maximal projection β iff
there is no γ, γ is a segment of β and γ dominates α.

The following structure illustrates the definition of non-local movement. Given that YP is a maximal extended projection, Movement from α to β is non-local movement. The upper YP-segment is the highest segment of YP. Let us call γ the highest segment of YP. γ dominates α but γ does not dominate β. Therefore movement from α to β is non-local movement.

(69)



3.1 Predictions

My proposal makes the following predictions that diverge from Chomsky (1981):

Movement into an A′-position is local if it does not leave a maximal extended projection. There are several instances of this kind.

1. CP-internal subject movement into SpecIP and SpecCP is local (see also Déprez 1989, 1991).
2. DP-internal movement to SpecDP is local (see also Longobardi 1991).
3. CP-internal adjunct movement is local.
4. Object movement to SpecAgrOP is local.

Movement into an A-position is non-local if it leaves a maximal extended projection.

1. ECM-constructions are a potential candidate if ECM is analyzed as subject to object raising but I do not discuss this case.

The structures in (71) illustrate CP-internal subject- object- and adjunct-movement. CP-internal subject- and adjunct movement are local because they do not leave any maximal extended projections. In (71a) the subject moves from SpecVP to SpecIP and SpecCP. In (71c) the manner adverb *how* is base generated in SpecFP and moves to SpecCP. Object movement to SpecCP proceeds in two steps. In (71b) the object moves first to SpecAgrOP because AgrOP is a maximal extended projection. SpecAgrOP is an escape hatch. This is local movement. Then the object moves from SpecAgrOP to SpecCP. This is non-local movement. Maximal extended projections are in bold face.

(70) a. who came?
b. who did you see?
c. how did she fix the car?

(71) a. [**CP** who$_i$ [IP t$_i$ [VP t$_i$ came]]]
b. [**CP** who$_i$ did you see [**AgrOP** t$_i$ [VP t$_i$]]]
c. [**CP** how$_i$ did she [FP t$_i$ fix the car]]

3.2 Weak pronouns in German

In German, weak (=unstressed) subject pronouns are possible in sentence-initial position but weak object pronouns are ruled out in sentence-initial position. The pronoun *es* (it) is a weak pronoun. It is always unstressed. Its stressed variant is *das* (this). Weak pronouns are in italics.

(72) a. *Es* hat den Wein getrunken.
it-nom has the-acc wine drunk
'it drank the wine.'

b. **Es* hat der Mann getrunken.
it-acc has the-nom man drank
'The man drank it.'

Travis (1984) proposes that V-2 clauses in German are IPs if the subject is fronted and CPs if some other constituent is fronted. Only stressed XPs can move to SpecCP. Hence unstressed pronouns cannot move to SpecCP and the contrast between (72a) and (72b) is accounted for. This proposal accounts for the distribution of weak pronouns. However, the assumption that some V-2 clauses are IPs causes several problems. E.g. sentential modifiers can adjoin to CP-internal IP but adjunction to V-2 clauses is ruled out.

(73) a. Ich weiss [CP dass [IP gestern [IP Peter dieses Buch gelesen
I know that yesterday Peter this book read

hat]]]
has

(73) b. *[?IP gestern [?IP Peter hat dieses Buch gelesen]]
yesterday Peter has this book read

Furthermore the IP-analysis makes wrong predictions with respect to extractability out of embedded V-2 clauses and it has to be assumed that IP is head-final if it is dominated by CP and head-initial otherwise. (see Vikner & Schwarz 1996 for a list of arguments against the CP-IP analysis of embedded V-2 in German.)

Déprez (1991) avoids the problems of the IP-CP analysis of embedded V-2 by going back to the assumption that all V-2 clauses in German are CPs. She proposes that weak pronouns are restricted to A-positions. In her proposal Spec positions are A-positions and adjoined positions are A′-positions. Subjects move to SpecCP which is an A-position. Hence weak subject pronouns are possible in sentence-initial position. Objects adjoin to CP which is an A′-position. Hence weak object pronouns are not possible in sentence-initial position.[36]

As I said in the section on the *that*-trace effect, Déprez' structure is not compatible with Kayne's (1994) antisymmetry proposal. In Kayne (1994) it is not possible to distinguish adjunction to maximal projections from specifier positions.

Rizzi (1991, talk given at GLOW as cited in Vikner & Schwarz 1996) adopts Déprez' proposal that weak pronouns are restricted to A-positions. In his

[36] See the section on the *that*-trace effect.

theory Spec positions are A-positions if they exhibit Spec-head agreement with respect to φ-features. In German V-2 sentences, SpecCP is an A-position if it is filled by the subject because the finite verb moves to C and there is spec head agreement between the verb in C and the subject in SpecCP with respect to φ-features. If the object moves to SpecCP, SpecCP is an A′-position because objects do not agree with the verb in C.

My objection to Rizzi's definition of A-positions is that it does not account for all instances of A-movement. There is evidence that DP-internal movement to SpecDP has the properties of A-movement. However, there is no Spec-head agreement in DP if an argument or adjunct of the noun moves to SpecDP. See the next section on quantifier scope in Italian.

My proposal accounts for the distribution of weak pronouns if weak pronouns are restricted to local movement. CP-internal subject movement to SpecCP is local movement whereas object movement to SpecCP is non-local movement because it leaves AgrOP.

3.3 Quantifier scope in Italian

Longobardi (1991) starts with the observation that the English and Italian DPs in (74) are ambiguous. The universal quantifier *every new professor* takes wide scope over the cardinal DP *five students* or vice versa.

(74) a. the introduction [of five students] [to every new professor]
b. la presentazione [di cinque studenti] [ad ogni nuovo professore]

In English, the scope ambiguity disappears if the cardinal DP *five students* moves to SpecDP. In (75) the cardinal DP takes wide scope over the universal quantifier *every new professor*.

(75) [five students]' introduction [to every new professor]

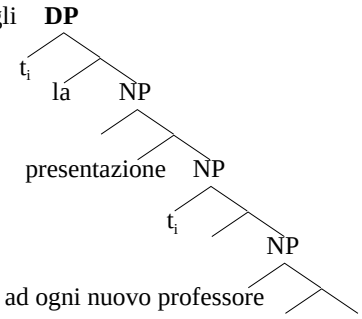
In Italian, the same disambiguation effect arises if the cardinal DP moves out of DP. The cardinal wh-phrase takes wide scope over the universal quantifier.

(76) [Di quanti studenti] consigli la presentazione [ad ogni
of how many students do you recommend the introduction to every

nuovo professore]?
new professor

The wide scope of the cardinal wh-phrase over the universal quantifier is accounted for if the cardinal wh-phrase reconstructs into SpecDP rather than into its NP-internal base position. This is predicted by the definition of local versus non-local movement in (67).

(77) [di quanti studenti]$_i$ consigli



DP-internal movement to SpecDP is local movement because it does not leave any maximal extended projections. Local movement does not reconstruct. Movement out of SpecDP is non-local movement because DP is a maximal extended projection. Non-local movement reconstructs. Hence the cardinal wh-phrase reconstructs into SpecDP.[37] It is important to notice that in (77) there is no Spec-head agreement with respect to φ-features between the cardinal wh-phrase *di quanti studenti* in SpecDP and the determiner *la* in D. The cardinal wh-phrase is plural whereas the determiner is feminine singular. Hence spec head agreement is not a precondition for local movement.

3.4 Passive

In passive constructions the object moves to SpecIP:

(78) John$_i$ was arrested t_i.

Passive verbs do not assign an external theta role. They also do not assign Case. Object movement from SpecVP to SpecIP is local movement if either the VP-shell that hosts the subject or AgrOP or both projections are not projected.

In (79a) the upper VP-shell is not projected. AgrOP is not a maximal extended projection because IP is an extended projection of AgrOP. Both are

[37] It follows from the definition of barriers that extraction out of DP proceeds through SpecDP. DP is a maximal extended projection and SpecDP is an escape hatch (given that DP moves to SpecAgrOP).

functional projections that have the same categorial features as the VP-projection. In (79b) AgrOP is not projected. The upper VP-shell is an extended projection of the lower VP-shell because both are lexical projections and share categorial features. In (79c) neither the upper VP-shell nor AgrOP is projected. IP is an extended projection of the lower VP-shell.

(79) a. [**IP** John$_i$ was [AgrOP t_i [VP t_i arrested]]]
b. [**IP** John$_i$ was [VP [VP t_i arrested]]]
c. [**IP** John$_i$ was [VP t_i arrested]]

3.5 Raising

In raising constructions the subject of the embedded predicate moves into the subject position of the matrix predicate:

(80) a. John$_i$ seems [t_i to sleep].
b. John$_i$ seems [t_i happy].

The definitions in (18)–(23) plus the definition of local versus non-local movement in (67) incorrectly predict that movement to the subject position of the matrix predicate is non-local movement. The embedded predicates are maximal extended projections and movement out of a maximal extended projection is non-local movement.

One way to establish that raising is local movement is to add another condition to the definition of maximal extended projections. Maximal extended projections are functional categories. Lexical categories cannot serve as maximal extended projections. Furthermore one has to assume that neither the embedded verbal predicate in (80a) nor the adjectival predicate in (80b) project a functional category. Instead, raising verbs take VPs or APs as objects in SpecVP.

(81) a. John$_i$ seems [VP t_i to sleep].
b. John$_i$ seems [AP t_i happy].

Given these assumptions, VP and AP in (81) are not maximal extended projections and raising is local movement.[38] However, this analysis does not account for the fact that superraising is ungrammatical.

[38] Another possibility is to adopt Hyde's (1997) analysis of raising. He claims that raising constructions are control structures. They do not involve movement. Hence the question of whether raising is local movement or non-local movement does not arise. (In Hyde's proposal passive still involves movement.)

(82) *John$_i$ is likely [t_i that it appears [t_i to be happy]]

In Chomsky (1986) superraising is ruled out by a constraint on improper movement which states that movement from an A′-position to an A-position is illicit. Hence movement from SpecCP to SpecIP is illicit.

(83) *[IP John$_i$ is likely [CP t_i that it appears [t_i to be happy]]]

In the framework of my proposal superraising is accounted for by the following constraint, given the additional assumption that every matrix clause projects up to CP.

(84) Constraint on non-local movement:[39]
The landing site of non-local movement is the specifier of a maximal extended projection.

If matrix clauses are CPs, IP is not a maximal extended projection and it follows from the constraint on non-local movement that movement from SpecCP to SpecIP is ruled out.

4 Summary

I have provided a definition of barriers and escape hatches that is based on the notion of maximal extended projections. According to these definitions subextraction out of subjects, objects and adjuncts is only possible if they move to the specifier of a maximal extended projection. Objects allow subextraction if they move to SpecAgrOP. AgrOP is a maximal extended projection. Subjects (and adjuncts) allow subextraction if they move to SpecCP. CP is a maximal extended projection. Subjects, objects and adjuncts do not allow subextraction if they remain in their base position because they are base generated in the specifier of a non-maximal extended projection.

I have discussed two alternatives as to why objects do not allow subextraction. The first hypothesis was that there is a correlation between Case assignment and subextraction: predicates that assign Case allow subextraction. However, we have seen that there are Nouns and Adjectives which allow subextraction out of their objects even though they do not assign Case. We have also seen that there are verbs that assign Case but do not allow subextraction out

[39] The constraint on non-local movement cannot be stated in terms of target α because IP is a maximal extended projection when it is targeted. IP is a maximal extended projection until CP is projected.

of their objects. Predicates that allow subextraction out of their objects are called bridge-predicates. I have sketched an incorporation analysis that accounts for the lack of extractability out of the objects of non-bridge predicates.

The bounding theory proposed in this paper also account for the parallels between extraction out of CP and extraction out of DP. In both cases extraction proceeds through the respective specifier position as an escape hatch.

My proposal also accounts for Pustejovsky's (1985) observation that prenominal genitives that are part of the theta grid of the noun do not block subextraction out of DP. These prenominal genitives are in SpecNP. They do not block extraction out of DP which proceeds through SpecDP. Prenominal genitives that are not part of the theta grid of the noun block subextraction out of DP because they are in SpecDP.

According to my analysis the *that*-trace effect does not follow from bounding theory. Bounding theory enforces that subject movement out of CP proceeds through SpecCP as an escape hatch but the trace in SpecCP is licit independent of whether or not *that* is in C. I assume that in English local movement triggers obligatory spec head agreement in CP and that *that* is not the agreeing form of C. Subject movement to SpecCP is local.

Local movement is not defined in terms of the properties of the landing sites (Chomsky 1981) or in terms of spec head agreement (Déprez 1989, Rizzi 1991) but in terms of the domains it takes place in. Quantifier scope in Italian provides an argument contra Déprez (1989) and Rizzi (1991) because it shows that local movement does not necessarily involve spec head agreement. Movement to SpecDP is local movement because it does not exhibit reconstruction effects, but there is no agreement between the element in SpecDP and the head of DP. The definition of local movement also accounts for the distribution of weak pronouns in German and passive.

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