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Contents

Wh-Movement out of the Site of VP Ellipsis*

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I. Introduction

The literature lacks a close investigation of wh-movement out of the site of VP ellipsis (VPE). An example of this phenomenon is a sentence like (1); (2) shows the intended interpretation of the embedded question in (1):

(1) I don't know which puppy you SHOULD adopt, but I know which one you SHOULDN'T.[1]

(2) ... [$_{CP}$ [which one]$_i$ [$_{IP}$ you shouldn't [$_{VP}$ ~~adopt t_i~~]]][2]

The wh-phrase *which one* has moved out of its position as the internal argument of *adopt* to front the embedded question.

Examples of wh-movement of an internal argument out of the site of VPE are cited as evidence in the on-going debate surrounding the nature of an elided VP, as will be discussed below. But the relevant examples exhibit unexplained grammaticality variation, which complicates their use as support for any theory. Sentence (3) is an ungrammatical example:

(3) * I think you should adopt one of these puppies, but I don't know [which one]$_i$ you should [$_{VP}$ ~~adopt t_i~~].

Without an understanding of the conditions under which the phenomenon is licensed, it is hard to assess its implications for larger debates. This paper examines wh-movement out of the site of VPE in more depth and detail than has been done, resulting in a preliminary proposal which explains the grammaticality patterns of numerous examples. The proposal states that wh-movement out of an elided VP is licensed only if there is a contrastively focused element in the C-command domain of the moved wh-phrase. This licensing condition covers relativization and topicalization out of an elided VP as well and is therefore posited as a general licensing condition on A' movement out of the site of VP ellipsis.

In section II, theoretical background is presented; this includes a discussion of the role of wh-movement out of an elided VP in the debate about the nature of the VPE site. Section III accounts for the grammaticality contrast between movement of a wh-argument and movement of a wh-adjunct out of an elided VP; this allows concentration on the more interesting argument extractions. Several sets of data are presented and discussed in section IV, and in section V the main analysis is developed. Section VI concludes with some theoretical consequences of the analysis and a glance at a possible alternative approach.

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[1] Words in uppercase are intended to be focused.

[2] Unpronounced material is struck out. This notation reveals the assumption that there is syntax in the ellipsis site. Some evidence for this assumption will be presented later.

II. Theoretical Background

VPE itself has naturally been the focus of much work, because it irresistibly offers us "the puzzle of generating meanings from silence." (Jason Merchant 1999, p. 2) One of the on-going debates related to VPE is the nature of that silence: is it an unpronounced syntactic copy of an overt VP in the discourse, or is it some kind of anaphoric proform? Supporters of the former theory (Fiengo & May 1994, Sag 1976, Williams 1977 and others), which is referred to as the deletion or reconstruction approach[3] , cite grammatical examples involving wh-movement out of an elided VP as supporting evidence.[4] In the relevant construction, exemplified by (1), repeated from above, there is a moved, overt wh-phrase fronting an embedded question. If there is syntax in the ellipsis site, that wh-phrase is easily regarded as binding a trace that is inside the ellipsis site, as illustrated in (2), also repeated from above:

(1) I don't know which puppy you SHOULD adopt, but I know which one you SHOULDN'T.
(2) ... $[_{CP}$ [which one]$_i$ $[_{IP}$ you shouldn't $[_{VP}$ ~~adopt t_i~~]]]

Supporters of the proform theory claim that there is no syntax in the ellipsis site; the problem is that if there is no syntax, the wh-phrase is a disallowed vacuous operator. Therefore, goes the deletion/reconstruction argument, this type of sentence is evidence against the proform theory. Moreover, under the proform theory, the ellipsis site can be replaced with anaphoric "do it" or "do so". And VPE-extraction examples like (1) can't host "do it" or "do so":

(4) * I don't know which puppy you SHOULD adopt, but I know which one you SHOULDN'T do it/so.

A possible response to these arguments is to analyze VPE extraction as an instance of pseudogapping (PG), a construction exemplified by (5):

(5) I think Jake should adopt the black puppy, and Janet should [~~adopt~~] the brown one.

Under a PG analysis, VPE extraction involves deletion of only the verb, and the wh-phrase moves to the front of the embedded clause, from which position it unproblematically binds an unelided trace. In (6), this analysis is illustrated for (1):

(6) I don't know which puppy you SHOULD adopt, but I know $[_{CP}$ [which one]$_i$ $[_{IP}$ you SHOULDN'T $[_{VP}$ $[_V$ ~~adopt~~] t_i]]]]

Support for the PG analysis is found in the fact that PG and VPE extraction pattern together in not allowing backwards binding. For instance, in (7) the deleted verb precedes its antecedent, and the pseudogap is ungrammatical:

(7) * Although I don't think Janet should the brown puppy, I do think Jake should adopt the black one.

And as shown in (8), backwards VPE extraction seems to be similarly prohibited:

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[3] It's the "deletion" approach to those who posit underlying syntactic structure in the ellipsis site which is subsequently deleted (unpronounced) under some brand of identity with an overt VP in the discourse. It's the "reconstruction" approach to those who posit that the content of the ellipsis site is "reconstructed" as a copy of an overt VP in the discourse at the level of logical form.

[4] I'll hereafter use the phrase "VPE extraction" to refer to movement of an element out of the site of VPE.

(8) * Although I don't know which puppy you SHOULD, I do know which one you SHOULDN'T adopt.

However, the argument against this reasoning is that there *are* constructions which do not host PG but which do host VPE extraction. For example, PG does not allow the deletion of a verb plus a preposition, while VPE does allow fronting of an interrogative pronoun that is the object of a preposition, as illustrated by the following pairs ((9) is borrowed from Johnson 1997, p. 21):

(9) a. * While Holly didn't discuss a report about every boy, she did every girl.
b. I know which woman HOLLY will discuss a report about, but I don't know which woman YOU will.

(10) a. * Tom didn't go to a movie with Richard, but he did Craig.
b I don't know who Tom DID go to a movie with, but I know who he DIDN'T.

And finally, Fiengo and May (1994) offer (11) as yet another argument against a PG analysis of VPE extraction:

(11) I know which book Max thinks Mary read, and which book Bill doesn't ~~[think Mary read]~~. (p. 229, ft. 31)

The ellipsis site can be interpreted as [think Mary read], as illustrated. And [think Mary read] is not a candidate for pseudogapped material; pseudogapping deletes a verb but not its complements:

(11.5) *Max thinks Mary read *Angle of Repose*, and Bill does ~~[think Mary read]~~ *Crossing to Safety*.

Summarizing the last bit of discussion: VPE extraction is problematic for the proform approach to VPE and more easily accounted for by the deletion/reconstruction approach, because the latter assumes that there is syntax in the ellipsis site and therefore that the ellipsis site can host a trace of wh-movement. Attempts by proform theorists to analyze VPE extraction as cases of PG (rather than full VPE) are weakened by evidence showing that VPE extraction is possible in some constructions in which PG is disallowed.

So, again, *grammatical* examples of VPE extraction have been used to support the deletion approach to VPE. But as mentioned already, not all instances of VPE extraction are grammatical. Some of those that aren't grammatical have actually also been called upon as evidence in favor of the deletion theory of VPE. The argument is that if there is syntax in the ellipsis site, the ellipsis site should be sensitive to island effects. That is, island violations that occur inside a VPE site are expected to result in ungrammaticality. And as Chung et al. 1995 and Merchant 1999 illustrate, this expectation seems to be realized. The (a) examples of (12) and (13) contain an island violation in the absence of VPE, and the (b) examples show that the ungrammaticality persists even when the VP is not pronounced (just as is predicted if there is syntax in the ellipsis site):

(12) a. * We left before they started playing party games. What did you leave before they started playing?
b. * We left before they started playing party games. What did you leave before they did? (Chung et al. 1995)

(13) a. * They want to hire someone who speaks a Balkan language, but I don't know which they want to hire someone who speaks.
b. * They want to hire someone who speaks a Balkan language, but I don't know which they do. (Merchant 1999)

This issue arises in discussions of sluicing, an ellipsis process which *does* rescue island violations (Ross 1969, Chung et al. 1995, Merchant 1999); (14) exemplifies:

(14) They want to hire someone who speaks a Balkan language, but I don't know which (Balkan language) [~~they want to hire someone who speaks~~].

Examples like (14) challenge the theory that sluicing is a process of syntactic deletion, because under such a theory the stranded wh-phrase ([which (Balkan language)] in (14)) is linked to a position inside an island. One response to this problem is to propose that the island violation is located at the position of the trace inside the island, and that the sluice disposes of the violation along with the syntactic material that is deleted (Lasnik 2000 and Merchant 1999 discuss this idea). But this proposal cannot apply equally to both sluicing and VPE, since VPE apparently doesn't rescue island violations. Contrary claims would have to be made about the island-violation examples of sluicing and VPE to analyze both ellipsis processes as straightforward deletions of syntactic material.

Again, the unexplained grammaticality variation of VPE-extraction examples is relevant. Given this grammaticality variation, it is possible that the ungrammaticality of the (b) examples of (12) and (13) is due to something other than the island violation. Perhaps once some other condition on VPE extraction is met, VPE actually does rescue island violations. Lasnik 2000 mentions this issue and provides (15) as an example of a sentence similar to (13b) but without the island:

(15) * They want to hear a lecture about a Balkan language, but I don't know which (Balkan language) they do. (Lasnik, 2000)

The question of whether VPE rescues island violations will be reconsidered after the presentation of the main analysis of VPE extraction. We will see that, according to the analysis given here, it *is* most likely the island violation that causes the degradation of (12b) and (13b) (or at least, the degradation cannot be attributed to the proposed licensing condition on VPE extraction). But that result is significant, because the difference between sluicing and VPE (with respect to island-rescuing) remains intact and puzzling.

The arguments in favor of the deletion approach to VPE discussed in this section point toward an analysis of VPE extraction which assumes syntax in the ellipsis site. I find these arguments, with respect to the VPE-extraction facts, to be convincing. Therefore, I consider VPE-extraction constructions to arise from wh-movement out of an elided VP, and all the discussion which follows assumes this analysis.

Before addressing the relevant grammaticality variation, I turn to apparent cases of VPE extraction involving adjuncts.

III. Accounting for the Argument-Adjunct Contrast in VPE Extractions

There is a robust grammaticality contrast between extraction of an internal argument from within an elided VP and extraction of an adjunct. This contrast is apparent when a pair of examples is constructed in which one example involves adjunct extraction and the other involves internal-argument extraction, but which differ minimally in other respects. The pairs in (16) and (17) are examples.

(16) a. I think you should adopt one of these puppies, but I don't know WHEN you should.
b. * I think you should adopt one of these puppies, but I don't know which ONE you should.

(17) a. I think Pete caught some crawdads, but I don't know WHY he did.
b. * I think Pete caught some crawdads, but I don't know how MANY he did.

Adjunct extraction from within an elided VP, as represented by the (a) examples, seems always to be grammatical. Pairs like (16) and (17) show that whatever is going on in the variable argument-extraction examples, there is indeed a contrast between argument- and adjunct- extraction from within an elided VP. The way I propose to account for the adjunct cases is to claim that they do not

actually involve wh-movement out of an elided VP. Rather, they involve fronting of an adjoined wh-adjunct and elision of only the *lower* VP of the adjunction structure. (18), which involves only regular VPE, shows that it is in principle possible to elide the lower VP of an adjunction structure:

(18) a. I adopted a puppy today, and I predict that YOU will tomorrow.
b. ... $[_{CP}$ that $[_{IP}$ YOU will $[_{VP}[_{VP}$ ~~adopt a puppy~~] tomorrow]]]

Given this possibility, (19b) may be posited as the structure of the VPE-extraction-formed embedded question in (19a):

(19) a. I think you should adopt one of these puppies, but I don't know WHEN you should.
b. ... $[_{CP}$ $WHEN_i$ $[_{IP}$ you should $[_{VP}[_{VP}$ ~~adopt a puppy~~] t_i]]] .

The adjunct *when* starts out adjoined to the ellipsis site and is therefore not actually extracted from within the ellipsis site. My assumption is that the variable grammaticality of the wh-argument cases is linked precisely to the fact that the sentences involve *extraction from within a VPE site*—because in the relevant sentences a regular VPE *is* licensed in the absence of this extraction. The fact that there is a legitimate derivation for the Wh-adjunct cases which does *not* involve extraction means that the wh-adjunct cases do not have to be accounted for by an analysis that explains the grammaticality patterns of VPE extraction. With this assumption, we can put the adjunct cases aside and concentrate on the more complicated argument cases.

IV. VPE Extraction Data and a Preliminary Proposal

Before considering wh-movement, it is worth noting that A-movement and head-movement out of the site of VPE are grammatical. (20) is an example of A-movement out of a VPE site: the DP *the temperature* is raised from its position as the internal argument of *monitor* to (spec, IP).

(20) The pressure should be monitored, and [the temperature]$_i$ should be [~~monitored t_i~~]$_{VP}$, too.

And (21) shows that head-movement is possible out of a VPE site, as *be* raises from V to I and then to C to front the matrix question.[5]

(21) Roy is monitoring the pressure, but is_i Sophie t_i [~~t_i monitoring the pressure~~]$_{VP}$?

But wh-movement, as we have already seen, is not as cooperative. To exemplify the problem: (22) is a grammatical example of the type of VPE extraction considered in a majority of the examples here: wh-movement to front an embedded question. (23) is an ungrammatical example of the same type (we have seen these examples already):

(22) I don't know which puppy you SHOULD adopt, but I know [which one]$_i$ you SHOULDN'T [~~adopt t_i~~]$_{VP}$
(23) * I think you should adopt one of these puppies, but I don't know [which ONE]$_i$ you should [~~adopt t_i~~]$_{VP}$.

Considering the versions of (23) involving a sluice and involving an overt VP helps confirm the ungrammaticality of (23), as it is clearly degraded compared to (24) and (25):

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[5] This is not the only possible structure for (19). The auxiliary *be* might originate in I°, in which case *be* does not raise out of the ellipsis site. However, evidence from Irish and Hebrew shows that head movement out of a VPE site is indeed possible (McCloskey 1991, Doron 1999).

(24) I think you should adopt one of these puppies, but I don't know which ONE (or WHICH one).
(25) I think you should adopt one of these puppies, but I don't know which ONE you should adopt.

Before looking at the data, some assumptions and terminology are necessary to facilitate discussion and to divide the examples up into manageable sets. "Contrastive focus" turns out to be involved in the grammaticality patterns of VPE extraction. In general terms, focus is phonologically realized as an increase in intensity and in some cases tone; one purpose that focus serves is to mark expressions that contrast with each other. For now I'll attempt only an informal definition of *contrast*: contrastive expressions are of the same semantic type but differ in meaning. I will return to the issue.

The following terms will be useful. The "VPE clause" refers to the smallest clause that contains the elided material (for example, the italicized clause in (26). The "antecedent clause" refers to the smallest clause that contains the elided VP's antecedent (for example, the singly underlined clause in (26). The "matrix material" refers to any material that dominates the VPE clause or the antecedent clause; this does not include the VPE clause or the antecedent clause—the matrix material is not a constituent. Matrix material is doubly underlined in (26):

(26) I think [you should adopt one of these puppies]$_{\text{antecedent clause}}$,
and
I think [*Joe should* [~~*adopt one of these puppies*~~]]$_{\text{VPE clause}}$, too.

To give a brief overview: the organization of the initial data is the following. All sets of sentences involve wh-movement of an *argument* out of the site of VPE. The first three sets do not involve parallel extraction; "parallel extraction" refers to a sentence involving wh-movement in the antecedent clause of an element which occupies a syntactic position parallel to that of the moved wh-phrase in the VPE clause. These three sets differ from each other in the location of the main contrast between the conjuncts of the sentences. The four sets which follow the first three, which also differ from each other with respect to the location of the contrast, *do* involve parallel extraction.

No parallel extraction:
(A) no contrast in VPE clause other than in moved Wh-phrase
(B) contrast in subject of VPE clause
(C) contrast in AUX of VPE clause

Parallel extraction:
(D) no contrast in VPE clause other than in moved Wh-phrase
(E) contrast in subject of VPE clause
(F) contrast in AUX of VPE clause
(G) contrast only in matrix material

The data are divided up this particular way to make it easier to see how the proposal works; this organization derives only from the proposal and does not reflect anything about the organization in which sentences were presented to speakers for judgment.

The data in (A) indicate that wh-movement of an argument out of a VPE site is ungrammatical when the only VPE-clause contrast is located in the extracted wh-phrase.

(A) *VPE-clause contrast—only in the moved wh-phrase (no parallel extraction)*:

(27) * I think you should adopt ONE of these puppies, but I don't know [WHICH one]$_i$ you should [~~adopt t$_i$~~].
(28) * No one doubts Jan will eat SOMEthing when she arrives, but it's not clear WHAT she will.
(29) * They said Pete caught SOME crawdads, but I don't know HOW MANY he did.
(30) * I know we invited SOMEone, but I can't remember WHO we did.

For comparison, consider (31) through (34); they represent the grammatical results when the sentences in (A) are modified to involve no ellipsis (the (a) examples), and to involve sluicing (the (b) examples):

(31) a. I think you should adopt one of these puppies, but I don't know WHICH one you should adopt.
b. I think you should adopt one of these puppies, but I don't know WHICH one.
(32) a. No one doubts Jan will eat something when she arrives, but it's not clear WHAT she will eat.
b. No one doubts Jan will eat something when she arrives, but it's not clear WHAT.
(33) a. They said Pete caught some crawdads, but I don't know HOW MANY he caught.
b. They said Pete caught some crawdads, but I don't know HOW MANY.
(34) a. I know we invited someone, but I can't remember WHO we invited.
b. I know we invited someone, but I can't remember WHO.

The sentences in (B), which involve contrast in the subject of the VPE clause, represent grammatical examples of VPE extraction.

(B) *VPE-clause contrast—in the subject (no parallel extraction)*:

(35) I think YOU should ride the TALLEST camel, but I don't know which one PHIL should.
(36) No one doubts JAN will eat a SANDWICH when she arrives, but it's not clear what MARGE will.
(37) They said PETE caught ELEVEN crawdads, but I don't know how many FRAN did.
(38) I know SHARON invited LARRY, but I can't remember who JACK did.

The sentences in (C) involve contrast in the AUX (auxiliary verb or modal) of the VPE clause. They are also grammatical.

(C) *VPE-clause contrast—in the AUX (no parallel extraction)*:

(39) I think you SHOULD adopt one of these puppies, but I can't predict which one you actually WILL.
(40) No one doubts Jan CAN eat a lot of cake, but it's not clear how much she actually WILL.
(41) They said Pete MIGHT have caught a lot of crawdads, but I don't know how many he actually DID.
(42) It's clear that they COULD invite someone, but I don't know who they ever WOULD.

The generalization which can be stated already from looking at (A), (B), and (C), is that a contrast is required, and that the contrast must be close to the ellipsis site. The grammatical examples, those in (B) and (C), involve contrast in the subject or AUX of the VPE clause. The domain that includes these two locations can be described in two ways: either as the smallest IP

dominating the ellipsis site, or as the material which intervenes between the extracted wh-phrase and the ellipsis site. Further evidence will help us argue for one over the other.

Initially during the collection of judgments, it seemed to be the case that parallel extraction improved the grammaticality of VPE extraction. For example, (44) is a big improvement over (43) (both are sentences we have seen already):

(43) * I think you should adopt one of these puppies, but I don't know which one you should.
(44) I don't know which puppy you should adopt, but I know which one you shouldn't.

This effect was not unexpected, because parallel extraction seemed likely to lend itself to a licensing condition based on binding at the level of logical form (LF). Various versions of LF-based identity conditions have been shown to make promising predictions for regular VPE (Sag 1976a,b; Williams 1977; Fiengo & May 1994). A possible VPE-extraction licensing condition, which would account for the differing judgments of (43) and (44), is given in (45):

(45) *LF-Identity Condition for VPE Extraction*:
A VP containing a trace bound by an outside Wh-operator can be elided only if its antecedent contains a syntactically parallel trace bound by an outside Wh-operator.

Condition (45) would predict that sentences which do not involve parallel extraction would not be candidates for grammatical VPE. But as we have seen, the sentences in (B) and (C) lack parallel extraction, and they are acceptable. An example repeated from (C):

(46) I think you SHOULD adopt one of these puppies, but I can't predict which one you actually WILL.

These examples show that an LF-based identity condition like (45) does not account for the VPE-extraction facts. Considering the remaining parallel-extraction examples will lead to a contrast-based licensing condition, as anticipated by our observations of sets (A), (B), and (C).

The sentences in set (D) involve parallel extraction, and they exhibit contrast in the Wh-phrase but in no other element of the VPE clause. They are found by many speakers to be degraded: worse than the sentences in (B) and (C) but not quite as bad as those in (A).

(D) *Parallel extraction; VPE-clause contrast—only in the moved Wh-phrase*:

(47) ? I don't know which PUPPY you_3 should adopt, but I know which KITTEN you_3 should.
(48) ? Some guests wondered WHAT Jan_3 would eat, and other guests wondered HOW MUCH she_3 would.
(49) ? How many CRAWDADS did $Pete_3$ catch? I don't know, but I know how many LOBSTERS he_3 did.
(50) ? I'll tell you which STUDENTS we_3 can invite, but I'm still unsure which PROFESSORS we_3 can.

In addition to being worse than the sentences in (B) and (C), the sentences in (D) are judged to be worse than versions of these sentences with an overt VP.

The examples in (E) involve parallel extraction and contrasting VPE-clause subjects. They are grammatical.

(E) *Parallel extraction; VPE-clause contrast—in the subject*:

(51) I don't know which puppy YOU should adopt, but I know which one TONI should.
(52) Some guests wondered what JAN would eat, and other guests wondered what BOB would.

(53) How many crawdads did PETE catch? I don't know, but I know how many FRAN did.
(54) I'll tell you who PAUL invited, but that won't provide any clues about who BRENDA did.

Set (F) includes sentences with contrasting VPE-clause AUXs. They are also grammatical.

(F) *Parallel extraction; VPE-clause contrast—in the AUX*:

(55) I don't know which puppy you SHOULD adopt, but I know which one you SHOULDN'T.
(56) Everyone knows what Jan WILL eat and what she WON'T.
(57) They mentioned how many crawdads Pete TRIED to catch, but I don't know how many he actually DID.
(58) I'll tell you who we COULD invite, but I can't say who we actually WILL.

In (G), there is contrast in the matrix material, and there's *no* contrast at all in the VPE clause. The examples in (G) are ungrammatical.

(G) *Parallel extraction; no VPE-clause contrast; only matrix-material contrast*:

(59) * PETE knows which puppy you$_3$ should adopt, but JAN doesn't know which one you$_3$ should.
(60) * SOME guests wondered what Jan$_3$ would eat, but OTHER guests already knew what she$_3$ would.
(61) * Do you know how many crawdads Pete$_3$ caught? No, I don't, but LAURA knows how many he$_3$ did.
(62) * MAGGIE doesn't know who we$_3$ can invite, but SARA can tell you who we$_3$ can.

The sentence-type in (G)—parallel extraction and only matrix-material contrast—wasn't possible in the sets lacking parallel extraction, because in those sets there was no way to prevent the wh-phrase from contrasting with the corresponding internal argument in the antecedent clause. In other words, the only way for the extracted wh-phrase to be *non*-contrastive with its syntactic correspondent is when there's parallel extraction in the antecedent (as in (G)), because that's the only situation in which the syntactic correspondent is also a wh-expression. I will come back to this issue later and argue differently.

The same generalization emerges from (D) through (G) as was formulated for the data in (A), (B), and (C): the grammatical examples involve contrast in the subject or AUX of the VPE clause. This requirement does not hold for regular VPE, or for A-movement or head-movement out of a VPE site; this is illustrated by (63) through (65), in which there is no contrast in the subject or AUX of the VPE clause but no degradation occurs:

(63) JOE said he thought I'd ridden a camel, and SUE said she thought [$_{IP}$ I had [~~ridden a camel~~]] too.
(64) ROY said he thinks the pressure should be monitored, and SOPHIE said she thinks [$_{IP}$ it should be [~~monitored t$_i$~~]], too.
(65) Guess whether Roy was monitoring the pressure! I don't know; was$_i$ [$_{IP}$ he t$_i$ [~~t$_i$ monitoring the pressure~~]]?

In summary, the requirement for grammatical VPE extraction is that there be a contrast in the subject or AUX of the VPE clause. This requirement can be stated, as mentioned already, as a condition on the presence and location of contrast, and the necessary domain for contrast can be described as either the smallest IP dominating the ellipsis site or the material that is between the extracted wh-phrase and the ellipsis site; these two options are so far equivalent. Data involving topicalization and additional examples of wh-movement out of an elided VP, presented in the next section, motivate choosing the latter domain description.

V. A Contrast-Locality Condition for VPE Extraction

It has been noted that regular VPE and A-movement and head-movement out of an elided VP do not require a particular location of contrast to be grammatical, while wh-movement does. It would be unsurprising if other A' -movements shared this property with wh-movement. Relativization out of an elided VP will be the first test of this hypothesis. First, it will be assumed that the preliminary proposal in (66) is the one being tested, as it is the more restrictive of the two options for the contrast domain mentioned in the previous section:

(66) *Contrast-locality condition on VPE-extraction:*
For A' -movement out of the site of VPE to be licensed, the smallest IP dominating the elided VP must contain an expression that contrasts with its syntactic correspondent in the antecedent clause.

An examination of the following instances of relativization out of an elided VP shows that condition (66) predicts the correct patterns of grammaticality.[6] (71) shows the assumed structure of the relative clause in (70).

no contrast in smallest IP; ungrammaticality predicted and confirmed:

(67) * I discovered that my cat had scratched some of the furniture, so I threw away the least salvageable pieces that he had.
(68) ... $[_{CP}$ OP_i that $[_{IP}$ he had $[_{VP}$ ~~scratched t_i~~]]].
(69) * I repaired the furniture that my cat had scratched, so I was then able to sell the very pieces that he had.
(70) * I repaired the SOFA that my cat had scratched, and my sister repaired the CHAIRS that he had.

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[6] A brief look at antecedent-contained deletion (ACD) provides another piece of evidence in support of a contrast-locality condition for VPE extraction. A preliminary look suggests that finding a contrast in the subject or AUX immediately dominating the ellipsis site is assured in cases of ACD, regardless of what analysis of ACD is assumed. (i) and (ii) take the form of commonly cited ACDs. They involve contrast in the subject or AUX:

(i) JACK read every book (that) SALLY did.
(ii) Jack read every book (that) he COULD.

(iii), which involves no contrast in the relevant domain, is ungrammatical:

(iii) * $Jack_3$ read every book (that) he_3 did.

It is interesting to note in addition that the version of (iii) without VPE actually *can* be grammatical, given the appropriate context. (iv) might be stated as a purposefully uninformative answer to the question: "How many books did Jack read?"

(iv) Jack read every book that he read.

But (iii) would still be unacceptable in that context.

contrast in smallest IP; grammaticality predicted and confirmed:

(71) I discovered that my cat had scratched some of the furniture, and then I sold the furniture that he HADN'T.
(72) ? I discovered that my CAT had ruined some of the furniture, after I had already sold the furniture that my DOG had.
(73) I sold the furniture that I knew my cat MIGHT scratch, and I kept the pieces that he already HAD.
(74) ? I repaired the furniture that my CAT had scratched, and I threw away the furniture that my DOG had.

Relativization follows the grammaticality pattern of embedded-question wh-movement and is therefore accounted for by condition (66).[7]

Topicalization out of an elided VP provides a second test of condition (66). There are (at least) two differences between wh-movement and topicalization which are relevant to this discussion. A moved wh-phrase lands in (spec, CP), while a topicalized element lands adjoined to IP (according to one of the widely accepted theoretical assumptions regarding topicalization[8]). Additionally, a topicalized element is inherently contrastive, while a wh-phrase isn't. Together, these assumptions lead to the prediction that cases of topicalization out of an elided VP will always adhere to condition (66), because the topicalized element will always be contrastively focused and will always be inside the relevant smallest IP. That is, (66) will be met regardless of whether the subject or AUX of the VPE clause is contrastively focused. The grammaticality of (78) through (80) confirm this prediction. They represent the first six of the possible contrast locations that were considered for wh-movement, and they are all acceptable.[9] (81) shows the assumed structure of the second conjunct of (75).

(75) I think Pete should sign the BLUE papers, and I think the GREEN ones he should, too.
(76) I think PETE should sign the BLUE papers, and I think the GREEN ones JAN should.
(77) I think Pete MIGHT have signed the BLUE papers, but the GREEN ones he most definitely DID.
(78) I think the BLUE papers Pete should sign, and I think the GREEN ones he should too.
(79) I think the BLUE papers PETE should sign, and I think the GREEN ones JAN should.
(80) I think the BLUE papers Pete MIGHT have signed, but the GREEN ones he most definitely DID.

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[7] It is not ideal that (72) and (74) are not perfectly grammatical. But it is not the only place where some speakers have judged contrastive subjects to be slightly less good than contrasting AUXs.

[8] The other assumption is that topicalization involves movement into the specifier of a topic projection below CP but above IP. I am assuming the adjunction analysis.

[9] The sentence that is missing from the topicalization examples is one in which only matrix material is contrastively focused. This was a type that was examined for Wh-movement. The problem with a topicalized example of this type is that it requires non-contrastive (even if focused) topicalized elements. Here's an example:

(i) * SALLY thinks that the BLUE papers Pete signed, but MARY doesn't think that the BLUE ones he did.

Its ungrammaticality is likely linked to the fact that the topicalized phrases don't contrast. Note that it is ungrammatical even in the absence of VPE extraction:

(ii) * SALLY thinks that the BLUE papers Pete signed, but MARY doesn't think that the BLUE ones he signed.

(81) ...and I think [$_{IP}$ [$_{DP}$ the GREEN ones]$_i$ [$_{IP}$ he should [~~sign t$_i$~~] too.

These examples offer further support for adopting condition (66).

However, the picture is complicated by the construction of examples in which the VPE-extractee is moved out of the VPE clause itself, and in which there is no contrastive focus in the smallest IP dominating the ellipsis site. Sentences (82) and (83) are two such examples involving wh-movement and (84) is one involving topicalization; they are both good while condition (66) predicts them to be bad.

(82) I don't know which puppy you should adopt, but I know which one JACK thinks [$_{IP}$ you should].
(83) I don't know which poem Sally will recite, but I'll tell you which one I HOPE [$_{IP}$ she will].

(82) and (83) point toward the alternative contrast domain mentioned in section III: the domain between the extractee and the ellipsis site. In (82), the focus is on *Jack*, and *Jack* is indeed between the extracted wh-phrase and the ellipsis site, but not in the smallest IP dominating the ellipsis site. Likewise, in (83), the contrastive focus is on *hope*, which is outside the smallest IP but in the domain between extracted phrase and ellipsis site.

Additional evidence in favor of adopting this modification of (66) is found in examples of VPE extraction which strand infinitival *to*.[10] It appears that the grammaticality of such examples depends on there being a contrastively focused expression between the extracted wh-phrase and the ellipsis site. In (84) and (85), the only word in this domain is *to*, which can't be focused.[11]

(84) * Rachel would sew something if she could just figure out WHAT to.
(85) * Rachel would sew something if she could just figure out what TO.

In (86), there is material in the contrast domain (the domain between the extracted wh-phrase and the ellipsis site), and when this material contains a focused element, the result is good:

(86) Rachel would sew something if she knew what [$_{\text{CONTRAST DOMAIN}}$ she was SUPPOSED to].

The observations for VPE extraction of wh-phrases, then, seem to require that the contrast domain be expanded to include all the material between the extractee and the ellipsis site.[12] (66) can thus be reformulated as (87):

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[10] I am assuming that *to* is the head of IP. I will make only brief mention of examples involving infinitival *to*; their use as examples is complicated by the restrictions on stranding *to* in regular VPE, and the lack of a widely accepted analysis of these restrictions. See Johnson 1997 for discussion and references.

[11] The only construction I can think of in which *to* can be focused is something like (i):

(i) We WOULD do something if there were actually anything TO do.

But this case does not involve VPE extraction. An infinitival *to* stranded by VPE cannot carry focus, as far as I have noticed.

[12] Additionally, the following examples of antecedent contained deletion (ACD)—borrowed from Jacobson 1992—support expansion of the contrast domain beyond the smallest IP (focus is mine):

(i) John kissed every woman who WANTED him [$_{IP}$ to].
(ii) John kissed every woman who THOUGHT [$_{IP}$ he would].

(87) *Contrast-locality condition on VPE-extraction:*
For wh-movement out of the site of VPE to be licensed, there must be a contrastively focused expression in between the VPE-extracted wh-phrase and the ellipsis site.[13]

But topicalization doesn't cooperate with this new contrast domain (which is the reason that (87) is formulated to apply specifically to extracted Wh-phrases, and not as a general condition on VPE A' -extraction). (88) illustrates this; the topicalized phrase has exited the smallest IP dominating the ellipsis site, and the result is still grammatical.

(88) The BLUE papers I think Pete signed, and the GREEN ones I think [$_{IP}$ he did], too.

In (88), the contrast is located inside the extracted phrase itself (the topicalized phrase) and nowhere else. It appears that for topicalization, the contrast must show up either in between the extractee and the ellipsis site, or on the extractee itself. I could claim that since there actually doesn't seem to be any constraint against topicalization out of an elided VP, a licensing condition that covers topicalization doesn't need to be posited. However, it would be preferable to posit a condition on VPE extraction that is as general as possible, and later I will do so. For now, I leave (87) as a condition on VPE wh-extraction specifically.

One final set of examples is worth considering. When the contrast is located in an adjunct within the VPE clause, the result seems to be (mostly) grammatical:

(89) ? You should ride that FRIENDLY camel TODAY, but I don't know WHICH one you should TOMORROW.
(90) ? I think Joe will use a WRENCH to fix the SINK, but I don't know WHAT he will to fix the RADIATOR.
(91) ? They said Pete caught eleven crawdads when the tide was LOW, but I don't know HOW many he did after the tide came IN.
(92) ? I was sure we had invited JILL last SUMMER, but I couldn't remember WHO we had last WINTER.

These may not be quite as good as the same sentences with overt verbs, but they are judged to be better than the worst VPE-extraction examples we've considered (for example, those in set (A), in which there is no contrast in the VPE clause aside from the wh-phrase itself). The contrastively focused adjuncts in (89) through (92) are not located between the extracted wh-phrase and the ellipsis site; they *follow* the ellipsis site. (87) thus predicts them to be ungrammatical. However, if (87) is reformulated using the notion of C-command, the fact that these sentences are not completely degraded is expected. The condition currently states that the contrast must be "in between" the extracted wh-phrase and the ellipsis site. To both capture what is meant by "in between," and to include in the domain a VP- or IP-adjoined adjunct, the domain can be described as the C-command domain of the extracted wh-phrase. However, care must be taken not to include the wh-phrase itself in the definition of C-command. We can do that by adopting the following non-reflexive definition of C-command:

(93) *C-command:*
A node α C-commands a node β iff
(i) neither node dominates the other
(ii) the mother of α dominates β

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[13] The informal "in between," in this condition is not intended as a satisfying description of a syntactic position. (87) will be reformulated yet again.

Now condition (87) can be restated more formally:

(94) *Contrast-locality condition for VPE-extraction:*
For wh-movement out of the site of VPE to be licensed, there must be a contrastively focused expression in the C-command domain of the VPE-extracted wh-phrase.

With a formal contrast-locality condition in hand, let's return to the problem posed by topicalization. A version of (94) generalized to include all A' extractions would make the wrong predictions about topicalization: it would disallow sentences like (95), in which the only contrastive focus is carried by the topicalized phrase itself. The contrast domain defined by (94) is bracketed:

(95) I think Pete should sign the BLUE papers, and the GREEN ones [I think he should] too.

The topicalization examples *would* be accounted for by a generalized version of (94) if C-command were defined as a reflexive relation. This is precisely the difficulty with formulating a single condition: a wh-extractee must *not* be included in the contrast domain and a topicalized extractee *must* be included in the contrast domain. A possible solution—the one I will pursue here—to this problem would be in place if the wh-extractees did not actually carry contrastive focus. In that case, (94) would account for both wh-movement and topicalization, as long as the definition of C-command were changed to a reflexive one—and that could be done by eliminating the clause stating that neither node dominates the other, leaving us with a simpler definition:

(96) *C-command:*
A node α C-commands a node β iff the mother of α dominates β

To consider the plausibility of my proposal—that the wh-extractees in the relevant data do not carry contrastive focus—let's use a particular example.

(97) * I think you should adopt [a puppy_3], but I don't know [WHICH one_3] you should.

In (97), the extracted wh-phrase *which one* carries the only focus in the VPE clause. Its syntactic correspondent in the antecedent is *a puppy*. If *which one* is contrastively focused, (94) would predict (97) to be grammatical, because there is a contrastively focused expression in the (reflexive) C-command domain of the extracted wh-phrase.

The informal definition given earlier of contrastiveness states that two expressions contrast if they are of the same semantic type but have different meanings. This informal definition doesn't provide the tools for determining whether *WHICH one* and *a puppy* contrast, because it is unclear what the "meaning" of the wh-phrase is. A formal definition of contrastiveness is necessary; the following one is taken from the literature:

(98) *Contrasting phrases* (Rooth 1992b)[14]:
Construe a phrase E as contrasting with a phrase A, iff both (i) and (ii) hold:
(i) the ordinary semantic value of A is an element of the focus semantic value of E
(ii) the ordinary semantic values of A and E are not equivalent.

[14] Rooth gives this definition of contrastiveness, in a slightly different form, although he dispenses with references to contrast in his final analysis of focus in the paper. I will not be using the full formal technology outlined in the literature on focus to frame my condition on VPE extraction (see Rooth 1992a,b, Merchant 1999, and Schwarzschild 1999 for discussion and references on the syntax and semantics of focus). Instead, I will use only the basic concepts and provide informal definitions; they are sufficient for my purpose here, which is simply to anchor the observations about VPE extraction within a larger theory of contrastive focus.

The focus semantic value of a phrase can be defined for my purposes in the following way (see footnote 14 for further comments): the focus semantic value of E is the set of ordinary semantic values that results when the focused expressions in E are replaced with all possible alternatives of the same semantic type.

For example, the focus semantic value of (99) is (100):

(99) SUE tore up the contract.

(100) {[[Sue tore up the contract]][15], [[Mary tore up the contract]], [[Joe tore up the contract]], [[Bob tore up the contract]]...[[X tore up the contract]], etc.} (where X is an individual)

To apply (98) to the example under consideration—repeated below as (101)—we must determine the ordinary and focus semantic values of *WHICH puppy*, and the ordinary semantic value of *a puppy*.

(101) * I think you should adopt [a puppy$_3$], but I don't know [WHICH one$_3$] you should.

A puppy is an indefinite noun phrase, and its ordinary semantic value is an existential quantification over individuals that are puppies. Following the literature on the semantics of wh-questions, I assume that the ordinary semantic value of *WHICH puppy* is also an existential quantification over individuals that are puppies. Therefore, the two expressions under consideration cannot be contrastive, because their ordinary semantic values are equivalent.

To finish illustrating how (98) applies to the example (even though we have already determined a lack of contrastiveness), we can note that the ordinary focus semantic value of *WHICH puppy* is the set of all existential quantifications over individuals that are puppies. The ordinary semantic value of *a puppy*, then, is certainly an element of the focus semantic value of *WHICH puppy*. It is the fact that the two phrases have equivalent ordinary semantic values that prevents them from contrasting.

We can conclude that the ungrammaticality of (101), at least, is predicted by the contrast-locality condition given in (94), because there is no contrastive focus in the C-command domain of the extracted wh-phrase. But to be satisfied that (94) covers all the data, repeated below are all the examples (in the data) in which the only focus is located in the extracted wh-phrase (which are precisely the examples that were a problem for (94) before we formalized the definition of contrastiveness).

(102) * I think you should adopt ONE of these puppies, but I don't know WHICH one you should.
(103) * No one doubts Jan will eat SOMEthing when she arrives, but it's not clear WHAT she will.
(104) * They said Pete caught SOME crawdads, but I don't know HOW MANY he did.
(105) * I know we invited SOMEone, but I can't remember WHO we did.

(102) through (105) share the following characteristic: the extracted wh-expression's syntactic correspondent in the antecedent clause is an indefinite noun phrase. In each example, the extracted wh-expression and its correspondent have equivalent ordinary semantic values and are therefore not contrastive. The contrast-locality condition given in (94) predicts them to be ungrammatical.

A final complication is posed the following set, in which the extracted wh-expression does indeed contrast with its syntactic correspondent in the antecedent clause. These examples involve parallel extraction, and the antecedent's wh-expression has a different ordinary semantic value from

[15] The double brackets indicate the ordinary semantic value of the sentence they contain.

the extracted wh-expression in the VPE clause. For instance, in (106), *which PUPPY* contrasts with *which KITTEN*.

(106) ? I don't know which PUPPY you$_3$ should adopt, but I know which KITTEN you$_3$ should.
(107) ? Some guests wondered WHAT Jan$_3$ would eat, and other guests wondered HOW MUCH she$_3$ would.
(108) ? How many CRAWDADS did Pete$_3$ catch? I don't know, but I know how many LOBSTERS he$_3$ did.
(109) ? I'll tell you which STUDENTS we$_3$ can invite, but I'm still unsure which PROFESSORS we$_3$ can.

My analysis predicts (106) through (109) to be grammatical. Although they are not judged by most speakers to be grammatical, they are indeed judged not to be as bad as (102) through (105). This provides support for my analysis, although it also indicates that it does not provide a complete explanation of VPE-extraction licensing.

Summarizing the current discussion, the following is a generalized licensing condition for A' - extraction out of the site of VPE, which accounts for clear patterns of grammaticality among examples of VPE extraction:

(110) *Contrast-locality condition for VPE extraction:*
For A' extraction out of the site of VPE to be licensed, there must be a contrastively focused expression in the C-command domain of the extracted phrase.

VI. Conclusions

Sentences (111) through (121) are examples of VPE extraction taken from the literature[16]. The judgments and focus indicated are those of the authors.

(111) I know how many homeworks I've graded, but I don't know how many Bill has. (Chung et al. 1995)

(112) * We left before they started playing party games. What did you leave before they did? (Chung et al. 1995)

(113) I saw Abby, but Bart, I didn't. (Merchant 1999)

(114) * They want to hire someone who speaks a Balkan language, but I don't know which they do. (Merchant 1999)

(115) John kissed Mary, but I wonder who Harry did. (Fiengo & May 1994)

(116) I know which book Max read, and which book Oscar didn't. (Fiengo & May 1994)

(117) * We wanted to invite someone, but we couldn't decide who to. (Johnson 1997)

(118) "What VP Ellipsis Can Do, What it Can't, but not Why." (Johnson 1997)

(119) I know which women HOLLY will discuss a report about, but I don't know which woman YOU will. (Johnson 1997)

16 They are not intended as an exhaustive list.

(120) speaker A: What was Harry able to take a picture of?
speaker B: A Gnu.
speaker A: * What was Tom? (Sag 1976)

(121) * I'm going to make a candlestick. What are you? (Hardt 1999)

All but two of the above are accounted for by (110)—the contrast locality condition for VPE extraction—as long as the contrastive elements are focused. The exceptions are (120) and (121). These involve root questions, which distinguishes them from all the examples of VPE extraction considered so far. It seems to be the case that root Wh-questions cannot be formed through VPE extraction under any circumstance; the root versions of the grammatical embedded questions we have looked at are ungrammatical, and condition (110) predicts them to be good. (122) and (123) are examples.

(122) I think YOU should ride the tallest camel. * But which one should PHIL?
(123) No one doubts JAN will eat a sandwich when she arrives. * But what will MARGE?

I have no account of the ungrammaticality of (122) and (123).

A consequence of (110) for larger theoretical concerns should be noted. Earlier, I mentioned that ungrammatical cases of VPE extraction have been cited to show that VPE does not rescue island violations. (124), repeated from section II, involves an island violation because the extractee is linked to a position inside a relative clause.

(124) * They want to hire someone who speaks a Balkan language, but I don't know which they do. (Merchant 1999)

(125) is a similar sentence without the island and it is also ungrammatical:

(125) * They want to hear a lecture about a Balkan language, but I don't know which (Balkan language) they do. (Lasnik, 2000)

(110) provides an account of both cases of ungrammaticality: neither (124) nor (125) exhibits the contrastive-focus requirement. To check whether the ungrammaticality of (124) is due to its violation of condition (110) or to its island violation, we have to construct examples that adhere to condition (110) and that involve an island; (126) through (129) are such examples[17]:

(126) * JOHN wants to hire someone who speaks Albanian, but I don't know which Balkan language MARY does.

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[17] Merchant 2001 provides several other examples:

(i) *Relative clause island:*
*Abby DOES want to hire someone who speaks GREEK, but I don't remember what kind of language she DOESN'T.

(ii) *Left-branch* (attributive adjective case):
*ABBY bought a big car, but I don't know how big BEN did.

(iii) *Derived position islands (subjects, topicalizations)*
*Abby DID said that a biography of HARPO is going to be published this year — guess which Marx brother she DIDN'T.

(iv) *COMP-trace effects:*
*It appears to ME that SEN. HATCH will resign, but I don't know which senator it does to YOU.

(127) * John WANTS to hire someone who speaks Albanian, but I don't know which Balkan language he'll actually be ABLE to.
(128) * I don't know whether John wants to hire someone who speaks a Balkan language, but I know which language he DOESN'T.
(129) * I don't know whether John wants to hire someone who speaks a Balkan language, but I know which language he DOESN'T want to.

These data establish that VPE extractions which violate islands are still ungrammatical even when the condition for VPE extraction is met, suggesting that we can continue to blame the island violation for the ungrammaticality. This result shows that the contrast claimed to hold between VPE and sluicing—that VPE doesn't rescue island violations and that sluicing does—*does* in fact hold. For discussion of the interaction between sluicing and islandhood, see Merchant 1999.

On a different topic, there is one interesting generalization which should be noted, as it may lead toward an analysis quite different from the one presented here. All the ungrammatical sentences involving VPE extraction considered here can host sluicing. (130) and (131) illustrate:

(130) * I think you should adopt one of the puppies, but I don't know WHICH one you should.
(131) I think you should adopt one of the puppies, but I don't know which one.

And all the grammatical sentences involving VPE extraction considered here can *not* host sluicing, because there is material that follows the extracted wh-expression which is crucial to the meaning of the sentence. (132) and (133) illustrate:

(132) I don't know which puppy you should adopt, but I know which one you SHOULDN'T.
(133) * I don't know which puppy you should adopt, but I know which one.

These observations yield the conjecture that there is a constraint which forces the largest elision that can occur (without compromising the meaning of the sentence) once extraction from within an elided phrase is triggered.[18] See Merchant 2001 for elaboration of this idea and references.[19]

In conclusion: my contrast-based licensing condition for VPE extraction accounts in a systematic way for previously unexplained grammaticality patterns exhibited by VPE extractions. It does so using plausible theoretical concepts that have been independently motivated, such as contrastive focus and C-command. A puzzle remains: why is any special condition for VPE extractions required at all? We would expect the facts about VPE extraction to fall out as a consequence of the interaction between VPE and A' movement generally, but nothing that I am aware of about these two phenomena predicts the VPE-extraction patterns. I anticipate that when more complete theories of ellipsis and A' movement have been developed, my analysis of VPE extraction will be reasonably integrated.

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[18] The representation of these observations in terms of a constraint is an idea first proposed to me by Judith Aissen.
[19] Merchant proposes the following constraint:

MAXELIDE: "Elide as much of an XP as possible" (when XP contains an A'-trace)

and comment that this constraint may be in part derivable from economy.

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Three kinds of transderivational constraint*

Christopher Potts

1 Remarks

The status of *transderivational constraints* (TDCs) in syntactic theory has always been controversial. TDCs – informally definable as any that make syntactic well-formedness dependent upon *sets of sentences* – were proposed throughout the 1970s in various forms.[1] Most were quickly discovered to be factually or theoretically unsound. But this did not lead to a rejection of transderivational thinking. Quite the opposite; TDCs play a bigger role in syntactic theorizing today than ever before. The term itself is in disfavor, but the *blocking principles* of Di Sciullo and Williams (1987) meet the formal definition (see also Williams 1997; Hankamer and Mikkelsen 2001), as do the *economy conditions* of Chomsky 1995, Reinhart 1998, Fox 2000, and others working in the Minimalist Program.

Despite this current enthusiasm, little work has been done on the underlying logic of these constraints and their consequences for the design and complexity of syntactic theories.[2] As a result, all proposed TDC are stated informally, and sometimes their transderivational nature seems not even to be appreciated by their proponents.

This paper is a preliminary investigation of the formal properties of TDCs. I show that there are (at least) three logically and conceptually distinct classes of TDC. The tamest of the trio contains only those that can be cast as constraints on *grammars*, rather than constraints on natural language objects themselves. I call these *grammar constraints*. They include the metarules of GPSG (Gazdar et al. 1985) and its descendants, blocking principles, and others. Many are context-free definable; in section 3.1 I exemplify using the GPSG passive metarule and a blocking principle for Danish definite marking (Hankamer and Mikkelsen 2001).

From a model-theoretic vantage point, grammar constraints place limitations on the constraint set. But most TDCs constrain the constraints themselves, by setting their applicability relative to other sentences (sometimes even non-sentences). These are the *true TDCs* and the strategies for stating grammar constraints are of no use with them.

The true TDCs divide into two subclasses, which I call *optional TDCs* and *intrinsic TDCs*.[3] Optional TDCs enforce conditions that can be given non-transderivational statements within a more powerful formalism; in

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[1]There is no ideal name for these constraints. "Transderivational" is sometimes used for constraints on non-adjacent trees in a single derivation. This not the sense intended here. Rather, "transderivational" is reserved for constraints that reference sets of complete linguistic objects, whatever the nature of those objects is taken to be (single trees, attribute value matrices, ordered tuples of trees, etc.). "Interderivational" is better, but not theory neutral. "Comparative" is better still, but is easily confused with the comparative construction. Certainly, this name would make it hard to discuss Williams's (1997) transderivational constraint on comparative marking, which would be a comparative comparative constraint.

[2]Jacobson 1974 is a pioneering work in this area. An outstanding recent contribution is Johnson and Lappin 1999. See also Pullum and Scholz 2001.

[3]The use of "intrinsic" is adapted from Johnson and Lappin's (1999: §2.5.1) observation that Chomsky's (1995) Smallest Derivation Principle "cannot, as far as we can see, be reformulated a local constraint on movement" (p. 31). The techniques offered in this paper permit assured omission of the hedge "as far as we can see". Unfortunately, space precludes a discussion of this constraint.

section 3.1, I illustrate first with purely formal languages, and then with an example drawn from the recent linguistic literature: the Scope Economy condition of Fox (2000), which can be given a non-TD statement only if one assumes a *derivational* theory. Intrinsic TDCs are those that are transderivational no matter what formalism is assumed. I discuss one intrinsic TDC in detail – Rule H, again from Fox 2000 – and briefly mention many others that fall into this class.

This bifurcation in the class of true TDCs raises pressing theoretical issues. It is probable that a grammar incorporating TDCs is prohibitively complex. So a demonstrated need for an optional TDC could decide among formalisms (see Section 3.1.1). In particular, the validity of Fox's Scope Economy would be decisive for a derivational view over a representational one, as only the former can state this condition as a non-TDC.

In the interest of space, I do not here consider the linguistic motivation for the constraints I discuss. The focus is entirely on getting at their logical properties.

2 Constraints on possible grammars

Useful transderivational effects can be obtained by restricting the form of *grammars*. In this section, I show that many of these *grammar constraints* can be stated in the weak monadic second-order logic $L^2_{K,P}$ of the work of Rogers (1996, 1997, 1998). This logic is provably equivalent to a context-free formalism in the sense that a finite set of trees T is definable in it just in case T is generated by a context-free grammar. Moreover, the satisfaction question for $L^2_{K,P}$ is decidable. Thus, these grammar constraints are highly tractable.

I begin, in section 2.1, with a brief overview of $L^2_{K,P}$ and the kinds of relations we can define within it. I then state the GPSG passive metarule and the blocking principle of Hankamer and Mikkelsen (2001) using the tools developed in 2.1.[4]

2.1 The basics of the logic $L^2_{K,P}$

As Rogers (1997: p. 723) notes, $L^2_{K,P}$ is powerful. Since it is second-order (hence the ^{2}), it allows quantification over both nodes (its individuals) and sets of nodes. This makes it possible to place conditions on arbitrarily large trees, since trees are just sets of nodes meeting certain properties (see (3) below).

However, because it is a monadic logic, all binary predicates are either members of the set of relations in (1), or else defined in terms of these relations and unary predicates (members of the class K).[5]

(1) a. The usual predicate logic connectives: $\wedge, \vee, \rightarrow, \leftrightarrow, \neg$

b. $\lhd$ = *immediate domination* $\quad\quad$ $\prec$ = *left-of*
$\approx$ = *equality*

Thus, one can ensure that every sentence has both a subject and a predicate by imposing the following condition on models:

(2) $\forall x[\mathrm{S}(x) \rightarrow \exists y, z[x \lhd y \wedge \mathrm{NP}(y) \wedge x \lhd z \wedge \mathrm{VP}(z) \wedge y \prec z \wedge$
$\forall v[x \lhd v \rightarrow y \approx v \vee x \approx v]]]$

—every node x labelled S has a daughter y labelled NP and a daughter z labelled VP and y precedes z and x has no daughters distinct from y and z

[4] These ideas are inspired by Rogers's (1997) proposals, though my interpretation is much different than his.

[5] I use in addition the meta-logical symbol '$\equiv$' (strict equivalence), and abbreviations like

$$\bigvee_{x_i : i \leq 3} \varphi(x_i) \equiv \varphi(x_1) \vee \varphi(x_2) \vee \varphi(x_3)$$

The power of second-order quantification permits complex conditions such as (3), which says that every chain contains exactly one node that is case marked ((3) takes for granted the explicitly defined relation CHAIN from Rogers 1998 (§13.5).)

(3) $\forall X[\text{CHAIN}(X) \rightarrow \exists x[X(x) \wedge \text{CASE}(x) \wedge \forall y[X(y) \wedge \text{CASE}(y) \rightarrow x \approx y]]]$

—every set of nodes that forms a chain contains exactly one node that bears case

2.2 Defining local trees in $L^2_{K,P}$

Rogers (1997) provides the tools for translating context-free rewrite rules (tree admissability constraints) into statements of $L^2_{K,P}$. We begin by defining local trees using the predicate CHILDREN (Rogers 1996, 1997).

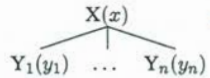
(4) $\text{CHILDREN}(x, y_1, \ldots, y_n) \equiv$

$$\bigwedge_{y_i : 1 \leqslant i \leqslant n} [x \lhd y_i] \wedge \bigwedge_{i \neq j} [y_i \not\approx y_j] \wedge \forall z[x \lhd z \rightarrow \bigvee_{y_i : 1 \leqslant i \leqslant n} [z \approx y_i]]$$

—x immediately dominates all and only the nodes in $y_1, \ldots, y_n$, which are all distinct

Using CHILDREN, we can actually treat local trees as predicates of variable arity. Symbolically, this is most perspicuously done by including tree diagrams in formulae, decorated with predicates and variables. The result is rather Fregean in its embrace of complex graphemes:

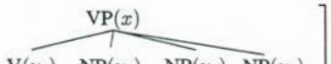
(5)



$$\equiv \text{CHILDREN}(x, y_1, \ldots, y_n) \wedge X(x) \wedge \bigwedge_{y_i : 1 \leqslant i \leqslant n} [Y_i(y_i)]$$

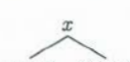
—the mother node x in the local tree is labelled X and each daughter y_i is labelled by Y_i

These defined predicates provide a neat shorthand, allowing, for instance, a perspicuous statement of a constraint blocking tri-transitive verbs; the following are equivalent:

(6) a. $\neg\exists x, y_1, y_2, y_3, y_4$ []

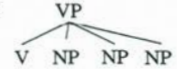
b. $\neg\exists x, y_1, y_2, y_3, y_4[\text{CHILDREN}(x, y_1, y_2, y_3) \wedge \text{VP}(x) \wedge \text{V}(y_1) \wedge \text{NP}(y_2) \wedge \text{NP}(y_3) \wedge \text{NP}(y_4)]$

Similarly, the cumbersome statement in (2) can now take the form (7).

(7) $\forall x \left[\text{S}(x) \rightarrow \exists y, z \left[\right.\right.$  $\left.\left.\right]\right]$

I stress that the tree predicate makes statements in the *object* language. It has exactly the status of, e.g., $\rightarrow$. It is a defined predicate adopted to make the system easier to work with. Linguistically speaking, this means that the tree predicate is interpreted over natural language objects. So (6) defines a set of trees that excludes all subtrees of the form (8b), properly blocking (8a).

(8) a. *Willie bet Fats five-thousand bucks the game.

b. * 

2.3 Why there cannot be object language TDCs

The goals of this section are two. Using the GPSG passive metarule as an example, I show that we can state grammar constraints in $L^2_{K,P}$, which amounts to showing that they are strongly context-free. But equally important is my illustration that these constraints *must* be grammar constraints if our class of models includes individual sentences. Attempting to use them to restrict natural language objects directly has laughably false consequences.

2.3.1 The GPSG Passive metarule

Metarules play a key role in the GPSG grammar formalism and the frameworks it has influenced. As the name indicates, these are metagrammatical principles, closure properties on the set of rules in the grammar. As Gazdar et al. (1985) write "Metarules map lexical ID rules to lexical ID rules" (p. 59). For instance, the *passive metarule* says, roughly, that every transitive verb has a passive counterpart – that is, for every rule licensing a transitive verb phrase based on a verb V there is a rule licensing the passive counterpart of V.

The metagrammatical status of this rule becomes evident when one states it in the object language, i.e., as a direct constraint on natural language objects; see (9).[6,7]

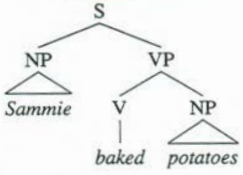
(9) *Passive meta-rule in the object language (with disastrous results)*:

$$\forall X \forall (x, y_1, y_2) \left[\left[\mathcal{V}(X) \wedge \begin{array}{c} XP(x) \\ \diagup \quad \diagdown \\ X(y_1) \quad \text{NP}(y_2) \end{array} \right] \rightarrow \exists z, w \left[\begin{array}{c} XP(z) \\ | \\ X_{[\text{PAS}]}(w) \end{array} \right] \right]$$

—every transitive verb phrase has a passive counterpart

But this is not the intended statement; quite probably, (9) is not a rule in any natural language. It has the unfortunate effect of blocking (10).

(10) Sammie baked potatoes.



It is *false* of this tree (hopeful model) that for every subtree meeting the antecedent condition of (9) there is one meeting its consequent condition. There is just one VP. It is a transitive verb phrase. Hence it does not validate the consequent —

$$\begin{array}{c} XP(z) \\ | \\ X_{[\text{PAS}]}(w) \end{array}$$

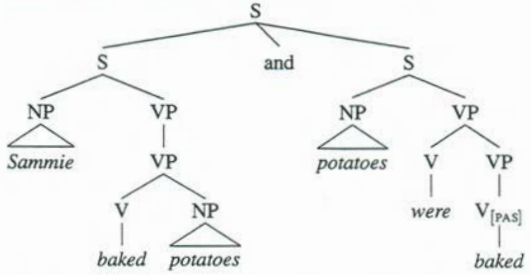
— for two reasons: (i) it has just one daughter node; and (ii) its head, w, is not a member of [PAS].

However, this tree does satisfy (9):

[6] I use $\mathcal{V}$ to denote the set of verbal predicates. This third-order set is legitimate in the second-order only $L^2_{K,P}$ because it is merely an abbreviation: $\mathcal{V}(X) \equiv [X = V_1 \vee V_2 \ldots]$. That is, $\mathcal{V}$ abbreviates a finite disjunction of predicates and is thus eliminable. I also use $XP(x)$ as an abbreviation for $X(x) \wedge BAR\text{-}2(x)$. Similarly, $X_{[\text{PAS}]}(x)$ abbreviates $X(x) \wedge [\text{PAS}](x)$.

[7] I ignore optional *by*-phrases. To allow these, one would make the consequent of (9) a disjunction, one disjunct specifying a *by*-marked PP daughter.

(11) Sammie baked potatoes and potatoes were baked.



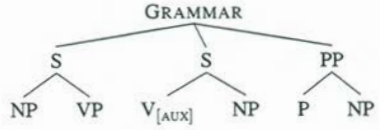
The difficulty is not with passive metarule *per se*, but rather with the structures that it is being interpreted relative to. One must heed the prefix 'meta-', that is, treat the passive metarule as a constraint on admissible rule sets. This can be done within $L^2_{K,P}$, with the interpretation relative to a *grammar tree*.

2.3.2 Grammar trees and TDCs

The passive metarule is fundamentally a constraint on the kinds of grammars linguists are allowed to write, as the above quote from Gazdar et al. 1985 (p. 59) indicates. Only in this indirect sense does it constrain the models of grammars (sentences) themselves. Thus, while one can state the passive metarule in $L^2_{K,P}$, the models must now be taken to represent *entire grammars*. To do this, we exploit the fact that a context-free grammar can be seen as a method for specifying a finite set of local trees. Each rule of the grammar licenses a tree of depth one; see Rogers 1999 for the technical details of this correspondence. We can obtain a single object from this set of trees (and thus state constraints on the entire grammar) by adding a rule that links all the trees via a GRAMMAR root node.

A simple example of how this works is the three rule grammar represented in (12), which I call a *grammar tree*.

(12)



This is just an embedding of the context-free grammar[8] —

(13)
$$\begin{array}{lcl} \text{GRAMMAR} & \twoheadrightarrow & \text{S} \mid \text{PP} \\ \text{S} & \twoheadrightarrow & \text{NP} \quad \text{VP} \\ \text{S} & \twoheadrightarrow & \text{V}_{[\text{AUX}]} \quad \text{NP} \\ \text{PP} & \twoheadrightarrow & \text{P} \quad \text{NP} \end{array}$$

— into a linguistic tree. We could provide $L^2_{K,P}$ formulae specifying these rules using exactly the scheme employed above for object-language constraints.

This provides an appropriate object for interpreting the passive metarule: we simply use a formula very much like (9), but interpret it relative to a grammar tree. To do this, I introduce the relation $\Rightarrow$, the grammar (meta) counterpart of the tree predicate, and moreover put variables in boldface, to further emphasize the metalevel at which we are operating

[8] In order to avoid arrow confusion, I use $\twoheadrightarrow$ in the statement of formal language grammars.

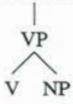
(14) *Passive metarule as a* metarule:

$$\forall \mathbf{X} \forall (\mathbf{x}, \mathbf{y_1}, \mathbf{y_2}) \quad [\mathcal{V}(\mathbf{X}) \wedge [\mathbf{XP}(\mathbf{x}) \Rightarrow \mathbf{X}(\mathbf{y_1})\ \mathrm{NP}(\mathbf{y_2})]] \rightarrow \exists \mathbf{z}, \mathbf{w}[[\mathbf{XP}(\mathbf{z}) \Rightarrow \mathbf{X}_{[PAS]}(\mathbf{w})]]]$$

—every transitive VP rule has a counterpart passive rule based on $V_{[PAS]}$

As a constraint on grammars, this limits the class of models to those in which there is a injective function from transitive VP rules to passive VP rules. Thus, a *grammar* such as (15)—

(15) * GRAMMAR



—is *not* a model if we impose the constraint in (14).

I close this section by noting that if a constraint (meta- or otherwise) regulates the existence of just a single local tree, then it does not matter whether we impose it on natural language objects or on their grammars. For instance, the prohibition (6) on tri-transitive verbs could alternatively be conceived of as a disallowing *rules* of that form. It is only when we need to consider sets of trees that we must move to the grammar tree, where the models are complete grammars.

2.4 Blocking in Danish definites: an empirical challenge met

In this section, I show that an intricate blocking principle can be stated using the same techniques as employed for the passive metarule. Again, it is crucial that this principle regulate grammars, not sentences. The actual statement in $L^2_{K,P}$ presupposes a quite refined version of grammars. This might reflect a limitation on the method employed here, but I suspect that it can be made more natural.

Hankamer and Mikkelsen (2001) argue that the distribution of definiteness marking in Danish nominals is governed by a blocking principle. Their basic generalization is that "in the absence of modifiers, only postnominal definiteness marking is possible" (§3.3). Thus, one has paradigms such as (16) - (17).

(16) a. * den hest
DEF horse

b. hesten
horse.DEF

(17) a. * røde hesten
red horse

b. den røde hest
DEF red horse

However, there are two classes of nouns that cannot take a definite suffix, regardless of whether they are modified: proper names and nouns ending in the suffix *-ende*. Thus, one has, e.g., (18).

(18) a. den (stakkels) studerende
the (poor) student

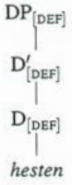
b. * studerende(e)n
student.DEF

Hankamer and Mikkelsen's claim is that, in the domain of definite marking, grammatical suffixation blocks the use of the determiner – the word trumps the periphrastic form.

As in the case of the passive metarule, we cannot make this a direct constraint on the class of models of the grammar. But we can impose it as a condition on the *grammar* of Danish, as follows.

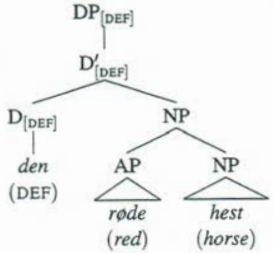
Hankamer and Mikkelsen argue that (19) is the structure of examples such as (16b).

(19)



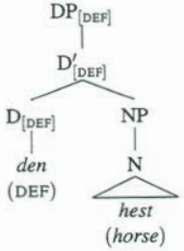
They argue furthermore that (16a) has the structure in (20).

(20)



The structure that is supposed to be blocked by (19), where available, is this one:

(21)



Thus we want to say that a rule licenses a D′ with just one daughter, a D^0 only if there is no rule licensing D′ with daughters D^0 and a non-branching NP. First, we define a class $\mathcal{G}$ of grammatical features, a set of predicates like [PLURAL], [DEF], [PROPER-NAME], etc. Then we state the required blocking principle as the constraint on grammars in (22).

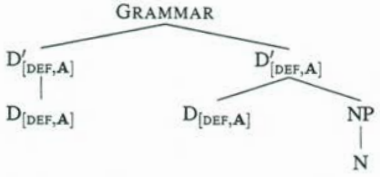
(22) *Blocking with Danish definites:*

$$\forall \mathbf{X}, \mathbf{x}, \mathbf{y}, \mathbf{z}$$
$$[\mathcal{G}(X) \wedge [\mathrm{D}'_{[\mathrm{DEF},\mathbf{X}]}(\mathbf{x}) \Rightarrow \mathrm{D}_{[\mathrm{DEF},\mathbf{X}]}(y)\ \ \mathrm{NP}(z)] \rightarrow$$
$$\neg\exists \mathbf{v}, \mathbf{w}[\mathrm{D}'_{[\mathrm{DEF},\mathbf{X}]}(\mathbf{v}) \Rightarrow \mathrm{D}'_{[\mathrm{DEF},\mathbf{X}]}(\mathbf{w})]]$$

—a rule licenses a non-branching definite D′ with some feature **X** only if there is no rule licensing a D′ bearing **X** and expanding into a D with **X** and a non-branching NP

Thus, the following is not a possible subgrammar of Danish, since the rule (subtree) on the left meets the antecedent condition of (22) but the rule on the right is the negation of the consequent of (22). (**A** is an arbitrary member of $\mathcal{G}$.)

(23)



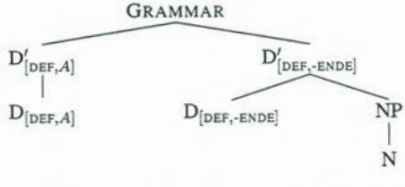
The final piece in this restatement of the Blocking principle is a constraint against expanding proper names and *-ende* nominals as definite marked D's. Since this references just one structure, it could, in isolation, be either a constraint on the grammar or a constraint on sentences themselves. However, we must make it a constraint on grammars, so that it interacts with (22); see (24).

(24) $\forall \mathbf{x}, \mathbf{y}[[D_{[\mathrm{DEF}]}(\mathbf{x}) \wedge \mathbf{x} \lhd \mathbf{y}] \rightarrow [\neg[[\text{-ENDE}](\mathbf{y}) \vee [\text{PROPER-NAME}](\mathbf{y})]]]$

—if a node is labelled D and [DEF], then its daughter is not a member of [-ENDE] or a proper name

This principle stipulates that proper names and *-ende* nominals never meet the antecedent condition of (22), and hence can take a definite article. According to Hankamer and Mikkelsen (2001), (18) represents an arbitrary morphological gap. So we do no violence to the intuition behind the analysis by stating this principle. The following therefore is a possible fragment of a Danish grammar tree, assuming $A \neq$ [-ENDE] $\vee$ [PROPER-NAME].

(25)



A drawback to this statement is that it requires a highly refined view of the rules of the grammar. In particular, we require a different rule of the gross form $[\mathrm{D}'_{[\mathrm{DEF},A]} \Rightarrow \mathrm{D}_{[\mathrm{DEF},A]}]$ for every feature grammatical feature A. However, it seems clear that the feature inheritance mechanisms of GPSG, which Rogers has shown to be $L^2_{K,P}$ definable, can capture the obvious generalizations over these sets of rules. The account would still, though, have to encode at least as much detail (featural sensitivity) as the above does.

2.5 Historical- and meta- views

The need for constraints like the passive metarule was recognized by Chomsky in his early work. Chomsky (1965: §1.5) draws a distinction between *substantive* and *formal universals*. Substantive universals say things like "All spoken natural languages draw from a fixed set of phonetic features". Formal universal are "of a more abstract sort" (p. 29). They impose conditions on the nature and composition of natural language grammars. This is exactly what the passive metarule does: as noted above, it is a closure property on the set of rules that a natural language grammar tree can contain.

The tools set out above are not tied to definability in $L^2_{K,P}$. For instance, Chomsky writes "consider the proposal that the syntactic component of a grammar must contain transformational rules..." (p. 29). This presupposes a more powerful formalism than $L^2_{K,P}$, but it yields just as easily to the above techniques. It simply says that every grammar consists of at least one function mapping trees into trees. Similarly, universal constraint rankings on Optimality Theory grammars are restrictions on grammars, not natural language structures. For prominent and diverse examples of such constraints, some of which have obviously transderivational effects, see Prince and Smolensky 1993 (§7, §8), Aissen 1999, Ito and Mester 1998.

In sum, it should be stressed that although grammar constraints have transderivational effects, in that they make statements about the properties of sets of trees, they do not act directly on natural language objects. Indeed, the prefix 'meta-' is exactly correct for this class. The following relations bring this into focus. When one says that a sentence is licensed by a grammar G, one is actually saying that the long conjunction of constraints that compose G has the formula associated with S as a logical consequence, as in (26), in which G is a grammar and C_i are constraints.[9]

(26) *The grammar constrains the possible sentences*:

$$G = C_1 \wedge C_2 \wedge \cdots \wedge C_2 \models_1 S$$

So G regulates what can appear on the *right* side of $\models_1$. Formal constraints move up a level in a kind of Tarskian hierarchy of languages, imposing constraints on the form of the formula on the *left* side of $\models_1$. This is depicted in (27), where $\mathbf{G} = C_1 \wedge C_2, \wedge \cdots \wedge C_n$ is a metagrammar (conjunction of grammar constraints).

(27) *Grammar constraints constrain the possible grammars*:

$$\mathbf{G} = C_1 \wedge C_2, \wedge \ldots C_n \models_2 \quad G = C_1 \wedge C_2 \wedge \cdots \wedge C_2 \models_1 S$$

Thus, Rogers's (1996, 1997) accomplishment consists in showing that the relations in both (26) and (27) can often be captured in $L^2_{K,P}$. But not all conditions with the effect of regulating sets of possible sentences are this theoretically friendly. I turn now to the more troublesome class of true TDCs.

3 TDCs of a different sort

Not all TDCs can be stated as restrictions on grammars. Most of the controversial ones must be conceived of either as restrictions on the application of rules or as licensing structures of arbitrary complexity based on the status of comparable structures. This involves quantification over sets of models. $L^2_{K,P}$, a logic allowing quantification over nodes and sets of nodes only, cannot impose such conditions at all. While we could move to yet a higher metalevel, placing constraints on the constraints on the rule set (and so on in an upward Tarskian

[9] Kornai and Pullum (1990: §3.2) state the phrase structure condition Optionality as a constraint on grammars, in a manner that could be translated directly into grammar tree notation of this paper. For relevant discussion, see Pullum and Scholz 2001 (§2.3).

whirl), we simply cannot constrain the constraints themselves. This limitation is fundamental to the logics that underlie linguists' grammars and is central to their reasoning about natural language objects; see section 4 for brief comment.

As noted above, true TDCs divides into two subclasses, optional TDCs and intrinsic TDCs. Those in the first class are TDCs only in some formalisms. Those in the second are TDCs no matter what machinery is adopted. I begin with a discussion of optional TDCs. Although Scope Economy is the only linguistic proposal known to me that falls into this class, I show first that it is a well-defined class of constraints, using abstract rewriting systems to illustrate. I then turn to the intrinsically transderivational, focussing on Rule H of Fox (2000).

3.1 Optional TDCs

3.1.1 Illustration in the abstract

It is straightforward to show that TDCs can expand the weak generative capacity of a grammar formalism. Consider the context-free grammar in (28). (This example is due to Geoff Pullum.)

(28) A context-free grammar generating $L = \{a^i b^j c^k \mid i = j \vee j = k \ \wedge i, j, k \geqslant 0\}$

S	$\rightarrow$	aXbC	S	$\rightarrow$	AbZc
S	$\rightarrow$	C	S	$\rightarrow$	A
X	$\rightarrow$	aXb	Z	$\rightarrow$	bZc
X	$\rightarrow$	ab	Z	$\rightarrow$	bc
X	$\rightarrow$	e	Z	$\rightarrow$	e
C	$\rightarrow$	cC	A	$\rightarrow$	aA
C	$\rightarrow$	e	A	$\rightarrow$	e

Some sample derivations are given in (29).

(29)

a.	b.	c.
S	S	S
aXbC	AbZc	AbbZcc
aaXbbC	aabZc	Abbbccc
aaXbbC	aabbcc	bbbccc
aaabbbC		
aaabbbc		

It is well-known that the language $a^n b^n c^n$ is not context-free. We cannot impose the condition that the a's and c's match in number using only rules of the form in (28); derivations like (29a) are unavoidable. This requires the power of a tree-adjoining grammar, a (small) step up in the complexity hierarchy.

But now consider the transderivational constraint in (30) imposed on the language L of (28).

(30) The string $a^n b^n c^m$ is in L only if $b^n c^m$ is in L.

The only way $b^n c^m$ can be in L is if $m = n$. Thus, if this condition is added to the grammar (28) we generate the $a^n b^n c^n$. But, as noted, one need not adopt a TDC like (30) in order to obtain this language. Moving to a tree-adjoining grammar suffices.

This example is general. For instance, the language $a^n b^n c^n d^n f^n$ is not a tree-adjoining language (Vijayshanker 1988: §4.2), but a TDC like (30) plus a tree-adjoining grammar generating $\{a^i b^i c^i d^j d^k f^k \mid i = j \vee j = k \wedge i, j, k \geqslant 0\}$ would clearly suffice.

I turn now to a recent linguistic proposal that falls into class of optional TDCs.

3.1.2 Scope Economy and Shortest Move

The Scope Economy condition of Fox 2000 (§2) is an interesting case of a constraint that can be conceived of either as a TDC or as a condition on sentences-as-sets-of-trees. The condition is given in (31).

(31) SCOPE ECONOMY (Fox 2000: p. 26)
An SSO [Scope Shifting Operation—CP] can move XP_1 from a position in which it is interpretable only if the movement crosses XP_2 and $\langle XP_1, XP_2\rangle$ is not scopally commutative.

$\langle XP_1, XP_2\rangle$ is scopally commutative (when both denote generalized quantifiers) if for every model, and for every $\phi \in D_{\langle e,et\rangle}$,
$[\![XP_1]\!](\lambda x[\![XP_2]\!](\lambda y\phi(y)(x)) = [\![XP_2]\!](\lambda x[\![XP_1]\!](\lambda y\phi(y)(x))$

I assume that the definition of "scopally commutative" is actually a biconditional. For simplicity's sake, I grant that semantic (model-theoretic) identity is something that can be easily and effectively computed, and so treat it as in effect a feature of nodes.[10] I also assume that (31) has an added exception clause allowing a quantifier to raise out of the VP even where this has no semantic consequences. Fox's proposals seem to require such movement, which is perhaps syntactically motivated.

The effects of Scope Economy are dependent on another principle, Fox's version of Shortest Move, which I provide in (32)

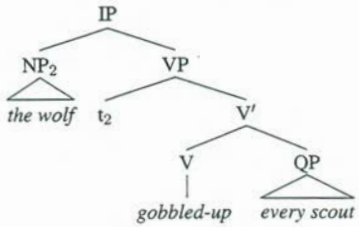
(32) SHORTEST MOVE (Fox 2000: p. 23)
QR must move a QP to the closest position in which it is interpretable. In other words, QP must always move to the closest clause-denoting element that dominates it.

Fox situates (31) in a derivational theory, in which sentences are represented using ordered sets of trees. We can most easily capture this by assuming that an *ad hoc* DERIVATIONAL NODE links the trees in a derivation, ordered left-to-right.

With this background in mind, consider the sentence in (33) and its initial representation (34).

(33) The wolf gobbled-up every scout.

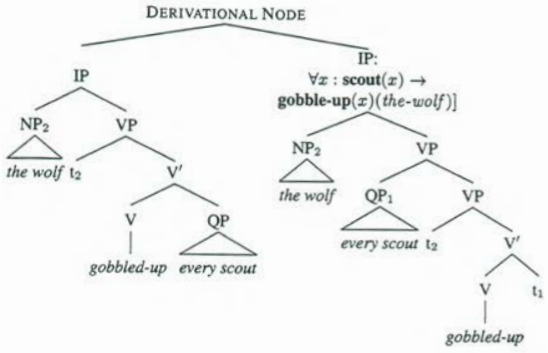
(34)



This is not an interpretable structure given Fox's assumptions. The verb *gobble-up* denotes a relation between individuals, hence requires that its sister denote in $\langle e\rangle$. But *every scout* lacks such a denotation, so there is a type-mismatch. This triggers QR of the object. By Scope Economy and Fox's assumption that the VP is clause-denoting, this yields (35).

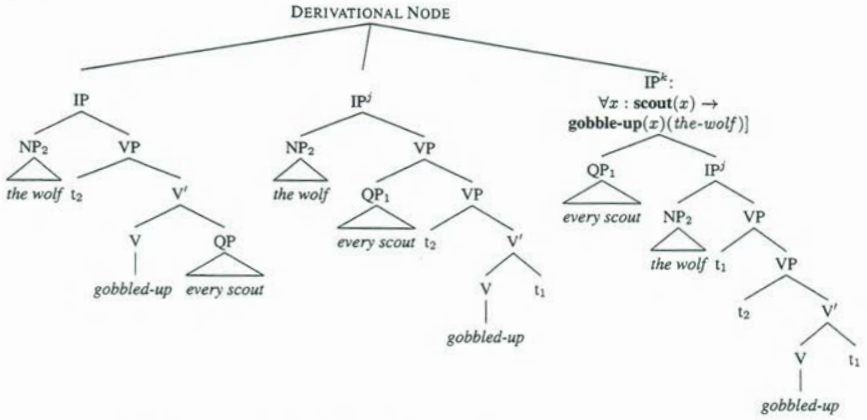
[10] This is granting a lot. Although there are classes of first-order formulae for which computing mutual entailments is a decidable problem, this is not true in general. See Hunter 1971 (p. 253).

(35)



The question now is whether *every scout* can undergo QR to the next highest clause-denoting node. Suppose that we allow this derivation, producing (36).

(36)



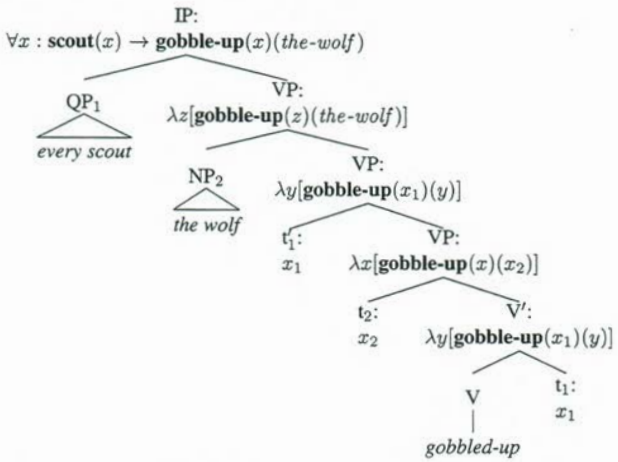
This derivation should be blocked. But how can we establish that the second application of QR failed to produce a meaning difference? This cannot be read off the final tree, the LF, because no proper subpart of that tree has as its meaning anything comparable to the meaning of the root node. If the Logical Form is the only interpreted structure, then the only way to block (36) is by appeal to the derivation represented in (35).

But this means that we can prevent Scope Economy from being a TDC by denying that only LFs are interpreted. An adequate grammar, Minimalist or otherwise, probably needs to have access to semantic information prior to LF anyway. (Johnson and Lappin (1999: §3.4) argue this point persuasively; see also Epstein et al. 1998 and Nissenbaum 2001.) If the tree rooted at IP^j in (36) is also interpreted, then it will have the same meaning as the third tree. Thus, Scope Economy can be seen as referencing just this derivation. Call this an *intraderivational* interpretation, since it places a condition on the function mapping one tree to another in a single derivation. Since such a function is necessary in a derivational theory anyway, Scope Economy does not, in all likelihood, require an increase in expressivity.

Before moving on to a discussion of a constraint that is irredeemably transderivational, it is worth pausing to flesh out two important implications of the above discussion.

Intraderivational Scope Economy is necessarily derivational Suppose that we adopt a declarative theory, so that the question is whether the LF (37) satisfies Scope Economy.

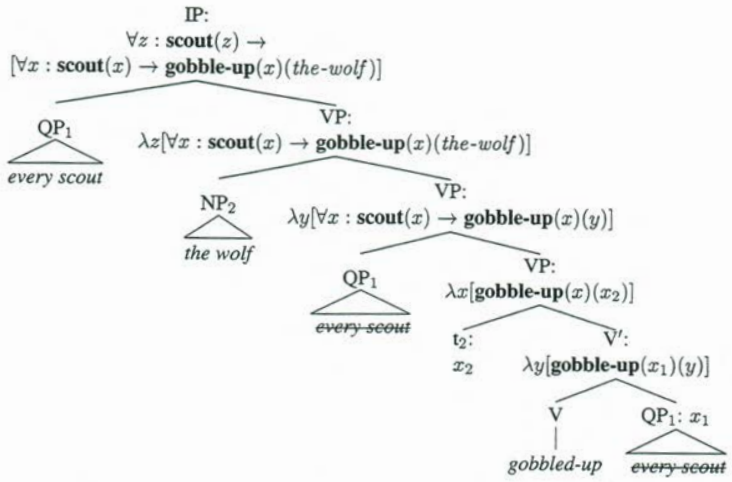
(37)



There is no subtree of this structure that has the same meaning as the root node. Hence, Scope Economy would necessarily reference another tree, in this case a tree in which *every scout* was adjoined in the position of t_1', at the VP-level.

This holds even in a copy theory of movement, but it is somewhat difficult to see this. A very strict version of the copy theory would derive the LF (38).

(38)



Suppose, for simplicity's sake, that we can optionally interpret any subset (proper or not) of the copies of *every scout* as quantifiers, letting the rest denote individuals, as I have done above for the lowest copy.[11] Then it is arguably true that the highest VP node is equivalent to the IP node; for this, one must assume that the structural rules of Contraction and Weakening, given in (39), are valid for natural languages:[12]

(39) a. CONTRACTION $\stackrel{def}{=} (p \rightarrow (p \rightarrow q)) \rightarrow (p \rightarrow q)$

b. WEAKENING $\stackrel{def}{=} (p \rightarrow q) \rightarrow (p \rightarrow (p \rightarrow q))$

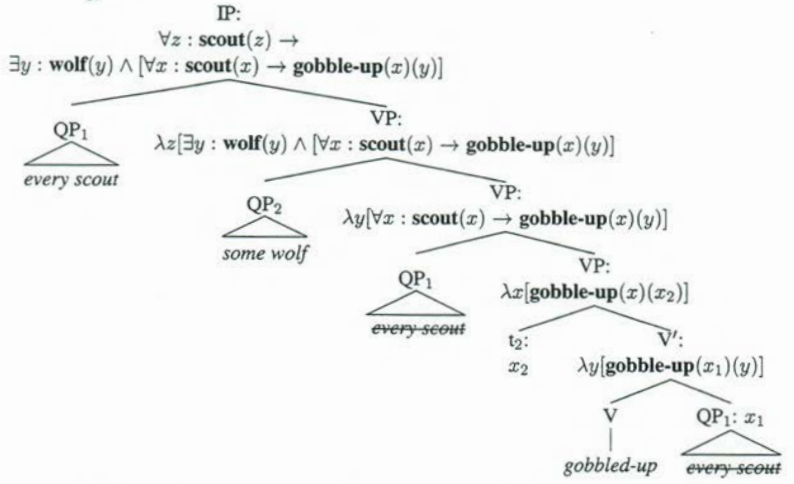
But this does not suffice to obtain the desired result. Consider a derivation involving non-scopally-commutative quantifiers:

[11]This avoids the important question of how the lowest copy could ever be interpreted without some kind of type shift, of the verb or the quantifier; see the discussion of (33).

[12]This is very far from being an innocent assumption. The rules of Contraction and Weakening are denied in Linear Logic (Girard 1987), which is widely employed by linguists, particularly those working in Lexical Functional Grammar; see the papers in Dalrymple 2001. The rules are also absent from Categorial Grammars with directional application, which have of course found numerous applications in linguistics.

(40) a. Some wolf gobbled up every scout.

b.



The IP does not denote a proposition that corresponds to any reading of (40a). (40b) asserts that *if* x is a scout, then there's a wolf that gobbled-up every scout. But the only readings of (40a) correspond to (i) every scout is such that a wolf gobbled-up him up; and (ii) there is a wolf that gobbled-up every scout. In essence, (40b) is a wide-scope reading of *some wolf* that does not entail the existence of a wolf.

Although the fact that this impossible reading is derivable poses a range of problems for this version of the copy theory, the only ramification it has for present purposes is that it must be possible to interpret only the highest copy of a quantifier, translating the others as individual variables. But this means that (37) is among the available derivations. We have seen already that (37) cannot combine with Scope Economy to block the second application of QR. We would have to refer to a set of derivations that included (38). That is, we would need to interpret Scope Economy as a TDC.

Given the discussion in Section 3.1.1, this situation invites a conjecture. We have found a rule the cannot be stated non-transderivationally in a representational theory, but can be stated in a derivational one. It would be surprising to find a rule, whether applicable to natural languages or not, that could be given *only* a representational view, since all the information in such a theory's trees is generally encoded in the final tree in a derivational theory. So it is extremely likely, though as yet not established, that the derivational theories properly contain the representational ones.

Overall complexity The above shows only that Scope Economy can be given a non-TDC interpretation. It does not establish that it can be defined in $L^2_{K,P}$. In fact, this seems impossible, since we require a tree isomorphism in order to compare the structures. Rogers (1998) shows that tree isomorphisms are not definable in $L^2_{K,P}$. But the ability to state these isomorphisms is a reasonable expansion of the logical language; Lindell (1992) has shown that graph isomorphism for trees is computationally highly tractable. In contrast, intrinsic TDCs require drastic, ill-understood changes is the underlying logic of linguistic theory.

3.2 RULE H: an Inherent TDC

Fox (2000: §4) proposes another economy condition, which he called Rule H:

(41) RULE H (Fox 2000, p. 115)
A pronoun, α, can be bound by an antecedent, β, only if there is no closer antecedent, γ, such that it is possible to bind α by γ and *get the same semantic interpretation.*

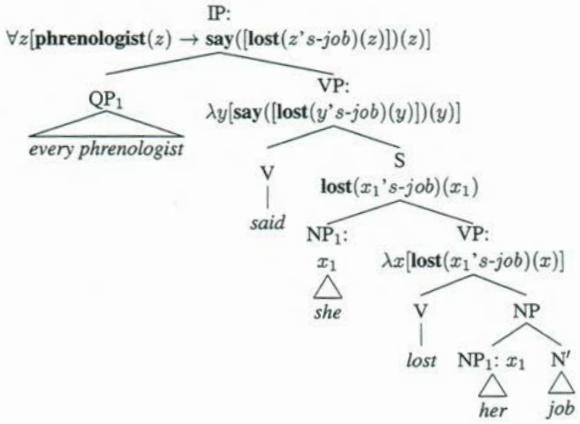
Although this condition sounds very much like Scope Economy, in that it makes the well-formedness of certain operator-variable relationships dependent upon meaning, it turns out to be intrinsically transderivational.

A simple application of this principle is as follows (based on Fox 2000 (p. 115ff)):

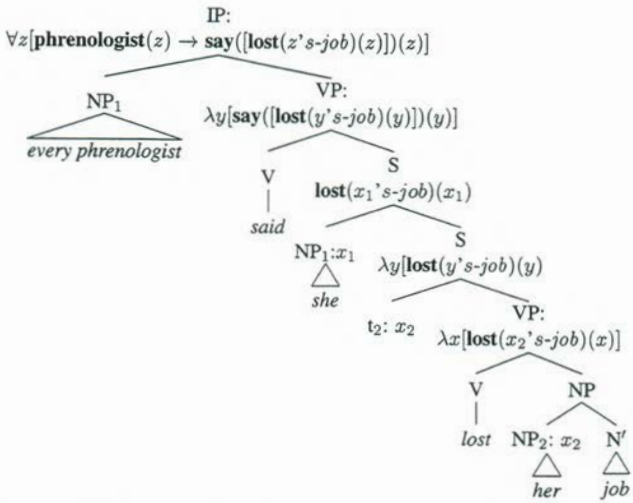
(42) Every phrenologist said that she lost her job.

The question is whether *Every phrenologist* can bind both the pronoun *she* and the pronoun *her*. That is, is (43a) well-formed?

(43) a.



b.



The intended answer is "No, (43a) is not well-formed". The binding relation between *every phrenologist* and *her* is blocked by Rule H, because the interpretation of this structure is identical to that of (43b), but *her* has a closer antecedent in (43b) than in (43a), namely *she*.

It is evident from the structures in question that Rule H cannot be an intraderivational constraint. There is no sense in which either of the trees in (43) is properly contained in the other (derived from the other), so the information required by Rule H is not available. To evaluate either of the trees in (43), one must consider a set that includes at least (43b), which makes evaluation of (43a) intrinsically transderivational.

4 Conclusions

The above discussion suggests that the class of TDCs is at least this structured:

(44)

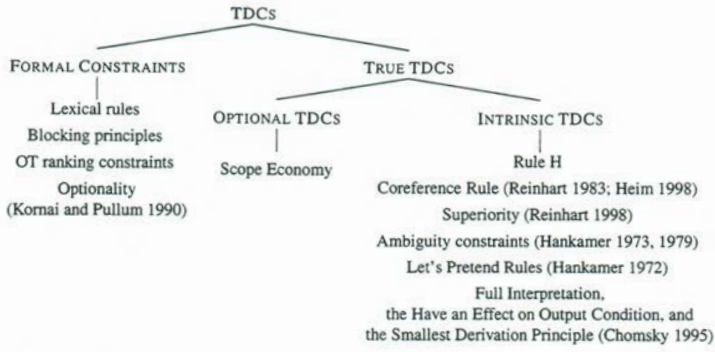
1. *Grammar constraints* are constraints on the set of constraints. The either establish closure properties on sets of rules (e.g., the passive metarule), or make one rule contingent on the (non-) existence of another (e.g., blocking with Danish definites).
2. *Optional TDCs* are transderivational only in certain frameworks. For example, Scope Economy is an intrinsic TDC in a nonderivational theory, but has an intraderivational interpretation in a derivational theory. This is possible because *the trees that are compared on the TDC interpretation are contained in the derivation.*
3. *Intrinsic TDCs*, such a Rule H, fundamentally involve quantification over sentences, whether modelled as single trees or ordered tuples of trees, because the relevant structures are not part of the derivational history of any one of them.

Interestingly, it turns out that the fact that a principle constrains a rule's domain of application does not make it an intrinsic TDC; both Scope Economy and Rule H have this property, but only Rule H is intrinsically a TDC. Rather, the crucial factor is whether or not the set of trees referenced by the constraint can be found in the derivation of the sentence in question.

We have, then, three kinds of TDC: grammar constraints, optional TDCs, and intrinsic TDCs. These are ordered by proper inclusion with respect to definability. Any grammar constraint can be stated intraderivationally (e.g., a passive transformation vs. a passive metarule), but not the reverse (Scope Economy has no metarule-type statement). And intraderivational constraints can (and in some frameworks must) be given a transderivational interpretation (as discussed above for Scope Economy).

I provide, in (45), a classification of TDCs that have been proposed in the past in the linguistic literature.

(45)



The list of intrinsic TDCs is long. It is worth asking, then, what kind of logic would allow their statement and form an adequate basis for linguistic theory. The challenge lies mainly in the fact that most linguistic proposals concern constraints between nodes in individuals trees (e.g., "a reflexive must have a clausemate antecedent"; "a negative polarity item must be in the scope of a downward entailing operator"). Thus, the theory cannot view trees atomic individuals. They must be rich relational structures – i.e., models. But TDCs require quantification over sets of trees, which seems to demand quantification over sets of *models*. It is easy to imagine how this might be done within the bounds of a reasonable logic: we divide the theory in half, as it were: in one part, the models are trees, the individuals nodes; in the other, the models are tree sets, the individuals trees. A relation between models and individuals in models would link the two universes.[13]

It is easy, then, to *describe* the required formal foundation. But the result is evidently of extreme complexity and also yields an oddly fragmented theory. In light of these considerations, we should be skeptical of TDC proposals, subjecting their empirical motivation to great scrutiny and searching hard for alternative accounts.

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[13] In forthcoming work, I argue that layered languages (Blackburn et al. 1993; Blackburn and Meyer-Viol 1997) provide a maximally constrained basis for a theory incorporating TDCs, and discuss the conceptual and theoretical drawbacks to adopting such a logic.

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Focus-related word order variation without the NSR: A prosody-based crosslinguistic analysis*

Daniel Büring and Rodrigo Gutiérrez-Bravo

0. Introduction

In this paper we show how to derive focus-related word order variation in transitive clauses in English Spanish, and German, within a prosodic theory of prominence such as Selkirk (1995) or Truckenbrodt (1999). The aim is to preserve the insights captured in Zubizarreta's (1998) treatment of these phenomena, while maintaining the assumption, shared in almost all recent work on phonological phrasing and accenting, that prominence is not governed by syntactic principles such as the Nuclear Stress Rule (NSR).

It is a well known fact that languages differ in whether or not they show a word order different from the canonical one in cases of subject focus (Contreras 1976, Vallduví 1992, Ladd 1996, Zubizarreta 1998, to cite just a few references), a phenomenon that will be referred to henceforth as focus-related word order variation. There are languages like English (SVO), where constructions with focused subjects display canonical word order, with a focused subject receiving the main pitch accent in-situ, as in (1).

(1) a. Who bought the newspaper?
b. JOHN bought the newspaper. SVO

On the other hand, there are languages like Spanish (also SVO), that display subject inversion when the subject is in focus, as in the answer in (2b).

(2) Spanish
a. Quién compró el periódico ayer?
who bought the newspaper yesterday
'Who bought the newspaper yesterday.'
b. Ayer compró el periódico JUAN. VOS
yesterday bought the newspaper Juan
'JUAN bought the newspaper yesterday.'

Finally, there are languages like German that display both patterns. Thus in German subordinate clauses (canonically SOV) a focused subject can be accented

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in-situ, as in the answer in (3b), or it can follow the object, as in (3c), although there is a slight preference for the former construction.[1]

(3) German

a. Wer ernnent den Aussenminister?- Es wird erwartet, dass
who nominates the foreign-minister it is expected that
'Who's in charge of nominating the foreign minister?- It is expected that...'

b. der KANzler den Aussenminister ernennt. SOV
the chancellor the foreign-minister nominates
'...the chancellor nominates the foreign minister.'

c. den Aussenminister der KANzler ernennt. OSV
the foreign-minister the chancellor nominates
'...the chancellor nominates the foreign minister.'

Word order in German is influenced not only by focus considerations, but also to the relative animacy and definiteness of the arguments of the verb involved (Lenerz 1977, Müller 1998). In order to keep the focus phenomena independent from these other variables, in the German examples in (3) both the subject and the object display the same degree of animacy and definiteness.

Now in a large number of recent works (Vallduví 1992, Ladd 1996, Zubizarreta 1998, to cite just a few references; see also Costa 1996 for an Optimality-theoretic approach), focus-related word order variation has been linked to the need for foci to receive sentential stress (Jackendoff 1972, Selkirk 1984, 1995). In order to account for the presence in Spanish of focus-related word order variation versus its absence in English, two different approaches have been suggested. One is to classify languages according to a parameter that makes the assignment of sentential stress strictly sentence-final (as in Spanish) or flexible (as in English), as suggested in Vallduví (1992) and Ladd (1996). Under this approach, in Spanish focused subjects must appear in the right periphery of the clause because foci must be signaled with sentential stress, and sentential stress is invariably sentence-final in this language. The other approach, developed in Zubizarreta (1998), assigns different intonational properties to the languages under consideration (different Nuclear Stress Rules, different sensitivity of these NSRs to constituents given in the discourse), and parametrizes the availability of Prosodically Motivated Movement, defined as scrambling that has as its ultimate effect making the focus the sentence-final constituent, where it can receive nuclear stress.

Under either of these approaches, however, it seems that a major generalization is not being captured. Although English, Spanish and German behave very differently when the subject is in focus, this is not what is observed in many other cases. Concretely, in transitive sentences where the direct object, the VP, or the whole sentence is in focus, all three languages behave similarly, with sentential stress falling on the direct object of the clause and the subject preceding the object as shown in (4-6).

[1] Throughout this paper we concentrate on German subordinate clauses to keep the word order effects independent from the verb-second requirement observed in matrix clauses.

(4) English
a. Sentence focus
i. What's been happening?
ii. John bought the NEWSpaper.
b. VP focus
i. What did John do?
ii. John bought the NEWSpaper.
c. Object Focus
i. What did John buy?
ii. John bought the NEWSpaper.

(5) Spanish
a. Sentence focus
i. Qué pasó?
'What happened.'
ii. Juan compró ayer el peRIÓdico.
Juan bought yesterday the newspaper
'Juan bought the newspaper yesterday.'
b. VP focus
i. Qué hizo Juan?
'What did Juan do?'
ii. Juan compró ayer el peRIÓdico.
Juan bought yesterday the newspaper
'Juan bought the newspaper yesterday.'
c. Object Focus
i. Qué compró Juan ayer?
'What did Juan buy yesterday?'
ii. Juan compró ayer el peRIÓdico.
Juan bought yesterday the newspaper
'Juan bought the newspaper yesterday.'

(6) German
a. Sentence focus
i. Worauf warten all? - Es wird erwartet, dass
where-upon wait all it is expected that
'What's everybody waiting for? -It is expected that...'
ii. der Kanzler den AUssenminister ernennt.
the chancellor the foreign-minister nominates
'... the chancellor nominates the foreign minister.'

b. VP focus
i. Was wird der Kanzler als nächstes tun? - Es wird erwartet, dass
what will the chancellor for next do it is expected that
'What's the chancellor supposed to do next?-It is expected that...'
ii. der Kanzler den AUssenminister ernennt.
the chancellor the foreign-minister nominates
'... the chancellor nominates the foreign minister.'

c. Object Focus

i. Wen ernennt der Kanzler als nächstes? - Es wird
who nominates the chancellor for next it is
erwartet, dass
expected that
'Who is the chancellor going to nominate next? -It is expected that...'

ii. der Kanzler den AUssenminister ernennt.
the chancellor the foreign-minister nominates
'... the chancellor nominates the foreign minister.'

Descriptively, what the examples in (4-6) show when compared with the examples in (1-3), is that all three languages have fairly similar intonational and syntactic properties. When the subject is in focus, however, these languages differ in whether the intonational pattern in (4-6), is sacrificed, as in English, whether canonical word order is sacrificed, as in Spanish, or whether either possibility is allowed, as in German. In this respect we argue throughout this paper that this set of facts can be straightforwardly captured in an Optimality-theoretic analysis, by making use of ranked violable constraints. The resulting analysis is one where the different behavior displayed by these languages in cases of subject-focus can be accounted for in a way that accommodates the similarities observed in (4-6) without the need for any extra machinery.

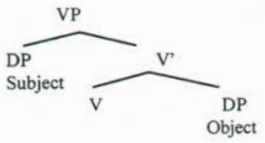
1. Word order

With respect to the syntax of the data under consideration, we propose the following constraint, which establishes that the subject is structurally more prominent than the object in the unmarked case.

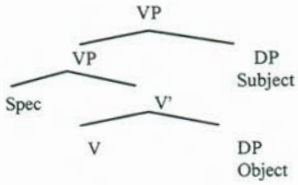
(7) SO
The subject is structurally more prominent than the object.
-Violated when the subject does not asymmetrically m-command the object.

Concretely, SO is satisfied when the subject occupies Spec-IP and the object remains in its VP-internal position. Crucially, all the structures in (8) violate this constraint. Whether the subject remains in Spec-VP (8a), or it is right-adjoined to VP (8b), or the object is scrambled, the subject fails to asymmetrically m-command the object.

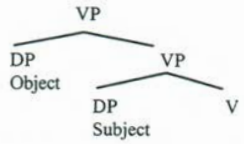
(8) a.



b.



c.



The evaluation of these structures by the SO constraint will be of particular importance when looking at Spanish, where we follow the standard assumption that the verb undergoes movement to I.[2] After V-to-I movement, (8a) will result in a VSO order, and (8b) and (8c) to the VOS order characteristic of the cases where the subject is in focus. We also assume that German OSV is the result of scrambling of the direct object, where the subject stays in Spec-VP, so these structures will also incur in a violation of SO. The SO constraint will be the only syntactic constraint that will play a part in the analysis. Notice that this constraint is defined in such a way that, in the absence of a direct object, movement of the subject to Spec-IP should, at the very least, not be obligatory.[3] On a first impression this would seem to be an undesirable consequence, but upon closer inspection, the situation is not so clear. English, for example, despite its fairly rigid word order, still has a good number of constructions where the subject of an intransitive verb does not move to Spec-IP. Such is the case of locative inversion (*In that corner now stands a mini-mall*) and expletive-associate constructions (*There are many students in that class*). Crucially, these kinds of constructions are not attested in English when the verb is transitive. Although this issue certainly merits further investigation, we assume that the structural condition stated in the SO constraint is a relevant requirement, even when there may be more than one constraint at play in deriving movement of the subject to Spec-IP. As we will see soon, the relevant word order effects will be derived by the interaction of the SO constraint with the constraints that govern phrasing, intonation and focus.

2. Phrasing and intonation

Throughout we assume that sentences are mapped into exhaustive strings of phonological phrases (henceforth, pP's), which in turn form an intonational phrase (henceforth, iP). Crucially, however, we propose that languages differ with respect to the kinds of constituents which they allow phonological phrases to correspond to. Concretely, we propose that while English and German align phonological phrases with lexical XPs (Selkirk 1984, Truckenbrodt 1999), Spanish aligns phonological phrases with prosodic words (PrWds). So English and German map a transitive sentence as in (9a) and (9b) respectively, whereas Spanish maps it as in (10). We follow Truckenbrodt (1999) in assuming that (all else being equal) phonological phrases do not align with functional projections, so we do not represent in the schemas the functional projections present in the structures in (9) and (10). From here onwards we represent phonological phrases with parentheses.

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[2] Following Vikner (1995) we similarly assume that V moves to I in German. This, however, has no effects on the relative word order of the subject and the object since the verb moves to the head position of a right-headed IP. See also Webelhuth (1992).

[3] Many thanks to João Costa for bringing this issue to our attention.

(9) a. English

(S) (V O)
[NP] [[NP]VP]

b.German

(S)(O V)
[NP] [VP [NP]]

(10) Spanish

(S) (V)(O)
[N_{NP}][V [N_{NP}]VP]

2.2 English and German

The phrasing pattern of English and German in (9) can be derived by means of the XP=pP constraint in (11), which can be thought of as the unification of two different conditions.

(11) XP=pP:
Align a (lexical) XP with a phonological phrase.
A. PRED
A predicate shares a phonP with at least one of its arguments.
B. XP
A phonP contains an XP. If XP and YP are within the same phonP, one contains the other (where X and Y are lexical categories).

The PRED condition follows the observation in Jacobs (1993) that predicates integrate with at least one of their arguments to form a prosodic unit. The XP condition essentially states that two separate XPs cannot be part of the same phonological phrase. The evaluation of the XP=pP constraint is exemplified in the tableaux (12) and (13), where for clarity each condition is presented separately on the right side of the tableau. Candidates (12b) and (13b), where there is a single phonological phrase in the sentence violate the XP condition, since the subject and the object are part of the same phonological phrase but neither contains the other. On the other hand, candidates (12c) and (13c), where every phonological phrase corresponds to a prosodic word, violate the PRED condition, since the verb does not form a phonological phrase with any of its arguments. The winning candidates are thus (12a) and (13a), with one phonological phrase aligned with the subject NP and the other one with the VP.

(12) *English*

	XP=pP	
	PRED	XP
☞ a. (John) (bought the newspaper)		
b. (John bought the newspaper)		*!
c. (John) (bought) (the newspaper)	*!	

(13) *German*: '...(that) the chancellor nominates the foreign minister.'

	XP=pP	
	PRED	XP
☞ a. (der Kanzler) (den Aussenminister ernennt)		
b. (der Kanzler den Aussenminister ernennt)		*!
c. (der Kanzler) (den Aussenminister) (ernennt)	*!	

We further assume that phonological phrases must have a head, which corresponds to the constituent inside the phonological phrase that receives an accent, and that phonological phrases can have at most one head. When a phonological phrase contains both a predicate and its argument, as in the VPs in (12) and (13), it is the argument that receives the accent, all else being equal. This result is obtained by means of the constraint in (14):[4]

(14) ARGUMENT-OVER-PREDICATE (A/P)
Within a Phonological Phrase, an argument is more prominent than a predicate.

Tableau (15) exemplifies for an English VP how this constraint is evaluated. Concretely, A/P is violated when the verb is accented instead of its complement.

(15)

	A/P
☞ a. (bought the NEWSspaper)	
b. (BOUGHT the newspaper)	*!

2.3 Spanish

Consider now Spanish, where we propose that every phonological phrase corresponds to a prosodic word. This kind of phrasing is the result of the constraint in (16).

(16) PrWd=pP
Align the right edge of each prosodic word with the right edge of a PhonP.
Violated once for every lexical head (N, V, etc.) whose right edge is not aligned with the right edge of a PhonP.

Evidence for the claim that in Spanish every prosodic word corresponds to a phonological phrase can be found in the fact that in Spanish every prosodic word receives an accent (Fant 1984, Sosa 1991, Face 2000).

[4] See also Schwarzschild (1999) for a similar constraint.

(17) A+ A A B
Los mozos sacaron la moto del garaje.
the butlers took the motorcycle of-the garage
'The butlers took the motorcycle out of the garage.' (Fant 1984)

In (17) we adopt Fant's representation of pitch accents in Spanish to abstract away from dialectal variation; Sosa (1991), for example, analyses the A accents in Latin American Spanish as different kinds of H* accents, and the B nuclear accent as L*. In a more detailed study of Peninsular Spanish, Face (2000), on the other hand, analyzes the pre-final pitch accents as L*+H and the final pitch accent as L+H*. The important point, however, is that the pattern in (17) is observed in one way or another in the data analyzed in all these works.

It is important to note that the accents in (17) are not simply the realization of lexical stress in Spanish. This is because, as noted in Fant (1984) and Sosa (1991) there are lexicalized expressions in Spanish where prosodic words are not accented, showing that there is no necessary one-to-one relation between accenting and lexical stress. This is shown in example (18) from Sosa (1991), where we represent lexically stressed syllables in boldface.

(18) H*+L H* H*+H L%
Quer**ría** uste**d**acer**car** una**si**lla?
would you bring.close a chair
'Would you bring a chair over here?'

In analyzing the intonational pattern of Spanish, Alcoba & Murillo (1998) propose that an intonational phrase in Spanish is composed of one or more tonic groups, each of which consists of a prosodic word plus all the clitics and stressless elements that appear to its left. Instead we would like to suggest that what has been described in the literature on intonation in Spanish as tonic groups are phonological phrases that result from the ranking where PrWd=pP outranks XP=pP. This is shown in tableau (19); for clarity, violations of PrWd=pP are signaled in the tableau with the category of the prosodic word that fails to have its right edge aligned with the right edge of a phonological phrase.

(19) *Spanish*: 'Juan bought the newspaper.'

	PrWd=pP	XP=pP
a. (Juan) (compró el periódico).	V!	
b. (Juan compró el periódico).	N!V	
☞ c. (Juan) (compró) (el periódico).		*

Candidate (19a) violates PrWd=pP because the verb does not form a phonological phrase by itself. Candidate (19b), where a single phonological phrase corresponds to the whole of the sentence incurs in two violations of this constraint because neither the subject nor the verb is right-aligned with a phonological phrase. The winning candidate is (19c), where every prosodic word corresponds to a phonological phrase. The winning candidate violates XP=pP,

specifically, the PRED condition, since the predicate does not form a phonological phrase with any of its arguments, but this violation has no effects because of the ranking PrWd=pP >> XP=pP. English and German, on the other hand, display the opposite ranking, as exemplified for English in tableau (20). This derives the phrasing pattern previously discussed for these languages, where the sentence is mapped into two phonological phrases, corresponding to the subject NP and the VP. Here the losing candidate (20b) loses to (20a) because of its violation of the PRED condition, since the predicate does not form a phonological phrase with any of its arguments.

(20) *English*

	XP=pP	PrWd=pP
☞ a. (John) (bought the newspaper).		V
b. (John) (bought) (the newspaper).	*!	

2.4 Prominence in the intonational phrase

To conclude this section, we consider how the most prominent prosodic unit in the intonational phrase is determined. Again following Selkirk (1984, 1995), Truckenbrodt (1999), *inter alia*, we assume that one of the phonological phrases that compose the intonational phrase is signaled by the nuclear pitch accent as the head of the intonational phrase. We propose that in all three languages under consideration this process is governed by the alignment constraint in (21), which requires the rightmost phonological phrase to become the head of the intonational phrase (see Truckenbrodt 1999).

(21) iP-Hd-right:
Align the right edge of every iP with the right edge of the PhonP that is the head of the iP.
-*Violated when the phonP that receives the nuclear accent is not right-aligned with the iP.*

This constraint will be violated by a structure like the one schematized in (22), where X̲ represents the nuclear accent and where the phonological phrase that contains this accent is not right-aligned with the intonational phrase:

(22) ( )$_{iP}$
(X̲)( )$_{PhonP}$

We further propose that iP-Hd-right is undominated in all three languages. As a summary of the discussion on intonation in this section, the rankings of the intonational constraints presented in this section for English, German and Spanish are presented in (23).

(23) a. *English*: iP-Hd-right, A/P, XP=pP >> PrWd=pP
b. *German*: iP-Hd-right, A/P, XP=pP >> PrWd=pP
c. *Spanish*: iP-Hd-right, PrWd=pP >> XP=pP, A/P

At this point, we can already tackle one of the problems mentioned in the introduction. In this section we have suggested that English and German resort to a phrasing strategy different from the one observed in Spanish. However, when we consider the rankings in (23), the result is that, all else being equal, in a transitive sentence in the three languages the nuclear accent will fall on the direct object. This is shown in the tableaux in (24).

(24) a. *English*

	iPHd-R	A/P	XP=pP	PrWd=pP
☞ a. (John) (bought the NEWSpaper)				V
b. (John) (BOUGHT the newspaper)		*!		V
c. (JOHN) (bought the newspaper)	*!			
d. (John) (bought) (the NEWSpaper)			*!	

b. *German*

	iPHd-R	A/P	XP=pP	PrWd=pP
☞ a. (der Kanzler)(den AUssenminister ernennt)				V
b. (der Kanzler)(den Aussenminister erNENNT)		*!		V
c. (der KANzler)(den Aussenminister ernennt)	*!			
d. (der Kanzler)(den Aussenminister)(erNENNT)			*!	

c. *Spanish*

	iPHd-R	PrWd=pP	XP=pP	A/P
☞ a. (Juan) (compró) (el peRIÓdico)			*	
b. (Juan) (comPRÓ) (el periódico)	*!			
c. (JUAN) (compró) (el periódico)	*!			
d. (Juan) (compró el peRIÓdico)		V!		

The fact that, when all else is equal, all three languages will show the same intonational pattern, despite the differences in phrasing, will provide us with the basic foundations to understand how and when they differ and how and when they behave in a similar way once focus considerations are introduced.

3. Focus

Before introducing focus considerations to the picture laid out so far, we present our assumptions regarding foci. In what follows, we will consider only cases where the focus is the constituent in the answer to a simple *wh*-question that corresponds to the *wh*-operator in the question, as in (25).

(25) a. *Who* screamed?
b. *JOHN* screamed.

Delimiting focus in this way is of particular importance when we consider the case of Spanish. Subject to considerable dialectal variation and also the degree of definiteness and individuation of the subject DP, Spanish presents constructions like (26a), where the focused subject appears in Spec-IP (from Zubizarreta 1998). It has been noted in the literature (Silva-Corvalán 1983, Fant 1984, and Zubizarreta 1998) that in these cases the subject has a different set of intonational properties associated with it than those that of the sentence-final subject of VOS sentences like (2b)[5]. More importantly, (26a) differs from (2b) in its interpretation too, since it can only have an corrective interpretation where it answers a question like (26b), where the answer is overtly implied by means of a tag or understood to be implied by the hearer.[6] Whether the focus in (25b) and (26a) correspond to two different kinds of foci, or whether some other variable is responsible for the differences in intonation and interpretation between these two examples, is an issue that will not be dealt with here.

(26) a. MARÍA me regaló la botella de vino.
María to-me gave the bottle of wine
'MARÍA gave me the bottle of wine.'
b. Quién te regaló la botella de vino? (Juan, verdad)?
who to-you gave the bottle of wine Juan right
'Who gave you the bottle of wine?(Juan, right?).'

Now, to derive the effect by which the focus ends up being intonationally the most prominent constituent in the sentence we propose the formalization of Truckenbrodt's (1995) FOCUS PROMINENCE constraint in (27), which we further propose to be undominated in all three languages under consideration.

(27) FOCUS PROMINENCE (FP)
Focus is most prominent.
-If α is a prosodic constituent at level *n* which contains a syntactic node that is F-marked, α is the head of the prosodic category at level *n*+1 that contains α.

The effects of this constraint are exemplified in (28). When the prosodic focus is a prosodic word, this prosodic word must become the head of the phonological phrase that contains it, as in (28a). In turn, when a phonological phrase contains a focus, this phonological phrase must become the head of the intonational phrase, as schematized in (28b), where X stands for a phrasal accent and X̲ for the nuclear accent.

(28) a. (X)$_{PhonP}$
( )(Foc)$_{PrWd}$

b. ( )$_{iP}$
(X) (X̲)$_{PhonP}$
( )( ) ( )(Foc)$_{PrWd}$

[5] But see Face (2000) for an alternative analysis.
[6] Rizzi (1997) reports this same property for fronted foci in Italian.

In a nutshell, what the FP constraint ensures is that the nuclear accent in an intonational phrase will fall on the focus, thus making it the most prominent constituent in the sentence. Now the crucial observation at this point is that when the subject is the focus in a transitive construction, in all three languages a conflict results between the requirements of FOCUS PROMINENCE and iP-Hd-Right, as schematized in (29):

(29) a. *English*: $(\quad)_{iP}$ $(S_{Foc})(V\ O)_{PhonP}$ b. *German*: $(\quad)_{iP}$ $(S_{Foc})(O\ V)_{PhonP}$

c. *Spanish*: $(\quad)_{iP}$ $(S_{Foc})(V)(O)_{PhonP}$

On the one hand, iP-Hd-Right requires the rightmost pP to be the head of the intonational phrase; on the other, FOCUS PROMINENCE requires the phonological phrase that corresponds to the subject (and which is not the rightmost pP) to become the head of the intonational phrase so that the focus can be most prominent. There are two ways to solve this conflict without violating neither iP-Hd-Right nor FOCUS PROMINENCE. One is to violate the constraint that governs the optimal phrasing pattern in these languages (XP=pP in English and German, PrWd=pP in Spanish) so that there is a single phonological phrase, which is right aligned with the intonational phrase and which has the focus as its prosodic head (see also Truckenbrodt 1999). This possibility is schematized in (30).

(30) a. *English*: $(\underline{X}\quad)_{iP}$ $(S_{Foc}\ V\ O)_{PhonP}$ b. *German*: $(\underline{X}\quad)_{iP}$ $(S_{Foc}\ O\ V)_{PhonP}$

c. *Spanish*: $(\underline{X}\quad)_{iP}$ $(S_{Foc}\ V\ O)_{PhonP}$

But here we would like to propose that an alternative possibility implies respecting all the relevant intonational and phrasing requirements and sacrificing the syntactic requirements of the SO constraint instead (descriptively, sacrificing canonical word order). This can be achieved by either having the subject in a position where it can form the rightmost phonological phrase with the verb, as in (31a) for English and (31b) for German, or by having the subject in the rightmost position forming its own phonological phrase, as in (31c) for Spanish.

(31) a. *English*: $(\quad\underline{X}\ )_{iP}$ $(O)(V\ S_{Foc})_{PhonP}$ b. *German*: $(\quad\underline{X}\ )_{iP}$ $(O)(S_{Foc}\ V)_{PhonP}$

c. *Spanish*: $(\quad\underline{X}\ )_{iP}$ $(O)(V)(S_{Foc})_{PhonP}$

English chooses the strategy in (30), Spanish chooses the strategy in (31), while German allows for either. As will be shown in the following and final section, the correct result can be arrived at simply through the ranking of the SO

constraint relative to the constraint that governs canonical phrasing in the languages under consideration.

4. A cross-linguistic analysis

The final rankings for the languages under consideration are presented in (32), where <<>> indicates a constraint tie. For simplicity we leave the A/P constraint out of the rankings and in the tableau to follow we present only candidates that satisfy this constraint.

(32) a. *English*: FocP, iPHdR, SO >> XP=pP >> PrWd=pP
b. *Spanish*: FocP, iPHdR >> PrWd=pP >> SO, XP=pP
c. *German*: FocP, iPHdR >> SO <<>> XP=pP >> PrWd=pP

Consider English first. As mentioned in the introduction, English does not modify its canonical word order in cases of subject focus.

(33) a. Who bought the newspaper?
b. JOHN bought the newspaper. SVO
c. *Bought the newspaper JOHN. VOS

In terms of the discussion developed so far, English can thus be understood as a language that sacrifices optimal phrasing instead of canonical word order, which is the result of the ranking SO >> XP=pP. The analysis is presented in the tableau in (34), we further assume that focus is signaled in the input, and that candidates that fail to realize the focus are ruled out by an undominated FAITH-FOCUS constraint.

(34) *English subject focus*

	FOCP	iP-HdR	SO	XP=pP
☞ a. (JOHN$_{Foc}$ bought the newspaper)				*
b. (John$_{Foc}$) (bought the NEWSpaper)	*!			
c. (JOHN$_{Foc}$) (bought the newspaper)		*!		
d. (bought the newspaper)(JOHN$_{Foc}$)			*!	

Consider the losing candidates in (34) one by one. Notice first of all that all these losing candidates display the optimal phrasing pattern of this language, so XP=pP is respected by all of them. They all lose, however, as the result of violating a higher ranked constraint. Candidate (34b), where the nuclear accent falls on the direct object of the verb, fatally violates FOCUS PROMINENCE, since the phonological phrase that contains the focus is not the head of the intonational phrase (and consequently, the focus is not the most prominent constituent). Candidate (34c) satisfies FOCUS PROMINENCE by mapping the subject into its own phonological phrase and making this pP the head of the intonational phrase. This candidate, however, is ruled out because of its violation of iP-Hd-R, since the head of the intonational phrase is not the rightmost phonological phrase in iP. Lastly, candidate (34d) satisfies both FOCUS PROMINENCE and iP-Hd-R by making the focused subject the final constituent of the sentence, but in the constraint ranking of English the resulting violation of

SO proves fatal. The winning candidate is candidate (34a), which makes a single phonological phrase out of the whole sentence and makes the subject the head of this phonological phrase by assigning the nuclear accent to it.

Spanish, on the other hand, displays the opposite pattern, and so canonical word order is sacrificed in cases of subject focus. The correct result, shown in tableau (36), is achieved by ranking PrWd=pP, the constraint that dictates phonological phrasing in this language, over SO.[7]

(35) a. Who bought the newspaper yesterday?
b. #JUAN compró ayer el periódico. SVO
Juan bought yesterday the newspaper
c. Ayer compró el periódico JUAN. VOS
yesterday bought the newspaper Juan
'JUAN bought the newspaper yesterday.'

(36) *Spanish subject focus*

	FOCP	iP-HdR	PrWd=pP	SO
a. ($JUAN_{Foc}$ compró el periódico)			N!V	
b. ($Juan_{Foc}$) (compró) (el peRIÓdico)	*!			
c. ($JUAN_{Foc}$)(compró) (el periódico)		*!		
☞ d. (compró) (el periódico) ($JUAN_{Foc}$)				*

Candidates (36b) and (36c) are ruled out in the same way as candidates (34b) and (34c) in English; the former violates FOCUS PROMINENCE, since the phonological phrase that contains the focus is not the head of the intonational phrase, and the latter violates iP-Hd-R, since the phonological phrase that is the head of the iP is not right-aligned with it. But with the ranking PrWd=pP >> SO, candidate (36a), which sacrifices optimal phrasing, loses to the candidate that sacrifices canonical word order (more concretely, structural prominence of the subject over the object) instead.

Lastly, consider German, which as proposed allows for either deviating form the optimal phrasing pattern or from canonical word order.

(37) a. Who's in charge of nominating the foreign minister?- It is expected that...
b. der KANzler den Aussenminister ernennt. SOV
the chancellor the foreign-minister nominates
'...the chancellor nominates the foreign minister.'
c. den Aussenminister der KANzler ernennt. OSV
the foreign-minister the chancellor nominates
'...that the chancellor nominates the foreign minister.'

[7] In the tableau in (36), we leave out for clarity the temporal adverb *ayer* 'yesterday',in the different structures in the candidate set. This has no effect on the evaluation of the candidates, since the presence of the adverb plays no role in the satisfaction or violation of the constraints in our analysis. It should be pointed out that, in Mexican Spanish at least, the absence of *ayer* in the preverbal position in (35c) leads to ungrammaticality.

In this case the correct result is arrived by means of a constraint tie between SO and XP=pP, the constraint that dictates optimal phrasing in this language. The resulting analysis is presented in tableau (38), where the constraint tie is represented by not having any division between the tied constraints in the topmost row of the tableau.

(38) *German subject focus*

	FocP	iP-Hd-R	XP=pP	SO
☞ a. (der KANzler$_{Foc}$ den Aussenminister ernennt).			*	
b. (der Kanzler$_{Foc}$) (den AUssenminister ernennt).	*!			
c. (der KANzler$_{Foc}$) (den Aussenminister ernennt).		*!		
☞ d. (den Aussenminister) (der KANzler$_{Foc}$ ernennt).				*

Consider now cases of sentence focus. As mentioned in the introduction, this is an instance where all three languages show a similar behavior; not only does the nuclear accent fall on the direct object, and the felicitous answers show canonical word order, but also the winning candidates in the tableaux (34), (36), and (38) (i.e. the optimal outputs for cases of subject focus) are all infelicitous answers to the relevant *wh*-question.

(39) *English*
a. What's been happening?
b. John bought the NEWSpaper.
c. #JOHN bought the newspaper.

(40) *Spanish*
a. Qué pasó?
'What happened.'
b. Juan compró ayer el peRIÓdico.
Juan bought yesterday the newspaper
'Juan bought the newspaper yesterday.'
c. #Ayer compró el periódico JUAN.
yesterday bought the newspaper Juan

(41) *German*
a. Worauf warten all? - Es wird erwartet, dass
where-upon wait all it is expected that
What's everybody waiting for? -It is expected that...
b. der Kanzler den AUssenminister ernennt.
the chancellor the foreign-minister nominates
'... the chancellor nominates the foreign minister.'

c. #der KANzler den Aussenminister ernennt.
the chancellor the foreign-minister nominates
'...the chancellor nominates the foreign minister.'
d. #den Aussenminister der KANzler ernennt.
the foreign-minister the chancellor nominates
'...that the chancellor nominates the foreign minister.'

The data in (39-41) can be captured straightforwardly in the analysis developed so far. In cases of sentence focus, the subject, the verb and the object are all F-marked. Consequently, FOCUS PROMINENCE will necessarily be violated, since only one of the three can get to be the head of the phonological phrase that will in turn be the head of the intonational phrase. Since there is no way to avoid these violations of FOCUS PROMINENCE anyway, candidates that depart from canonical phrasing and word order (39c, 40c, 41c,d) will be less harmonious than those that do not violate SO and the highest ranked phrasing constraint that dictates optimal phrasing. This analysis is presented in the tableau in (42-44).

(42) *English sentence focus*

	FocP	iP-HdR	SO	XP=pP
a. (JOHN$_{Foc}$ bought$_{Foc}$ the newspaper$_{Foc}$)	**			*!
☞ b. (John$_{Foc}$)(bought$_{Foc}$ the NEWSpaper$_{Foc}$)	**			
c. (JOHN$_{Foc}$)(bought$_{Foc}$ the newspaper$_{Foc}$)	**	*!		
d. (bought$_{Foc}$ the newspaper$_{Foc}$)(JOHN$_{Foc}$)	**		*!	

(43) *Spanish sentence focus*

	FocP	iP-HdR	PrWd=pP	SO
a. (JUAN$_{Foc}$ compró$_{Foc}$ el periódico$_{Foc}$)	**		N!V	
☞ b. (Juan$_{Foc}$)(compró$_{Foc}$)(el peRIÓdico$_{Foc}$)	**			
c. (JUAN$_{Foc}$)(compró$_{Foc}$)(el periódico$_{Foc}$)	**	*!		
d. (compró$_{Foc}$)(el periódico$_{Foc}$)(JUAN$_{Foc}$)	**			*!

(44) *German sentence focus*

	FocP	iP-Hd-R	XP=pP	SO
a. (der KANzler$_{Foc}$ den Aussenminister$_{Foc}$ ernennt$_{Foc}$).	**		*!	
☞ b. (der Kanzler$_{Foc}$) (den AUssenminister$_{Foc}$ ernennt$_{Foc}$).	**			
c. (der KANzler$_{Foc}$) (den Aussenminister$_{Foc}$ ernennt$_{Foc}$).	**	*!		
d. (den Aussenminister$_{Foc}$)(der KANzler$_{Foc}$ ernennt$_{Foc}$).	**			*!

The crucial observation is that, in contrast to what is observed in cases of sentence focus, sacrificing canonical phrasing or canonical word order does not improve the structures in any respect (i.e. the violations FOCUS PROMINENCE of cannot be avoided either way), so the canonical structures first presented in (24) emerge as the winners. As the reader will be able to verify, the rankings in (32) also account for those cases in (4-6) where the VP or the direct object is the focus of the sentence.

4. Conclusions

In this paper, we have provided an Optimality-theoretic cross-linguistic analysis of focus-related word order in English, Spanish and German based on the theories of prosodic phrasing of Selkirk 1995, Truckenbrodt 1999, *inter alia*. We have shown how this kind of analysis can preserve the insights captured in Zubizarreta's (1998) work on word order, without resorting to a mechanism by which intonational prominence is derived syntactically (the NSR), and without parametrizing the intonational and syntactic properties of the languages considered here.

The core of this analysis has been to claim that languages differ in whether they sacrifice phonological phrasing requirements or syntactic requirements when there is a potential conflict between FOCUS PROMINENCE and iP-Hd-R, or whether they allow for both possibilities. By making use of ranked violable constraints, the analysis further captures the parallelism that all three languages display when there is no conflict between these two constraints or when violation of FOCUS PROMINENCE is altogether unavoidable.

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The morphosyntax of definiteness in Danish[1]

Jorge Hankamer & Line Hove Mikkelsen

1 Introduction

In the Scandinavian languages, including Danish, Faroese, Icelandic, Norwegian, and Swedish, there are two ways definiteness can be expressed in a noun phrase: by a suffix on the noun or by a prenominal lexical determiner. The distribution of the two definiteness markers differs among the languages and among dialects. In this paper we focus on definiteness marking in standard Danish.[2] The two ways of marking definiteness are illustrated in (1): (1a) contains the definite suffix, and (1b) a prenominal definite article. We refer to forms like *hesten* in (1a) as DEFINITE NOUNS.[3]

(1) a. hest**en**
horse.DEF
'the horse'

b. **den** røde hest
DEF red horse
'the red horse'

Delsing (1993) argues that both structures involve a definiteness marker base-generated in D, and that (1a) is derived by head movement of N to D. Delsing's analysis falls within a family of recent proposals that there is head movement of N to D in various types of noun phrases in various languages, including Ritter (1988, 914–21) for Hebrew, Mohammad (1988, 249–54) for Arabic, Longobardi (1994) for Italian, and Duffield (1995, 282–322) for Celtic.

In this paper we argue against a head-movement analysis of definiteness marking in Danish, and present an alternative analysis where *hesten* is a determiner derived in the lexicon by a morphological rule. There are at least three advantages to our analysis. First, it accounts for the distribution of the two definiteness markers, while maintaining an empirically and theoretically well-motivated internal structure for Danish DPs. Second, our morphological approach is compatible with the existence of morphologically defined gaps in the distribution of the definite suffix. Third, the analysis resolves a long-standing puzzle about definiteness marking in DPs containing relative clauses.

The paper is organized as follows. In section 2 we present Delsing's head movement analysis and discuss two empirical problems with it (the more theoretical and technical problems with the head movement analysis are discussed in the appendix). In section 3 we present our analysis and show how it accounts for

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[2]The only dialect of Danish that differs from the standard one in this respect is West Jutlandic, which has no definite suffix (Hansen, 1927, 130–50).

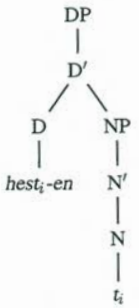
[3]Both definiteness markers show number and gender in Danish, agreeing with the head noun (see Mikkelsen (1998b) for data and discussion). Since these distinctions are not relevant for the issues of definiteness marking we discuss in this paper, we illustrate with singular common gender DPs where possible. In a singular common gender DP, the definite suffix is realized as *-en* and the prenominal definite article as *den*. Both are glossed DEF. Other glosses used are: COM for common gender, DEM for demonstrative, NEU for neuter gender, PL for plural, POSS for possessive, PRP for present participle, and SG for singular.

the distribution of the two definiteness markers in Danish, including facts not accounted for by the head-movement analysis. In section 4 we discuss relative clauses in more detail, showing how our proposal interacts with the analysis of Danish relative clauses, in particular their adjunction site and interpretation. Finally, in section 5 we summarize and discuss some general issues arising from the analysis proposed here for Danish.

2 The head movement analysis

Partly following Abney (1987), Delsing (1993) assumes a DP structure where D takes either an NP, AP or Deg(ree)P complement. Definite and indefinite determiners are generated in D, and when a definite D takes an NP complement N moves to D, and D is realized as a suffix on N (see Delsing's ex. (14), p 74):

(2)



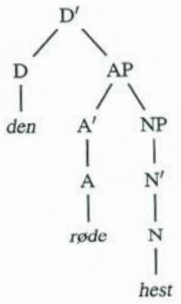
The definite suffix does not co-occur with attributive adjectives, as shown in (3).

(3) a. *hesten røde
horse.DEF red

b. *røde hesten
red horse.DEF

Delsing proposes that this follows from the adjective blocking head-movement of N to D (see Delsing's ex. (28), p 81):

(4)



The adjective in A intervenes between N and D, blocking N to D movement. Being unable to move, the noun appears *in situ* (N), and definiteness marking is realised as the lexical definite article *den* in D. However, the DP structure in (4) is problematic. In particular the assumption that NP is a right-hand specifier to AP is troublesome. We discuss this and other theoretical problems with the DP structure in (4) in the appendix. See also the detailed discussion in Svenonius (1992) and Svenonius (1993).

In the remainder of the present section we discuss two sets of facts that are problematic for a head-movement analysis of definiteness marking in Danish irrespective of specific assumptions about the internal structure of DP. We first show that definiteness marking in DPs containing a relative clause is not adequately accounted for on the head-movement analysis. We then show that there are at least two instances where definiteness marking is sensitive to morphology. This is unexpected on the head-movement analysis where the distribution of definiteness is governed by syntactic movement, which is sensitive to syntactic structure, but not word-internal morphology.[4]

2.1 Definiteness marking and relative clauses

In this section we show that DPs containing relative clauses exhibit a special pattern of definiteness marking. We argue that this pattern is not accounted for by the head-movement analysis.

Observe first that in the absence of any modifiers a definite DP must be marked with the postnominal definiteness marker:

(5) hesten
horse.DEF
'the horse'

(6) *den hest
DEF horse

(7) dén hest
DEM horse
'that horse'

As illustrated in (7), the string *den hest* is grammatical as a demonstrative DP, in which case *den* is stressed (indicated by an accent mark in (7)). To account for the fact that (6) is not a licit use of the prenominal definite article, we must assume that N to D movement is obligatory where possible[5]; (6) is then ungrammatical because N has failed to move to D. This assumption is, however, problematic when applied to DPs containing a relative clause. As illustrated in (8) and (9), these allow either prenominal or postnominal definiteness marking.

(8) den hest der vandt løbet
the horse that won race.DEF
'the horse that won the race'

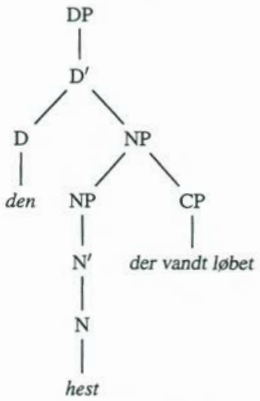
[4] At least under the STRONG LEXICALIST HYPOTHESIS (Scalise, 1984, 101f), which states that syntax cannot refer to or modify the internal structure of words (LaPointe, 1980, 222), see also Pullum and Zwicky (1991, 389–90). In the framework of Distributed Morphology (Halle and Marantz, 1993) morphological elements are present and active in syntax and vocabulary insertion happens post-syntactically at a level of Morphological Structure. It is an interesting question whether the morphological facts presented below can be accounted for under a head movement analysis recast in the Distributed Morphology framework. We do not pursue this question here.

[5] Though this is not made explicit in Delsing (1993)

(9) hesten der vandt løbet
horse.DEF that won race.DEF
'the horse, which won the race'

As indicated in the translations, there is a difference in interpretation: a relative clause with prenominal definiteness marking, as in (8), is interpreted as restrictive, whereas a relative clause with postnominal definiteness marking, as in (9), allows a nonrestrictive interpretation.[6] The grammaticality of (8) is unexpected under the head-raising analysis. Consider its structural representation in (10).

(10)



Since N to D movement is assumed to be obligatory, unless blocked by an intervening head, (8) is predicted to be ungrammatical, or – if *den* is stressed – to allow only a demonstrative interpretation (cf. the discussion of (7) above). However, (8) is grammatical with a stressless *den* and receives a definite rather than demonstrative interpretation. In (10) we assume that the relative clause is right-adjoined to NP. Our criticism is valid for any structure where the head of the relative clause (C) does not intervene between D and N. Any structure where the relative clause does intervene between D and N must rely on movement (of NP or of the relative CP) to account for the surface order, where relative clauses rigidly follow the noun they modify.

Delsing (1993, p. 119) gives similar data from Swedish and acknowledges that his analysis cannot account for this pattern. In section 4 we propose an analysis of relative clauses compatible with the facts in (8) and (9).

2.2 Morphological properties of definiteness marking

There are at least two instances where definiteness marking is sensitive to morphology. The first involves a morphologically defined class of nouns that do not occur with the postnominal definiteness marker. The second involves proper names that take the definite suffix only when morphologically marked as common nouns. To our knowledge these facts have not been discussed in the literature (though they are mentioned in some descriptive grammars, including Becker-Christensen and Widell (1995, pp. 55–6; 95) and Allan et al. (1995, pp. 23-4; 239)), so we discuss them in detail below.

[6] Some speakers also allow a restrictive interpretation for (9), whereas all speakers exclude a nonrestrictive interpretation for (8). We return to these facts in section 4

2.2.1 The first morphologically defined gap: **studerenden*

There is a morphologically defined class of nouns that do not occur with the postnominal definiteness marker. The class includes words like *studerende* ('student'), *besøgende* ('visitor'), *døende* ('dying person'), and *rejsende* ('traveler'). With these nouns a prenominal article is used in all contexts:[7]

(11) a. en studerende
a student

b. den (stakkels) studerende
the (poor) student

(12) a. *studerendeen
student.DEF

b. *studerenden
student.DEF

Morphologically, *studerende* is a present participle form composed of the verb *studere* ('to study') and the morpheme *-ende* (Allan et al., 1995, p.239). Present participle forms can be used attributively, as in (13), where they are considered 'adjectival' (Becker-Christensen and Widell, 1995, p. 95).

(13) den synkende skude
the sink.PRP ship
'the sinking ship'

Below we show that some participle forms, including *studerende*, *besøgende* etc, behave like nouns in the syntax. The fact that these nouns do not occur with the definite suffix is a problem for the head-movement analysis – where the lack of postnominal definiteness marking is analysed as the result of lack of head-movement – since it is not clear how the internal morphological composition of a noun can prevent the noun from undergoing head movement. Under the STRONG LEXICALIST HYPOTHESIS (see references cited in footnote 4 above) syntactic operations, such as movement operations, cannot operate on or be sensitive to the internal structure of words. In morphology, on the other hand, gaps and irregularities are ubiquitous, and we take the impossibility of the forms in (12) to be a morphological fact.

There is one complicating factor we need to take into account when arguing that *studerende* is an N; Danish allows N-drop under recoverability.[8] When the descriptive content of N is recoverable, either from the preceding discourse (14) or from the physical context (15), the N can be dropped.[9]

(14) a. A: Hvilken trøje kan du bedst li'?
Which sweater can you best like?
A: *'Which sweater do you like the best?'*

---

[7] It is a general property of Danish morpho-phonology that two adjacent schwas (written ee) reduce to one (Basbøll, 1998, p. 45). The definite form of a noun ending in schwa is realized as with a single schwa as illustrated in (i).

i. mo:lə + ən → mo:lən
pier + DEF
'the pier'

The two starred forms in (12) indicate that both the reduced and the unreduced definite form of *studerende* are impossible.

[8] We use 'N-drop' as a descriptive term. In theoretical terms 'NP-drop' would be a more adequate term.

[9] The morphological shape of the adjective is sensitive to definiteness (see Mikkelsen (1998b, 4–5)), hence the different form of the adjective *gul* 'yellow' in the two examples.

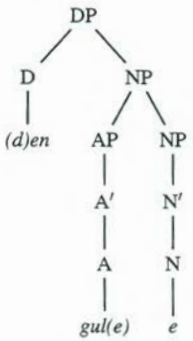
b. B: Den gule.
The yellow.
B: *'The yellow one.'*

(15) [In a context where the speaker is presented with a set of objects of different colors]

a. Jeg vil gerne ha' [en gul]
I will willingly have a yellow
I would like to have a yellow one

We assume that the elliptical DPs have the following structure, where AP is left-adjoined to an NP with a phonologically null head:

(16)



The recoverability condition on N-drop is illustrated in (17): unlike (17a), which contains a non-elliptical DP, (17b) is deviant without prior mention of people.

(17) a. Jeg kan godt li' skøre folk
I can well like crazy people
'I like crazy people'

b. #Jeg kan godt li' skøre
I can well like crazy

To justify the claim that *studerende* is an N, we must rule out the possibility that *en studerende* ('a student') is an elliptical DP of the structure in (16), containing only a D (*en*) and an A (*studerende*).[10] We show that this is in fact not the correct analysis, giving two arguments that *en studerende* 'a student' is not an elliptical DP, and two arguments that *studerende* is not an adjective, but a noun. These arguments can be carried out for any of the nouns in this class, but we limit the discussion to *studerende* here. That *studerende* and its class mates are nouns is also acknowledged in Allan et al. (1995, p. 283).

[10]We know from (13) above that present participle forms can be used as attributive adjectives.

1. Discourse initial position *En studerende* can occur discourse initially, and introduce a discourse referent that may be picked up by a pronoun in the following discourse. In this respect it behaves like a regular indefinite DP, and unlike an elliptical DP:

(18) [Where a.–c. are uttered discourse initially]

a. **En pige** kom gående ned ad gangen. Hun ...
A girl came walking down along hallway.DEF. She ...

b. **En studerende** kom gående ned ad gangen. Hun ...
A student came walking down along hallway.DEF. She ...

c. ***En høj** kom gående ned ad gangen. # Hun ...
A tall came walking down along hallway.DEF. She ...
[Intended meaning: *'A tall person came walking down the hallway'*]

2. Optionality and interpretation In contexts where N-drop is licensed (i.e. where the descriptive context of N is recoverable), it is also possible to have a non-elliptical DP, i.e. N-drop is optional. Moreover, an N-dropped DP is interpreted as if the missing N was present. Thus (19) and (20) are truth conditionally equivalent when the missing NP in (19) is understood as *bold*, and both are felicitous in a context where this information is recoverable.

(19) Jeg vil gerne ha' den grønne
I will willingly have the green
I would like to have the green one

(20) Jeg vil gerne ha' den grønne bold
I will willingly have the green ball
I would like to have the green ball

In contrast, (21) and (22) are not truth conditionally equivalent, and (22) is in fact marginal.

(21) Jeg så **en studerende** på gangen
I saw a student in hallway.DEF

(22) ?Jeg så **en studerende person** på gangen
I saw a studying person in hallway.DEF

(21) can be true in a situation where the person denoted by *en studerende* is not actually studying in the hallway at the point on time when the speaker sees him or her, as long as that person is a student. In contrast, (22) would be false in this situation. Next we give two arguments that *studerende* is not an A.

3. Adverbial modification *Studerende* cannot take adverbial modifiers like *ivrigt* ('eagerly'), while other present participle forms in attributive position can.[11]

[11]The construction in (24) is considered high register, but it is still productive, as evidenced by the attested examples in (i) from DK87-90, an electronic corpus of modern written Danish (documented in Bergenholtz (1992)).

i. (a) de ivrigt kunstinvesterende japanere
the eagerly art.invest.PRP Japanese

(b) de ivrigt fotograferende bilentusiaster
the eagerly fotograph.PRP car.enthusiasts

(23) *den ivrigt studerende
the eagerly student

(24) den ivrigt læsende befolkning
the eagerly reading population

In this respect *studerende* patterns with nouns, which also do not occur with adverbial modification:

(25) *ivrigt postbud
eagerly postman

4. Adjectival modification Like nouns, *studerende* can be modified by adjectives, whereas adjectives (such as *stabil* 'reliable' in (27)) cannot be modified by another adjective:

(26) Susi og Leo er (dygtige) studerende / postbude
Susi and Leo are (good) students / postmen

(27) Susi og Leo er (*dygtige) stabile
Susi and Leo are (good) reliable

Note that in (26) *dygtig* 'good' is interpreted relative to *studerende*, i.e. as 'good at being students'. Similarly, *dygtig* is interpreted relative to the noun *lærer* 'teacher' in (28), i.e. as 'good at being a teacher'.

(28) Susi er en dygtig lærer
Susi is a good teacher

Summary We conclude from the data presented above that *studerende* is a noun, and that its inability to occur with the definite suffix is due to its morphological properties, specifically the fact that it contains the present participial morpheme *-ende*. As mentioned above, this is a problem for the head movement analysis, since it is not clear how the morphology of a noun can prevent the noun from undergoing movement in the syntax. The morphological sensitivity of the postnominal definiteness marker is further illustrated in the next subsection with respect to definiteness marking of proper names.

2.2.2 The second morphological gap: **Mariaen* vs. *Mariaerne*

In Danish, as in English, proper names can be used as common nouns and appear e.g. with an indefinite determiner, as in (29), or plural inflection, as in (30), (see Thomsen (1997)).

(29) Jeg kender en Maria
I know a Mary
'I know someone called Mary'

(30) Jeg kender to Maria.er
I know two Mary.PL
'I know two people called Mary'

Proper names can also occur with a prenominal definite determiner in the context of a restrictive relative clause:

(31) Jeg kender den Maria som altid kommer for sent
I know the Mary who always comes too late
'I know the Mary who is always late'

In section 2.1 we showed that postnominal definiteness marking is possible in DPs containing a relative clause, so we expect these proper names functioning as common nouns to be able to occur with the postnominal article. This expectation is not borne out, as shown by the ungrammaticality of (32).[12]

(32) *Jeg kender Maria.en som altid kommer for sent
I know Mary.DEF who always comes too late

However, when a proper name is marked by plural morphology postnominal definiteness marking is possible:[13]

(33) Jeg kender begge Maria.er.ne som altid kommer for sent
I know both Mary.PL.DEF who always come too late
'I know both the Marys who are always late'

This is thus another instance where the distribution of the definite suffix is sensitive to morphology: only when a proper name form contains overt number morphology can it occur with the definite suffix. The grammaticality of (31) shows that a proper name can function as a common noun without any overt morphological marking. The ungrammaticality of (32) thus cannot be due to *Maria* not being a noun. To account for these facts under the head-movement analysis, one would have to find a way to rule out head-movement of the singular noun *Maria* in (32), while allowing it for the plural noun in (33). Since the two sentences differ only in morphological and lexical content and not in syntactic structure, this seems highly implausible.

This concludes our discussion of the head-movement analysis. We hope to have shown enough empirical problems with this analysis to justify exploring a different approach to definiteness marking in Danish DPs. In the next section we propose an alternative analysis where definite forms like *hesten* (the horse) are in fact determiners derived in the lexicon by a morphological rule. We further reject Delsing's idiosyncratic DP structure and posit a more conservative DP structure, where NP is the complement of D and APs left-adjoin to NP. Our analysis accounts for the distribution of the two definiteness markers without any appeal to movement.

3 A morphological account of definite nouns

Our central claim is that definite forms like *hesten* (the horse) are derived by a morphological rule that combines a noun with the definite suffix to yield a determiner.[14] The syntactic distribution of these definite

[12]The grammaticality of (30), in particular the well-formedness of the plural form *Mariaer*, shows that there is nothing phonologically amiss with the sequence *-iae*, so this phonological property cannot be the source of the badness of the singular definite form **Mariaen* in (32).

[13]In the plural the phonological shape of the definite suffix is invariably *-ne*.

[14]There is ample evidence that the postnominal definiteness marker is an ordinary suffix, and not, for example, a clitic. Of the six criteria for affix- vs. clitichood given in Zwicky and Pullum (1983), *-en* comes out as an affix on five (selectivity, irregularity, morphological idiosyncrasies, semantic idiosyncrasies, and participation in syntactic rules), while the sixth criterion (relative linear order) is inconclusive (see Mikkelsen (1998a, 57–69) for data and discussion). Börjars (1994) reaches similar conclusions for the postnominal definiteness marker in Swedish. This result is respected in our analysis, where *-en* is analysed as an affix, which combines with an N stem by a morphological rule in the lexicon.

forms follows from their status as determiners, while the morphologically defined gaps presented above are analysed as instances of the morphological rule failing to apply.

The analysis has a morphological component and a syntactic component. In 3.1 we present the morphological rule, Rule D (for Definiteness), and in 3.2 the syntactic structure of Danish DPs. In 3.3 we show how the two combine to account for the distribution of the two definiteness markers.

3.1 Morphology

We assume that a lexical entry for a noun contains at least the following information (where PFORM encodes the phonological shape of the word in question, SREP its semantic representation, GENDER its lexically determined gender, SUBCAT its argument structure, and CAT its syntactic category):[15]

(34) LEXICAL ENTRY FOR A NOUN

$$\begin{bmatrix} PFORM & \alpha \\ SREP & \beta \\ GENDER & \gamma \\ NUMBER & \delta \\ SUBCAT & \epsilon \\ CAT & \text{N} \\ \dots & \end{bmatrix}$$

Intuitively, Rule D takes a noun, combines it with the definite suffix and yields a determiner. We refer to such determiners as derived determiners or definite (noun) forms. Using the lexical representations for nouns introduced above, Rule D can be defined as in (35).

(35) RULE D

$$\begin{bmatrix} PFORM & \alpha \\ CAT & \text{N} \end{bmatrix} \Rightarrow \begin{bmatrix} PFORM & \alpha + DEF \\ CAT & \text{D} \end{bmatrix}$$

Where:

a. DEF represents the appropriate form of the definite suffix relative to the number and gender of the noun,[16] and

b. parts of the entry not mentioned in the rule are not affected.

[15] The representations used in this section are compatible with the more complex representation of lexical rules in HPSG (Pollard and Sag, 1994).

[16] I.e. *-en* for singular, common gender nouns, *-et* for singular, neuter gender nouns, and *-ne* for plural nouns.

(36) shows how Rule D applies to the noun *hest* (horse) to yield the derived determiner *hesten* (the horse). Following Pollard and Sag (1994, 19–20), we use < > ('the empty list') as the value of SUBCAT to indicate that *hest* does not subcategorize for any arguments.

(36) AN APPLICATION OF RULE D:

$$\begin{bmatrix} PFORM & hest \\ SREP & \lambda x\, horse(x) \\ GENDER & common \\ NUMBER & sing \\ SUBCAT & < > \\ CAT & \text{N} \\ \dots & \end{bmatrix} \Rightarrow \begin{bmatrix} PFORM & hesten \\ SREP & \lambda x\, horse(x) \\ GENDER & common \\ NUMBER & sing \\ SUBCAT & < > \\ CAT & \text{D} \\ \dots & \end{bmatrix}$$

Rule D affects only the values of the PHON and CAT features. In the remainder of this section we give evidence that the values of all other features remain unchanged.

To show that the GENDER and NUMBER values remain unchanged we exploit the fact that predicate adjectives agree in number and gender with the subject DP in a copula clause, as shown in (37).

(37) Min hest.COM-SG er rød / *rødt / *røde
My horse is red.COM.SG / red.NEU.SG / red.PL

As shown in (38), agreement is also found when the subject is a derived determiner like *hesten*, indicating that a derived determiner has the same gender and number features as the non-definite noun form it is derived from.[17]

(38) Hesten er rød / *rødt / *røde
Horse.COM.SG.DEF is red.COM.SG / red.NEU.SG / red.PL

To see that the SUBCAT value is unaffected by Rule D, consider the data in (39) and (40).

(39) a. *en hest til ejeren
a horse of owner.DEF

b. *hesten til ejeren
horse.DEF of owner.DEF

(40) a. en ejer til hesten
an owner of horse.DEF

b. ejeren til hesten
owner.DEF of horse.DEF

[17] Predicative adjectives do not agree for definiteness.

The noun *hest* does not allow a PP argument as indicated by the ungrammaticality of (39a). The same is true for the derived determiner *hesten* in (39b). Contrast this with the examples in (40). *Ejer* (owner) is a relational noun subcategorizing for an optional PP argument. The same is true of the derived determiner *ejeren* (the owner). These facts are explained under the assumption that Rule D does not affect the SUBCAT value.

Finally, we assume that Rule D has no effect on the semantic representation. We do not believe that definiteness should be modelled in the semantics, e.g. in terms of an iota operator (see Kalish et al. (1964, 306–10)). Rather we take definiteness to be a pragmatic phenomenon sensitive to discourse factors, context, and participants' beliefs (see e.g. Chafe (1976, 38–43) and Heim (1982, 274–320)).

Regarding the morphological gaps discussed in section 2.2, we do not have anything very interesting to say except that Rule D apparently interacts with other morphological rules in such a way as to produce these gaps. It is probably a brute morphotactic fact that the definite suffix cannot follow the *-ende* suffix, and another brute fact that the definite suffix cannot be attached directly to a proper name. Such idiosyncracies are not unusual in morphology.

Having laid out our assumptions about the morphology of the definiteness marker, we turn to syntax, and the syntactic structure of DP in Danish.

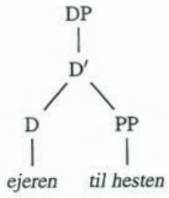
3.2 Syntax: the internal structure of DP

A derived determiner like *hesten* heads a non-branching DP as in (41).

(41)

The DP is non-branching because *hesten* inherits an empty SUBCAT value from *hest*. Contrast this with the structure for the example in (40b), where the derived determiner *ejeren* (the owner) inherits a non-empty SUBCAT list from the relational noun *ejer* (owner), which licenses a PP complement:

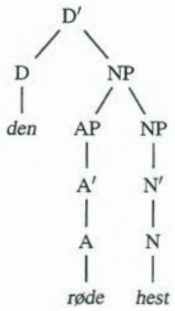
(42)



The non-branching DP structure in (41) might also be appropriate for personal pronouns like *hun* (she), which behaves as a full DP in the syntax and allows no complements. We return to this possibility in section 5.

We take the definite article *den* to be a transitive determiner taking an NP complement. Contra Delsing (1993), and Abney (1987, p. 327, ex. (381)), we assume that NP, never AP, is the complement of D, and that AP, when present, is left-adjoined to NP, as illustrated in (43).

(43)



With these syntactic and morphological assumptions in place, we return to the main goal of this paper: accounting for the distribution of the two definiteness markers in Danish.

3.3 Accounting for the distributional facts

In this section we account for the following distributional facts:

1. the two definiteness markers are in complementary distribution
2. definite forms like *hesten* ('the horse') do not co-occur with attributive adjectives.
3. when no attributive adjective is present only postnominal definiteness marking is possible.

The third fact takes us into an extensive discussion of a blocking effect which is crucial to our analysis. This blocking effect is further motivated in the analysis of relative clauses presented in section 4.

1. Complementary distribution Derived determiners are in complementary distribution with the prenominal definite article:

(44) *den hesten
the horse.DEF

On our analysis (44) is ungrammatical because *den* and *hesten* are both determiners, and there is only one D position. They cannot both occupy the D position, and neither can take (the other as) a DP complement, cf. the structures in (41) and (43). Similarly, derived determiners cannot cooccur with a possessive form, as shown in (45).

(45) a. *min hesten
my horse.DEF

b. *mandens hesten
man.DEF.POSS horse.DEF

c. *Peters hesten
Peter.POSS horse.DEF

(46) a. min hest
my horse

b. mandens hest
man.DEF.POSS horse

c. Peters hest
Peter.POSS horse

We argue that this is because the possessive *'s* or the possessive pronoun occupies D, and there is no other D position available for the derived determiner *hesten*.

2. No attributive adjectives with postnominal definiteness marking. As shown in (47), definite noun forms do not occur with attributive adjectives.

(47) *røde hesten
red horse.DEF

The reason (47) is not possible is that there is no NP for the AP to adjoin to, see the structure in (41). Note that this is different from adjectives appearing with a prenominal article in an elliptical DP, as in (16) above, since the elliptical DP does contain an NP, to which the AP is adjoined. The lexical content of the NP is just not pronounced.

3. No prenominal definite article without modification. In the absence of modfiers, only postnominal definiteness marking is possible (see the discussion in section 2.1 above).

(48) hesten
horse.DEF
'the horse'

(49) *den hest
DEF horse

We argue that the impossibility of (49) is due to BLOCKING in the sense of Poser (1992)). Poser argues that the well-attested phenomenon of BLOCKING (cf. Paul (1896), Aronoff (1976, 43–5)), whereby the existence of one form renders an equivalent and otherwise well-formed form ungrammatical, extends to blocking of phrasal forms by lexical ones. In particular, Poser proposes (p. 126) that lexical blocking of phrasal constructions occurs when the phrasal construction instantiates a 'morphological category', i.e. a category potentially instantiated by a word-formation rule. Essentially, when a word-formation process and a phrase-forming syntactic process compete for the expression of exactly the same morphological category, the word-formation process wins and the phrasal construction is blocked. Poser discusses three instances of such blocking: periphrastic verbs in Japanese, comparative and superlative adjectives in English, and progressive aspect formation in Basque. We suggest that definiteness marking in Danish is another instance, in particular that the existence of the lexical item *hesten* in (48) blocks the phrase *den hest* in (49): *hesten* is derived by a word-formation process (Rule D), blocking the syntactic construction *den hest* from instantiating the category 'definite' for the noun *hest*. A phrase like *den røde hest* (the red horse) is not blocked, because there is no corresponding word form to block it. Similarly *dén hest* (that horse), with the stressed demonstrative *dén*, is not blocked because it doesn't mean the same thing as *hesten*, and the two forms are not competing for expression of the same morphological category.[18]

[18]We will not review here all the literature on lexical blocking of syntactic constructions, but one proposal pre-dating Poser's deserves mention. Postal (1966, p. 188–9) observes the following English facts:

4 Relative Clauses

In section 2.1 we saw that relative clauses cooccur with either a prenominal definite article or a definite suffix (though never with both), and pointed out that this is problematic for the head raising analysis, as it is implausible that there is any intervening head to block N raising to D on any analysis of relative clause structures. Thus under the head raising analysis, we would expect to find the same distribution of the definite markers as in simpler constructions, i.e. the suffixed form if no prenominal adjectives are present, and the prenominal article otherwise.

When one or more prenominal adjectives are present, the suffixed form is indeed impossible; but when there are no prenominal adjectives, both (50) and (51) (repeated from (8) and (9) above) are grammatical:

(50) den hest der vandt løbet
the horse that won race.DEF
'the horse that won the race' [all speakers]

(51) hesten der vandt løbet
horse.DEF that won race.DEF
'the horse, which won the race' [all speakers]
'the horse that won the race' [some speakers]

As noted above, the interpretations are somewhat complicated, but important. In (50), the only possible interpretation of the relative clause is as a restrictive one; in (51), for some speakers the only possible interpretation is nonrestrictive, while for others a restrictive interpretation is also possible (cf. Mikkelsen (1998b, 39–42)). This last may be an instance of language change in progress, since it is mostly older-generation speakers for whom (51) is exclusively interpreted as nonrestrictive.

We do not understand the variation or change involved in (51).[19] We do, however, believe that we understand the reason why (50) can only be interpreted as restrictive. We assume that there are two places where a relative clause can adjoin: to NP, as in (52) (repeated from (10) above); or to DP, as in (53):

---

i. I ate the one Schwartz gave me [= Postal's (24a)]
ii. I bred the small one [= Postal's (25a)]
iii.*I ate the one [= Postal's (27a)]

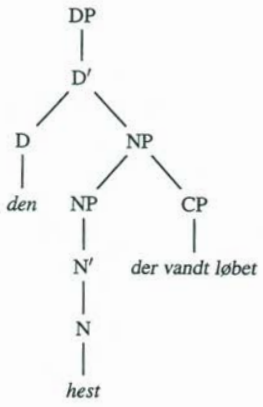
Postal suggests that *the one* in (iii) is blocked by the existence of the lexical item *it*. The blocking effect that Postal is appealing to here seems to be exactly the type of blocking effect discussed by Poser (1992) (though Poser does not refer to Postal's observations) which forms a crucial part of our analysis. We thus take the English facts in (i-iii) to support the claim that lexical items can block syntactic phrases under synonymy.

[19]Note that restrictive relative clauses are also possible with personal pronouns, which we assume are also D's:

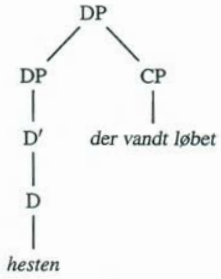
i. Jeg kender ham der vandt løbet
I know him who won race.DEF
'I know the guy who won the race'

This shows that restrictive relative clauses can, at least in some contexts, be adjoined to DP.

(52)



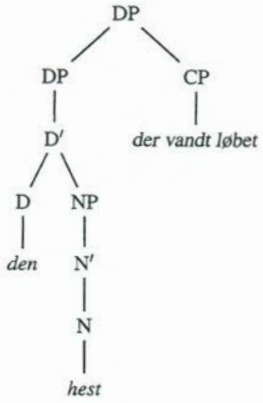
(53)



We propose that, to get the nonrestrictive interpretation, the relative clause must be adjoined to DP, as in (53); for some speakers, this structure can also correspond to a restrictive interpretation, perhaps by raising of the D at L(ogical) F(orm). But structure (52) has only the restrictive interpretation, and nothing that happens at LF can change that.

Under these assumptions, we can see straightforwardly why there is a gap in the interpretation possibilities for (50). To get a nonrestrictive interpretation with that order of words, the structure would have to be as in (54):

(54)



But this structure contains the DP *den hest*, which is blocked by the existence of *hesten*. Thus there is no way for (50) to have a nonrestrictive interpretation. The reason that the restrictive relative clause construction in (52) is not blocked is that in this structure *den hest* does not form a phrase and only phrases can be blocked by lexical items.

5 Conclusion

We have argued that the morphosyntax of definiteness marking in Danish is best accounted for not by an analysis involving head raising, but by a word formation rule which marks a noun as definite and simultaneously changes its category to D. This move may seem dismaying, in that we suggest that what was thought to be a closed category (even a 'functional' one) is in these languages expanded by a morphological rule to an open category. This move, however, allows us to maintain an otherwise very conservative set of assumptions about the syntax of these constructions, and, together with the assumption of lexical blocking of phrasal constructions, to account straightforwardly for the central facts of definiteness marking in the Mainland Scandinavian languages as well as some previously unexplained phenomena concerning relative clauses.

Two directions suggest themselves for further investigation. On the one hand, there are other cases where a tight relationship of some kind exists between a determiner and an immediately following noun, expressed in a morphological and/or phonological reflex, which is blocked by the presence of an intervening adjective.

Leu (2001) discusses a phenomenon in Swiss German, where the definite article takes a reduced, phonologically assimilated form when immediately followed by a noun, but invariably the full, independent form *di* when an adjective intervenes:

(55) a. d autobahn [= Leu's ex. (1a)]
the highway (fem)

b. *d / di alt autobahn [= Leu's ex. (1b)]
the old highway

(56) a. k xint [= Leu's ex. (2a)]
the children (plural)

b. *k / di xlinä xint [= Leu's ex. (2b)]
the little children

This and similar determiner – adjective – noun interactions in other languages might be worth exploring from the perspective applied to definiteness marking in Danish above.

The second direction for exploration is somewhat broader. If we have succeeded in arguing that a head-raising analysis is unsuccessful in accounting for the problem of definiteness marking in Danish, and if in turn the alternative approach to this morphosyntactic problem that we develop here is accepted as promising, then it might be fruitful to reconsider other analyses involving head raising as a crucial mechanism in accounting for some interactions between morphology and syntax.

Appendix: some theoretical problems for the head raising analysis

Consider the tree in (57), which is the structure proposed by Delsing for DPs containing an adjective:

(57)

Notice first that AP is the complement of D, whereas NP is analysed as a specifier of AP. While we agree that D is the head of the entire projection in (57), and that A heads an AP, we do not agree that AP is the complement of D. Instead we maintain a more traditional analysis, where AP is adjoined to NP, and NP is the complement of D, cf. section 3. Evidence that N, and not A, heads the complement of D in Scandinavian is given by Svenonius (1992). Based on the criteria for headedness proposed in Zwicky (1985), Svenonius (1992, 109–17) argues that A is not the head of the complement of D, since A fails most of the criteria for being a head of this domain: it is not obligatory, it is not unique, and it does not control features on the NP it modifies. In contrast, N passes all of these criteria, and we conclude with Svenonius (1992) that N rather than A heads the complement of D (see also the detailed discussion of the headedness of Swedish noun phrases in Börjars (1994).)

Notice next that the SpecA analysis requires determiners to take at least three different kinds of complements; NP, AP and DegP. The latter case is instantiated when A is modified by a word like *very*, which is assumed to head a Degree Phrase, cf. Abney (1987). This multiplication of subcategorization possibilities seems empirically unmotivated in Danish, since there are no determiners allowing only a subset of these possibilities. All determiners can appear with no adjective (taking an NP complement), an unmodified adjective (taking an AP complement), or a modified adjective (taking a DegP complement). The problem with Delsing's analysis is thus that it dislocates the optionality of adjectives and their modifiers to the subcategorization of the determiner. In section 3 we proposed a more traditional analysis where AP is left-adjoined to NP. This analysis locates the optionality where it should be located – in the adjunct status of adjectives – and the determiner simply takes a NP argument. Note also that the right-hand specifier position that Delsing proposes for the NP goes against the general head-directionality of Danish; complements are uniformly to the right, and specifiers uniformly to the left.[20]

This particular feature of the analysis (NP as a right-hand specifier of AP) is not, in fact, crucial to the overall account of the distribution of definiteness marking, so it is important to note that our other objections,

[20]Specifier-left order is observed even in small clauses, where the subject uniformly precedes the predicate:

i. Jeg gjorde [Peter gal]
I made Peter mad

ii. Jeg malede [porten blå]
I painted gate.DEF blue

both empirical and theoretical, hold equally against a head-raising analysis assuming a structure like that proposed by Abney (1987) in which NP is the complement of A, rather than the specifier of AP.

The main theoretical problem with the head-raising analysis resides in its most crucial assumption about the syntactic structure: namely that in a structure involving an adjective, A is the head of the complement of D. This assumption is crucial because an A in any other structural position (adjunct or specifier) would not, under either the Head Movement Constraint of Travis (1984, 131) nor the Relativized Minimality Constraint of Rizzi (1990), block head raising of N to D. But this raises an embarrassing question: if A is the head of the complement of D in D-A-N constructions, which it must be in order to block N-to-D raising, what prevents A-to-D raising in such structures? As shown in (58), the definiteness marker cannot appear on adjectives, even when there is no overt noun present.[21]

(58) a. *røden hest
red.DEF horse

b. *røden
red.DEF

Note that in the structure in (57), D and A are in the exact configuration that D and N are in in the structure in (2). Since the head-raising analysis assumes that N moves to D in (2), we would expect A to be able to move to D in (57). The same question (why A does not move to D) arises for Longobardi's 1994 analysis of N-to-D movement of proper names in Western Romance. Longobardi is assuming a more standard DP analysis, where NP is the complement of D, and APs are in Spec NP, and suggests that A to D movement is ruled out by the Head Movement Constraint, since "A is not the head of the complement of D" (p. 644). As far as we can tell, the non-movement analysis of definiteness marking in Danish that we propose below is not inconsistent with Longobardi's analysis of Western Romance. This explanation is not available to the head-raising account of definiteness in Danish, because in this analysis A must be the head of the complement of D. Delsing (1993) notes this problem (p. 91–2) and suggests that syntactic categories like N and A have a binary valued feature [+/- head movement], and that the value of this feature is subject to parametric variation. In the absence of further evidence for the head movement feature, this seems to be nothing more than a restatement of the facts.

[21]There are grammatical noun phrases where an attributive adjectives carries a suffix *-en*, but this is a remnant of an old accusative suffix, unrelated to the definite suffix (see Diderichsen (1946, 110–11)):

i. sort.en muld
black.ACC. soil

ii. blid.en bør
soft.ACC wind

We thank Bodil Kappel Schmidt for bringing these facts to our attention.

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A two-tiered approach to binding domain formation: evidence from Czech[1]

Anne Marie Sturgeon

1. *Introduction.*

Considering a configurational approach to binding theory from the perspective of a language such as English, which has a wide range of 'logophoric' uses of anaphors, can be misleading. It has led some to discount configurational analyses entirely (cf. Pollard and Sag 1991, Reinhardt and Reuland 1993). While I think that these analyses have much to offer in terms of a greater understanding of the intricacies of binding, a deeper look at anaphora within languages which do not have 'logophors' is necessary to develop a more complete understanding of the role of syntactic structure in predicting the distribution of pronouns.

Czech is among those languages which lack logophors (Reinhart and Reuland 1993, 'exempt anaphors,' Pollard and Sag 1992), but which, nevertheless, exhibits non-complementarity between reflexives and pronominals in certain positions. In this paper I present new evidence from Czech which clearly shows that the distribution of reflexives is constrained by configurational restrictions, contra Pollard and Sag 1992. However these same data show that an approach based solely on the Complete Functional Complex (Chomsky 1986) cannot be entirely correct. To account for the data I propose an alternative analysis in which only certain syntactic domains (including both tense and argument structure domains) correspond to the domain within which reflexives must be bound.

The analysis presented here stipulates that reflexives must be bound to a c-commanding co-argument. If that is not possible, they are bound within the most deeply embedded IP. Through this two-tiered binding domain areas of non-complementarity and surprising differences in the distribution of possessive and object reflexives in Czech, not yet discussed in the literature, are explained.

This account is reminiscent of Dalrymple 1993 who posits that only certain syntactic domains are relevant to forming binding domains for pronouns. Under her analysis, relevant binding domains are assigned lexically. My approach is different. The same set of principles are relevant for calculating the binding domains of all pronouns. It is not necessary to associate certain domains with certain pronouns. I combine a *Knowledge of Language*-type definition of binding domain formation with a delineation of the relevant domains for binding.

A range of new Czech data is presented which show areas of non-complementarity between pronominals and reflexives as well as differences in the distribution of possessive and object reflexives. With these issues in mind, binding within adjunct PP's, nominals, and embedded clause structures, both object control and VP complements to verbs of perception, are discussed.[2]

The paper is organized as follows. In section 2, an introduction to binding in Czech is presented. Recent analyses of binding are considered in §3 and a preliminary definition of 'binding domain' is developed. In section 4, areas of non-complementarity between pronominals and reflexives within complex DP's is discussed and evidence is presented that argues for the relevance of argument structure in the calculation of binding domains. In §5 differences in the distribution of possessive and object reflexives are discussed, leading to the proposal of a two-tiered definition of binding domain for Czech. In §6 the definition of binding domain is formalized and additional predictions are discussed. In section 7, remaining issues are

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[2] Fieldwork for this project was funded by grants from the Institute for Humanities Research (UCSC) and the UCSC Women's Club.

considered. Section 8 summarizes the theoretical and empirical findings. In the Appendix, §9, cross-linguistic binding similarities are shown.

2. *Czech Reflexives.*

Czech reflexives have been argued to be of the 'long-distance' variety (Toman 1991, Avgustinová, et al 1997, Veselovská 1995, di Bona 1981). They exhibit features common to those types of reflexives: they can be bound outside their minimal clause[3], they are 'subject' oriented, and monomorphemic. In this paper I show that the distribution of Czech reflexives can be accounted for without reference to 'long distance' binding. All reflexives respect certain syntactic restrictions.

Czech has both object[4] and possessive reflexives. These reflexives do not appear in the nominative case.[5] Anaphors are not inflected for the ϕ-features or case of their antecedent. Possessive reflexives are adjectival (cf. Toman 1991, Veselovská 1995, di Bona 1981) and agree in case/number/gender with the noun they modify. There are both clitic and strong object reflexives:

(1) *Clitic forms*: *se* (acc), *si* (dat)
Strong forms: *sebe* (acc, gen), *sobě* (dat, loc), *sebou* (instr).[6]

Only the binding behavior of strong forms is considered here.[7] Reflexive possessives include:

(2) *svůj* (masc), *svoje/svá* (fem), *svoje/své* (neut), *svoji* (pl).

Reflexives and reciprocals are homophonous; only reflexive readings are discussed.[8]

2.1 *Basic Czech Binding Data.*

The core binding observations in Czech are similar to those of English.

(3) **Jan$_1$ nenávidí *sebe$_1$/*jeho$_1$*.**
Jan hates self/him
Jan$_1$ hates himself$_1$.

(4) **Hana$_1$ mluví *se* *sebou$_1$/*ní$_1$*.**
Hana talks with self/her
Hana$_1$ talks to herself$_1$.

There is complementary distribution between pronominals and reflexive pronouns within the minimal finite clause.

Turning to possessive reflexives, (5) demonstrates that complementarity holds for many speakers, under coreference, in the minimal finite clause.[9]

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[3] Toman 1991 argues that Czech reflexives cannot be bound outside their minimal clause (finite or non-finite). Others have argued that they can be bound outside of non-finite clauses (Avgustinová, et al 1997, Veselovská 1995, di Bona 1981). I posit that reflexives, under certain circumstances, can be bound from outside certain non-finite clauses.

[4] To distinguish them from possessive reflexives, I will refer to the Czech reflexives which correspond to the English 'himself/herself' as object reflexives.

[5] The absence of nominative anaphors is a cross-linguistic phenomenon (cf. Rizzi 1990, Woolford 1999).

[6] Abbreviations: masc (masculine), fem (feminine), neut (neuter), pl (plural), sg (singular), loc (locative), acc (accusative), gen (genitive), dat (dative), instr (instrumental), voc (vocative), comp (complementizer), adj (adjective), aux (auxiliary), refl (reflexive), neg (negative morpheme), cl (clitic).

[7] Clitic reflexives must be bound 'locally,' by a coargument; strong reflexives can be bound 'long distance' (cf. Toman 1991, Avgustinová, et al 1997).

[8] Reflexives and reciprocals differ in their binding behavior. Reflexives must bind to a 'subject;' reciprocals can bind to objects within their minimal clause (cf. Avgustinová, et al 1997).

[9] Speakers I interviewed from central Bohemia exhibited complementarity in this position. Speakers from Moravia (Brno) and Western Bohemia accepted both the reflexive and the pronominal.

(5) **Mirka$_1$ viděla *svou$_1$/%jeji$_1$ knihu*.**[10]
Mirka saw self's/her book
Mirka$_1$ saw her$_1$ book.

There is a difference, however, in behavior between 1st/2nd person and 3rd person possessive reflexives.

(6) **Vy$_1$ jste otrávil *svou$_1$/vaši$_1$* kocku?**
you.pl aux.2pl poisoned self's/your cat
Did you poison your cat? (Toman 1991: 6a)

For all speakers there is non-complementarity between possessives pronominals and reflexives in the first and second person.[11]

Like many monomorphemic, 'long distance' anaphors, Czech reflexives must bind to a 'subject.'

(10) **Vlad'a$_1$ dal Janě$_2$ *svou$_{1/*2}$* knihu.**
Vlad'a gave Jana.dat self's book
Vlad'a$_1$ gave Jana his$_1$ book.

In (10) the reflexive must bind to the DP in subject position. It cannot be co-indexed with a dative object, even if, as is assumed by contemporary analyses of ditransitive constructions for some languages (c.f. Larson 1988, Demonte 1994), c-command holds.[12]

3. *Current Approaches to Binding*:

3.1 *Pollard and Sag 1992.*

In Czech, when it is not possible for the reflexive to bind to a coargument, non-complementarity between reflexives and pronominals is found.[13] This intuition forms the core of the Pollard and Sag 1992 analysis of reflexives in English. They claim that when a reflexive cannot, in principle, be bound by a coargument, that reflexive is an 'exempt' anaphor and is out of range of the binding theory. They correctly predict certain areas of non-complementarity in Czech:

(11) **Nakonec ho uložil$_1$ do postele *vedle sebe$_1$/něho$_{1/2}$*...**
at last him.acc put.masc to bed next-to self/him
At last he$_1$ put him to bed next to himself$_1$/him$_1$... (Kopřiva 1988)

(12) **Byl$_1$ rád, že má dceru, oba syny i mně *blízko sebe$_1$/něho$_{1/2}$*...**[14]
was glad that has daughter both sons and me near self/him
He was glad that he had his daughter, both sons, and me around him...
[taken from Czech National Corpus at www.ucnk.ff.cuni.cz]

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[10] '%' indicates that this form is grammatical for a minority of speakers.

[11] Noting that possessive reflexives are less common than reflexive pronouns cross-linguistically, Burzio 1996 posits an implicational hierarchy which suggests that if a language has 1st/2nd person possessive reflexives, it will have 3rd person. Czech has the full range of possessive reflexives, but 1st/2nd differ from 3rd in their distribution. This difference is not accounted for under my analysis.

[12] For our purposes 'subjects' are defined structurally as: [spec, DP, NP, IP, VP]. This is a common trait of 'long distance' reflexives cross linguistically, and some analyses of binding have linked this requirement to an LF movement of reflexives to I (Lebeaux 1983, Pica 1984, 1986, Chomsky 1986a, Reinhardt and Reuland 1991, among many others). I do not pursue an analysis of this type here. This requirement is stipulated by my account.

[13] As noted in §2.1, when a possessive reflexive and its antecedent are contained within the same minimal finite clause, there is complementarity between pronominals reflexives for many speakers. This result is surprising because the possessive reflexive is not a clause mate with its antecedent.

[14] In both these textual examples (11-12), the text used the reflexive. Consultants also accepted the pronominal.

When the reflexive is located in an adjunct PP, there is non-complementarity between the pronominal and the reflexive. This follows from the Pollard and Sag 1992 account. The reflexive is an 'exempt' anaphor because there is no potential coargument antecedent. However, other facts from Czech argue against their account. Binding across a sentence boundary is impossible.

(13) **Jana$_1$ zuřila. Zprávy o sebe/ní byly vymysly.**
Jana was-furious reports about self/her were fabrications
Jana$_1$ was furious. The reports about her was fabrications.

As in (11-12), the reflexive in (13) has no coargument which could antecede it, but binding in this case is ungrammatical. The Pollard and Sag 1992 analysis, which allows binding in cases such as (13), has effectively explained many areas of non-complementarity in English. However, an analysis of this type will not work for a language such as Czech which disallows binding across sentence boundaries.[15] These examples suggest that a configurational approach is necessary.

3.2 *A Configurational Approach.*

A promising configurational approach to non-complementarity between pronominals and reflexives is provided in Hestvik 1991. The central claim of his proposal, within the Chomsky 1986b framework, is that the binding domain for pronominals need not contain a 'subject' (Bresnan 1987, Huang 1983). He removes any mention of 'subject' from the definition of binding domain. Relevant definitions incorporating Hestvik's modification of 'binding domain' are given here:[16]

(14) ***Binding Domain***:[17] (to be revised) a binding domain for α is the most deeply embedded Complete Functional Complex (CFC) containing α in which the basic binding requirements for α can be met.

(15) ***Complete Functional Complex***: An XP in which all the θ-roles compatible with a head are assigned in A-positions.

Under these new definitions, maximal projections which contain all arguments corresponding to the theta-roles of a head, but which lack a 'subject,' can be considered binding domains. Additionally, it is posited that anaphors and pronominals have different binding requirements.

(16) ***Basic Binding Requirements***: (i) for α, **an anaphor**, can be met in principle in a category C iff there is an assignment of indices to DP's within C (perhaps different from the actual assignment of indices within C) according to which α is A-bound.
(ii) for α, **a pronominal**, can be met in principle in a category C iff there is an assignment of indices to DP's within C (perhaps different from the actual assignment of indices within C) according to which α is A-free.

The different binding requirements of pronominals and anaphors are reflected in the calculation

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[15] German as well as Croatian also disallow 'exempt' anaphors across sentence boundaries:

(i) Marija$_1$ je ljuta. Odvratna slika *sebe$_1$ je izlozena izvan LCR-a.
Mary is furious ugly picture self.gen is displayed outside LCR
'Mary$_1$ is furious. The ugly photo of herself$_1$ was posted outside the LCR.' (Croatian)

(ii) Mary$_1$ ärgert sich fürchterlich.Das hässliche Foto von *sich$_1$ wurde vor dem LCR aufgehängt.
Mary is-angry self terribly the ugly photo of self was in-front-of the LCR hung-up
'Mary$_1$ is terribly upset. The ugly photo of herself$_1$ was posted outside the LCR.' (German)

This suggests that a Pollard and Sag 1992-type analysis would be untenable for these languages also.

[16] Hestvik's definition of binding domain includes this additional requirement: 'contains a governor for α.' This is unnecessary for the Czech data.

[17] A slight reformulation of Chomsky (1986b) due to James McCloskey.

of the binding domain. Pronominals must be free within their binding domain and anaphors must have the potential to be bound.

Informally, the Binding Domain for α is the most deeply embedded CFC in which the basic binding requirements for α, a pronominal or anaphor, can, in principle, be met. Two questions are relevant when determining the Binding Domain for α: What is the CFC which most immediately contains α? and Is it possible for α's basic binding requirements to be met in that CFC? If the answer to the second question is yes, the minimal CFC is the Binding Domain for α. But, if that is not the case, the next higher CFC is considered, and the procedure is repeated.

This analysis can account for the non-complementarity in (11-12) while predicting that anaphors cannot appear across sentence boundaries from their antecedents. Example (11) repeated:

(17) **Nakonec ho uložil$_1$ do postele *vedle sebe$_{1/}$něho$_{1/2}$***...
at last him.acc put.masc to bed next-to self/him
[$_{IP}$ At last he$_1$ put him to bed [$_{PP}$ next to himself$_1$/him$_1$...]] (Kopřiva 1988)

In this case, the binding domain for the pronominal is the PP which contains it. This PP forms a CFC and the pronominal's binding requirements (that it be A-free) are met within that domain. The binding domain for the reflexive, however, must expand beyond the minimal CFC containing it, the PP. Its binding requirements cannot be met within the PP; there is no potential antecedent within that domain. The binding domain for the reflexive is the next higher CFC containing the reflexive, the IP.

This analysis, which crucially claims that binding domains need not contain subjects, is adequate to account for the areas of non-complementarity within PP's, while not overpredicting the distribution of reflexives. In the next section we will consider another area where non-complementarity between pronominals and reflexives and subjectless binding domains are found, the nominal paradigm. The definition of binding domain will need to be modified somewhat to account for the data.

4. '*Subjectless' NP's: Predictions for binding within Complex DP's.*

In this section the argument structure of Czech nominals is explored. The goal is to modify the definition of binding domain in order to present a unified analysis of non-complementarity between pronominals and reflexives in both adjunct PP's and DP's.

Certain complex DP's in Czech exhibit patterns of non-complementarity between reflexives and pronominals similar to those within PP's, (11-12).

(18) **Karlovy$_1$ *básně* o soběi/něm$_{1/2}$ jsou pěkné**
Karel.adj poems about self/him are pretty
[$_{DP}$ Karel's$_1$ *poems* about himself$_1$/him$_1$] are pretty.

(19) **Janova$_1$ *důvěra* v sebe$_1$/*něho$_1$ je obdivuhodná.**
Jan.adj trust in self/him is admirable
[$_{DP}$ Jan's$_1$ *trust* in himself$_1$/*him$_1$] is admirable.

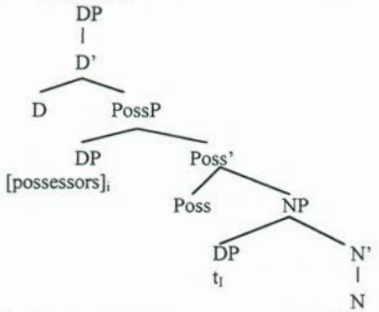
In (18), under coreference with the syntactic possessor, *Karel*, both the pronominal and the reflexive are grammatical. The same, however, is not true for (19). Under coreference with *Jan*, only the anaphor is possible. How can the definition of 'subjectless' Binding Domain account for (18) and (19) which both appear to include a 'subject' within the DP?

These binding facts are accounted for through a discussion of the difference between structural subjects and external arguments and an examination of the argument structure differences between the head nouns in (18-19). In the next section the internal syntax of the Czech DP is outlined.

4.1 *The Syntax of Czech DP's.*

Veselovská 1995 assumes that all prenominal possessors (POSS)[18] are base generated as external arguments of N in [spec, NP]. She argues that POSS raises from its base position in [spec, NP] to the specifier of a functional projection below DP, PossP.[19]

(20) Schematic DP: [20]



Possessors in Czech sit lower in the DP than in a language such as English; determiners can precede possessives.

(21) **ta Petrova milovaná sestra**
that/the Petr.adj beloved sister (Veselovská 1995: 253)

This analysis will be adopted for some, but not all, DP's.

4.2 *Argument Structure of Czech Nouns.*

Two types of Czech nouns readily take PP modifiers, *poem-* type nouns and psychological nouns. "*Poem*-type" nouns are often referred to as *picture*-nouns in the literature (c.f. Warshawsky-Harris 1976); they consist of nouns such as *book, poem, article*. They will be compared with psychological nouns such as *fear, embarrassment, irritation*. The binding differences, (18-19), between these nouns is traced to their argument structure and corresponding internal syntax.

Psych nouns include: *strach* (fear), *obdiv* (pride), *důvěra* (trust, confidence), *láska* (love), *zlost* (anger), *podrážděnost* (irritation), *frustrace* (frustration), *rozpačitost* (embarrassment), and potentially others. Psych nouns are all related to verbs,[21] for example: *frustrace* (frustration): *frustrovat* (to be frustrated by), *obdiv* (pride): *obdivovat se* (to be proud of) and *podrážděnost* (irritation): *podráždit* (to be irritated at). The head of the argument PP varies idiosyncratically with the head N.

Due to their relationship with verbs, psych nouns co-occur with DP elements in POSS that must be interpreted as experiencers.[22]

(22) **Pavlův strach z hadu**
Paul's fear of snakes

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[18] I adopt the terminology of Veselovská 1995. POSS will be used to refer to the syntactic position filled by "prenominal possessors." GEN will be used to refer to postnominal DP's marked with the genitive case.

[19] Veselovská 1995 follows Longobardi 1995 and Picallo 1994 in assuming that POSS elements raise at LF from [spec, NP] to [spec, PossP] to be in an agreement relation with the functional head, $Poss^0$. The relevance of this analysis to the binding data is the position of POSS elements at LF.

[20] As the focus for this paper is the position of POSS, unrelated functional projections between PossP and NP have been ignored.

[21] With the exception of *rozpačitost* (embarassment).

[22] A systematic investigation of the binding behavior of other deverbal nouns such as *quarrel, discussion, understanding,* and *destruction* has not yet been conducted. This is an important area for future research.

(23) **Mariin obdiv k sobě**
Mary's pride in herself

In (22) the only possible interpretation of *Pavel* is as the experiencer of *fear of snakes*.

Poem-type nouns, on the other hand, are not related to verbs and the head of the PP modifier is consistently, *o* (about) + locative. As opposed to psych nouns, there is no one consistent interpretation associated with the DP in the POSS position of these nouns.

(24) **Petrův článek o sobě**
Petr's article about himself.

(25) **Janin článek**
Jana's article

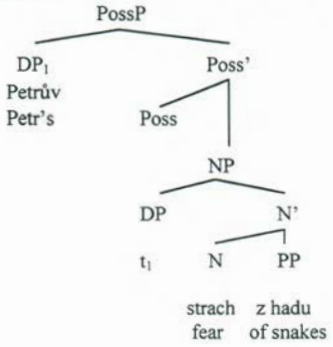
Among the possible interpretations of *Petr* are: agentive, writer of the article; possessive, current owner of the article.[23] The only requirement for the POSS element of *poem*-type nouns is that it be related to the head noun (cf. Williams 1984).[24]

4.3 *Syntactic Structures*.

The contrasts in section 4.2 suggest that psych nouns and *poem*-type nouns differ in their argument and syntactic structures. I suggest that psych nouns assign an experiencer thematic role to their external argument while the *poem*-type nouns do not have external arguments (cf. Georgopoulos 1991, Giorgi & Longobardi 1991).

Assuming psych nouns assign a thematic role to an external argument, I posit that this argument is base-generated in [spec, NP] and raises to [spec, PossP]. The PP within psych nouns is assumed to be a complement, since the P head is determined by the head noun.

(26) **Petrův strach z hadu**
Petr's fear of snakes



[23] The agentive reading tends to be the strongest for my consultants, though other interpretations are generally available.

[24] An additional difference between these two types of nouns is that psych nouns can co-occur with modifiers related to the adverb, *neustále* (constantly), while *poem*-type nouns cannot (cf. Grimshaw 1991).

(i) **Noviny neustále psaly články o Petrovi.**
The newspapers constantly write articles about Peter.

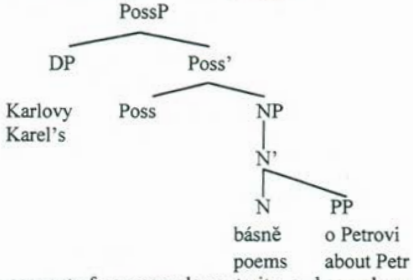
(ii) **Petrův neustálný strach z hadu je bez důvodný.**
Petr's constant fear of snakes is senseless.

(iii) ***Petrův$_1$ neustálny článek o sobě$_1$**
Petr's constant article about himself

This data further points to the similarity between psych nouns and their verbal counterparts. *Poem*-type nouns, lacking verbal counterparts, cannot co-occur with adverbial modifiers.

Within *poem*-type DP's I argue that the possessor is not assigned a thematic role. Differing from psych nouns, this POSS element is base-generated in [spec, PossP] (contra Veselovská 1995). The modifying PP is also an argument to the noun. [25]

(27) **Karlovy básně o Petrovi**
Karel's poems about Petr



These assumptions are crucial in the account of non-complementarity and complementarity between pronominals and reflexives in the nominal paradigm.

4.4 *Binding Predictions.*
Schematics are shown in (28-9) for *fear*-type and *poem*-type nouns.

(28) $[_{PossP}\ [_{DP}$ **Petrův**$_1$ $]_i\ [_{NP}\ t_i$ ***obdiv*** **k** **sobě**$_1$/***něm**$_1$* $]]$
Petr.adj pride towards self/him
Petr's$_1$ *pride* in himself$_1$/*him$_1$

(29) $[_{PossP}\ [_{DP}$ **Karlovy**$_1$ $]\ [_{NP}$ ***básně*** **o** **sobě**$_1$/**něm**$_{1/2}$ $]]$
Karel.adj poems about self/him
Karel's$_1$ *poems* about himself$_1$/him$_1$

According to the definitions in (14-16), the NP forms a CFC for both these types of nouns; all theta roles pertaining to the head are assigned within that domain.[26] The differences in binding patterns follow from the assumption that psych nouns have an external argument, while *poem*-type nouns do not; there is a trace of the syntactic possessor within NP's headed by psych nouns, but there is no such potential binder within NP's headed by *poem*-type nouns.

Considering first the case of psych nouns, complementarity holds between pronominals and anaphors.

(30) **Janova**$_1$ ***důvěra*** **v** **sebe**$_1$/***něho**$_1$* **je obdivuhodná.**
Jan.adj trust in self/him is admirable
Jan's trust in himself is admirable.

(31) **Karlova**$_1$ ***frustrace*** **nad sebou**$_1$/***něho**$_1$* **způsobovala problémy.**
Karel.adj frustration on self/him caused problems
Karel's *frustration* at himself caused problems.

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[25] Extraction facts support this assumption. A PP complement can be extracted from this complex DP

(i) **O kom často piši noviny články?**
about whom often write newspapers articles
Who does the newspaper write articles about a lot?

This suggests that the PP is an argument and not an adjunct of the head noun, *articles*. If the PP were any higher in the tree, adjoined to DP or VP, c-command would not hold between the POSS element and the anaphor in an example such as (29), predicting, incorrectly, that POSS could not bind the anaphor.

[26] Giorgi (1987) discusses Italian data which suggest that NP, rather than DP, is the relevant binding domain in complex DP's.

(32) **Mirky$_1$ *rozpačitost* na sebe$_1$/*ní$_1$ mě překvapila.**
Mirka.adj embarassment on self/her me surprised
[$_{PossP}$ Mirka's$_i$ [$_{NP}$ t$_i$ *embarassment* at herself]] surprised me.

The NP is the minimal binding domain for both the anaphor and the pronominal; within this domain the anaphor has the potential to be bound by the trace of the noun's external argument. The pronominal, though, is ungrammatically bound by that trace. Thus, the anaphor is predicted to be grammatical and the pronominal ungrammatical.

Binding an anaphor to a DP outside its binding domain, the NP, is not possible.

(33) **Marie$_1$ nenávidí Petrův$_2$ *strach* o sebe$_{2/*1}$.**
Marie hates Peter.adj fear about self/him/acc
Marie$_1$ hates Petr's$_2$ *fear* of himself$_2$.

(34) **Jana$_1$ byla překvapená Daninou$_2$ *zlostí* na sebe$_{2/*1}$.**
Jana was surprised Dana.adj anger on self
Jana$_1$ was surprised at Dana's$_2$ *anger* at herself$_2$.

(35) **Jana$_1$ byla překvapená Haninou$_2$ *podrážděností* na sebe$_{2/*1}$.**
Jana was surprised Hana.adj irritation on self
Jana$_1$ was surprised at Hana's$_2$ *irritation* at herself$_2$.

A pronominal, however, is grammatical when bound to the matrix subject; it is A-free within its binding domain, the NP.

(36) **Jiřina$_1$ nemá ráda Karlův$_2$ *strach* o ní$_1$.**
Jiřina neg-have glad Karel.adj fear about her
Jiřina$_1$ doesn't like Karel's$_2$ fear of her$_1$.[27]

If we take seriously the assumption that psych nouns assign a thematic-role to an external argument, it should be possible for that argument to be covert (c.f. Chomsky 1986a, Stowell 1989, Giorgi & Longobardi 1991). This prediction is borne out in the following examples.[28]

(37) **Strach o sobě$_1$/*něm byl pro Jana$_1$ největsi problém.**[29]
fear about self/him was for Jan biggest problem
[$_{PossP}$ PRO$_i$ [$_{NP}$ t$_i$ Fear of himself] was Jan's$_i$ biggest problem.

(38) **Obdiv k sobě$_1$/*něm byl Janova$_1$ největsi chyba.**
pride toward self/him was Jan.adj biggest fault
[$_{PossP}$ PRO$_i$ [$_{NP}$ t$_i$ Pride in himself] was Jan's$_i$ biggest problem.

In these cases PRO functions as the antecedent for the anaphor and is controlled by the DP, *Jan*. Additionally, the pronominal is correctly predicted to be ungrammatical as it would be bound within its binding domain, the NP.

If PRO can function as the controlled external argument one would expect to also see arbitrary control.

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[27] This example was judged to be marginal by some consultants.

[28] Anaphors in Czech must be c-commanded by their antecedent. Note the ungrammaticality of:

(i) **Bratr Jany$_1$ vařil večeře ve *svém$_1$/jejím$_1$ bytě.**
bother Jana.gen cooked dinner in self's/her apartment
Jana's$_i$ brother cooked dinner in her$_i$ apartment.

(ii) **Petrův$_1$ obrazek v Newsweeku rozrušil *svou$_1$/jeho$_1$ matku.**
Petr.adj picture in Newsweek bothered self's/his mother
Petr's$_i$ picture in Newsweek bothered his$_i$ mother.

[29] These constructions are not accepted by one consultant, but have been accepted by 5 others. They appear to be of a marginal status, but there is a robust distinction between the acceptability of (37-40) and (42-3).

(39) **Obdiv k sobě/*němu je velká chyba.**
pride towards self/*him is big mistake
[$_{PossP}$ PRO$_{arb1}$ Pride in oneself$_1$] is a big mistake.

(40) **Strach o sebe/*něho je velký problém.**
fear about self is big problem
[$_{PossP}$ PRO$_{arb}$ Fear of oneself] is a big problem.

This is shown to be the case in (39-40).

Turning to *poem*-type DP's different binding patterns are found. First, there is non-complementarity between pronominals and anaphors within the minimal DP.

(41) **Karlovy$_1$ básně o sobě$_1$/něm$_{1/2}$ jsou moc pěkné.**
Karel.adj poems about self/him are very pretty
[$_{PossP}$ Karel's$_1$ [$_{NP}$ poems about himself$_1$]] are very pretty.

This follows from the definitions in (14-16); the minimal CFC containing the anaphor and the pronominal is the NP. Within this CFC the binding requirements for the pronominal can be met; it is A-free within that domain. Since there is no potential binder for the anaphor within the NP, its basic binding requirements cannot be met within that domain. Its binding domain must expand to include the next higher CFC in which there is a potential binder, PossP. *Karel*, in [spec, PossP], is the antecedent for the anaphor.

Poem-type nouns, as opposed to psych nouns, do not assign a thematic role to an external argument, and do not appear to license covert PRO 'subjects.' Contrast (42-3) with (37-40). Assuming that c-command is a prerequisite for binding, the anaphors in both (42-3) are predicted to be ungrammatical.

(42) **Článek o *sobě$_1$/něm$_{2/?1}$ byl pro Jana$_1$ největsi problém.**
article about self/him was for Jan biggest problem
[$_{PossP}$ The article about himself] was Jan's biggest problem.

(43) ***Články o sobě nejsou pěkné.**
articles about self neg-are pleasant
Articles about oneself are not pleasant.

Pronominals, however, are grammatical.

The following data show that the range of potential antecedents for reflexives within poem-type DP's is larger than that of psych DP's. Given the definitions of (14-16), either the pronominal or the anaphor can co-refer with the 'subject' of the complex DP, but only the pronominal can co-refer with an antecedent outside that domain, since PossP forms the binding domain for the reflexive The following data show, however, this prediction is not accurate; the anaphor *can* be bound by the matrix subject, outside PossP.

(44) **Božena$_1$ zahodila Karlovy$_2$ básně o sobe$_{1/2}$/%ni$_1$/něm$_2$.**
Božena threw-away Karel.adj poems about self/her/him
Božena$_1$ threw away Karel's$_2$ poems about her$_1$/him$_2$. (adapted from Toman 1991:24a)[30]

(45) **Karel$_1$ nesnášel Petrovy$_2$ ódy na svého$_{1/2}$/jeho$_{1/2}$ učitele.**
Karel neg-endured Petr.adj odes on self's/his teacher
Karel$_1$ couldn't stand Petr's$_2$ odes about his$_{1/2}$ teacher. (adapted fromToman 1991: 50b)

This complicates matters. It appears that not PossP, but a larger domain, IP or VP, forms the binding domain for the anaphor. The anaphor can be bound by any DP within IP/VP. This result is not predicted under Hestvik 1991. He posits that binding domains expand, crucially, by CFC.

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[30] Unexpectedly, a pronominal referring to *Božena* is not grammatical for some speakers. Out of 11 speakers, 6 accepted the pronominal under co-reference with *Božena* and 5 rejected it. For all speakers, the anaphor was preferred over the pronominal. See §7 for a discussion of cases like this.

The data in (44-5) show that this assumption cannot be correct. The binding domain for the anaphor must extend past the PossP, the 'next higher' CFC.

Assuming a VP internal subject hypothesis, however, these examples do not allow us to determine whether it is the VP or the IP which forms the 'extended' binding domain for the reflexive. In the next section, additional evidence is presented which allows us to make this distinction. That evidence includes data which exhibits the different distribution of possessive and object reflexives: complex psych DP's, object control structures, and verbs of perception are considered.

Binding within complex DP's headed by *poem*-type nouns has enabled us to tease apart the notion of structural 'subject' from that of external argument. In these DP's, the 'subject' is not an external argument of the head noun, but is in a structural subject position, [spec, PossP]. The data show that only external arguments function to 'close off' the binding domain of the anaphor. The external argument of a psych noun, as opposed to the structural *subject* of *poem*-type DP's, is a coargument of the reflexive; therefore, NP's headed by psych nouns form binding domains. The data are different with *poem*-type complex DP's. Though the structural subject (the possessor) *can* antecede the reflexive, the binding domain must extend higher because the reflexive can also be bound by any other 'subject' DP in the finite clause. It is crucial to make reference to argument structure and *not* simply structural subject to capture the binding facts of these complex DP's.[31]

In the next section data is considered which will determine the precise conditions under which the binding domain for the reflexive can be extended.

5. *Extending the Binding Domain.*

In the previous section we saw that a configurational account of binding in which binding domains expand by CFC is inadequate to account for binding behavior of reflexives within *poem*-type complex DP's. Reflexives in those constructions can be bound by a antecedent outside the PossP containing the reflexive. In this section other areas in which the complementary distribution of pronominals and reflexives breaks down are considered in order to determine precisely under what circumstances and how far the binding domain for reflexives can expand.

5.1 *Contrasting Possessive and Object Reflexives.*

In certain structures possessive and object reflexive differ in their distribution. This is not surprising considering that it is inherent to the structural position of possessive reflexives that there is no potential coargument antecedent within the PossP containing them.

Complementarity between possessive reflexives and pronominals breaks down in complex psych nouns. All speakers exhibit non-complementarity in cases such as (46), even those for whom there is complementarity within the minimal finite clause.[32]

(46) **Janina$_1$ radost ze své$_1$/její$_1$ nové práce mě překvapila.**
Jana.adj happiness from self's/her new work me surprised
[$_{PossP}$ Jana's$_1$ happiness with [$_{PossP}$ her$_1$ new job]] surprised me.[33]

Contrast (46) with (19), repeated here:

(47) **Janova$_1$ *důvěra* v sebe$_1$/*něho$_1$ je obdivuhodná.**
Jan.adj trust in self/him is admirable
[$_{PossP}$ Jan's$_1$ *trust* in himself$_1$/*him$_1$] is admirable.

This contrast is captured by our current analysis. The binding domain for the pronoun in (47) is the entire complex PossP containing it. Within that domain, the reflexive is grammatically

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[31] See§9, the Appendix, for cross-linguistic evidence of these argument structure differences among nouns.
[32] Note that for the majority of speakers there is complementarity between 3rd person possessive reflexives and pronominals within the minimal finite clause, (5).
[33] For many speakers, the pronominal is preferred under coreference with the subject of a complex DP.

bound; a pronominal would be ungrammatically bound. The situation is different for the possessive reflexive in (46). The binding domain for the pronominal is the minimal PossP containing it. This domain contains no potential binder, ensuring that the pronominal is A-free. However, the binding domain for the reflexive must expand to the next higher CFC, which contains a potential binder. The maximal PossP containing the reflexive forms its binding domain; within that domain the reflexive can be grammatically bound.

The binding behavior of possessive reflexives in cases similar to (46), but in which the complex DP containing the possessive reflexive is further embedded are not predicted by the current analysis. The behavior of these possessive reflexives is similar to object reflexives within *poem*-type complex DP's. Compare (48-9) with (44), repeated here:

(48) **Jana$_1$ pocítila Karlovo$_2$ zklamani nad svou$_{1/\%2}$/její$_{\%1}$/jeho$_2$ porážkou.**
Jana felt Karel.adj disappointment on self's/hers/his defeat
Jana felt [$_{PossP}$ Karel's disappointment in [$_{PossP}$ his/her defeat.]][34]

(49) **Pavel$_1$ pocítil Karlovo$_2$ zklamani nad svou$_{1/2}$/jeho$_{1/2}$ knihou.**
Pavel felt Karel.adj disappointment on self's/his book
Pavel$_1$ felt Karel's$_2$ disappointment in his$_{1/2}$ book.[35]

(50) **Božena $_1$ zahodila Karlovy$_2$ básně o sobe$_{1/2}$/%ni$_1$/něm$_2$.**
Božena threw-away Karel.adj poems about self/her/him
Božena$_1$ threw away [$_{PossP}$ Karel's$_2$ [$_{NP}$ poems about her$_1$/him$_2$.]]
(adapted fromToman 1991:24a)

As we saw in (46), the predicted binding domain for the possessive reflexive in (48) should be the maximal PossP containing it, *Karel's disappointment in his defeat*. The binding facts, however, contradict this prediction. It is grammatical, and actually preferred, for the reflexive to be anteceded by the matrix subject (outside its predicted binding domain).[36]

In the previous section we saw a similar situation with object reflexives within *poem*-type complex DP's, (50). The embedded object reflexive can be bound outside of its predicted binding domain, the maximal PossP containing it. Consultants generally prefer the reflexive under coreference with the matrix subject.

These two cases, though superficially distinct, share a crucial feature; in both of these cases it is not possible for the reflexive to be bound by a coargument. In (50), the possessive, base generated in [spec, PossP] is not a coargument of the object reflexive. In (48-9), the possessive reflexive is the highest argument within the minimal PossP containing it and has potential antecedent within that domain.

At this point it is possible to make an important generalization: when the reflexive cannot be bound by a coargument, the binding domain extends beyond 'the next higher' CFC. Evidence presented in the next section determines the identity of this extended domain.

5.2 *Evidence from Verbs of Perception and Object Control Constructions.*

The binding behavior of possessive and object reflexives differs within non-finite complements to verbs of perception. Considering first object reflexives:

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[34] Jindřich Toman, p.c., pointed out this example.

[35] The reflexive is often preferred under co-reference with the matrix subject, the pronominal under coreference with the 'subject' of a DP headed by a psych noun.

[36] Recall that this binding pattern is not possible with object reflexives:

(34) **Jana$_1$ byla překvapená Daninou$_2$ *zlostí* na sebe$_{2/*1}$.**
Jana was surprised Dana.adj anger on self
Jana$_1$ was surprised at Dana's$_2$ *anger* at herself$_2$.

Here we see that the object reflexive must be bound within the minimal PossP containing it. In this case, the reflexive has a coargument potential antecedent.

(51) **Poslouchal$_1$ Petra$_2$ mluvit o sobe$_{2/*1}$/něm$_{1/*2}$.**[37]
heard.3sg Petr.acc to-talk about self/him
[$_{IP}$ He$_1$ heard [$_{VP}$ Peter$_2$ talk about himself$_{2/*1}$/him$_{1/*2}$.]]

(52) **Viděla$_1$ Petru$_2$ dívat se na sebe$_{2/*1}$/ní$_{1/*2}$ do zrcadle.**
saw.fem Petra.acc to-look-at refl-clitic at self/her towards mirror
She$_1$ saw Petra$_2$ look at herself$_{2/*1}$/her$_{1/*2}$ in the mirror.

In (51-2) it is impossible for the object reflexive to find an antecedent outside the minimal (non-finite) clause and an anaphor is required under coreference with the non-finite subject. This is expected given the partial theory already developed. In (51-2) the embedded VP is a CFC and constitutes the binding domain for both the reflexive and the pronominal. The reflexive, therefore, may not be bound outside that domain and the pronominal may not be bound within that domain.

Contrast (51-2) with examples involving possessive reflexives. In (53-4) two observations are important. First, the pattern of complementarity breaks down. Secondly, the reflexive may be bound outside the perception verb complement:

(53) **Slyšela$_1$ Petru$_2$ zpívat svou$_{1/\%2}$/její$_{\%1/2}$ písničku.**
heard.3sg Petra.acc to-sing self's/her song.acc
She$_1$ heard Petra$_2$ sing her$_{1/2}$ song.

(54) **Viděl$_1$ Milana$_2$ polibit svou$_{1/\%2}$/jeho$_{\%1/2}$ ženu.**
saw.masc Milan.acc to-kiss self's/his wife.acc
He$_1$ saw Milan$_2$ kiss his$_{1/2}$ wife.

In these examples, possessive reflexives are bound from outside clausal complements to two verbs of perception: *see* and *hear*. The possessive reflexive cannot be bound within its coargument domain, the minimal PossP containing it; its binding domain appears to extend to the matrix IP/VP. The contrast between (51-2) and (53-4) is reminiscent of the contrast between the binding behavior of object and possessive reflexives within psych DP's, (34) and (48-9). Syntactic position is the relevant factor structure in predicting the distribution of possessive vs. object reflexives.[38]

Consider next the case of binding and object control constructions. It is not possible for either type of reflexive to be bound by an antecedent outside of the non-finite complement in a construction of this type.[39]

(55) **Marie$_1$ přinutila Jana$_2$ o sobě$_{2/*1}$/ní$_{1/*2}$ lhát.**
Marie pressured Jan.acc about self/her to-lie
Marie$_1$ pressured Jan$_2$ to lie about himself$_2$/her$_1$.

(56) **Petr$_1$ zakázal Janovi$_2$ mluvit o sobě$_{2/*1}$/něm$_{1/*2}$.**
Petr forbid Jan.dat to-talk about self/him
Petr$_1$ forbid Jan$_2$ to talk about himself$_2$/him$_1$.

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[37] Binding reflexive pronouns out of complements to verbs of perception and object control structures is impossible for the majority of my consultants. There is disagreement in the literature about binding and infinitival complements. Toman 1991 maintains that binding out of non-finite complements is impossible, while Veselovská 1995, Avgustinová, et al 1997 say that it is possible.

[38] Possessive reflexives can be bound across certain clause boundaries across which object reflexives cannot. This might suggest that possessive reflexives are 'long distance' anaphors while object reflexives are not. Evidence will be presented in §6 which show that reflexive pronouns also exhibit 'long distance' binding behavior under certain circumstances. I claim that these binding differences are predicted by their syntactic position, not an inherent difference between these two types of reflexives.

[39] A very small minority of consultants allowed both types of anaphors to be bound from positions outside of both types of non-finite complements. Veselovská 1995 and Avgustinová 1997 allow binding out of these both of the non-finite constructions considered here; Toman 1991 does not.

(57) **Marie$_1$ připoměla Janovi $_2$ starat se o svou$_{2/*1}$/jeho$_2$/její$_1$ kočku.**
Marie reminded Jan.dat to-take-care refl-cl about self's/his/her cat
Marie$_1$ reminded Jan$_2$ to take care of his$_2$/her$_1$ cat.

(58) **Marie$_1$ přinutila Janu$_2$ o svém$_{2/*1}$/její $_{1/2}$ životě lhát.**
Marie pressured Jana.acc about self's/her life to-lie
Marie$_1$ pressured Jana$_2$ to lie about her$_{1/2}$ life.

Both object, (55-6), and possessive, (57-8), reflexives must be bound within the non-finite complement which contains them. (57-8) contrast with (53-4) in which possessive reflexives are shown to be able to find an antecedent outside of clausal complements to a perception verbs. What is the relevant difference between non-finite complements to object control structures and verbs of perception?

It is usually assumed that the non-finite complements to verbs of perception and object control structures are of a different phrasal type (cf. Safir 1993). In English many researchers agree that verbs of perception take a small clause VP complement while object control constructions have a CP or IP complement. The form of the non-finite verb provides evidence:

(59) Michelle watched Kyra *wash* the rice.

(60) Michelle reminded Kyra *to cook* the rutabagas.

In Czech, the non-finite verb is in the same form in both constructions, but other evidence distinguishes the two types of complements. The first is the interpretation of tense.

The tense of the non-finite verb is interpreted differently in these two constructions: in (53-4) (complements to verbs of perception) the tense of the complement clause is dependent on the tense of the matrix clause; both clauses must be interpreted with the same tense. In object control structures this is not the case. The tense of the non-finite complement clause is not linked to the tense of the matrix one. It is often interpreted as future with respect to the matrix clause.

These two constructions also differ syntactically. It is possible to front the non-finite complement in an object control construction.

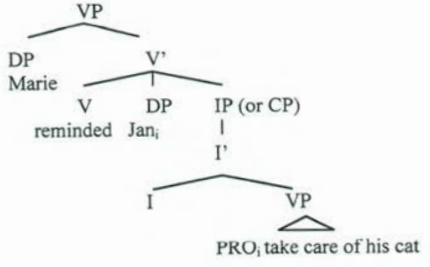
(61) **Starat se o svou$_2$ kočku Marie$_1$ připoměla Janovi$_2$.**
to-take-care refl-cl about self's cat Marie reminded Jan.dat
To take care of his$_2$ cat Marie$_1$ reminded Jan$_2$.

A similar fronting is not possible with verbs of perception.

(62) ***Zpívat svou$_1$ písničku slyšela jsem Petra$_1$.**
to-sing self's song heard aux.1sg Petr.acc
*Sing(ing) his$_1$ song I heard Petr$_1$.

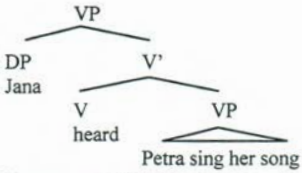
This suggests that the fronted complement in (61) is an XP, while the fronted complement in (62) is not. I assume that object control structures take IP (or CP)[40] complements, while verbs of perception have subordinate VP small clauses. In (62) the fronted material would be V', accounting for its ungrammaticality.

(63) Object Control:



[40] Whether this node is a CP or an IP is not relevant to the analysis at the present time.

(64) Small Clause VP Complement:



Given these distinct structures, a binding generalization can be made. Neither type of reflexive can be bound from a position outside the most deeply embedded IP which contains it. This predicts that possessive reflexives can bind out of non-finite complements to verbs of perception and psych DP's, but not the subordinate clause in object control constructions. In the following section these binding generalizations are formalized.

6. *Formalization of Binding Requirements.*

The patterns we have seen can be described informally in the following terms. An analysis in which the anaphor looks for a potential antecedent in successively larger CFC's is inadequate. Instead, if an anaphor can bind to a co-argument (an element within its minimal CFC), it will do so, to the exclusion of other indexings. If binding to a coargument is inherently impossible (the anaphor has no c-commanding coarguments), it must be bound within the most deeply embedded IP which contains it. As can be seen from this description, both argument structure and tense (I) play definitive roles in determining binding behavior in Czech (cf. Dalrymple 1993).

6.1 *Definitions.*

There are two distinct domains which are relevant for the behavior of anaphoric elements in Czech: the coargument domain (CFC) and the IP. To capture this generalization formally, the definition of binding domain is modified. A procedural definition is provided.

(65) ***Binding Domain***:
- (a) Locate the most deeply embedded CFC containing α.
- (b) Determine whether the basic binding requirements for α can, in principle, be met within that domain. If they can, this CFC is the binding domain for α.
- (c) If not, find the most deeply embedded IP containing α. This is the binding domain for α.

(66) ***Complete Functional Complex***: An XP in which all the θ-roles compatible (as defined in (15)) with a head are assigned in A-positions.

This definition of binding domain combines two relevant domains discussed in Dalrymple 1993: the co-argument domain (CFC) and the tense domain. If the anaphor cannot be bound in the coargument domain, it must be bound within the minimal IP containing it. The data presented here provide evidence both for the centrality of argument structure and the role of tense in determining binding domains. As opposed to Dalrymple 1993, in my analysis there is no need to link each lexical item with a syntactic binding domain. For each syntactic structure, the binding domain of a reflexive can be calculated. It has also been shown that binding domains do not necessarily enlarge, by CFC, for example; there can be two different types of domains which are relevant: in this case, the CFC and the minimal IP.

This two-tiered definition of binding domain makes correct predictions for both types of Czech reflexives.

(67) **Poslouchal$_1$ Petra$_2$ mluvit o sobe$_{2/*1}$/něm$_{1/*2}$.**
heard Petr.acc to-talk about self/him
[$_{IP}$ He$_1$ heard [$_{VP/CFC}$ Peter$_2$ talk about himself$_{2/*1}$/him$_{1/*2}$.]]

In (67) the reflexive pronoun has a c-commanding coargument by which it must be bound. The small clause VP forms the minimal CFC and binding domain for both the anaphor and the pronominal. A pronominal is not possible under coreference with the small clause subject, and the anaphor must be bound within that domain.

Different predictions are made for the possessive reflexive.

(68) **Viděl$_1$ Milana$_2$ polibit svou$_{1/\%2}$/jeho$_{\%1/2}$ ženu.**
saw.masc Milan.acc to-kiss self's/his wife
[$_{IP}$ He saw [$_{VP}$ Milan kiss [$_{PossP}$ his wife.]]]

The possessive reflexive has no c-commanding coargument within the minimal CFC which contains it (PossP). As a result the binding domain for the reflexive is the minimal IP, the matrix clause, within which it is grammatically bound. The basic binding requirements of the pronominal, on the other hand, can be met within the minimal CFC, the PossP. Pronominals are predicted to be grammatical under any indexing. The binding of a possessive reflexive out of a small clause VP complement is predicted to be grammatical, but not the binding of a reflexive pronoun.

Reflexives contained within non-finite complements to object control structures behave differently.

(69) **Marie$_1$ připoměla Janovi$_2$ starat se o svou$_{2/*1}$/jeho$_2$/její$_1$ kočku.**
Marie reminded Jan.dat to-take-care refl-cl about self's/his/her cat
Marie$_1$ reminded Jan$_2$ [$_{IP}$ PRO$_2$ to take care of [$_{DP}$ his$_2$/her$_1$ cat.]

In this case, the possessive reflexive cannot be bound within its minimal CFC, PossP, so it must be bound within the minimal IP containing it. The complement IP forms the binding domain for the anaphor. The pronominal can be bound by the subject of the complement IP, as it is free within its binding domain, PossP.

How does this new definition affect the account of binding out of *poem*-type DP's? The reflexive pronoun cannot be bound within its minimal CFC, the NP, since there is no c-commanding coargument.

(70) **Božena $_1$ zahodila Karlovy$_2$ básně o sobě$_{1/2}$/ni$_1$/něm$_2$.**
Božena threw-away Karel.adj poems about self/her/him
[$_{IP}$ Božena$_1$ threw away [$_{DP}$ Karel's$_2$ [$_{NP}$ poems about her$_1$/him$_2$.]]]
(Toman (1991:24a)

Since the reflexive pronoun cannot be bound within its minimal CFC, it must be bound in its minimal IP, in this case, the root sentence. The fact that DP and PossP form CFC's does not limit the reflexive from being bound by the matrix subject.

The definition of binding domain presented here makes the correct predictions for binding across both types of Czech reflexives and many different types of constructions. In the following section, additional predictions of this analysis are discussed.

6.2 *Additional Predictions.*

Assuming this definition of binding domain, certain surprising predictions are made. If this definition of Binding Domain is correct, object reflexives are predicted to be able to bind out of small clause VP complements under certain circumstances: when there is no potential binder within the minimal CFC containing them. This situation arises when 'subjectless' complex *poem*-type DP's are found within these small clauses.[41]

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[41] The pronoun reflexive cannot be bound outside of the small clause if the matrix subject is 1/2nd person. This follows a cross-linguistic tendency: reflexives which are bound by first and second persons cannot be bound 'long distance.'

(i) **Videla$_1$ jsem Petra$_2$ číst Pavlův$_3$ článek o sobě$_{2/3/*1}$.**
saw aux.1sg Petr.acc to-read Pavel.adj article about self

(71) **Jana$_1$ videla$_1$ Petra$_2$ číst Pavlův$_3$ článek o sobě$_{1/2/3}$.**[42]
Jana saw Petr.acc to-read Pavel.adj article about self
Jana$_1$ saw Petr$_2$ read Pavel's$_3$ article about her$_1$/himself$_{2/3}$.

(72) **Jana$_1$ videla$_1$ Petra$_2$ číst Pavlův$_3$ článek o svém$_{1/2/3}$ psu.**
Jana saw Petr.acc to-read Pavel.adj article about self's dog
Jana$_1$ saw Petr$_2$ read Pavel's$_3$ article about her$_1$/his$_{2/3}$ dog.

In (71), as opposed to (67), the object reflexive *can* be bound from a position outside the small clause VP complement. According to the definition of Binding Domain, when a reflexive cannot be bound by a coargument, it must be bound within the minimal IP containing it. In this case the binding domain for the reflexive is the entire sentence, and, as predicted, the reflexive can be bound by any 'subject' within that domain.

This example provides further evidence for the modified definition of binding domain. In an account like the one in Hestvik 1991, the binding differences between (67) and (71) would not be predicted. It is not the case that the reflexive looks to successively higher CFC's in which to be bound. In Czech, intervening CFC's between the coargument domain and the IP are irrelevant to forming binding domains. The relevant domain for the reflexive, if it cannot be bound by a coargument, is IP.

Both possessive and object reflexives can be bound 'long distance' given the right circumstances, when there is no c-commanding co-argument DP. Additionally, this generalization would not be captured under an analysis which simply specified different binding domains for these reflexives. The syntactic position of the reflexive determines its binding behavior.

7. *Remaining Issues*: *Unexpected Complementarity*.

The framework of the analysis presented in this paper accounts extremely well for a wide variety of cases which exhibit non-complementarity between pronominals and reflexives. A few unexpected areas of complementarity between these types of pronouns remain. There is a tendency of Czech reflexives to be bound by the most prominent DP within their binding domain, often the matrix subject. A configurational solution to this outstanding issue has not been found, but a framework within which to consider these problems is investigated.

A distinctive characteristic of the analysis developed here is that it leads us to expect free choice between reflexives and pronominals in a wide array of cases, all cases, in fact, in which the basic binding requirements of an anaphor cannot be satisfied within the lowest CFC within which they appear. It is troubling, then, that the pattern of non-complementarity re-appears in two contexts where it is not expected. The first case involves 'subjectless' complex DP's. Non-complementarity between pronominals and reflexives is predicted to hold within *poem*-type DP's without subjects. The minimal CFC containing both the pronominal and the reflexive is the NP. Pronominals can be free within this domain and anaphors must look to the minimal IP as a binding domain. However, this is not the case. A pronominal, under coreference with the matrix subject is ungrammatical.

(73) **Hana$_1$ našla článek o sobě$_1$/*ni$_1$.**
Hana found article about self/her
[$_{IP}$ Hana$_1$ found the [$_{NP}$ article about herself$_1$.]]

Another case of unexpected complementarity is in the possessor position in the minimal

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I saw Petr read Pavel's article about himself.

This was pointed out to me by Irena Polić. I have not researched this pattern thoroughly in Czech.

[42] Examples (71-2) were checked with one consultant. These 'super' long distance bindings also seem to be acceptable in English:

(i) María$_1$ saw Paul read George's article about herself$_1$.

finite domain. For many speakers only the reflexive is possible under coreference with the matrix subject in (74).

(74) **Mirka$_1$ viděla *svou$_1$/%jeji$_1$ knihu*.**
Mirka saw/fem self's/her book
Mirka$_1$ saw her$_1$ book.[43]

I claim that these two problematic cases (73-4) stem from the same tendency in Czech binding. When a matrix subject binds a pronoun, the anaphor is preferred, if possible. Burzio 1996 discusses the role of the antecedent in binding relations and provides a framework within in which to consider these issues. He posits that when the antecedent is in an agreement relationship with a finite I, (i.e. the matrix subject) that domain, the IP, is likely to not allow anaphors contained within it to find antecedents outside the clause. He posits a hierarchy of 'blocks' to long distance binding, based on the relationship of potential antecedents to agreement, the stronger the agreement, the stronger the 'block.'

(75) Subject of: Indicative >> Subjunctive >> Infinitive >> Small Clause >> DP

This hierarchy predicts, correctly it seems, that, cross-linguistically, it is most difficult for anaphors to be bound from outside indicative clauses, less so from outside subjunctives, infinitivals, etc.

I use Burzio's hierarchy slightly differently. Instead of concentrating on what is a block, I use the hierarchy as a measure of the relative prominence of the antecedent. Indicative subjects are the most prominent, 'subjects' of complex DP's the least. This hierarchy is used to make two predictions. First, anaphors, when possible[44], bind to the most prominent DP within their binding domain. Secondly, when a prominent DP functions as a binder, an anaphor is preferred. This is comparable with the 'maximality effect' discussed in Huang 2000; the cross-linguistic tendency of root clause subjects to be the preferred antecedent for monomorphemic, 'long distance,' anaphors.

The prominence of the 'subject' antecedent appears to affect binding in Czech. For most speakers, when the subject of an indicative clause functions as an antecedent for a pronoun, an anaphor is preferred.

(76) **Hana$_1$ našla článek o sobě$_1$/*ni$_1$.**
Hana found article about self/her
Hana$_1$ found the article about herself$_1$.

(77) **Božena $_1$ zahodila Karlovy$_2$ básně o sobe$_1$/%ni$_1$.**
Božena threw-away Karel.adj poems about self/her
Božena threw away Karel's poems about her.
(adapted fromToman 1991:24a)

(78) **Mirka$_1$ viděla *svou$_1$/%jeji$_1$ knihu*.**
Mirka saw self's/her book
Mirka$_1$ saw her$_1$ book.

In (76) the pronominal is not possible under coreference with the matrix subject. In (77), though both are predicted to be grammatical, the reflexive is strongly preferred over the pronominal. For many speakers, a possessive reflexive is the only possible pronoun under coreference with the matrix subject in (78).

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[43] One way of predicting this fact would be to claim that PossP did not form a binding domain, possibly because it does not contain a lexical head. This would predict the facts in (74). The VP would form the binding domain for the reflexive. It would, however, be problematic for a large number of cases. In the majority of constructions, the possessive reflexive can be bound from a position outside the minimal PossP containing it: when the antecedent is 1/2nd person, (9), when the reflexive is embedded within a complex psych DP, (46), or a CP complement to a verb of perception, (68).

[44] By *possible* I mean that the reflexive is still obeying configurational requirements on binding.

For a minority of speakers only the anaphor is possible when possessive pronouns are bound to the matrix subject from within small clause VP's and complex DP's, even though the pronominal would be free within its binding domain. For most others the anaphor is strongly preferred.

(79) **Viděl$_1$ Milana polibit svou$_{1/\%2}$/jeho$_{2/\%1}$ ženu.**
saw.masc Milan.acc to-kiss self's/his wife
He saw Milan kiss his wife.

(80) **Jana$_1$ pocítila Karlovo$_2$ zklamani nad svou$_{1/\%2}$/její$_{\%1}$/jeho$_2$ porážkou.**
Jana felt Karel.adj disappointment on self's/hers/his defeat
Jana felt Karel's disappointment in his/her defeat.

I relate this effect to the tendency of reflexives to be interpreted as bound by the most prominent DP within its binding domain. In (79-80) the anaphor is preferred under coreference with the matrix subject and dispreferred under coreference with the 'subject' of the DP. Clearly, configurational limitations on binding (the definition of binding domain) are respected; it is not the case that reflexives are always bound by the most prominent DP in the sentence. But Burzio's hierarchy, when interpreted to represent the relative prominence of the antecedent, seems relevant to the choice of the antecedent (and the pronoun).

I do not claim that this solves the problems introduced by (76) and (78), given the configurational approach taken in this paper. Instead, it provides another perspective from which to view these puzzles. Following Burzio 1996 and Huang 2000, I posit that some aspects of the variation exhibited by speakers with respect to possessive and pronoun reflexives is due to the relative prominence of the antecedent.

7.2 *Bound Pronominals?*

This analysis has gone farther than the *Knowledge of Language* binding theory in predicting areas of non-complementarity between pronominals and anaphors. 'Subjectless' binding domains were investigated and their role in non-complementarity between anaphors and pronominals was established. However, there remains a problematic prediction of this analysis: pronominals cannot be bound within their binding domain. As is common in languages with 'long-distance' anaphors, which can be bound only by 'subjects,' a pronominal *can* be bound to a non-subject DP within its binding domain.

(81) **Sarka$_1$ mluvila s Janou$_2$ o ní$_{2/*1}$.**
Sarka talked with Jana.instr about her.
Sarka$_1$ talked with Jana$_2$ about her$_2$(self).

The pronominal in this case *can* corefer with the object but not the subject. Both bindings are possible in English. It seems that pronominals must be only ''subject' A-free within their binding domain.'

This is a problem for any GB analysis of long distance anaphora which include condition B. Binding analyses have been presented without condition B, which claim that pronominals occur wherever reflexives are blocked by another principle (cf. Reinhardt 1983). An analysis which includes condition B, such as the one I posit in this paper, cannot explain why pronominals can be bound within their binding domains, but an analysis without condition B would fail to explain patterns of non-complementarity between pronominals and anaphors. Without condition B, one would expect pronominals to appear everywhere reflexives are blocked, not a co-occurrence of both types of pronouns as is shown to be the case in Czech. As both the inclusion and exclusion of condition B are problematic, I include condition B in this analysis.

This issue is an important and difficult one to consider within a GB approach to binding. I, unfortunately, offer no solution, but, instead, outline the scope of this problem with respect to *Knowledge of Language*-type binding analyses.

8. *Conclusion*:
The account developed here provides a unified analysis for new Czech data exhibiting areas of non-complementarity between pronominals and reflexives. It also accounts for the difference in distribution between object and possessive reflexives.

The analysis incorporates key elements of the *Knowledge of Language* Binding Theory with aspects of Dalrymple 1993. It has been shown that an analysis which claims that binding domains expand by CFC is inadequate to predict the Czech facts. Additionally, it is unclear what the relevance of a CFC related to a syntactically higher lexical item would be to the reflexive. In my analysis this problem is avoided. Only certain domains have been shown to be relevant to binding: the argument structure and tense domains. If the reflexive cannot be bound within its coargument domain it must be bound within the minimal IP containing it. The data show that complementarity holds just where the anaphor is bound from a position outside its co-argument domain, which is predicted by the two-tiered definition of binding domain. This generalization reflects broader typological patterns across languages (cf. Huang 2000).

9. *Appendix 1*: *Binding and the Nominal Paradigm Cross-linguistically.*
Do the nominal argument structure assumptions discussed in §4 concerning *poem*-type nouns and psych nouns hold cross-linguistically? The prediction is that these assumptions would impact binding cross-linguistically. Though a cross-linguistic study is outside the scope of this paper, binding facts in several other Slavic languages as well as English suggest that these generalizations do hold in other languages. In Polish and Croatian the complex DP facts mirror the Czech.

In NP's headed by psych nouns there is complementarity between pronominals and anaphors, and the anaphor cannot be bound by an antecedent outside of the DP.

(82) **Ewa$_1$ podziwiala Marty$_2$ wiare w siebie$_{2/*1}$/nia$_{1*2}$.**
Eve admired Marta's trust in self/her
Eve$_1$ admired Marta's$_2$ trust in herself$_{2/*1}$. (Polish)

(83) **Jana$_1$ je bila iznenadjena Danicinim$_2$ strahom od sebe$_{2/*1}$/nje$_{1/*2}$.**
Jana aux.3sg was surprised Danica's fear from self/her
Jana$_1$ was surprised at Danica's$_2$ fear of herself$_{2/*1}$. (Croatian)

Within *poem*-type DP's non-complementarity holds between pronominals and anaphors and anaphors can be bound by a matrix subject.

(84) **Bozena$_1$ wyricila wierze Karola$_2$ o sobie$_{1/2}$/niej$_1$/nim$_2$.**
Bozena threw-away poems Karol's about self/her/him
Bozena$_1$ threw away Karol's$_2$ poems about her$_1$/himself$_2$. (Polish)

(85) **Božena$_1$ je bacila Karlove$_2$ pjesme o sebi$_{1/2}$/njoj$_1$/njemu$_2$.**
Božena aux.3sg threw-away Karel's poems about self/her/him.
Božena$_1$ threw away Karel's$_2$ poems about her$_1$/himself$_2$. (Croatian)[45]

In Croatian and Polish nominal argument structure plays a similar role in binding.

English, a language which is not considered to have 'long distance' binding, exhibits some of the same nominal binding patterns as Czech, Croatian, and Polish. Runner 2000 conducted experiments showing that examples such as (86-90) are grammatical for many speakers.

(86) √/?Jill found Matt's article about herself.
(87) √/?Martina looked for Michael's book about herself.
(88) √/?Marissa hates Brandon's picture of herself.

Binding out of *fear*-type DP's, however, is ungrammatical.[46]

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[45] Thanks to Anna Bondaruk and Irena Polić for providing the Polish and Croatian data.

[46] Jeff Runner only considered binding out of DP's headed by *poem*-type nouns, mainly *picture*-nouns.

(89) *Jill found Matt's fear of herself surprising.
(90) *Joanna was irritated by Mark's pride in herself.

The same effects appear in English, Croatian, and Polish binding. These data suggest the cross-linguistic relevance of the nominal argument structure assumptions posited in §4.

References.

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Phases, Case and Accessibility: the case of extraction from DP in Spanish*

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0. Introduction

In their work on the Accessibility Hierarchy, Keenan & Comrie (1977) have shown how *wh*-extraction can be conditioned by the case or grammatical relation of the extracted constituent. In Tagalog (Austronesian), for example, only constituents specified as topics can be *wh*-questioned, clefted or relativized, an observation originally due to Keenan (1976). This is shown in the Tagalog examples in (1) from Guilfoyle et. al. (1992). Concretely, in examples (1b) and (1c) the agent cannot undergo wh-extraction because a different argument of the verb is specified as a topic.

(1) TAGALOG (Guilfoyle et. al. 1992)

a. *Sino ang bumili ng damit para sa bata'?*
who COMP Agent-Topic-bought ACC-dress for OBL-child

b. **Sino ang binili para sa bata ang damit?*
who COMP Theme-Topic-bought for OBL-child TOP-dress

c. * *Sino ang bumili ng damit ang bata'?*
who COMP Benefactive-Topic-bought ACC-dress TOP-child

The correlation between case/grammatical relation and extractability can perhaps be seen at its clearest in the fact that passivization is a typical strategy used to override this restriction. In the Toba Batak (Malayo-Polynesian) examples in (2), the *patient* DO cannot be extracted for relative clause formation in the presence of an *agent* subject (2b). Instead, passivization of the relative clause must take place to make the *patient* accessible for extraction.

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(2) TOBA BATAK (Keenan & Comrie 1977:68-69)

a. *boru-boru na manussi abit i*
woman that wash clothes the
'The woman who is washing the clothes.'

b. **abit na manussi boru-boru i.*
clothes that wash woman the
('The clothes that the woman is washing.')

c. *abit na nisussi ni boru-boru i.*
clothes that washed by woman the
'The clothes that were washed by the woman.'

Lastly, Keenan & Comrie's work also shows that in some languages wh-extraction of certain constituents is not possible at all. Yoruba, for example, disallows extraction of IOs and obliques (though not genitives) altogether in relative clause formation.

The idea that I would like to develop in this paper is that extraction from nominal expressions in Spanish is not unlike the Accessibility phenomena described in Keenan and Comrie's work. The facts concerning extraction from DP in Spanish and other Romance languages are well known. As described for Spanish in Demonte (1987) and Campos (1988), when a derived nominal has two genitive arguments introduced by the preposition *de*, 'of', the *agent* argument of a noun can be extracted, as shown in (3b). The *theme* argument, however, cannot be extracted when the *agent* is present, as can be seen in (3c). Instead, the *theme* argument of a noun can only be extracted when there is no other genitive argument, as shown in (3d). Lastly, a non-genitive argument can never undergo extraction, as shown in (4b).

(3) a. *Perdiste [la traducción de Juan de La Odisea].*
you-lost the translation of Juan of The Odyssey
'You lost Juan's translation of The Odyssey.'

b. *De quién$_i$ perdiste [la traducción t$_i$ de La Odisea]?*
of who you-lost the translation of The Odyssey
'Whose translation of the Odyssey did you lose?'

c. **De qué$_i$ perdiste [la traducción de Juan t$_i$]?*
of what you-lost the translation of Juan
('What did you lose Juan's translation of?')

d. *De qué$_i$ solicitaste [la traducción t$_i$]?*
of what you-asked-for the translation
'What did you ask for the translation of?'

(4) a. *Estudian* [*el miedo a los animales*]
they study the fear to the animals
'They study the fear of animals'

b. **A qué*$_i$ *estudian* [*el miedo* t_i]?
to what they-study the fear

Although there are numerous analyses of extraction from nominal expressions in Spanish and other Romance languages (Cinque 1980, Demonte 1987, Campos 1988, Giorgi & Longobardi 1991, Valois 1991), in this paper I will propose an alternative analysis that follows Keenan & Comrie's observation that *wh*-extraction can be conditioned by the case of the extracted constituent. Concretely, I will propose that the effects observed in (3) and (4) result from the fact that DP in Spanish is a specific kind of extraction domain, which I will refer to as a Case-opaque domain. This is a domain whose specifier combines the properties of A-bar positions as escape hatches for extraction and of A-positions as positions where Case is licensed. The crucial characteristics of this analysis will be the assumption that derivations proceed by Phases, as suggested in Chomsky (2000), and a head movement analysis of the head of the functional projection immediately subjacent to DP.

1. DP as a Case-opaque domain

Chomsky (2000) suggests that derivations proceed by Phases, a Phase defined as in (5).

(5) ***Phases (CP and vP)***
Given HP [α [H β]] β is the *domain* of H and α (a hierarchy of one or more Specs) is it *edge*.

Phases are subject to the *Phase-impenetrability condition*, defined in (6), which only allows constituents in the specifier of the Phase projection to be accessible to operations outside the Phase. Concretely, the Phase-impenetrability Condition rules out a movement operation like (7):

(6) *Phase-impenetrability condition*
In phase α with head H, the domain of H is not accessible to operations outside α, but only H and its edge.

(Chomsky 2000)

(7) * [$_{CP}$ *wh*$_i$ ... [$_{CP}$ .... [$_{XP}$ t_i ...]]].

In order for the head of the matrix CP to attract the *wh*-operator, the operator must move through the specifier of the lower CP Phase, since the specifier of the Phase is the only position that is accessible for operations outside the phase. In a nutshell, the primary function of the concept of Phase is to disallow non-cyclic long extraction altogether.

The notion of Phase raises the question of what happens when the head of YP, YP the phrase immediately subjacent to the Phase, undergoes movement to the head position of the Phase. Clearly enough, if the head of YP bears a strong Case feature, this feature will be checked before movement of the head Y, as in T-to-C movement in English.

(8) a. $[_{XP}\ Y_i\ [_{YP}\ t_i\ ]]$.
b. $[_{CP}\ [_{TP}$ John will read what]].
c. $[_{CP}$ what$_i$ will $[_{TP}$ John read $t_i]]$?

I would like to propose, however, that when the head of YP bears a weak Case feature, then movement of any constituent to the specifier of the Phase will be conditioned by the possibility of this constituent to check the Case feature of Y. I will henceforth refer to this configuration as a **Case-opaque Domain**. This name is intended to convey the fact that extraction from this domain displays opacity effects with respect to Case.

(9) CASE-OPAQUE DOMAIN
XP= Phase, Y adjoins to X, Y bears a weak Case feature; movement through Spec-XP now depends on the possibility of checking the Case feature of Y.
$[_{XP}\ Y_i+X\ \ldots\ [_{YP}\ t_i\ \ldots\ ]]$.

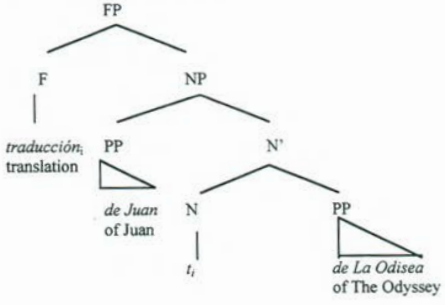
A Case-opaque Domain can be thought of as a maximal projection whose specifier simultaneously combines the properties of A-bar positions as escape hatches for extraction and of A-positions as positions where Case is licensed. The proposal I will develop from here onwards is that if DP is taken to be a Phase, then a straightforward account of the extraction facts in (3-4) can be arrived at by analyzing DP as a Case-opaque domain.

2. DP structure

My basic assumptions regarding the structure of nominal expressions are the following. In order to account for the linear order of the noun with respect to its arguments schematized in (10), I assume the analyses where the external argument of the noun in generated in Spec-NP and the noun moves to the head position of a functional projection (FP) above NP (Cinque 1994, Bernstein 1991, Valois 1991):

(10) a. *la traducción de Juan de La Odisea.*
the translation of Juan of The Odyssey
'Juan's translation of The Odyssey.'

b.



I also assume, following Siloni's (1997) analysis of the construct state construction in Hebrew, that an AgrGenitive phrase where genitive case is licensed is immediately subjacent to DP, as in (11a). The structure assumed for Spanish nominal expressions is accordingly the one in (11b).

(11) a. HEBREW (construct state)

[$_{DP}$ harisat$_i$ [$_{AgrGen}$ ha-cava$_j$ t$_i$ [$_{NP}$ t$_j$ t$_i$ 'et ha-'ir]]]
destruction the-army ACC the city
'The army's destruction of the city' (Siloni 1997)

b. Spanish DP

[$_{DP}$ . . . [$_{AgrGenP}$ . . . . [$_{FP}$ . . . [$_{NP}$ ....]]]].

Lastly, my assumptions on feature checking and Case licensing are those that follow from the dichotomy between weak and strong features developed in Chomsky (1995), and not those in Chomsky (2000). From this latter paper, only the notion of Phase is adopted here.

2.2 Prenominal possessives

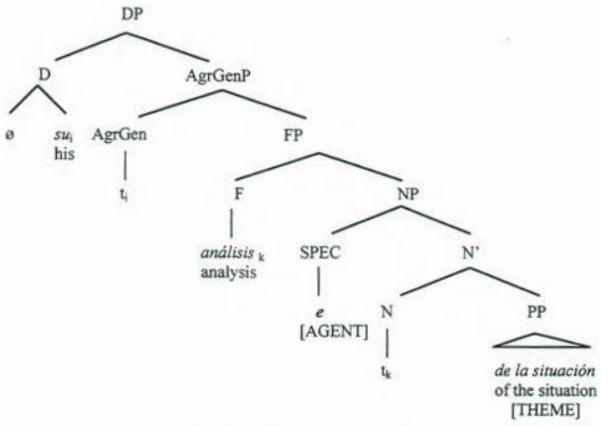
As a way of introducing the analysis, it is useful to start by looking at prenominal possessives in deverbal nouns. As is well-know, Spanish like other languages has a series of prenominal possessives that can correspond to the external argument of the noun, as in (12a). The possessive can also correspond to the noun's internal argument when the external argument is not present or when it is expressed as a non-genitive oblique, as in (12b).

(12) a. ***su*** *análisis de la situación.*
his analysis of the situation
'His analysis of the situation.'

b. ***su*** *análisis (por parte de Juan)*
its analysis (by part of Juan)
'Its(=the situation's) analysis (by Juan).'

McCloskey (1998) suggests that prenominal possessives in Italian can be analysed as the head of an agreement projection immediately subjacent to DP. This head can be analyzed as further being in agreement with an argument of the noun realized as a null category (see also McCloskey & Hale (1984) for Irish, Rivero (1986) for Spanish). Following McCloskey's proposal, I suggest that Spanish prenominal possessives can be analysed as the head of the AgrGen projection and that movement of this head to adjoin to a null D results in the structure in (13).

(13)



Two different facts provide support for this analysis of prenominal possessives in Spanish. The first one is that co-occurrence of a determiner and a pronominal possessive was observed in 17th century literary Spanish (Bello & Cuervo 1881, Kany 1951), as in example (14). This pattern is still attested in some varieties of South American Spanish (Kany 1951), as in the examples in (15) and (16).

(14) *Cantareis la mi muerte cada día.*
you-shall-sing the my death each day
'You shall sing my death every day.' (Bello & Cuervo 1881: 230)

(15) *una mi hermana*
a my sister
'a sister of mine'

(16) *esas tus cosas*
those your things
'those things of yours' (Kany 1951: 43)

Secondly, analyzing Spanish prenominal possessives as determiners (Brucart 1987) is problematic because the phi-features of the possessive do not necessarily correspond to the phi-features of the nominal expression as a whole. In example (17) the possessive bears a [2nd person] phi feature, but the nominal expression as a whole is 3rd person.[1]

(17) [DP *tu descripción de aquellos terrenos*]
your description of those lots
'Your description of those lots.'

[1] I am indebted to Judith Aissen for bringing this point to my attention.

With respect to this analysis of prenominal possessives, I further assume that AgrGen bears a weak genitive Case feature ([GEN]). All else being equal, this Case feature will be checked at LF by feature movement from the genitive argument of the noun closest to AgrGen, both when this argument is realized as an overt genitive PP and when it is realized as the null category in (13). Finally, I also assume that in constructions like (10a), where there is no prenominal possessive, a null AgrGen head adjoins to an overt determiner. More specifically, I assume that this null AgrGen head differs form the overt counterpart (the prenominal possessive) in that has no phi-features, but they both still bear the weak genitive Case feature.

3. The Analysis

Up to this point, I have suggested that DP in Spanish can be characterized as a Case-opaque domain. The main consequences of this proposal are the following. First, since DP is a Phase, a constituent extracted from it must now move through Spec-DP. This is a welcome result, since now the well known fact that movement out of a nominal expression must proceed through Spec-DP (Torrego 1985, Stowell 1989, *inter alia*) need not be stipulated. Rather, it follows directly from the Phase-impenetrability Condition. Secondly, since AgrGen moves to adjoin to D, extraction is now conditioned by the possibility of checking the genitive Case feature of AgrGen. As will be discussed in what follows the main advantage of this is that the extraction facts in (3) can now be shown to follow directly form the Minimal Link Condition of Chomsky (1995), reproduced in (18). For the purpose of this analysis it is enough to assume that closeness reduces to c-command, so β will be closer to K than α if β asymmetrically c-commands α.

(18) *Minimal Link Condition*
K attracts α only if there is no β, β closer to K than α, such that K attracts β.
(where K is a sublabel (i.e. a feature) of some head)
(Chomsky 1995)

The purpose of the Minimal Link Condition is to ensure that a head attracts the closest constituent that could check it features, but it is crucial to note that it also rules out derivations which involve an indirect violation of this locality condition. That is, if K attracts α such that α is the closest element to K that could check some feature F1 of K, but in doing so α also checks a feature F2 which could be checked by some β closer to K than α, this still counts as a violation of the Minimal Link Condition and the resulting derivation is ruled out. Chomsky (1995) suggests that this characteristic of the Minimal Link Condition is what rules out SuperRaising, schematized in (19).

(19) ***SuperRaising*** (following Chomsky 1995)

a. seems [$_{CP}$ that it was told John [$_{CP}$ that IP]].
b. *John seems [$_{CP}$ that it was told *t* [$_{CP}$ that IP]].

In (19a), the [NOM] Case feature of the expletive 'it' has already been checked by the intermediate I^0 and is no longer accessible to any operation since the structural Case features

of nominals are uninterpretable. Because of this, the only constituent that could check the [NOM] Case feature of matrix I^0 is 'the DP 'John'. In fact, all else being equal, raising of *John* to matrix Spec-IP actually makes the derivation converge, since *John* can check not only the [NOM] Case feature of matrix I^0, but also its D-feature and its phi-features. What rules out this potential case of SuperRaising is instead the Minimal Link Condition. When movement of *John* in (19b) checks the D-feature and phi-features of matrix I^0, a violation of the Minimal Link Condition is incurred in, since the closest constituent that could potentially check these features is the expletive 'it'[2], even if *John* is the only constituent that could check the Case feature of matrix I^0. This property of the Minimal Link Condition will play a crucial role in the analysis of extraction from DP, to which we now turn. The basic extraction pattern is repeated in (20), where a genitive *agent* can be extracted in the presence of a genitive *theme*.

(20) *De quién*$_i$ *perdiste* [*la traducción* t_i *de La Odisea*]?
of who you-lost the translation of The Odyssey
'Whose translation of the Odyssey did you lose?'

In order to analyze this example, I further assume that D can bear a [wh] feature which attracts the *wh*-genitive phrase. The relevant step of the derivation is schematized in (21), where the genitive PP corresponding to the *agent* has moved to substitute for [Spec, D] in order to check D's [wh] feature.

(21) *perdiste* [$_{DP}$ *De quién*$_i$ *la* [*traducción* t_i *de La Odisea*]]
you-lost of who the translation of the Odyssey

Recall now the analysis presented in the previous section. Since null AgrGen has adjoined to the determiner before movement of the wh-operator, the operator simultaneously checks the genitive Case feature of AgrGen. The derivation proceeds, and after C^0 [wh] is merged with TP, the genitive wh-operator moves from [Spec, D] to substitute for [Spec, C], yielding the SpellOut structure in (20). Consider now the case where extraction of the *theme* argument results in ungrammaticality.

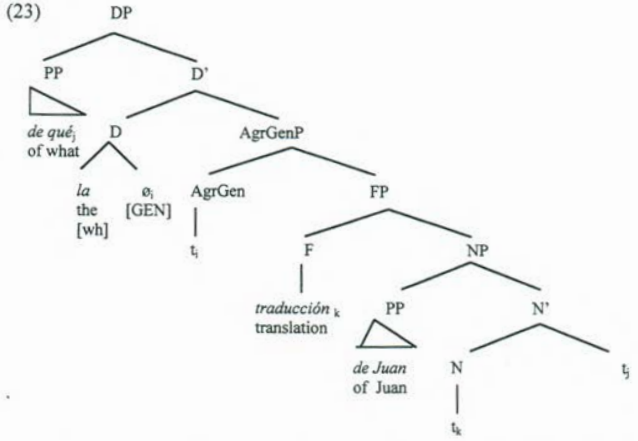
(22) **De qué*$_i$ *perdiste* [*la traducción de Juan* t_i]?
of what you-lost the translation of Juan
('What did you lose Juan's translation of?')

The crucial step where the derivation goes wrong is schematized in (23), where the genitive *theme* has substituted for [Spec, D]. Here we to see the effects of the DP phase as a Case opaque-Domain. The genitive PP corresponding to the *theme* has moved to check the [wh] feature of D, and in doing so it has simultaneously checked the genitive Case feature of AgrGen, since the genitive *theme* is now in a Spec-head relation with AgrGen. But this brings with it a violation of the Minimal Link Condition. When the *theme* genitive PP is extracted, the Minimal Link Condition is violated, since it is not the closest genitive PP that can check the [GEN] feature of AgrGen. Rather, it is the *agent* genitive PP, which asymmetrically c-commands the *theme* genitive PP, is the constituent closest to D that could potentially

[2] The [D] feature and the phi-features of 'it', as opposed to its Case feature, are still accessible for further syntactic operations, given that the categorial and phi-features of nominal are interpretable.

check this feature. This example is in effect almost identical to the SuperRaising example discussed in (19). It is important to notice that the *theme* genitive PP is the only constituent that can check the [wh] feature of D, so D can attract no other constituent to check this feature. But by doing so the Minimal Link Condition is violated with respect to the feature [GEN], so the derivation is ruled out.

(23)



Next, recall that extraction of the *theme* is not possible either when the *agent* argument is cross-referenced by a prenominal possessive. In this case, following the assumptions laid out in the previous section, the null agent in Spec-NP is still the genitive argument closest to AgrGen that can check AgrGen's [GEN] Case feature. The relevant step in the derivation is schematized in (25).

(24) **De qué*$_i$ *perdiste* [*su traducción* t$_i$]?
of what you-lost his translation
('What did you lose his (i.e. Juan's) translation of?')

(25) *perdiste* [$_{DP}$ *De qué*$_i$ *su* [*traducción* [$_{NP}$ **e** t$_i$]]
THEME AGENT
you-lost of what his translation

Consider now the case where extraction of the *theme* is possible when there is no *agent*, as in (26).

(26) *De qué*$_i$ *solicitaste* [$_{DP}$ *la* [*traducción* t$_i$]]?
of what you-asked-for the translation
'What did you ask for the translation of?'

I would like to argue that the most straightforward analysis of these cases is one where we take the DP in (26) to be the "passive" form of the derived nominal. Active/passive alternations in derived nominals have been widely observed in the literature (Cinque 1980, Giorgi & Longobardi 1991, *inter alia*). As exemplified in (27b), in the passive form of the noun the only genitive argument corresponds to the *theme*, and the *agent* can optionally be realized as a non-genitive oblique.

(27) a. *el análisis de Juan de la situación*
the analysis of Juan of the situation
'Juan's analysis of the situation'

b. *el análisis de la situación por parte de Juan.*
the analysis of the situation by part of Juan
'The analysis of the situation (by Juan).'

Note that incorporating the passive analysis of derived nominals is going to be necessary in any case, because as noted by Cinque (1980), Giorgi & Longobardi (1991) and others, some derived nominal are inherently passive. In other words, they do not allow its external argument to be realized as a genitive PP.

(28) a. *la captura de Juan (por la policía)*
the capture of Juan by the police
'Juan's (*theme*) capture by the police.'

b. **la captura de la policía de Juan*
the capture of the police of Juan
AGENT THEME
('The police's (*agent*) capture of Juan (*theme*).')

(29) a. *la absorción de calcio por los huesos.*
the absorption of calcium by the bones
'The absorption of calcium by the bones.'

b. * *la absorción de los huesos de calcio.*
the absorption of the bones of calcium
AGENT THEME
('The bones' absorption of calcium.')

If we take (26) to correspond to the passive form of the noun *traducción* 'translation', the analysis is unproblematic. The *theme* argument of the passive nominal moves to substitute for the specifier of the DP phase, and simultaneously checks the [wh] feature of D and the [GEN] feature of AgrGen; there is no violation of the Minimal Link Condition, since there is no other argument that could potentially check the [GEN] feature. The relevant step of the derivation is schematized in (30).

(30) *solicitaste* [$_{DP}$ *de qué*$_i$ *la* [*traducción* [$_{NP}$ t_i]]
THEME
you-asked-for of what the translation

Analyses based on the passive form of the noun for cases like (26), however, have been rejected for Italian by Giorgi & Longobardi (1991) and for French by Valois (1991) on the grounds that a purpose clause can appear in the nominal expression even when the only genitive argument of the noun is the *theme*, as in (31a). They further note that extraction in these cases can co-occur with a purpose clause, as shown in (31b):

(31) a. [*La destitución de Juan* [*para* PRO *satisfacer al sindicato*]] *fue*
the impeachment of Juan for to-satisfy ACC-the union was
completamente inevitable.
completely unavoidable
'The impeachment of Juan to please the union was completely unavoidable.'

b. *De quién*$_i$ *va a ser necesaria* [*la destitución* t_i [*para* PRO
of who it-goes to be necessary the impeachment for
satisfacer al sindicato]]?
to-satisfy ACC-the union
'Who's impeachment is going to be necessary to please the union?'

The argument put forth by Giorgi & Longobardi (1991) and Valois (1991) is that the presence of a purpose clause indicates the presence of the null *agent* PRO in NP that controls the PRO subject of the purpose clause. Under the assumption I have adopted here that null arguments of the noun still bear a [GEN] feature, it would appear that examples like (31b) would be problematic for my proposal. The reason is that the null genitive *agent* would still be the genitive argument closest to AgrGen that could potentially check its Case feature, so it should not be possible to extract the *theme* in this case either. However, I will now present evidence against the argument developed in Giorgi & Longobardi (1991) and Valois (1991), which will in turn support the analysis of constructions like (26) as corresponding to the passive form of the derived nominal. Crucially, notice that the examples in (32) clearly show that the presence of a purpose clause does not necessarily imply the presence of a PRO in Spec-NP, since the purpose clause occurs with what is clearly the passive form of the noun, where the *theme* is the only genitive argument of the noun and the *agent* is realized as an oblique.

(32) a. *Fue necesaria* [*la destitución de Juan* [*por parte de la mesa directiva*]
it-was necessary the impeachment of Juan by part of the board executive
[*para* PRO *satisfacer al sindicato*]].
for to-please to-the union
'Juan's impeachment by the executive board was necessary to please
the union.'

b. *Se aprobó* [*la traducción de este libro* [*por parte de la academia*]
CL was-approved the translation of this book by part of the academy
[*para* PRO *hacerlo más accesible al público*]].
for to-make-it more accessible to-the public
'The translation of this book by the Academy to make it more accessible to the public was approved.'

This fact points to the conclusion that Control of PRO in a purpose clause in a nominal expression is an instance of Event Control, as originally argued for by Williams (1985). Following one of Williams' arguments, this becomes even clearer when interpretive properties of these constructions are taken into account. In (31a), for example, what 'pleased the union' was 'Juan's impeachment', not the *agent* of 'impeachment'. Accordingly, there is neither syntactic nor interpretive evidence in favor of the existence of a null *agent* in constructions of this kind.

Finally, recall the impossibility of extraction of a non-genitive oblique.

(33) a. *Estudian* [$_{DP}$ *el miedo a los animales*].
they-study the fear to the animals
'They study the fear of animals'

b. **A qué*$_i$ *estudian* [$_{DP}$ *el miedo* t_i]?
to what they-study the fear
(What do you study (the) fear of?)

The ungrammaticality of (33b) cannot be explained as the result of a violation of the Minimal Link Condition, since the extracted constituent is not a genitive PP and thus does not check the genitive Case feature of AgrGen. Instead here we see the essence of the Case-opaque Domain at work: since the zero-level projection of the head of the phase bears an unchecked [GEN], the ungrammaticality of (33b) can now be analyzed as the result of a feature clash (Rizzi 1990, Chomsky 1995) between the [GEN] feature of AgrGen and the Case feature of the oblique PP (presumably [ACC]) when it moves to check the [wh] feature of D. The relevant step of the derivation is shown in (34).

(34) *estudian* [$_{DP}$ *a qué*$_j$ *el+*Ø$_i$ [$_{AgrGenP}$ t_i [*miedo* t_j]]]
they-study to what the+AgrGen fear

4. Back to Accessibility

Up to this point, I have suggested how the notion of Case-opaque Domain can provide a straightforward account of extraction from DP in Spanish. Before concluding this paper, I will briefly consider the application of this kind of analysis in the clausal (instead of the nominal) domain, where the observations on Accessibility were first recorded.

The analysis I suggest has the potential to provide an account for some of the Accessibility phenomena in Keenan & Comrie (1977), along the same lines of the analysis of Spanish developed here. As mentioned briefly in section 1, a Case-opaque Domain can arise at the clausal level iff; a) the head of the phrase immediately subjacent to CP bears a weak

Case feature, and; b) this head moves to adjoin to C. Consider for example the case of a language where only nominative (or absolutive, in ergative-absolutive languages) operators can be *wh*-extracted. This can now be understood as a case where the head of the phrase immediately subjacent to CP (say T) bears a weak nominative feature, and further moves to adjoin to C, either as a result of *wh*-movement or because of an independent feature checking requirement. The crucial issue to keep in mind in testing the predictions of this analysis is that neither T-to-C movement nor the presence of a weak Case feature in T create by themselves a Case-opaque Domain. English has T-to-C movement, but since the Case feature of T is strong, it is checked before T-to-C movement and so the relevant configuration does not arise. In Spanish, on the other hand, the nominative feature of T is presumably weak (since Spanish allows for post-verbal subjects). However, in this language the verb never moves beyond T, as is well known (see Suñer 1994), so again there is no Case-opaque domain at the clause level in this case either. Further considerations that need to be addressed include, for example, whether the category [TOPIC] can be characterized as a form of Case in those languages where only topics can be subject to *wh*-extraction, as in the Tagalog examples in (1). All of these are issues that require further investigation.

5.Conclusions

In this paper, I have suggested that movement of a functional head bearing a weak Case feature to adjoin to the head of a Phase projection results in a specific kind of extraction domain, a Case-opaque domain. Extraction from this domain is conditioned by the possibility of the extracted constituent to check the Case feature of the adjoined functional head. I have argued that if DP is analyzed as a phase, the facts related to extraction from DP in Spanish can be understood as the result of DP being precisely this kind of extraction domain. Concretely, I have proposed that movement of the head of a Genitive Agreement Phrase bearing a weak [GENITIVE] feature to adjoin to D makes DP a Case-opaque domain in Spanish. The impossibility of extracting a *theme* genitive argument of the noun in the presence of an *agent* can now be understood as the result of a violation of the Minimal Link Condition. The resulting account is in essence the same as the account for the impossibility of SuperRaising in Chomsky (1995). Finally, non-genitive arguments of the noun cannot be extracted because a feature clash results between the [GENITIVE] Case feature of AgrGen adjoined to D and the Case feature of the non-genitive PP when it moves through the specifier of the DP Phase.

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Relative Clauses in Syrian Arabic: Two Reconstruction Problems

James Darrow

1 Introduction: some background, some premises and some observations[1]

The copy theory—part of a larger body of "minimalist" proposals by Chomsky 1993, 1995—has provided a compelling account of some well-known reconstruction effects. For example, it captures the fact that elements pronounced in a *wh*-phrase or topic behave as if they also occupied a position lower down in the structure. Here's how: suppose that A'-movement[2] creates an instance of a phrase (a copy) in a target position while keeping another in the source position. Source-position "tail" copies are not pronounced, they are gaps.[3] But even so, we know that they exist because they trigger variable-binding and Condition C effects; variable-binding and Condition C—among other tests sensitive to LF structure—essentially can track the history of a moved element.[4] Copy theoretically, "reconstruction" is just a name for the successful detection of an unpronounced copy.

Other research programs, including Cresti 1995, Engdahl 1986, Jacobson 1995, 1999 and Sharvit 1997 (among others) see reconstruction in a different light. These researchers have argued that enriching the principles of semantic interpretation derives certain types of reconstruction without any appeal to syntactic operations. For example, one semantic approach has dealt relatively well with variable-binding reconstruction in certain types of relative clauses (Sharvit 1997). In fact, reconstruction in relative clauses remains a fairly serious source of empirical discomfort for the copy theory—presuming that nominal phrases and their relative clauses are never related by movement, the copy theory appears to be helpless to explain reconstruction effects between them.[5]

On the other hand, Chomsky 1995, Fox 2000 and Romero 1996 have claimed that a syntactic account of reconstruction like the copy theory has at least one advantage over the semantic account. Though the argumentation is too intricate to summarize briefly, Fox 2000 and Romero 1996 demonstrate that semantic reconstruction comes up short when faced with the fact that scope-sensitive operations and Condition C obligatorily correlate under reconstruction. Because semantic accounts make no reference to syntactic structure, they cannot adequately predict[6] that scope-sensitive elements interpreted under reconstruction cannot escape (they "feed") Condition C effects, effects presumably determined by LF structure. On the other hand, the correlation between Condition C and scope reconstruction flows quite naturally from a syntactic account like the copy theory. Let us assume these arguments to be persuasive, and take up the copy theoretic explanation for reconstruction.

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[2] However formalized (Chomsky 1995, 1998, 1999).

[3] Though see Pesetsky 1998 for another view.

[4] For arguments that variable-binding requires c-command at LF, see (for example) Heim & Kratzer 1998, Reinhart 1983. For Condition C applying at LF, see Chomsky 1995, Fox 2000, Romero 1996.

[5] Naturally, the same embarrassment holds for other constructions not obviously derived by A'-movement which nonetheless show connectivity effects, clefts and pseudoclefts being prime examples (Higgins 1973, Percus 1997, and many others).

[6] (without resorting to some *ad hoc* semantic account of Condition C that would correlate with scope)

The argument maintained below will be this: discomfort notwithstanding, copy theoretic assumptions provide a fairly reasonable account of two problems raised by reconstruction effects in Syrian Arabic relative clauses.[7] The abstract schema (1) sketches the phenomenon: certain elements *E* pronounced inside a definite nominal phrase can be detected by the principles of variable-binding and Condition C inside that phrase's relative clause modifier.

(1) **Syrian Reconstruction Generalization:** $[_{DP(definite)}\ [_{nominal}\ \ldots \underset{\uparrow}{\boldsymbol{E}} \ldots]\ [_{relclause}\ \ldots \underset{\uparrow}{\_\_} \ldots]\ ]\ \ldots$

(1) illustrates the basic scheme, but the situation is complicated. Reconstruction occurs in two types of relative clause: ones with traces and ones with resumptive pronouns.

Resumptive pronouns freely alternate with (DP) traces in the object gap position[8] of the Syrian relative, as in (2) and (3).[9]

(2) *Definite nominal:*

a. Damasʃq heyya [$_{DP}$ [**lmədina** fiSuriya] [yalli maa ʃuftha ***pro***]].
Damascus 3fs DEF.*city*.fs *in*.DEF.*Syria* C NEG *saw*.1s.3fs
"Damascus is the city in Syria that I didn't see."

b. Damaʃq heyya [$_{DP}$ [**lmədina** fiSuriyya] [yalli maa ʃuft ***t***]].
Damascus 3fs DEF.*city*.fs *in*.DEF.*Syria* C NEG *saw*.1s
"Damascus is the city in Syria that I didn't see."

(3) *Indefinite nominal:*

a. Damaʃq heyya [$_{DP}$ [**mədina** fiSuriyya] [maa ʃuftha ***pro***]].
Damascus 3fs *city*.fs_ *in*.DEF.*Syria* NEG *saw*.1s.3fs
"Damascus is a city in Syria that I didn't see."

b. Damaʃq heyya [$_{DP}$ [**mədina** fiSuriyya] [maa ʃuft ***t***]].
Damascus 3fs *city*.fs *in*.DEF.*Syria* NEG *saw*.1s
"Damascus is a city in Syria that I didn't see."

The paradigm in (2) differs from (3) just in the definiteness of the nominal object: the definiteness prefix *əl-* marks *mədina* 'city' as definite in (2). In (3) *mədina* is indefinite and thus bare.[10, 11] The head noun

[7] The particular relative clauses under investigation are restrictive relatives.

[8] Detailed investigation into Syrian Arabic subject resumptives is made complicated by obligatory *pro*-drop in neutral contexts and other ill-understood properties of clause-initial subjects. Inquiry into the domain of subject relative clause gaps is a large topic: too large to address in this particular discussion.

[9] Cowell 1964 claims that Syrian resumptives, while optional in principle, are more common than gaps in speech and writing. The Syrian speakers I have polled so far find both structures perfectly acceptable, though they admit to using resumptive pronouns more. Brustad 2000, on the other hand, claims that resumptives are obligatory in Syrian (90). It seems that resumptive optionality can vary within the dialects covered by the term "Syrian."

[10] The definite-marking prefix [əl-] undergoes two allophonic phonological processes in Arabic: (1) the initial schwa vowel obligatorily deletes when preceded by a vowel (e.g. when the preceding word ends in a vowel); (2) the [l] phoneme assimilates the [coronal] place of its following consonant.

and the gaps of the relatives in (2) and (3) have been boldfaced—the (a) examples include relative clauses with resumptive pronouns, the (b) examples DP-traces.

Note that my representation in the (a) examples supposes that resumptives in Syrian are null. Some recent work in Semitic syntax has made use of the notion that the spec/head relation triggers the realization of agreement clitics (e.g. Aoun & Benmamoun 1998, Benmamoun 1999 and others). In line with this work, I will assume that null object resumptive pronouns trigger (and thus can be detected by) agreement on V, or whatever predicate governs them.[12, 13] For instance in (2a) and (3a) the clitic *–ha* on the verb *fuft* 'I saw' instantiates 3rd person feminine singular features, in agreement with the resumptive *pro*. I will postpone discussion of how the resumptive *pro* obtains the phi-features of the head noun of the relative clause until Section 3.

Let's now get back to the significance of relative clause resumptive pronouns for reconstruction. If the copy theory provided an account of reconstruction into Syrian relative clauses with trace-type gaps, that would be surprising enough. But reconstruction into *pro*-type gap positions is a very serious challenge for any theory that explicitly ties reconstruction to A'-movement: standard analyses of resumptive pronouns hold that they are not derived by movement at all (e.g. Borer 1984, McCloskey 1990). The copy theory basically faces two reconstruction problems in the Syrian relative clause domain.

(4) **Two Reconstruction Problems:**

- **Problem #1:** How can the reconstruction effects in (1) come about at all?

- **Problem #2:** How can reconstruction effects be tied to resumptive *pro* positions?

I submit that the copy theory achieves reasonable answers to both these challenges by compelling us to adopt a "head-raising" analysis of Syrian relative clauses. This type of analysis sits squarely within the famous proposal phylum of Shachter 1973, Vergnaud 1979, 1986, Munn 1994, Kayne 1994 and Bianchi 2000. Supposing that the head nominal phrase in (1) raises by A'-movement out of the gap position of the relative clause modifier, a tail copy of the head nominal will remain to be detected by Condition C and variable-binding. This is the basic analysis to be developed below.[14]

Aoun & Choueiri 1997 implicitly address the two problems above as they apply to variable-binding reconstruction in Lebanese Arabic. The next section and part of Section 3 outline this proposal and show it to be only partially satisfactory for Syrian. The bulk of Section 3 discusses Problem #1, establishing

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[11] The morphology of the relative clause complementizer appears to be sensitive to the definiteness of the head nominal (just as in Modern Standard Arabic): "definite" complementizers are realized as *yalli, illi,* or *halli* (depending on dialect), while the "indefinite" complementizer is phonetically null. See Cowell 1964, Brustad 2000 for a more detailed discussion.

[12] Note that this type of agreement only happens with pronominal objects. NP arguments in object position do not trigger agreement. I have no serious explanation for this fact. Aoun & Choueiri 1997 and Aoun & Benmamoun 1998 specifically identify the site of clitic agreement with *pro* as a CliticP above VP but below IP. See footnote 27 and Section 3 for a different analysis. Jim McCloskey (p.c.) points out that this same pattern of agreement exists in the Celtic languages.

[13] Another explanation for the existence of clitics in the place of independent object pronouns might be that the clitics are themselves pronouns: "weak" pronouns that must incorporate onto their governing predicate. If such an incorporation [i.e. head-movement] proposal turned out to be valid it might have some solid consequences for the theory below—a theory that makes crucial use of object *pro*s in D—depending on whether the trace of head-movement can be treated as a variable (particularly as a pronominal variable) or not.

[14] Note that the reconstruction effects in (1) appear to hold only for definite nominal phrases. I will not address the issue of indefinite nominals much more in this paper.

the empirical generalizations of Condition C and variable-binding reconstruction for Syrian Arabic and detailing the head-raising analysis. Section 4 discusses Problem #2, attempting to cash out the claim that the tail copy of a phrase can involve a resumptive pronoun. Section 5 includes some initial and tentative suggestions for a semantic theory of Syrian Arabic relative clauses, and the conclusion briefly addresses some larger-scale implications and problems.

2 A prior account of the problems in question

Aoun & Choueiri 1997 concern themselves with Lebanese Arabic examples like (5), cases of variable-binding under reconstruction between definite nominal phrases and restrictive relatives.

(5) [$_{DP}$ [təlmiiz**un**$_1$ ʃʃaaTir]$_2$ [yalli **[kəll lmʕallmeet]**$_1$ bifaDDluu$_2$]]. . .
student(ms).3mp DEF.*good* C *all* DEF.*teachers* *prefer*.3mp.3ms

. . . raH yirbaH ʒeeyze. *[Lebanese: A&C 20a]*
FUT *win* *prize*

"Their$_1$ good student$_2$ that all the teachers$_1$ prefer him$_2$ is going to win a prize."[15]

In (5), the definite head nominal phrase [*təlmiizun$_1$ ʃʃaaTir*]$_2$ 'their$_1$ good student' is linked to the gap position indicated by the resumptive clitic *–u$_2$* on the verb *bifaDDluu$_2$* 'prefer'. The possessive pronominal clitic *–un$_1$* receives a variable interpretation bound by *kəll lmʕallmeet$_1$* 'all the teachers'.

An explanation for this kind of interpretation must resolve both reconstruction problems given in (4): how does *–un$_1$* come to be bound, and (how) does this binding involve the resumptive clitic *–u$_2$*? Aoun & Choueiri 1997 claim that an indirect relation between the nominal head phrase and the relative clause's resumptive pronoun induces variable-binding. First, a *pro* element within the gap position DP raises into the relative Spec, CP headed by *yalli* to check [+definite], [Case], and [ϕ]-features. Next, the tail *pro* in the A'-chain {*pro . . . pro*} gets bound at LF by a c-commanding quantifier in the relative clause: *kəll lmʕallmeet$_1$* 'all the teachers' in (5). The bound-variable interpretation is transferred to the upper *pro* (or else both *pro*s are instances of the same element), and the overt pronoun in the head nominal phrase receives the interpretation of the upper *pro* via a "predication relation" between the relative clause and the nominal phrase.[16]

As for the question of how reconstruction may be related to a resumptive position (Problem #2), Aoun & Choueiri 1997 propose a complex internal syntax for Lebanese resumptive DPs—the pronounced, obligatory clitic occupies the D head and the *pro* DP occupies the specifier of the resumptive

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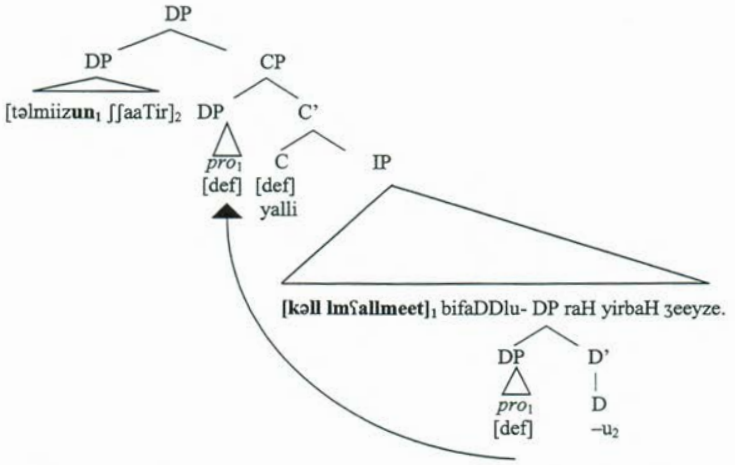
[15] Glosses adapted from Aoun & Choueiri 1997. I am not sure whether the Lebanese construction [*kəll* + definite plural N] is a true universal quantification. Baker (1996) and others have argued that determiners like *all* cross-linguistically do not have the same quantifier properties as *every*. In Modern Standard Arabic and Syrian, there exists an alternative construction [*kəll* + indefinite singular N] usually translated 'each/every N.' For this section, I will just assume (with Aoun & Choueiri 1997) that Lebanese *kəll* (+ definite plural N) is a quantifier that can bind pronominal variables. In discussion below I will try to sidestep this issue by using the Syrian quantifier *wala* 'no,' which has the added advantage of forestalling *e*-type readings.

[16] In the terminology of Aoun & Choueiri 1997, "the relativized DP, the relative clause, and the *pro* in COMP are all coindexed. . . . [T]he *pro* and its trace form a chain generated by movement [and since] reconstruction occurs. . . with chains generated by movement, reconstruction will be available [between the *pro* and its trace]. . ." (16).

clitic DP. This *pro* is the element that raises to Spec, CP, transferring its interpretation to the nominal phrase by predication.[17]

In sum, the derivation for (5) would proceed as in (6).

(6)



There are some additional advantages of the *pro*-raising analysis. Aoun & Choueiri 1997 remark that adjuncts may not be relativized in Lebanese. DPs like (7a) or (7b) are unacceptable.

(7) a. *ssabab yalli rəHt.o . . .
DEF.*reason*(ms) C *left*.1s.3ms
"The reason that/why I left. . ." *[Leb: A&C 41]*

b. *sabab yalli rəHt.o . . .
reason(ms) C *left*.1s.3ms
"A reason that/why I left. . ." *[Leb: A&C 86]*

Such facts appear mysterious but are entirely expected in the *pro*-raising perspective—non-argument positions cannot license *pro*. Moreover Aoun & Choueiri 1997, having amassed some arguments that *pro* is strictly definite, claim that *pro* raises to Spec, CP only to check a [+definite] feature on C. When C is [-definite] (as determined by an indefinite nominal phrase head) *pro* will not raise and thus reconstruction effects do not occur, as evidenced by the absence of variable-binding in (8):

(8) *ʃəft [[təlmiiz min təlmiizun$_1$]$_2$ [[kəll lmʕallmeet]$_1$ bifaDDluu$_2$]]
saw.1s *student*(ms) *of student*(mp).3mp *all* DEF.*teachers prefer*.3mp.3ms
"I saw [a student of theirs$_1$]$_2$ that all the teachers$_1$ prefer him$_2$." *[Lebanese: A&C 29a]*

[17] This is actually a simplification of the claims of Aoun & Choueiri 1997. The full claim is that the resumptive clitic undergoes head-movement to a clitic projection between VP and IP; the resumptive *pro* in Spec, DP would thus undergo (A-)movement to Spec, CliticP and *then* (A'-)movement to Spec, CP. Reconstruction, strictly

pro-raising appears to meet the challenge posed by the two reconstruction problems in (4): variable-binding in a nominal head occurs because the variable of Lebanese relative clauses is always a resumptive pronoun *pro*, not a trace *t*. This resumptive *pro* can be bound and can transfer its bound interpretation to a pronoun in the nominal phrase. Aoun & Choueiri 1997 grant that a head-raising analysis might suffice to predict variable-binding in cases like (5), but explicitly reject such an account for Lebanese. They note, for instance, that the ban on adjunct relativization would be unexplained under the head-raising account. Leaving that objection aside for now (we will return to it in the conclusion), in the following section we will investigate reconstruction in Syrian Arabic as a test to decide whether *pro*-raising or head-raising accounts for the facts of Syrian Arabic.

3 Problem #1: reconstruction in Syrian relative clauses

This section is bipartite: the first part establishes the variable-binding and Condition C reconstruction generalizations in Syrian Arabic (the facts sketched in 1). The second part discusses the significance of those generalizations for the *pro*-raising hypothesis and for the copy theory, attempting to address Problem #1: how can the reconstruction effects come about at all?

3.1 *Two Generalizations*

Let us first address variable-binding in Syrian. As might be expected (Heim & Kratzer 1998), semantic variable-binding of pronouns appears to require c-command. The paradigm in (9) demonstrates this requirement.

(9) a. **[wala Taalib]$_1$** Habb ətta**H**?ee? ʕaleyu ***pro***$_1$.
no student(ms) *liked*(3ms) DEF.*investigation of*.3ms
"No student$_1$ liked the investigation of him$_1$."

b. ***huwwa**$_1$/**pro**$_1$ Habb ətta**H**?ee? ʕaley **[wala Taalib]**$_1$.
3ms *liked*(3ms) DEF.*investigation of no student*(ms)
"He$_1$ liked the investigation of no student$_1$."

c. *əl?ustaaða yalli **[wala Taalib]**$_1$ maa Habbha. . .
DEF.*teacher*(f) C *no student*(ms) NEG *liked*(3ms).3fs

. . . Habbət ətta**H**?ee? ʕaleyu ***pro***$_1$.
liked.3fs DEF.*investigation of*.3ms

"The teacher that no student$_1$ liked liked the investigation of him$_1$."

The sentences in (9a) and (9b) were read aloud to informants, who were asked whether they accurately described a situation where every student in school has been investigated by the teachers and deeply resents the process. The sentence (9b) where the pronominal variable asymmetrically c-commands the quantifier was quite clearly rejected in this scenario. Of course, this type of example does not necessarily

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speaking, would take place into the CliticP, not the resumptive DP. See fn. 26 for some brief discussion of this proposal for Syrian.

demonstrate that variable-binding requires c-command since it also instantiates a Condition C violation. The sentence in (9c), though, where the QNP is embedded in a subject relative clause, was also judged to be unacceptable. This example clearly cannot be ruled out by Condition C (at any level of representation): it and (9a) suggest that variable-binding requires c-command.

The speakers polled for the sentences in (10) were asked whether the sentences might describe a likely scenario in a situation where every student in school is extremely modest. Confronted with the DP in (11), the speakers were asked if the phrase could refer to an investigation of students that the students all hated (11a) or that did not particularly affect them (11b).[18] Given that variable-binding requires c-command, the bound-variable interpretation of the pronominal pro_1 in sentences (10a) and (11a) is puzzling: the QNP *wala Taalib*$_1$ does not (visibly) c-command the position of the pronominal.[19]

$pro_1 \ldots QP_1$

(10) a. ʔaqtiraHtu [[liqtiraaH ʔinnuu ***pro***$_1$ zekii]$_2$ [$_{CP}$ yalli [**wala Taalib**]$_1$ ʔibil fiih *pro*$_2$]]
*suggest*ed.1s DEF.*suggestion* C.3ms *smart* C *no student accept*ed *in*.3ms
"I made the suggestion that he$_1$ was smart that no student$_1$ accepted.

***$QP_1 \ldots pro_1$**

b. *ʔaqtiraHtu [[liqtiraaH ʔinno [**wala Taalib**]$_1$ zekii]$_2$ [$_{CP}$ yalli ***pro***$_1$/**huwwe**$_1$. . .
*suggest*ed.1s DEF.*suggestion* C *no student smart* C 3ms

. . . ʔibil fiih *pro*$_2$]].
*accept*ed(3ms) *in*.3ms

"I made the suggestion that no student$_1$ was smart that he$_1$ accepted."

(11) a. [[əttaHʔee? ʕaleyu ***pro***$_1$]$_2$ [illi [**wala Taalib**]$_1$ maa Habbu *pro*$_2$]]. . . ***QP subject, relativized object***
DEF.*investigation of*.3ms C *no student* NEG *liked*.3ms
"The investigation of him$_1$ that no student$_1$ liked. . ."

b. *[[əttaHʔee? ʕaleyu ***pro***$_1$]$_2$ [illi t_2 zaʕaal [**wala Taalib**]$_1$]]. . . ****QP object, relativized subject***
DEF.*investigation of*.3ms C *upset no student*
"The investigation of him$_1$ that upset no student$_1$. . .

The examples in (10a) and (11a) are structurally similar. They each contain a (boldfaced) null pronominal ***pro***$_1$ inside a phrasal complement to the definite head noun of the relative clause. The null

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[18] Jim McCloskey (p.c.) points out that (11) might be used to refer to an investigation of a person who no student liked. This ambiguity might account for the fact that two speakers did not find there to be an acceptability difference between (11a) and (11b). The grammaticality judgments indicated in (11) were shared by five other speakers.

[19] Examples similar to (11) using the construction [*kəll* ('all, every') + indefinite singular] were accepted by one speaker. I attribute this fact to an *e*-type reading available for pronouns in relation to [*kəll* + indefinite singular]. Such a reading is generally unavailable for pronouns in relation to quantifiers like *no*, thus I will stick to the Syrian quantifier *wala* for this discussion.

pronominals are variables bound by the (boldfaced) QNP *wala Taalib$_1$* 'no student.' In each case the gap position of the relative clause is an object *pro* detectable by object agreement on the verb. Note that the QNP subject c-commands the gap in the (a) cases.

Suppose that LF "reconstruction" of *pro$_1$* in the (a) examples (however implemented[20]) targets the relative gap position; this would explain how variable-binding comes about, since *pro$_1$* would be c-commanded by the QNP subject *wala Taalib$_1$* 'no student' at LF. (10b) and (11b) provide possible reasons to think that this idea is on the right track. (10b) seems uninteresting: it switches the positions of the pronoun and the QNP from those in (10a). The unavailability of variable-binding is expected in (10b) no matter if the QNP is interpreted in its pronounced position *or* if it has 'reconstructed' to a position below the pronominal subject of the relative clause. In neither position would it c-command the pronoun it is attempting to bind. However, (10b) does show that the QNP in the head nominal phrase cannot reconstruct to a position c-commanding the relative clause subject. This can be taken as weak evidence that the gap position of the relative is the locus of reconstruction. (11b) provides stronger evidence: variable-binding of the pronominal *pro$_1$* is unavailable with a relative clause containing a gap subject and a QNP object. We can conclude that in (11a) the QNP c-commands the position of reconstruction while in (11b) it does not. Since the gap is c-commanded in (11a) but not (11b), it makes sense to identify the gap with the position of reconstruction. We have (perhaps[21]) established the generalization in (12).

(12) **Syrian variable-binding reconstruction generalization:** "A pronoun within a definite nominal phrase can 'reconstruct' to the gap position of that phrase's relative clause modifier."

e.g. $[_{DP(definite)}$ [. . . pronoun$_1$ . . .]$_2$ [C QNP$_1$ . . . *pro$_2$*]]

With this generalization in hand, let us now see whether Condition C effects hold under reconstruction in Syrian. Condition C forbids names bound by pronouns or other names[22] (Chomsky 1986, Reinhart 1983). This restriction holds in Syrian, as demonstrated by (13) and (14) below.

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[20] The term "reconstruction" in this discussion refers merely to the phenomenon where an element is interpreted or has various effects in a position different from where it is pronounced. It does not refer to any particular analysis of this phenomenon.

[21] Strictly speaking, all that has been shown is that reconstruction occurs into a position below the relative clause subject (10a), (11a) and above the relative clause object (11b). Conceivably reconstruction could target some fixed position between the subject and the object of the relative clause every time: it might have nothing to do with the gap. Jim McCloskey (p.c.) points out that this position might be identified with the left edge of *v*P. Section 4 presents some direct evidence that it is in fact the gap position that is relevant to relative clause reconstruction.

[22] For the purposes of this discussion, assume that names are base-generated with an index that gets assigned a value by some assignment function, just like pronouns. Whether or not the binding of names by pronouns (or pronouns by names) is true "semantic binding" or simply accidental coindexation is irrelevant here.

(13) a. **Ahmed**$_1$ ʔaal ʔinno Layla Haakə**tu**$_1$.
said C *liked*.3fs
"Ahmed$_1$ said that Layla liked him$_1$."

b. ***huwwa**$_1$/*pro*$_1$ ʔaal ʔinno Layla Haakət **Ahmed**$_1$.
3ms *said* C *liked*.3fs
"He$_1$ said that Layla liked Ahmed$_1$."

(14) a. ***huwwa**$_1$/*pro*$_1$ ʕajib **Ahmed**$_1$.
likes
"He$_1$ likes Ahmed$_1$."

b. ***Ahmed**$_1$ ʕajib **Ahmed**$_1$.
likes
"Ahmed likes Ahmed."

In (13) it appears that the binding configuration *name$_i$* > *pronoun$_i$* is allowed across a clause-boundary (a) , but that *pronoun$_i$* > *name$_i$* is disallowed (b). Clause-internally, the *pronoun$_i$* > *name$_i$* and *name$_i$* > *name$_i$* configurations are not permitted, as (14) demonstrates. The Condition C requirement that names not be bound appears to hold.

Given that Condition C entails c-command (part of binding), examine the paradigms below. (15a) and (16a) were judged to be unacceptable: they contain a name in a CP complement to N, and a pronominal subject of the relative clause modifier of that N.[23] Notice that the object position has been relativized and contains a resumptive *pro* (detectable by agreement on the verb). These sentences become acceptable when the name and the pronoun are switched, as in the (b) cases. The speakers consulted for the (b) cases require the name to be mentioned in the preceding discourse to accept the sentences (due to the strangeness of having a pronoun precede its coreferent name) , but otherwise found the sentences to be directly contrastive to the (a) cases.[24]

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[23] Not all speakers accepted cases with PP phrasal complements to N. This type of disagreement between speakers w/r/t phrases that can or cannot reconstruct is typical, and may be due to the fact that PP complements to N are ambiguous between complement and adjunct status (as suggested by Heycock 1995).

[24] Interestingly, the (a) cases become acceptable when the subject *pro* of the relative clause is pronounced as a subject pronoun. This fact is not necessarily problematic for identifying the (a) cases as Condition C violations: subject pronouns are only pronounced in Syrian for emphasis or contrast (Cowell 1964), and it is clear that emphatic or contrastive contexts can alleviate Condition C under reconstruction (example [i] taken from Heycock 1995).

(i) *Which fan of Madonna$_1$ does she$_1$ like best?
(ii) Which fan of Madonna$_1$ does *she$_i$* like best?

**** subject pronoun, relativized object:***

(15) a. *ʔaqtiraHtu [[liqtiraaH ʔinnu Ahmed Habb **Layla$_1$**]$_2$ [yalli ***pro***$_1$ ʕaaraDetu *pro*$_2$
suggest.1cs DEF.*suggestion* C *loved* C *object*.3fs.3ms

. . .tamaaman]].
completely

"I made the suggestion that Ahmed loved Layla$_1$ that she$_1$ objected to completely."

subject name, relativized object:

b. ʔaqtiraHtu [[liqtiraaH ʔinnu Ahmed Habbha ***pro***$_1$]$_2$ [yalli **Layla$_1$** ʕaaraDetu *pro*$_2$
suggest.1cs DEF.*suggestion* C *loved*.3fs C *object*.3fs.3ms

. . .tamaaman]].
completely

"I made the suggestion that Ahmed loved her$_1$ that Layla$_1$ objected to completely."

****subject pronoun, relativized object:***

(16) a.*əlʔaaDiia ʕakaset [[əlHekem ʔinnu **Ahmed$_1$** kaan bareeʔ]$_2$ [yalli ***pro***$_1$ kaan Habbu *pro*$_2$]].
DEF.*judge*.f *reversed*.3fs DEF.*decision* C *was innocent* C *was liked*.3ms

"The judge reversed the decision that Ahmed$_1$ was innocent that he$_1$ had liked."

subject name, relativized object:

b. əlʔaaDiia ʕakaset [[əlHekem ʔinnuu ***pro***$_1$ kaan bareeʔ]$_2$ [yalli **Ahmed$_1$** . . .
DEF.*judge*.f *reversed*.3fs DEF.*decision* C.3ms *was innocent* C

. . .kaan Habbu *pro*$_2$]].
was liked.3ms

"The judge reversed the decision that he$_1$ was innocent that Ahmed$_2$ had liked."

Because simply switching the pronoun and the name in (15) and (16) determines the grammaticality of the sentences, it is reasonable to believe that the source of unacceptability in the (a) cases is a Condition C effect under reconstruction. Specifically, it appears that a name embedded in a CP complement to N can be bound at LF by a subject pronoun in the relative clause modifier of that N.

The following examples establish some legitimacy for this claim. The sentences in (17) are virtually equivalent to (15a) and (16a) except that the nominal phrase containing a name has been related to a subject gap, a gap that c-commands the pronoun coindexed with the name.

(17) a. ʔaqtiraHtu [[liqtiraaH ʔinnu Ahmed Habb **Layla**$_1$]$_2$ [yalli t_2 zaʕaalha ***pro***$_1$
suggest(PERF).1CS DEF.*suggestion* C *loved* C *bothered*.3fs

. . . katheeran]].
very much

"I made the suggestion that Ahmed loved Layla$_1$ that bothered her$_1$ very much."

b.əlʔaaDiia ʕakaset [[əlHekem ʔinnu **Ahmed**$_1$ kaan bareeʔ]$_2$ [yalli t_2 maa kaan zaʕaalu ***pro***$_1$
DEF.*judge*.f *reversed*.3fs DEF.*decision* C *was innocent* C NEG *was bothered*.3ms

. . . katheeran]].
very much

"The judge reversed the decision that Ahmed$_1$ was innocent that had not bothered him$_1$ very much."

The grammaticality of (17a) and (17b) indicates the relevance of the gap position in determining reconstruction effects in relative clauses. Supposing that reconstruction of the name inside the head nominal phrase occurs into the gap position, we predict (17a) and (17b) to be acceptable since at no time would the name be bound by the (object) pronoun.

The Condition C generalization for Syrian appears to be that a definite nominal phrase containing an embedded name coindexed with a relative clause subject cannot then be related to the relative object gap, as shown by (15a) and (16a). In other words, a name in a head nominal phrase "reconstructs" to the gap position of the relative. As expected, ungrammaticality disappears when the pronoun and the name are reversed (15b) (16b) and when the definite nominal phrase containing the name is related to a gap that c-commands the pronoun (17). In sum, we have the generalization in (18).

(18) **Syrian Condition C reconstruction generalization:** "A name within a definite nominal phrase 'reconstructs' to the gap position of that phrase's relative clause modifier."

e.g. *[$_{\text{DP(definite)}}$ [. . . name$_1$ . . .]$_2$ [C pronoun$_1$ . . . *pro*$_2$]]

With the variable-binding generalization (12) and the Condition C generalization (18) established, let's see what significance they might have for the *pro*-raising analysis and for the assumptions of the copy theory.

3.2 *The copy theory and the head-raising analysis*

Recall that the Aoun & Choueiri 1997 *pro*-raising analysis predicts Condition C to be absent under reconstruction in relative clauses (since at no time in the derivation would a name in the nominal phrase ever be inside the relative clause). I submit that *pro*-raising is an incomplete account of Syrian relative clauses in light of the Condition C generalization (18).

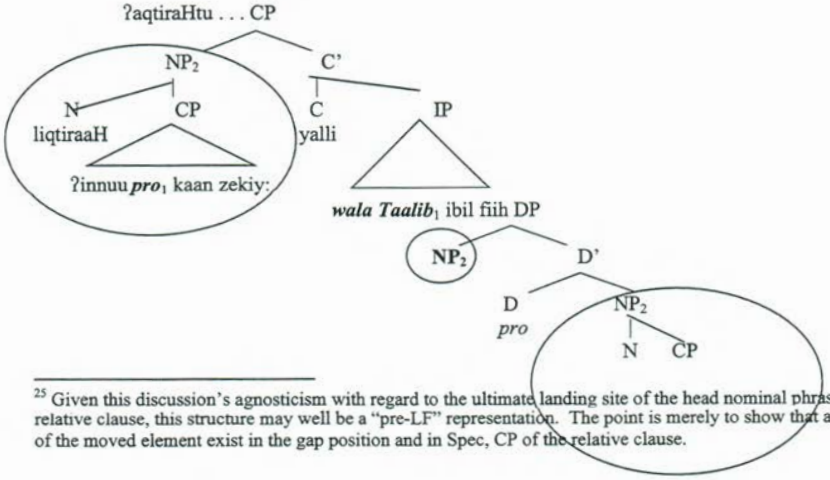
What does the copy theory have to say about Condition C? Suppose that the principles governing Condition C operate on LF representations (Chomsky 1995, Fox 2000, Reinhart 1983). Since Condition C is sensitive to structure at LF, specifically whether or not names are bound, it stands to reason that Condition C effects under reconstruction provide positive evidence for the existence of structure in the reconstruction site at LF. Put into copy theory terms, a Condition C effect under reconstruction locates an unpronounced copy of a moved phrase that contains a name.

Applying this reasoning to Syrian, the Condition C generalization (18) becomes an excellent case for the actual structure of a head nominal phrase existing in the relative clause's gap position at LF. The same reasoning applies to the variable-binding generalization in (12): since variable-binding requires c-command at LF, (12) indicates that a copy of the head nominal phrase exists in the gap position at LF, allowing binding of the variable inside the nominal phrase. We have assumed that copies represent instances of a single phrase that has undergone (A'-)movement: this assumption virtually compels us to say that the head nominal phrase moves from the gap position of its relative clause, leaving a tail copy that induces Condition C effects (18) and variable-binding effects (12).

As mentioned earlier, this type of "head-raising" analysis of relative clauses originated with work by Shachter 1974 and Vergnaud 1979, 1982. Researchers within the antisymmetry framework of Kayne 1994 have been the most prominent advocates of the theory in recent years, Bianchi 2000 being the most comprehensive discussion. Here, it only matters that the head nominal undergoes some type of A'-movement out of the gap position (presumably to Spec, CP). It does not matter whether this is the final position of the nominal (Kayne 1994, Bianchi 2000) or whether the head nominal moves on to another, ultimately more standard A-position (Vergnaud 1982).

Having adopted a copy-theoretic head-raising perspective on the generalizations in (12) and (18), let us be more clear about what the structure of relative clauses looks like in Syrian. The variable-binding reconstruction case (10a) is repeated below as (19) with its corresponding structure.[25]

(19) ʔaqtiraHtu [[liqtiraaH ʔinnuu ***pro***$_1$ kaan zekiy:]$_2$ [yalli **wala Taalib**$_1$ ibil fiih *pro*$_2$]].
*suggest*ed.1cs DEF.*suggestion* C.3ms *was smart* C *no student accepted to*.3ms
"I made the suggestion that he$_1$ was smart that no student$_1$ accepted."



[25] Given this discussion's agnosticism with regard to the ultimate landing site of the head nominal phrase of the relative clause, this structure may well be a "pre-LF" representation. The point is merely to show that at LF, copies of the moved element exist in the gap position and in Spec, CP of the relative clause.

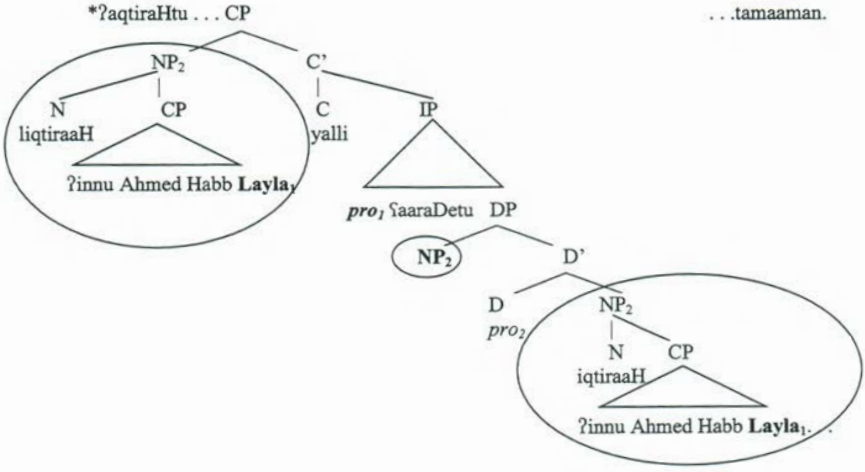
In the structure above, the head nominal phrase [$_{NP}$ *liqtiraaH ʔinnuu* pro$_1$ *kaan zekiy:*]$_2$ originates in the gap position (here, complement position to the resumptive *pro*[26]) and moves through Spec, DP into Spec, CP. The copies have been indicated with oval outlines. The pronoun *pro*$_1$ in the tail copy becomes bound by the QNP *wala Taalib*$_1$ at LF.

As for cases that violate Condition C under reconstruction, let us articulate the structure for (15a), repeated as (20) below.

(20) ***ʔ**aqtiraHtu [[liqtiraaH ʔinnu Ahmed Habb **Layla**$_1$]$_2$ [yalli ***pro***$_1$ ʕaaraDetu *pro*$_2$ . . .
*suggest*ed.1cs DEF.*suggestion* C *loved* C *objected*.3fs.3ms

. . . tamaaman]].
completely

"I made the suggestion that Ahmed loved Layla$_1$ that she$_1$ objected to completely."



[26] This structure and the one that follows makes a claim about the internal structure of the gap position (that contains a resumptive pronoun) that will not be defended until the next section. Specifically, it claims that resumptive *pro*s are derived by NP-movement through Spec, DP and into Spec, CP, leaving an NP copy in the gap position.

As in (19), the reconstruction effect is derived by the head nominal leaving a tail copy in the gap position. The NP [*liqtiraaH ʔinnu Ahmed Habb Layla*$_1$]$_2$ 'the suggestion that Ahmed loved Layla' moves through Spec, DP into Spec, CP; its tail copy (or perhaps the one in Spec, DP) triggers the Condition C effect at LF since the name *Layla*$_1$ is bound by the relative subject *pro*$_1$.

In sum, we have seen that Condition C and variable-binding indicate the presence of a copy of a nominal head within the Syrian relative clause, motivating a head-raising analysis. Such an analysis reasonably addresses Problem #1 in (4) by claiming that reconstruction effects arise due to movement of the head nominal from the gap position. At this point, we make the clear prediction that the gap position particularly, the one involving the resumptive *pro*, gives rise to reconstruction effects. How can we test whether this position and not another triggers Condition C and variable-binding? Someone who finds head-raising distasteful might claim that reconstruction consistently targets a fixed position between the relative clause subject and the relative clause object (Spec *v*P, for example, or Spec, CliticP). Such a hypothesis arguably deduces the facts in section 3.1. We need an answer to Problem #2 to firmly establish head-raising from the gap position as a valid theory: is reconstruction really related to the resumptive gap position and if so, how?

4 Problem #2: resumptive DPs and reconstruction

In preparing an answer to the question of how (and even whether) reconstruction effects are tied to resumptive pronoun positions, an issue of their external syntax, let's first try to address their internal syntax. Recall from (2) and (3) that resumptive pronouns—as detected by agreement clitics on the main verb—alternate with trace gaps. Koopman 1999 has proposed two types of movement to account for various options in the morphosyntax of pronouns cross-linguistically: DP-movement and NP-movement.[27] DP-movement targets the entire pronominal DP, and NP-movement moves through Spec, DP to strand the D head.

Suppose that relative clauses derive by movement of a nominal phrase out of a gap position: if the head nominal is a DP that can undergo either type of movement, then we have an account of the optionality between resumptives and traces. When the entire DP raises, a DP copy is left behind (i.e. a DP-trace gap of the familiar type). When the NP inside the head nominal raises, though, it must move through Spec, DP, triggering agreement on D (following Koopman's analysis). This agreement in features is realized as *pro*, which we have assumed triggers the pronominal agreement clitic on the main verb.[28]

Let's assume for sake of argument that the optionality between DP- and NP-movement out of relative clauses is motivated by a feature [*wh*], which can be generated either on D or N of the head nominal phrase (see Borer 1999 for proposals that [definite] behaves this way in Semitic). The tree structures in (19) and (20) indicate what NP-movement of the nominal head looks like for cases of variable-binding and Condition C reconstruction. As it turns out, we make a surprising prediction about these structures.

Heycock 1995 and Huang 1993 have suggested that A'-movement of a predicate results in obligatory reconstruction of that predicate. Whatever the ultimate explanation for this generalization, it is relevant to the structures in (19) and (20): the NPs that move out of the gap position through Spec, DP to

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[27] Koopman 1999 actually refers to the latter type as "NumP" movement. For this discussion the existence of NumP is not relevant; let's simply assume "NP movement" to refer to movement of some phrase below DP.

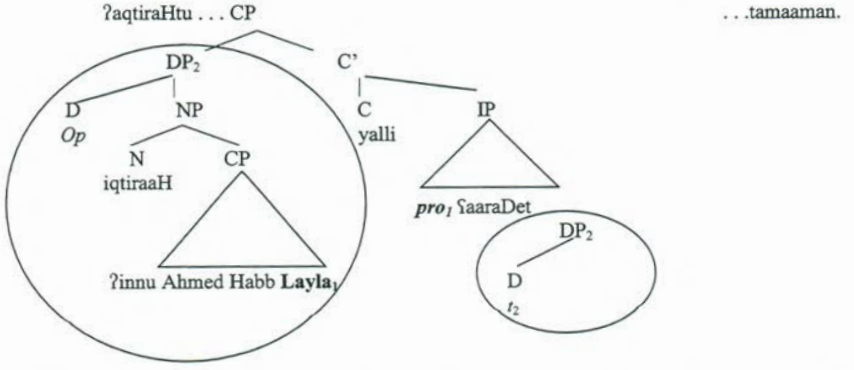
[28] Notice that we now predict that DP-movement should display the standard effects of DP-traces but that NP-movement might not. This prediction appears to be borne out in Modern Standard Arabic, which displays a similar type of ambiguity of resumption in relative clauses, where resumptive clitics (i.e. NP-movement stranding a *pro* and an NP-copy) cannot license parasitic gaps but DP-copies can (Darrow 1995).

Spec, CP are predicates. This predicate, whatever its denotation (<s, <e,t>>-type function, "property," etc.), cannot be incorporated into the argument structure of the verb by itself. Longobardi 1994 has argued that D performs this function; D transforms its complement NP into an argument. Essentially, DP encodes "referentiality" but NP does not. Since the moved NPs in (19) and (20) are predicates, we predict them to reconstruct obligatorily. In copy theory terms, this means that their tail copy must not be deleted at LF. The same prediction does not hold of moved DPs, being "referential" and being arguments they do not fall under the Heycock/Huang generalization. The tail copies of DP movement are free to delete (at least partially) at LF.

What does all this tell us about (19) and (20)? The Heycock/Huang generalization provides a test to determine whether reconstruction targets the gap position specifically. If the gap position truly induces the Condition C effects in (20), we expect Condition C to correlate only with NP-movement (i.e. with a resumptive *pro* and NP copy in gap position). Why? Because in (20), the lowest NP copy must not delete; if it did it would violate the Heycock/Huang generalization. Since the NP copy contains a name coreferent with a c-commanding pronoun, Condition C effects arise. But if the DP had moved instead, leaving no resumptive *pro* and no pronominal agreement on the verb, then the NP restriction of the tail copy of the moved DP should be able to delete, alleviating the Condition C effects. The acceptability of (21) bears out this prediction:

pro *subject, relativized object w/o clitic:*

(21) ʔaqtiraHtu [[liqtiraaH ʔinnu Ahmed Habb **Layla**$_1$]$_2$ [yalli ***pro***$_1$ ʕaaraDet t_2 tamaaman]].
suggested.1s DEF.*suggestion* C *loved* C *object*.3fs *completely*
"I made the suggestion that Ahmed loved Layla$_1$ that she$_1$ objected to completely."



The acceptability of (21) stands in sharp contrast to (20). Here, the entire DP of the nominal head phrase raises out of the gap position of the relative clause. Assuming that deletion applies to LF representations (either optionally or to effect a certain semantic interpretation, it does not matter which), the derivation as shown above is possible, where the NP complement of the DP tail copy has deleted.[29] Presumably, the D

[29] Safir 1999 develops an argument against precisely this kind of reasoning. He claims that the absence of Condition C effects under reconstruction is no argument for the absence (or partial deletion) of a copy, since the name inside the tail copy could simply have undergone "vehicle change", transforming it into a pronoun. It is not obvious to me

trace in the tail copy cannot be deleted: if it were there would be no variable in the relative clause. Note that another derivation for (21) exists where none of the tail copy gets deleted: this derivation will be ruled out by Condition C just like (20).

The Condition C reconstruction contrasts between DP-movement and NP-movement are further illustrated in (22).

(22) ***pro subject, relativized object <u>with</u> clitic:***

a. *ʔaqtiraHtu [[liqtiraaH ʔinnu **Ahmed**$_1$ kaan stupid]$_2$ [yalli ***pro***$_1$ ʕaaraDu *pro*$_2$...
suggested.1s DEF.*suggestion* C *was* C *objected*(3ms)3ms

...tamaaman]].
completely

"I made the suggestion that Ahmed$_1$ was stupid that he$_1$ objected to completely."

pro subject, relativized object <u>w/o</u> clitic:

b. ʔaqtiraHtu [[liqtiraaH ʔinnu **Ahmed**$_1$ kaan stupid]$_2$ [yalli ***pro***$_1$ ʕaaraD t_2...
suggested.1s DEF.*suggestion* C *was* C *object*(3ms)

...tamaaman]].
completely

"I made the suggestion that Ahmed$_1$ was stupid that he$_1$ objected to completely."

The NP/DP-movement theory makes a different set of predictions about variable-binding reconstruction. Since the tail copy of NP movement may not delete due to the Heycock/Huang generalization, we predict a pronoun in the tail NP copy to be able to get a bound-variable reading by a c-commanding quantifier. Of course, we have already seen instances of this type of reconstruction in, for example, sentence (19)/(10a). And since the tail copy of DP movement need not undergo deletion, we predict variable-binding in DP movement cases, too. That is, we do not predict an asymmetry between reconstruction effects and clitic presence like we did for Condition C, since the criteria inducing variable-binding are positive, not negative. This prediction is borne out by the examples in (23): in each case, variable-binding is available.

(23) ***QP subject, relativized object <u>with</u> clitic:***

a. [[ətaH?ee? ʕaleyu ***pro***$_1$]$_2$ [yalli [**wala Taalib**]$_1$ maa Habbu *pro*$_2$]]
DEF.*investigation of*.3ms C *no student* NEG *loved*.3ms
"The investigation of him$_1$ that no student$_1$ loved. . ."

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what predictive power vehicle change might have for the facts in Syrian: why should vehicle change be disallowed in relative clauses with resumptive pronouns but allowed for trace-type relative clauses? Safir explicitly distinguishes between "overt resumption" and "covert introduction of a pronominal variable" (618), but while this distinction arguably explains why trace-type (DP-movement) copies do not show Condition C effects, it does not capture why Condition C effects arise in the presence of resumptive pronouns.

QP subject, relativized object w/o clitic:

b. [[əttaH?ee? ʕaleyu ***pro***$_1$]$_2$ [yalli [**wala Taalib**]$_1$ maa Habb t_2]]
DEF.*investigation of*.3ms C *no student* NEG *loved*
"The investigation of him$_1$ that no student$_1$ loved . . ."

We thus appear to have arrived at a solution to Problem #2. The head nominal of a relative clause in Syrian originates in the gap position, where it can undergo NP-movement to derive a resumptive *pro* variable or DP-movement to derive a trace variable. Condition C reconstruction effects arise when the tail copy of NP movement induces Condition C violations, but the NP restriction in the tail copy of DP movement can delete, escaping Condition C. Variable-binding reconstruction effects arise under both kinds of movement because in both DP and NP movement a derivation will exist with the NP restriction on D present. And since the presence or absence of the resumptive variable *pro* determines the presence or absence of Condition C reconstruction, we can safely say that it is the object gap position particularly that triggers reconstruction effects, and thus that the head nominal phrase of the relative clause originates in that gap position.[30] The theory of NP and DP movement and the head-raising analysis thus provides a plausible answer to the problem of how reconstruction can be tied to resumptive pronoun positions. The next section offers a few suggestions for interpreting the LF structures that result from NP and DP movement.

5 One and a half proposals for a semantics

With respect to the analysis developed so far, two types of structure must be provided a semantics. First, we have relative clauses derived by NP movement, where the NP restriction on the *pro* variable must be present (by the Heycock/Huang generalization). Second, we have relative clauses derived by DP movement, where the NP complement to the D head containing the *t* variable can be deleted optionally.

It might be possible to identify an interpretation procedure for the DP movement case with the more familiar relative clause domain of English. English relative clauses only allow traces as gaps. Suppose that a DP movement head-raising analysis were appropriate for English relative clauses. We would then predict for English exactly the reconstruction effects found in Syrian relatives derived by DP movement. In fact, it has been argued by a number of researchers (e.g. Merchant 2000, Munn 1994, Safir 1999) that Condition C reconstruction effects are not found in English relative clauses. The examples in (24) appear to support this claim:

(24) a. I have a report on Bob$_1$('s division) that he$_1$ won't like. [Merchant 2000, fn. 5]

[30]One might think to identify the ultimate site of reconstruction in relative clauses to a CliticP between VP and IP, as proposed by Aoun & Benmamoun 1998 for Lebanese Clitic Left-Dislocation (see fn 10). But it is unclear to me whether CliticP can—alone—deduce that Condition C and the agreement clitic on V obigatorily correlate. That is, suppose that the Syrian resumptive pronoun originated in Spec, CliticP: why do Condition C effects exist only when the clitic is present? Moreover, it is unclear why it is possible to "turn off" agreement in CliticP in Syrian: how can relative clauses be generated without agreement on V? Incorporating CliticP into the head-raising theory is possible in principle: the head nominal phrase could be base-generated in Spec, CliticP and the verb could raise to the Clitic head position to agree. However, it is still unclear how agreement can be turned off. The main empirical motivation for CliticP in Aoun & Benmamoun 1998 was a variable-binding reconstruction asymmetry between preverbal and postverbal subjects. The consultants I have interviewed so far have been extremely resistant to postverbal subjects in the highest CP in a relative clause, so it has not yet been possible to test whether the same asymmetry holds for Syrian Arabic.

b. I read every report on Bob_1's division that he_1 ever submitted. [Merchant 2000, fn. 5]

c. I read the report on Bob_1's division that he_1 submitted yesterday. It was awful!

The absence of Condition C effects in (24) correlates with the absence of Condition C in Syrian relatives. As for variable-binding reconstruction, Jim McCloskey (p.c.) has pointed out to me that these effects can be found in English relative clauses, as in the following cases:

(25) a. These are the kinds of intrusions into his_1 private life that [no president]$_1$ should have to endure.

b. *The kinds of intrusions into his_1 private life that [no president]$_1$ should have to endure would surely sap his_1 morale.

(26) Feinstein and Boxer both ran strong campaigns. . . .

a. However, Murdoch's papers published allegations about her_1 private life that [neither candidate]$_1$ could effectively counter.

b. *However, allegations about her_1 private life that [neither candidate]$_1$ could counter damaged her_1 campaign.

The grammaticality of the (a) cases above but not the (b) ones patterns with the variable-binding reconstruction found in the Syrian examples (11a) and (11b). In sum, variable-binding and Condition C reconstruction effects in English parallel that of DP-movement relatives in Syrian. At this point, let us be content with reducing the issue of a semantics for Syrian Arabic DP movement-derived relative clauses to the issue of a semantics for English relative clauses.

As for Syrian relatives derived by NP movement, consider the Syrian Condition C violation (16a), repeated as (27) below:

(27) *ʔəlʔaaDiia ʕakaset [[ʔəlHekem ʔinnu **Ahmed**$_1$ kaan baree?]$_2$ [yalli ***pro***$_1$ kaan Habbu *pro*$_2$]].
DEF*judge*.f *reversed*.3fs DEF.*decision* C *was innocent* C *was liked*.3ms

"The judge reversed the decision that Ahmed$_1$ was innocent that he$_1$ had liked."

The trick to interpreting a head-internal relative clause is to interpret the tail copy of the head, the copy inside the relative. That LF tail copy of the sentence in (27) has *pro*$_2$ as its head D; both copies are spelled out below:

(28) Partial LF representation of (27):

[[Hekem ʔinnu **Ahmed**$_1$ kaan baree?]$_2$ yalli ***pro***$_1$ kaan. . .
decision C *was innocent* C *was*

. . . Habbu [*pro*$_2$ Hekem ʔinnu **Ahmed**$_1$ kaan baree?]].

liked.3ms *decision* C *was innocent*

In the spirit of work on head-internal interpretation by Grosu & Landman 1998, suppose that pro_2 induces NP-movement of the head NP *Hekem ʔinnu Ahmed kaan baree?* 'decision that Ahmed was innocent' because pro_2 is lexically encoded as a function from <*e*, *t*>-type functions to <*e*, *t*>-type functions. It takes the denotation of its sister NP, the tail copy of the head of the relative clause, and yields that same denotation.[31] Since this type of D is unavailable in English, NP-movement is unavailable in English head-internal relative clauses; we predict resumptive pronouns to be unavailable in English relative clauses. Once the D containing the *pro* variable in (27) and (28) denotes an <<e,t>,<e,t>> function, the interpretation procedure of the entire relative clause can proceed straightforwardly: the *pro* variable can function as the variable of the relative clause, and the upper copy of the relative clause head as the relative clause operator.[32] These suggestions for a semantics are few and vague. They are intended merely to show that a plausible semantics can be given in principle for the LF structures posited in this paper.

Conclusions

Surprisingly enough, the copy theory can provide a fairly satisfactory account of Condition C and variable-binding reconstruction in Syrian Arabic relative clauses. We have addressed both the problem of how reconstruction effects come about at all and also the problem of how reconstruction can be tied to resumptive pronoun positions. Accepting the premises of the copy theory and a head-raising analysis of relative clauses for Syrian derives the Condition C and variable-binding reconstruction generalizations, the optionality between resumptives and traces in relative clauses, and the correlation between Condition C and resumptivity (given some assumptions about DP movement and predicate reconstruction).

Two points remain to be addressed concerning the *pro*-raising proposal of Aoun & Choueiri 1997. Recall the unacceptable Lebanese relative clauses involving extraction of adjuncts in (7), repeated here as (30):

(30) a. *ssabab yalli rəHt.o . . . b. *sabab yalli rəHt.o . . .
DEF.*reason*(ms) C *left*.1s.3ms *reason*(ms) C *left*.1s.3ms
"The reason that/why I left. . ." *[Leb: A&C 41]* "A reason that/why I left. . ." *[Leb: A&C 86]*

Aoun & Choueiri 1997 claim that (30) demonstrates an absolute ban on relativization of adjuncts. Such a ban clearly does not hold for Syrian Arabic.[33] Witness the examples in (31):

(31)

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[31] One way to make sense of this claim is to say that there are two ways to extract a relative-clause-internal head in Syrian: either the D or the N of the DP head can, in principle, be generated with a [*wh*] feature. Borer 1999 suggests this type of base-generation option for the syntactic feature [definite]. When D is generated with a [*wh*] feature, a DP-movement derivation results (just like in English). When N is generated with a [*wh*]-feature, the D head that takes that NP as its sister is an <<e,t>,<e,t>> function.

[32] We can assume that the semantic function of the upper NP copy of the moved relative clause head is to initiate Predicate Abstraction over the *pro* variable (e.g. pro_2 in 27 and 28). This is not so outlandish a proposal: it parallels Heim & Kratzer's 1998 syncategorematic triggering of Predicate Abstraction by relative pronouns and by indices in English.

[33] I will not try to answer why Lebanese might have such a restriction on the relativization of adjuncts. It does seem likely to me that a plausible answer might link up with the fact that Lebanese resumptives are obligatory whereas Syrian ones are optional. Note that if the NP-movement-type head-raising analysis is on the right track for Lebanese, we predict Condition C effects to hold under reconstruction in that dialect.

a. əssabab yalli Layla Darabet Ahmed. . .
DEF.*reason* C *hit*.3fs
"The reason that Layla hit Ahmed. . ."

b. sabab Layla Darabet Ahmed. . .
reason *hit*.3fs
"A reason that Layla hit Ahmed. . ."

Aoun & Choueiri 1997 claim also that the *pro*-raising analysis deduces that relative clauses headed by indefinite nominals will not show reconstruction, since *pro* raises to check (among other features) [+definite]. Under Aoun & Choueiri's 1997 analysis, indefinite nominals do not involve movement of *pro*, just base-generation. A similar analysis might in principle be extendable to NP- and DP-copies, but I will leave this issue open.[34]

Several important issues remain for the head-raising analysis. For one, we have given up the standard base-generation analysis of relative clause resumptives (exemplified by McCloskey 1990), instead proposing that NP-movement derives the resumptive *pro* variables. And so it is now entirely unclear how one might explain the fact that resumptive clitics appear inside islands in Syrian Arabic. Aoun & Choueiri 1997, who derive resumptive pronouns by *pro*-raising, claim that island-internal resumptives are of a different kind altogether: they are base-generated. That is one possible approach: another take might be that NP-movement is island-sensitive (though why this might be is a total mystery).

Sandy Chung has pointed out to me that if the DP/NP-movement version of the head-raising analysis is correct for Syrian Arabic, we might predict many more types of reconstruction than just Condition C and variable-binding. For instance, an indefinite embedded inside the head nominal phrase should be able to bear narrow scope with respect to an element inside the relative clause. This element could be negation, or a universal quantifier, or perhaps an intensional verb. Such predictions remain open at this time, awaiting further field-work.

[34] It seems to me that the issue of what types of determiner can host a reconstructed nominal phrase should coincide with a theory about the ultimate landing site of the head nominal phrase. Kayne 1994 and Bianchi 2000 propose a structure for relative clauses where the relative CP is a sister to a relative determiner; the head nominal phrase under this theory sits in Spec, CP of the relative clause. It is quite difficult to find direct and obvious positive evidence in support of this theory, especially in languages without rich morphophonological material at the level of the relative CP. Nonetheless, future research into the head-raising analysis for Arabic will have to focus on the legitimacy of the Kayne/Bianchi relative clause-structure w/r/t particular aspects of Arabic syntax. It is my hope that investigation into the landing site of the head nominal phrase will shed some light on why indefinite nominals do not reconstruct.

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