The structure of gaps: on the interaction of derivational order, economy and other sensible principles

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1 Introduction

This presentation is concerned with two interconnected assumptions within current minimalist thinking.

(1) a. Movement gaps are generated before than their fillers.
b. Fillers are generated from movement gaps, i.e., they are *copies* of the gap.

The schematic derivation in (2) illustrates both tenets.[1]

(2) a. K = [$_{TP}$ was [$_{VP}$ arrested Cosmo^2]]
b. K = [$_{TP}$ was [$_{VP}$ arrested Cosmo^2]]
L = Cosmo^1
c. K = [$_{TP}$ Cosmo^1 [$_{T'}$ was [$_{VP}$ arrested ~~Cosmo~~^{2}]]]

Reconstruction effects are often taken to offer straightforward support for a theory of movement adopting the assumption in (1b), e.g., Chomsky (1993), Hornstein (1995).

(3) * [$_{DP^1}$ Which picture of Cosmo$_i$] did he$_i$ see [$_{DP^2}$ ~~which picture of Cosmo$_i$~~]?

Under this approach to reconstruction:

- ✓ No additional mechanism moving the filler back to its base position is required to obtain reconstruction.
- ✓ Interpreting a filler in the position of its gap follows from the application of the structure-building operations *Merge* and *Move*, the latter being *Copy+Merge* (Nunes 2004).

Anti-reconstruction phenomena do not fit straightforwardly in this framework.

[1] Numerical indexes on copies are for expository purposes only.

(4) [$_{DP^1}$ The claim that Cosmo$_i$ was asleep] seems to him$_i$ to be ~~DP~~^{2} correct.

There are operations that allow a theory adopting (1a) and (1b) to account for anti-reconstruction: *Late Merger* (Lebeaux 1991, 2009) and *Wholesale Late Merger* (Takahashi & Hulsey 2009).

(5) a. K = [$_{TP}$ seems to him$_i$ to be [$_{DP^2}$ the] correct]
b. K = [$_{TP}$ seems to him$_i$ to be [$_{DP^2}$ the] correct]]
L = [$_{DP^1}$ the]
c. K = [$_{TP}$ [$_{DP^1}$ the] [$_{T'}$ seems to him$_i$ to be [$_{DP^2}$ ~~the~~] correct]]
d. K = [$_{TP}$ [$_{DP^1}$ the [$_{NP}$ claim that Cosmo$_i$ was asleep]] [$_{T'}$ seems to him$_i$ to be [$_{DP^2}$ ~~the~~] correct]]

I argue that a theory adopting the assumptions in (1) cannot offer a complete and sound theory of reconstruction effects, as it is not able to account for *Barss' Generalization*.

(6) Barss' Generalization
Reconstruction of a filler to its gap is impossible if the filler does not c-command the gap in the surface representation.

Patterns supporting this generalization are offered in (7) and (8).

(7) a. [$_{DP^1}$ Some politician] is likely ~~DP~~^{2} to address every rally. $\exists < \forall, \forall < \exists$
b. How likely ~~DP~~^{2} to address every rally is [$_{DP^1}$ some politician]? $\exists < \forall$, *$\forall < \exists$

(8) a. [$_{DP^1}$ A doctor with any reputation] was certain not to be ~~DP~~^{2} available.
b. *[$_{DP^1}$ A doctor with any reputation] was ~~DP~~^{2} anxious for Cosmo not to be available.
c. *... and certain not to be ~~DP~~^{2} available [$_{DP^1}$ a doctor with any reputation] was.

If the structure of movement gaps is formed through Merge, then Barss' Generalization must be taken to describe a bleeding relation between two different points in a syntactic derivation: (i) movement of a phrase XP containing a gap DP^2, and (ii) application of Merge within DP^2. ***The assumptions in (1) do not allow to posit such a bleeding interaction.***

(9) a. DP^2 *formation of DP^2*
b. [$_{XP}$ X DP^2]
c. [$_{YP}$ DP^1 ... [$_{XP}$ X ~~DP~~^{2}]]
d. [$_{ZP}$ [$_{XP}$ X ~~DP~~^{2}] ... [$_{YP}$ DP^1 ...]] *too late to block (9a)!*

Arguably due to this technical restriction, most accounts of Barss' Generalization in the literature rely on theoretical primitives that fall outside the traditional toolbox of minimalist syntax.

- ✗ Sauerland & Elbourne (2002) propose an explanation that relies on the possibility of applying phrasal movement at PF, a theoretical choice that is at odds with the typology of units and operations typically attributed to this component (e.g., Embick & Noyer 2001, Embick 2015).
- ✗ Heck & Assman (2014): reconstruction is a lowering operation at LF that is subject to strict cyclicity. This analysis departs from the idea that syntactic reconstruction is a by-product of the structure-building processes.

Today's presentation

I will sketch a theory of the structure of gaps that adopts the assumptions in (1′).

(1′) a. Fillers are generated before than gaps. *contra (1a)*
b. Gaps are *computed* from (the structure of) fillers. *contra (1b)*

- ➔ These assumptions require ***syntactic derivations to incorporate top-down processes***.
- ➔ As for the type of computation mentioned in (1′b), I propose that the structure of gaps is constrained by some of the same principles that have been proposed to account for the distribution of referential expressions.
- ➔ The proposal accounts for the distribution of reconstruction effects, including (6).

In what follows, I will introduce the basic ingredients for the system to work. I will leave aside some non-trivial aspects of implementation (e.g., chain formation) to focus on the analytical results of the approach.

2 The form of the gap is computed from what there is in the filler

This result is taken to follow from the interaction of a number of independently motivated principles.

2.1 Specifiers are generated first

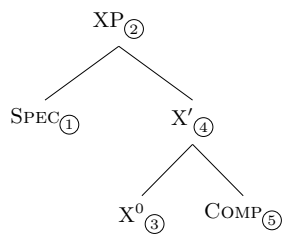
- ➔ Derivations that incorporate *top-down* steps are not strange in recent literature (e.g., Phillips 2003, Chesi 2007, Zwart 2009, Bianchi & Chesi 2014, Georgi & Salzmann 2016, den Dikken 2018).
- ➔ Evidence from processing suggests that a formalism mixing top-down and bottom-up steps is psycholinguistically more plausible (e.g., Resnik 1992).
- ➔ Many proposals are founded on rather traditional grammatical arguments based on criteria of descriptive adequacy (e.g., Phillips 2003, Georgi & Salzmann 2016, den Dikken 2018).

Here, I will remain agnostic about (actually very important) details of implementation. For the purposes of this presentation, the assumption in (10) is enough.

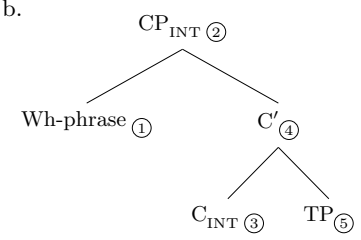
(10) Specifiers first
In the derivation of a phrase XP, the specifier of X^0 is generated and assembled to XP before than the complement of X^0.

As I understand, this is roughly equivalent to posit that syntactic derivations proceed as a *left-corner* parser (e.g., Rosenkrantz & Lewis 1970, Stanojević & Stabler 2018, Hunter 2019).

(11) a.



b.



I take that fillers and gaps are base-generated; fillers are "connected" to gaps occupying checking positions through *chain formation*.

(12) a. [CP Who^i [C' C TP]]
b. [CP Who^i [C' C [TP *gap*^{i} [T' T VP]]]]
Case
c. [CP Who^i [C' C [TP *gap*^{i} [T' T [VP *gap*^{i} came]]]]]?
Case θ-role

2.2 Recoverability of deletion

It has been observed at least since Chomsky (1964) that a constituent deleted by grammatical operations should be *recoverable* from elements in the surface form of the sentence.[2]

(13) * [DP¹ The crazy neighbour] was arrested [DP² ~~the guy who is my friend since moved here~~].

Since we are dealing with gaps only (and not with elliptical sites), we can informally define the condition on recoverability as follows.

(14) Recoverability
A movement gap can only contain information that is available on its filler.

The immediate consequence of adopting (14) is that only a reduced set of well-formed phrases can function as the gap of a given filler.

(15) a. [DP¹ The crazy neighbour] was arrested [DP² ~~the crazy neighbour~~].

[2] Roughly the same prediction can be derived from the Full Interpretation Principle.

(1) Full Interpretation (Chomsky 1986: 98)
Every element of PF and LF must receive an appropriate interpretation. None can simply be disregarded. At the level of PF, each phonetic element must be licensed by some physical interpretation.

Since most of the constituents within DP² in (13) do not satisfy Full Interpretation, the representation should be ruled-out.

b. [$_{DP^1}$ The crazy neighbour] was arrested [$_{DP^2}$ ~~the neighbour~~].

c. [$_{DP^1}$ The crazy neighbour] was arrested [$_{DP^2}$ ~~she~~/~~he~~]. ≈ *vehicle change*

2.3 Representational economy

Condition C can be conceived as a sort of competition between a pronoun and an R-expression, e.g., Schlenker (2005), Johnson (2013), Bruening (2014). Take the pair in (16); the intuition is that an R-expression in the position DP^2 is *redundant* with respect to DP^1. Thus, a "smaller form", i.e., a pronoun, is a better candidate to occupy this position.

(16) a. [$_{DP^1}$ The crazy neighbour] said that [$_{DP^2}$ he]$_i$ wrote a book.

b. * [$_{DP^1}$ The crazy neighbour] said that [$_{DP^2}$ $\underbrace{\text{the crazy neighbour}}_{\text{REDUNDANT!}}$]$_i$ wrote a book.

Following and adapting the account of Condition C in Schlenker (2005), I take that the distribution of restrictors in DPs is regulated by a principle of non-redundancy. Unlike Schlenker's *Minimize Restrictors!*, I assume that (i) the relevant principle applies under c-command, and (ii) extends to any type of DP, not only definite descriptions.

(17) Given a DP^1 that c-commands an anaphorically dependent DP^2, the restrictor in DP^2 must be as little redundant ***as possible*** with respect to the restrictor in DP^1.

The principle in (17) introduces a ***competition between DPs that function anaphorically with respect to a DP^1***. It can be modelled as a preference ranking, in which pronouns (18c) and placeholders (18d) are taken to be a determiner with φ-features and a bare determiner, respectively.

(18) Ranking of minimization of restrictors

a. Noun phrase + optional modifiers
[$_{DP}$ D [$_{NP}$ $AP_{\langle e,t\rangle}$ $NP_{\langle e,t\rangle}$]] *costly*

b. Noun phrase
[$_{DP}$ D $NP_{\langle e,t\rangle}$] *less costly*

c. Pronominal (φ-features as restrictor)
[$_{DP}$ D_{φ}] *even less costly*

d. Placeholder (no restrictor)
[$_{DP}$ D] *no cost*

Coming back to the example in (16), this approach suggests that there are a number of elements competing for occupying the DP^2 position. The winner will be the "simplest" DP that allows to form ***a grammatical and interpretable*** sentence. Since DP^2 needs to agree with T, a pronoun must be selected.

(19) Alternatives for DP^2 in (16)
$\underbrace{[_{DP}\ D\ ]}_{*}$ > $\underbrace{[_{DP}\ he\ ]}_{\text{THIS ONE!}}$ > [$_{DP}$ the neighbour] > [$_{DP}$ the crazy neighbour]

The economy principle in (17) ***may be violated*** if that is necessary for the interpretation of the sentence. Consider the example (20), in which the pronoun *his* may refer to both the politician or the employee.

(20) A politician that was well-known some years ago is so devoid of any moral sense that **he**$_i$ forced **a former employee of the government**$_j$ to kill **his**$_{i/j}$ wife.

Schlenker observes that in cases like these Condition C can be violated to avoid ambiguity.

(21) A politician that was well-known some years ago is so devoid of any moral sense that **he**$_i$ forced **a former employee of the government** to kill **the politician's** wife.

Notice that (21) becomes unacceptable if the ambiguity is eliminated.

(22) * A politician that was well-known some years ago is so devoid of any moral sense that **he**$_i$ forced **me** to kill **the politician's** wife.

2.4 Interpretability

Certain types of movement, e.g., wh-movement, are assumed to create operator-variable dependencies. This requirement is captured in (23).

(23) Chain interpretability
If a filler is to be interpreted as an operator, at least one of its gaps must function as a variable at LF.

Following Fox (2002), I assume that in order to form an operator-variable relation between a filler DP^1 and a gap DP^2 the latter must be interpreted as an anaphoric definite description through *Trace Conversion*.[3]

(24) Trace Conversion (informal definition)

a. Syntactic output
[$_{DP^2}$ which [$_{NP}$ picture]]

b. Variable Insertion
[$_{DP^2}$ which [$_{NP}$ picture x]]

c. Determiner Replacement
[$_{DP^2}$ the [$_{NP}$ picture x]]

The paraphrase in (25b) illustrates the output of the process in (24).

[3] The original definition of Trace Conversion is as follows.

(i) Trace Conversion (Fox 2002: 67)

a. Variable Insertion: (Det) Pred ⟶ (Det [Pred λy (y = x)]

b. Determiner Replacement: (Det) [Pred λy (y = x)] ⟶ the [Pred λy (y = x)]

(25) a. [$_{DP^1}$ Which [$_{NP}$ picture]] did you see [$_{DP^2}$ ~~which~~ [$_{NP}$ ~~picture~~]]?
b. *For what x, x a picture, you saw* ***the picture x***

While no semantic requirement is posited for gaps of A-movement, in certain cases they can be subject to particular interpretability conditions. Some examples are offered below.

3 Accounting for reconstruction and anti-reconstruction patterns

The system introduced so far allows to ***understand reconstruction as the result of the tension between representational economy and interpretability requirements***. Basically:

- ➔ The recoverability principle in (14) defines a set of candidate structures to occupy a gap position.
- ➔ The non-redundancy principle in (17) favours the most economic candidates.
- ➔ Interpretability principles such as (23) may favour less economic candidates.

The interaction of these principles allows to derive representations similar to the ones obtained by applying (Wholesale) Late Merger, e.g., (5).

3.1 Gaps of A-movement do not reconstruct for Condition C

Let's start with the sentence in (4), repeated for convenience in (26).

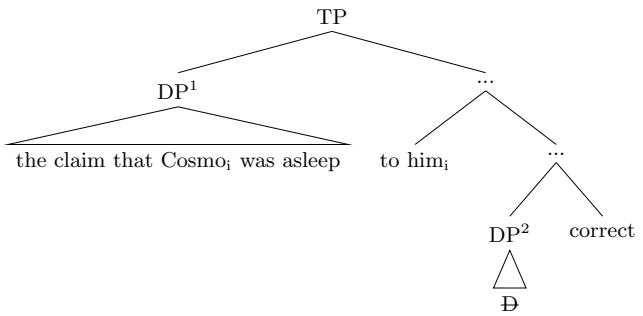
(26) [$_{DP^1}$ The claim that Cosmo$_i$ was asleep] seems to him$_i$ to be ~~DP~~^{2} correct.

If DP^2 ***was a copy*** of DP^1, this sentence should be ruled-out due to a Condition C violation. This is not what the principle in (17) predicts.

(27) Alternatives for DP^2 in (26)
$\underbrace{[_{DP^2}\ D\ ]}_{\text{THIS ONE!}}$ > [$_{DP^2}$ it] > [$_{DP^2}$ the claim that Cosmo was asleep]

Since there are no particular semantic conditions on gaps of A-movement other than being placeholders for theta-assignment, the best (i.e., more economical) type of DP to occupy the DP^2 position is a D.

(28)



Notice that the resulting representation is analogous to the one obtained in (5), which follows the assumptions in Takahashi & Hulsey (2009).

3.2 Gaps of A'-movement violate Condition C

As mentioned, the sentence in (3) seems to have a redundant occurrence of the NP *picture of Cosmo* within DP^2, e.g., (29).

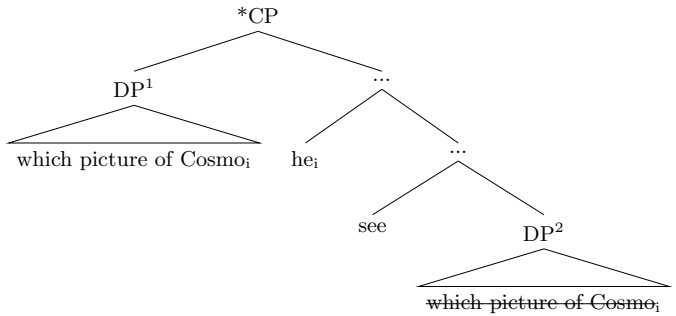
(29) * [$_{DP^1}$ Which picture of Cosmo$_i$] did he$_i$ buy [$_{DP^2}$ ~~which picture of Cosmo$_i$~~]?

In order to undergo Trace Conversion, DP^2 requires containing an NP.

(30) Alternatives for DP^2 in (29)
$\underbrace{[_{DP^2}\ D\ ]}_{*}$ > $\underbrace{[_{DP^2}\ what_{\varphi}\ ]}_{*}$ > $\underbrace{[_{DP^2}\ \text{which picture of George}\ ]}_{\text{THIS ONE!}}$

Therefore, ***interpretability requirements override the non-redundancy principle in (17)***, which in this case leads to a violation of Condition C.

(31) a.



b. * *For what x, x a picture of Cosmo$_i$, he$_i$ saw* ***the picture x of Cosmo$_i$***

3.3 The complement-adjunct asymmetry

As observed by van Riemsdijk & Williams (1981), Freidin (1986), Lebeaux (1988), among others, an R-expression inside an adjunct that modifies a noun does not reconstruct for Condition C (32a) in gaps of A'-movement; however, a violation is obtained if the relevant R-expression is inside an argument (32b).

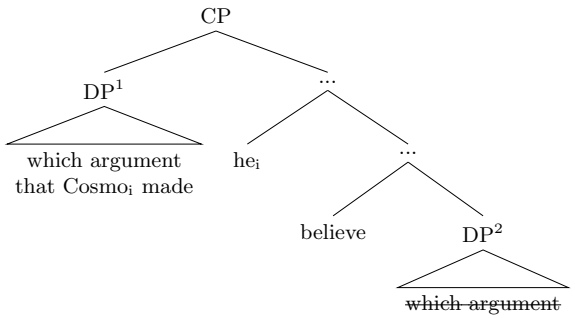
(32) a. [$_{DP^1}$ Which argument [$_{ADJ}$ that Cosmo$_i$ made]] did he$_i$ believe ~~DP~~^{2}?
b. * [$_{DP^1}$ Which argument [$_{COMP}$ that Cosmo$_i$ is a genius]] did he$_i$ believe ~~DP~~^{2}?

The asymmetry is easily captured in this framework. The "smallest" NP projected from an intransitive variant of the noun *argument* does not contain adjuncts. Therefore, the economy principle in (17) predicts that an "adjunctless" DP must occupy the DP^2 position in this case.

(33) Alternatives for DP^2 in (32a)
$\underbrace{[_{DP^2}\ D\ ]}_{*} > \underbrace{[_{DP^2}\ what_{\varphi}\ ]}_{*} > \underbrace{[_{DP^2}\ \text{which argument}\ ]}_{\text{THIS ONE!}} > [_{DP^2}\ \text{which argument that...}]$

Therefore, there is no Condition C violation in this type of configuration, as schematically shown in (34a).

(34) a.



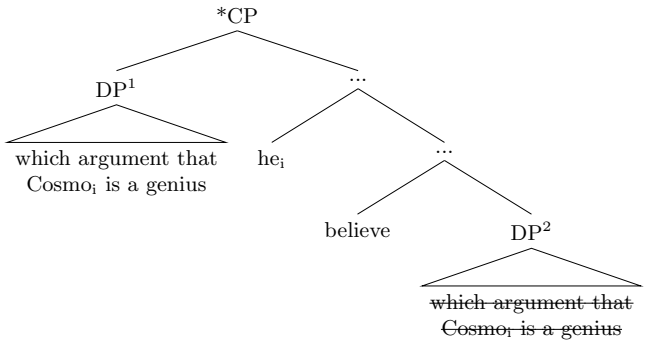
b. *For what x, x an argument that Cosmo$_i$ made, he$_i$ believed* ***the argument x***

On the contrary, the transitive variant of *argument* in (32b) selects a complement CP, i.e., the "smallest" NP formed with this N does contain the CP.

(35) Alternatives for DP^2 in (32b)
$\underbrace{[_{DP^2}\ D\ ]}_{*} > \underbrace{[_{DP^2}\ what_{\varphi}\ ]}_{*} > \underbrace{[_{DP^2}\ \text{which argument that Cosmo is a genius}]}_{\text{THIS ONE!}}$

Since the complement is required to be part of the gap, it triggers Condition C violations.

(36) a.



b. * *For what x, x an argument that Cosmo$_i$ is a genius, he$_i$ believed* ***the argument x that Cosmo$_i$ is a genius***

3.4 Optional reconstruction in gaps of A-movement

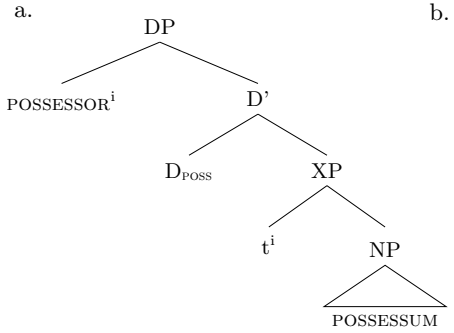
Accounting for A'-reconstruction involves positing "rigid" conditions to predict that A'-gaps **always reconstruct** in certain positions. On the contrary, dealing with reconstruction in A-movement requires taking **optionality** into consideration.

Consider the following example taken from Lebeaux (2009: 47).

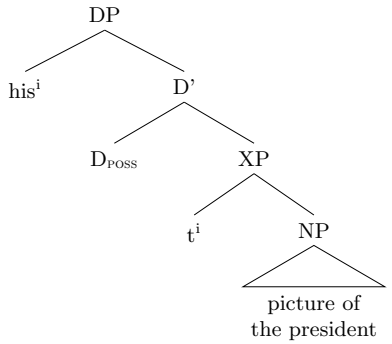
(37) [$_{DP^1}$ His$_i$ picture of the president$_k$] seemed to every man$_i$ ~~DP^2~~ to be seen by him$_k$ ~~DP^3~~ to be a real intrusion.

In this sentence, the NP *picture of the president* must not reconstruct in DP^3, but the pronoun *his* must do so in DP^2 to be bound by the quantifier *every man*. I assume that prenominal possessors involve a DP structure like the one sketched in (38).[4]

(38) a.



b.



In this case, the alternatives for DP^2 do not include a pronoun, as there seems to be no pronoun that can be obtained from assigning φ-features to D_{POSS}. The minimal option generates a grammatical structure, but the more redundant one allows to bind *his*.

(39) Alternatives for DP^2 with respect to DP^1 in (37)
$\underbrace{[_{DP^2}\ D_{POSS}\ ]}_{\text{OK}} > \underbrace{[_{DP^2}\ \text{his picture of the president}\ ]}_{\text{ALLOWS BINDING } \textit{his}}$

As pointed out by Schlenker (2005), ***violations of the minimization principle are allowed if they introduce new semantic effects***. Therefore, picking a redundant occurrence of *his picture of the president* in the DP^2 position is allowed in this case.

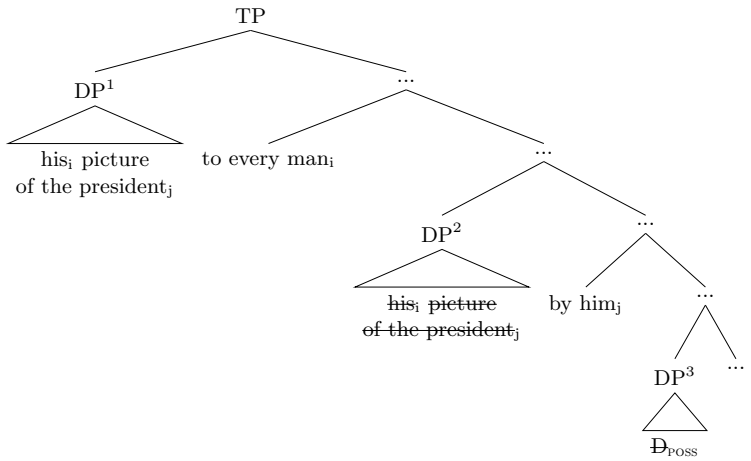
In contrast, there is no interpretative difference whether a full occurrence of *his picture of the president* appears in DP^3 or not. Therefore, D_{POSS} should be preferred:

(40) Alternatives for DP^3 with respect to DP^2 in (37)
$\underbrace{[_{DP^3}\ D_{POSS}]}_{\text{THIS ONE!}} > [_{DP^3}\ \text{his picture of the president}\ ]$

So the resulting representation is the one sketched in (41).

[4] As discussed in Alexiadou et al. (2007), there are a number of alternatives to maintain that the possessor is generated below D^0. I remain agnostic regarding the details of the analysis.

(41)

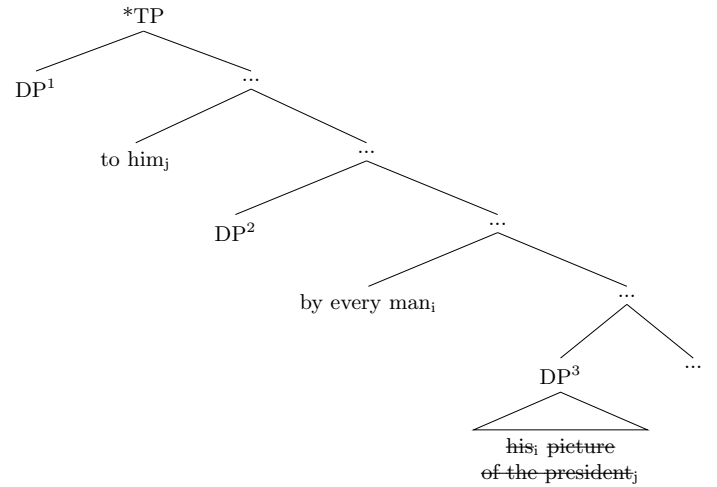


Exactly the same assumptions allow to explain the unacceptability of the sentence in (42), also from Lebeaux (2009):

(42) * [$_{DP^1}$ His$_i$ picture of the president$_k$] seemed to him$_k$ ~~DP^2~~ to be seen by every man$_i$ ~~DP^3~~ to be a real accomplishment.

In this case, the whole DP *his picture of the president* must appear in the position DP^3 for the pronoun *his* to be bound by *every man*. However, this would cause a Condition C violation as the pronoun *him* c-commands the R-expression *the president*.

(43)



This pattern is hard to explain by adopting (Wholesale) Late Merger. This operation allows ***merging a complement (or an adjunct) within a derived specifier***. However, as depicted in (38), the internal structure of DP^2 in (41) requires applying a movement operation from within the complement of D.

Take a case of optional reconstruction for narrow scope as the one exemplified in (44). This sentence is ambiguous regarding the scope of the indefinite.

(44) A Russian seems to have won the race. $\exists$ <*seem*; *seem*< $\exists$

This ambiguity finds a straightforward explanation under the assumption that indefinite DPs are variables that get bound through *existential closure* (Heim 1982). Assume first that an existential quantifier is introduced at the level of the matrix clause, so the indefinite DP^1 gets bound by it.

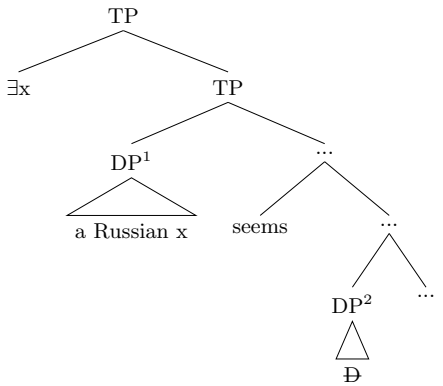
(45) $\exists$x [$_{DP^1}$ A Russian x] seems ~~DP^2~~ to have won the race.

Since DP^1 is the element of the chain CH = {DP^1, DP^2} that is interpreted as a variable, there is no use in DP^2 to have an internal structure.

(46) Alternatives for DP^2 in (45)
$\underbrace{[_{DP^2}\ D\ ]}_{\text{THIS ONE!}}$ > [$_{DP}$ a Russian]

The resulting representation should be similar to the one sketched in (47).

(47)



However, things may be different if the existential is introduced in the subordinate clause below *seems*, as sketched in (48).

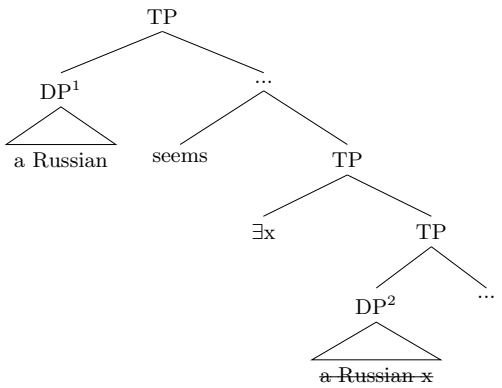
(48) [$_{DP^1}$ A Russian] seems [$_{TP}$ $\exists$x ~~DP^2~~ to have won the race].

In this configuration, including an NP restrictor in DP^2 introduces a new semantic effect, i.e., the existential can be interpreted in the scope of *seems*.

(49) Alternatives for DP^2 in (48)
$\underbrace{[_{DP^2}\ D\ ]}_{\text{OK}}$ > $\underbrace{[_{DP^2}\ \text{a Russian}\ ]}_{\text{ALLOWS } \textit{seem}< \exists}$

The basic representation for this interpretation is as follows.

(50)



4 Back to Barss' Generalization

Consider again the pairs illustrating Barss' Generalization. The example in (7a), repeated for convenience in (51), is ambiguous.

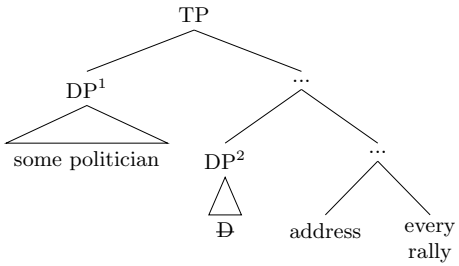
(51) [$_{DP^1}$ Some politician] is likely ~~DP~~^{2} to address every rally. $\exists < \forall$; $\forall < \exists$

At the point of the derivation in which DP^2 is formed, its structure must correspond to a placeholder as semantic effect is obtained from selecting a redundant option.

(52) Alternatives for DP^2 in (51)
$\underbrace{[_{DP^2}\ D\ ]}_{\text{THIS ONE!}}$ > [$_{DP}$ some politician]

This derives the $\exists < \forall$ interpretation.

(53)



Assume now that *every senator* undergoes QR within its clause.[5]

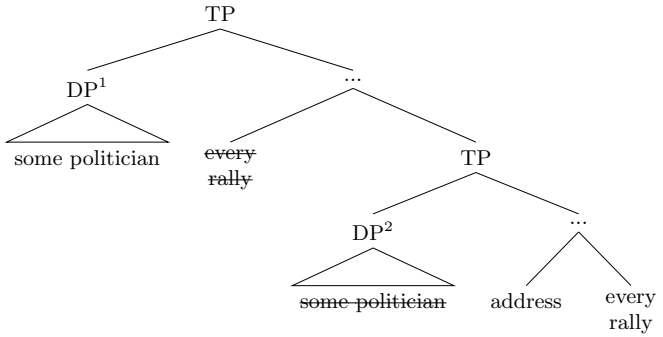
(54) [$_{DP^1}$ Some politician] is likely ~~every rally~~ ~~DP~~^{2} to address every rally.

[5]The representation in (54) follows the *phonological theory of QR* (Bobaljik 1995).

In this case, if DP^2 is identical to its filler, inverse scope is obtained.

(55) Alternatives for DP^2 in (54)
$\underbrace{[_{DP^2}\ D\ ]}_{\text{OK}}$ > $\underbrace{[_{DP^2}\ D\ ]}_{\text{ALLOWS } \forall < \exists}$

(56)

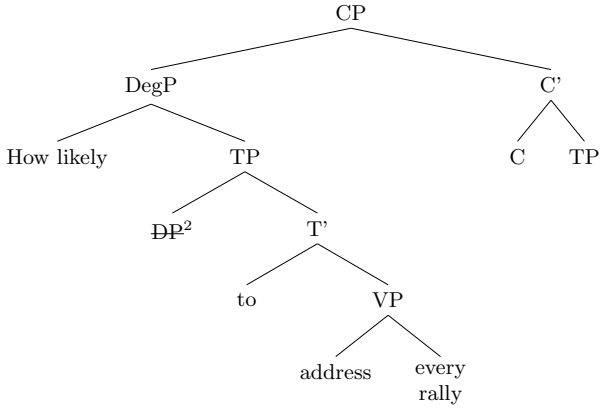


As observed in (7b), if the constituent containing DP^2 moves over DP^1, the interpretation based on reconstruction disappears.

(57) How likely ~~DP~~^{2} to address every rally is [$_{DP^1}$ some politician]? $\exists < \forall$, $*\forall < \exists$

This follows from the assumptions introduced so far. The following tree sketches the derivational point in which DP^2 is formed.

(58)



According to my assumptions, the set of candidate structures to occupy a gap position is determined by the principle of recoverability in (14). However, at the point sketched in (58), there is no filler. The only information available . Thus, ***a placeholder D is the only candidate to occupy this position***.

(59) Alternatives for DP^2 in (58)
$\underbrace{[_{DP^2}\ D]}_{\text{THIS ONE!}}$

In more general terms, if the structure of movement gaps *depends* on what is contained in their filler, then ***only structureless gaps are to be generated in configurations in which there is no available filler***.

5 Distance effects

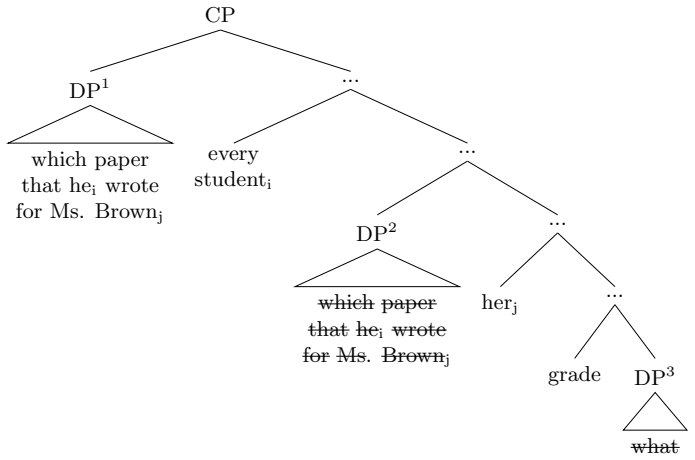
While I have adopted the hypothesis that gaps of wh-movement must be interpreted as anaphoric definite descriptions through Trace Conversion (24), such a requisite does not seem to apply for every gap in the sentence. The following pair is from Fox (1999: 174–175).

(60) a. $[_{DP^1}$ Which paper that he_i wrote for Ms. $Brown_j]$ did every $student_i$ ~~DP^2~~ get her_j to grade ~~DP^3~~?

b. * $[_{DP^1}$ Which paper that he_i wrote for Ms. $Brown_j]$ did she_j ~~DP^2~~ get every $student_i$ to revise ~~DP^3~~?

The acceptability of the example (60a) depends on DP^3 not being identical to DP^2.

(61)



As (61) suggests, ***reconstruction tends to occur in positions that are closer to the filler***. This distribution follows from the system sketched so far.

(62) Alternatives for DP^2 in (60a)
$\underbrace{[_{DP^2}\ D]}_{*} > \underbrace{[_{DP^2}\ what\varphi]}_{*} > \underbrace{[_{DP^2}\ which\ paper]}_{\text{OK}} > \underbrace{[_{DP^2}\ which\ paper\ that\ he...]}_{\text{ALLOWS BINDING } he}$

At the point of the derivation in which the structure of DP^3 needs to be computed, there is already an element in the structure that may function as a variable for the filler, i.e., DP^2. Thus, it would be redundant to generate another full lexical DP for this position.

(63) Alternatives for DP^3 in (60a)
$\underbrace{[_{DP^3}\ D]}_{*} > \underbrace{[_{DP^3}\ what\varphi]}_{\text{THIS ONE!}} > [_{DP^3}$ which paper$] > [_{DP^3}$ which paper that he...$]$

The effect seems to be ubiquitous. In the following example from Huang (1993), an identical occurrence of the wh-phrase is required in the position DP^2 for interpretability, but a smaller element needs to occupy the position DP^3 in order to avoid a Condition C violation.

(64) $[_{DP^1}$ How many pictures of $John_i]$ do you think ~~DP^2~~ he_i will like ~~DP^3~~?

If the positions of the pronouns is switched, a Condition C violation arises.

(65) * $[_{DP^1}$ How many pictures of $John_i]$ does he think ~~DP^2~~ you_i will like ~~DP^3~~?

It's not just a matter of whether Condition C effects do not arise with embedded subjects: if the violating pronoun is further embedded, the pattern remains the same.

(66) a. ? $[_{DP^1}$ Which picture of $George_i]$ did Elaine say ~~DP^2~~ that Carol thinks ~~DP^3~~ that he_i saw ~~DP^4~~?

b. * $[_{DP^1}$ Which picture of $George_i]$ did Elaine say ~~DP^2~~ that he_i thinks ~~DP^3~~ that Carol saw ~~DP^4~~?

Thoms (2010) shows that a similar effect is attested in three-place verb constructions.

(67) a. * Morag helped him_i with most of Tam's$_i$ homework.

b. $[_{DP^1}$ Which of Tam's$_i$ assignments] did Morag ~~DP^2~~ help him_i with ~~DP^3~~?

(68) a. * I introduced him_i to four of Tam's$_i$ friends.

b. $[_{DP^1}$ Which of Tam's$_i$ friends] did you ~~DP^2~~ introduced him_i to ~~DP^3~~?

I take these patterns to provide further evidence for a system that calculates the content of gaps "from left to right" in terms of an economy principle like (17).

Problem: How to account for reconstruction in positions farther away from the filler? The system actually predicts that (66b) is an okay sentence.

(66b′) $[_{DP^1}$ Which picture of $George_i]$ did Elaine say $[_{DP^2}$ ~~which picture of George~~$_i]$ that he_i thinks $[_{DP^3}$ ~~what~~$]$ that Carol saw $[_{DP^4}$ ~~what~~$]$?

To account for this, I tentatively (and very inductively) propose the following interpretability condition for wh-chains.

(69) Given a wh-chain CH = $\{DP^1, \ldots, DP^n\}$, interpret as an anaphoric definite description a chain-member within the sentence in which the chain receives its θ-role.

This condition forces the system to generate structure within gaps until reaching the one that occupies the specifier position of the CP from which extraction takes place.

(66b″) $[_{DP^1}$ Which picture of $George_i]$ did Elaine say $[_{DP^2}$ ~~which picture of George~~$_i]$ that he_i thinks $[_{\mathbf{CP}}\ [_{DP^3}$ ~~which picture of George~~$_i]$ that Carol saw $[_{DP^4}$ ~~what~~$]]$?

6 Concluding remarks

- ➔ The standard approach to movement within minimalism basically states that the form of the filler depends on the underlying form of the gap.
- ➔ A system like this cannot derive Barss' Generalization.
- ➔ I proposed to "revert" this relation between filler and gap: the structure of gaps depends on the form of the filler.
- ➔ The distribution of reconstruction and anti-reconstruction effects follows from non-redundancy principles that have been independently advanced for the domain of anaphora.

- ➔ Combining this insight with a "specifiers first" type of derivation allows to account for a number of reconstruction/anti-reconstruction phenomena, including the restriction described by Barss' Generalization.

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