Non-redundancy: towards a unified approach to movement and construal

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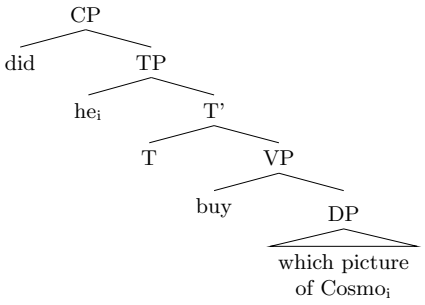
1 Introduction

Most work on movement within the minimalist framework assumes that gaps are *isomorphic* with respect to their filler; this is the *Copy Theory* (Chomsky 1993).

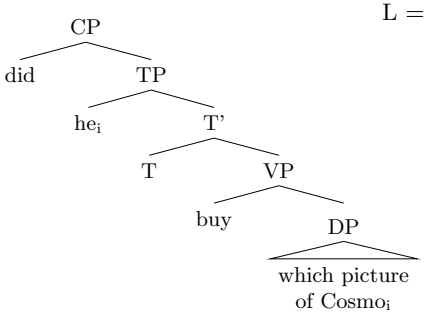
The standard way of obtaining this isomorphism is known as the *Copy+Merge* approach (Nunes 1995, 2004). Assume a phrase marker K like the one in (1).

(1) K =

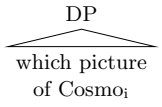


First, a copy L of one of the constituents in K is created.

(2) K =

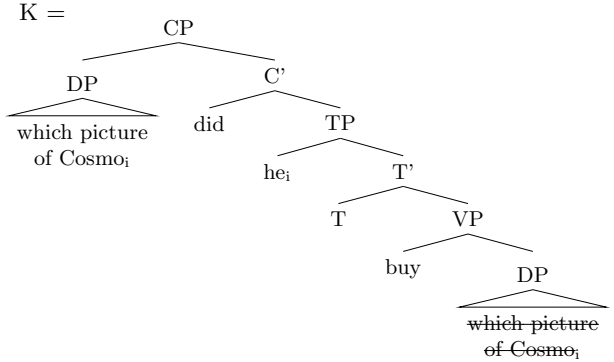


L =



Then, K and L are merged. The original version of the filler DP *which picture of Cosmo* is deleted at PF.

(3) K =



Notice that this approach basically states that **the form of the filler depends on the (underlying) form of the gap**, i.e., the filler is a mere duplicate of the original unpronounced constituent.

Just to make it explicit, the two key assumptions for the derivation in (1) to (3) are the following.

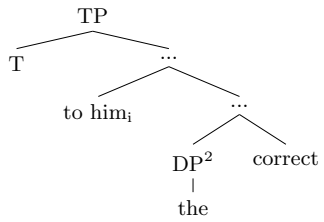
(4) Assumptions of the *Copy+Merge* approach
   a. Chain-members are derivationally related through the Copy operation.
   b. Derivations proceed in a bottom-up fashion, i.e., gaps are merged before than fillers.

Anti-reconstruction effects do not find a straightforward account in this framework. The sentence in (5) is wrongly predicted to violate Condition C if the filler DP^1 is a copy of the gap DP^2.[1]

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

Takahashi & Hulsey (2009) propose an approach to anti-reconstruction that allows to maintain the assumptions in (4). According to them, the gap DP^2 is a bare determiner $D^{min/max}$; a copy DP^1 is generated from it.

(6) K =

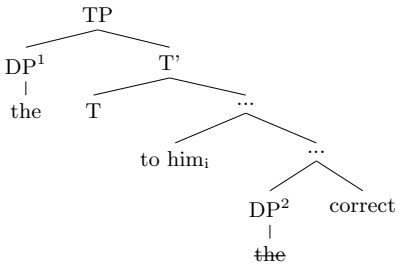


L =

Then, DP^1 is merged in Spec,T.

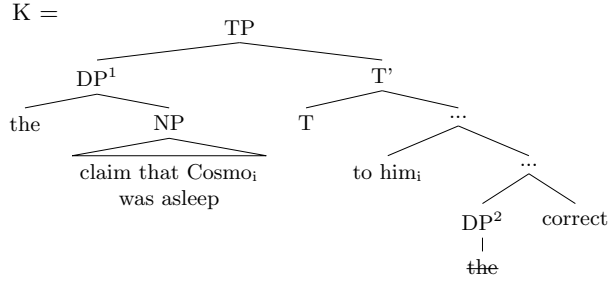
[1] For ease of presentation, I incorporate numerical indexes to distiguish between chain-members.

(7) K =



Finally, the NP restrictor of the determiner is merged *countercyclically* within DP[1]. Takahashi & Hulsey call this sequence of operations *Wholesale Late Merger*.

(8) K =



Immediate problem: in a derivational system, syntactic structure is taken to reflect the order in which Merge is applied. Fundamental definitions as the complement-specifier distinction follow from what combines first with a head.

> *The specifier-complement distinction itself reduces to first-Merge, second-Merge, and so on.* (Chomsky 2008:146)

In a derivational framework, the countercyclic operation in (8) is expected **not to be possible**; in a representational setting it is not even needed, as one could argue that DP[1] and DP[2] form a chain without the need of being derivationally related.

Moreover, Chomsky's (1965) original argument for postulating bottom-up derivations is based on cyclicity.[2] Therefore, adopting a countercyclical analysis to maintain a bottom-up approach to movement ends up being a little paradoxical.

In this presentation...

- ***Claim 1:*** the assumptions in (4) must be abandoned.
- ***Claim 3:*** The filler determines the lexico-syntactic structure of its gaps, and not the other way around; crucially, this follows straightforwardly if the structure building process is *top-down*.
- ***Claim 3:*** The internal structure of the gap DP[2] in (9) follows from the same principles explaining the pair in (10).

(9) [$_{DP^1}$ **The claim that Cosmo was asleep**] seems to him to be ~~**DP²**~~ correct.

[2] See den Dikken (2018) for relevant discussion.

(10) a. **The neighbour**$_i$ said that **he**$_i$ wrote a book.
b. * The neighbour said that **the neighbour**$_i$ wrote a book.

In what follows, I will introduce the basic assumptions on which these claims are based. 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 content of the gap depends on the content of the filler

Many of the assumptions of the standard bottom-up minimalist framework can be preserved in top-down model. While there is no "movement" of the filler, it satisfies its properties by forming a chain with constituents occupying traditional checking positions.

(11) a. [$_{CP}$ Who^i [$_{C'}$ C TP]]
b. [$_{CP}$ Who^i [$_{C'}$ C [$_{TP}$ $\underbrace{gap^i}_{\text{CASE}}$ [$_{T'}$ T VP]]]]
c. [$_{CP}$ Who^i [$_{C'}$ C [$_{TP}$ $\underbrace{gap^i}_{\text{CASE}}$ [$_{T'}$ T [$_{VP}$ $\underbrace{gap^i}_{\theta\text{-ROLE}}$ came]]]]]?

I will use this sketchy framework to investigate the internal structure of gaps. Basically, I propose there are two main ways in which a filler conditions the structure of its gaps.

Recoverability

I take gaps to be anaphoric unpronounced constituents whose meaning depends on the filler. 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.[3]

(12) * [$_{DP^1}$ The crazy neighbour] was arrested [$_{DP^2}$ ~~the guy who is my friend since high-school~~.]

As fillers always precede their gaps, the relevant condition can be defined as in (13).

(13) Recoverability
A movement gap can only contain lexico-syntactic information that is available on a preceding filler.

Assuming that what is relevant for chain formation is an identity-like relation between the features of (the heads of) two constituents (Muñoz Pérez 2018),[4] the gap DP[2] in (12) could in principle have any of the structures depicted in (14).

(14) a. [$_{DP^1}$ The crazy neighbour] was arrested [$_{DP^2}$ ~~the crazy neighbour~~.]

[3] 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 DP[2] in (12) do not satisfy Full Interpretation, the representation should be ruled-out.

[4] See section A.2 for the background assumptions on chain formation.

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

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

Notice that (14c) is based on the assumption that pronouns are determiners with a set of φ-features as restrictor.[5]

Non-redundancy

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.

(15) 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 (15) introduces a **competition between DPs that may function anaphorically with respect to a DP^1**. This competition can be modelled as a preference ranking.

(16) Ranking of minimization of restrictors

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

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

c. Pronominal (φ-features as restrictor)
$[_{DP}$ $D^{min/max}]$

This representational economy principle allows accounting for the pair in (10), repeated for convenience in (17).

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

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

The economy principle in (15) **may be violated** if that is necessary for the interpretation of the sentence. Consider the example (18), in which the pronoun *his* may refer to both the politician or the employee.

(18) 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.

(19) 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 (19) becomes unacceptable if the ambiguity is eliminated.

[5] Alternatively, one could follow Elbourne (2005) in taking pronouns to be determiners selecting null nouns.

(20) * 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.

Coming back to the example in (14), 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 interpreting the sentence. As "traces" of A-movement are taken to be just placeholder for θ-assignment, the result of the competition is as follows:

(21) Alternatives for DP^2 in (14)
$\underbrace{[_{DP}\ D^{min/max}\ ]}_{\text{THIS ONE!}} > [_{DP}$ the neighbour] > $[_{DP}$ the crazy neighbour]

3 Accounting for reconstruction and anti-reconstruction

The system introduced so far allows **understanding reconstruction as the result of the tension between the non-redundancy principle in (15) and interpretability requirements**. In the following subsections I discuss various cases.

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

Let's start with the sentence in (5), repeated for convenience in (22).

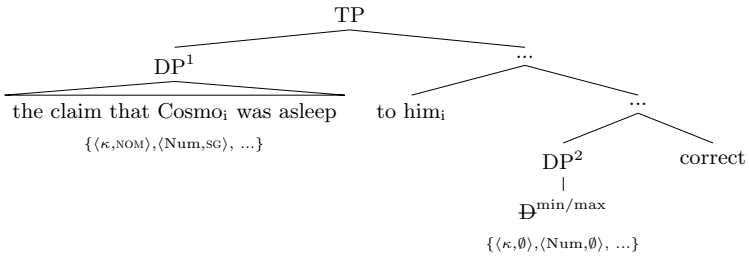
(22) $[_{DP^1}$ The claim that Cosmo$_i$ was asleep] seems to him$_i$ to be ~~DP^2~~ correct.

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 (15) predicts.

(23) Alternatives for DP^2 in (22)
$\underbrace{[_{DP}\ D^{min/max}\ ]}_{\text{THIS ONE!}} > [_{DP}$ 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 $D^{min/max}$.[6]

(24)



[6] This analysis has been previously advanced by Takahashi & Hulsey (2009), although their account relies on countercyclical operations, i.e., *Wholesale Late Merger*. See Muñoz Pérez (2017, 2018) for relevant discussion.

3.2 Gaps of A'-movement violate Condition C

There seems to be a redundant occurrence of the NP *picture of Cosmo* within DP^2 in (25).

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

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

For explicitness, Assume for the moment that to form an operator-variable dependency between DP^1 and DP^2 the latter must be interpreted as an anaphoric definite description, i.e., a sort of variable, through *Trace Conversion* (Fox 2002).[7]

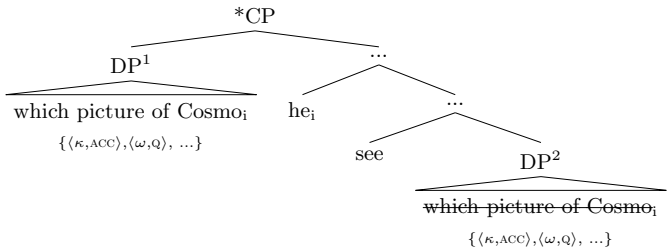
(27) Trace Conversion (informal definition)
- a. Syntactic output
  [$_{DP}$ which [$_{NP}$ picture]]
- b. Variable Insertion
  [$_{DP}$ which [$_{NP}$ picture x]]
- c. Determiner Replacement
  [$_{DP}$ the [$_{NP}$ picture x]]

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

(28) Alternatives for DP^2 in (25)
> $\underbrace{[_{DP}\ \text{what}_\varphi\ ]}_{*}$ > $\underbrace{[_{DP}\ \text{which picture of George}\ ]}_{\text{THIS ONE!}}$

Therefore, **interpretability requirements override the non-redundancy principle in (15)**, which in this sentence leads to a violation of Condition C.[8]

(29) 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 (30a) in gaps of A'-movement; however, a violation is obtained if the relevant R-expression is inside an argument (30b).

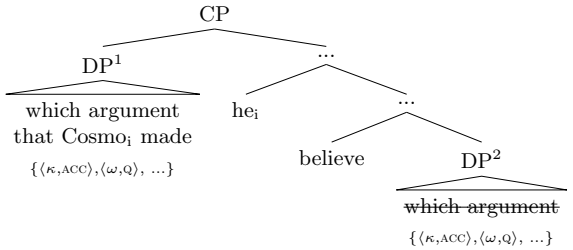
(30) a. [$_{DP^1}$ Which argument [$_{ADJ}$ that Cosmo$_i$ made]] did he$_i$ believe ~~DP^2~~?
b. * [$_{DP^1}$ Which argument [$_{COMP}$ that Cosmo$_i$ is a genius]] did he$_i$ believe ~~DP^2~~?

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 (15) predicts that an "adjunctless" DP must occupy the DP^2 position in this case.

(31) Alternatives for DP^2 in (30a)
$\underbrace{[_{DP}\ \text{what}_\varphi\ ]}_{*}$ > $\underbrace{[_{DP}\ \text{which argument}\ ]}_{\text{THIS ONE!}}$ > [$_{DP}$ which argument that Cosmo made]

Therefore, there is no Condition C violation in this type of configuration, as schematically shown in (32a).

(32) a.



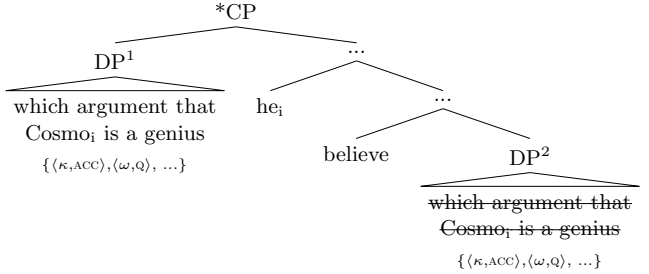
b. *For what x, x an argument that Cosmo$_i$ made, he$_i$ believed* ***the argument x***

On the contrary, the transitive variant of *argument* in (30b) selects a complement CP, i.e., the "smallest" NP formed with this N does contain the CP.

(33) Alternatives for DP^2 in (30b)
... > $\underbrace{[_{DP}\ \text{what}_\varphi\ ]}_{*}$ > $\underbrace{[_{DP}\ \text{which argument that Cosmo is a genius}]}_{\text{THIS ONE!}}$

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

(34) 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.

[7] 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)]

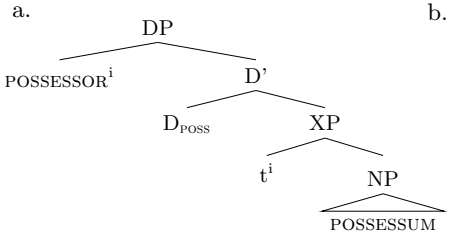
[8] Notice that both DPs in (29a) have the same feature-values. This issue is discussed in section **??**.

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

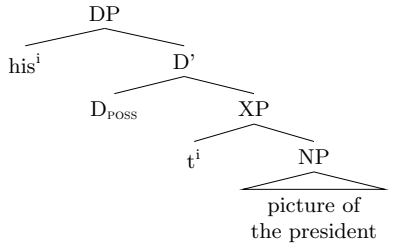
(35) [$_{DP^1}$ His$_i$ picture of the president$_k$] seemed to every man$_i$ ~~DP^2~~ to be seen by him$_k$ ~~DP^3~~ to be a real intrusion.

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 (36).[9]

(36) a.



b.



(37) Alternatives for DP^2 with respect to DP^1 in (35)
[$_{DP}$ it] > [$_{DP}$ his picture of the president]
OK ALLOWS BINDING *his*

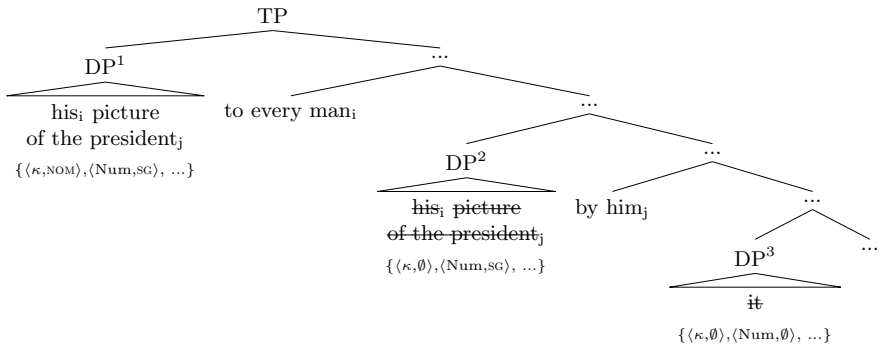
As pointed out by Schlenker (2005), **violations of the minimization principle are allowed if they introduce new semantic effects**. Therefore, picking a redundant occurrence of *his picture of the president* in the DP^2 position is allowed in this case.

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:

(38) Alternatives for DP^3 with respect to DP^2 in (35)
[$_{DP}$ it] > [$_{DP}$ his picture of the president]
THIS ONE!

So the resulting representation is the one sketched in (39).

(39)



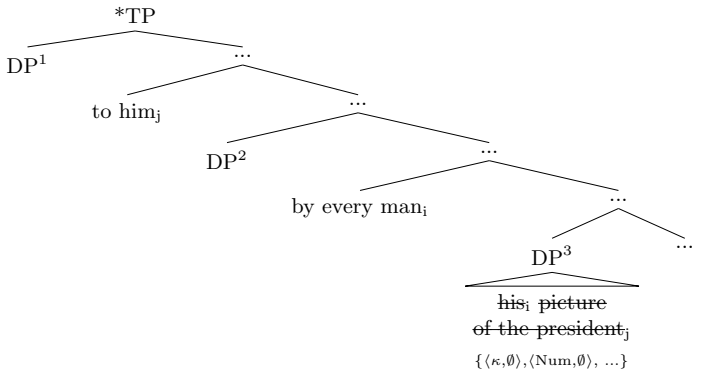
[9] As discussed in Alexiadou et al. (2007), there are a number of alternatives to maintain that the possessor is generated below D^0. I remain agnostic regarding the details of the analysis.

Exactly the same assumptions allow to explain the unacceptability of the sentence in (40), also from Lebeaux (2009):

(40) * [$_{DP^1}$ 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 causes a Condition C violation as the pronoun *him* c-commands the R-expression *the president*.

(41)



Interestingly, **this pattern is hard to explain by adopting Wholesale Late Merger (Takahashi & Hulsey 2009)**. This operation allows merging a complement (or an adjunct) within a derived specifier. However, as depicted in (36), the internal structure of the derived specifier in this case requires applying a movement operation from within the complement of D.

4 Accounting for Barss Generalization

Consider the following sentence, in which the universal quantifier may have scope over the existential.

(42) [$_{DP^1}$ Some young lady] seems to be likely ~~DP^2~~ to dance with every senator.
($\exists \succ \forall$; $\forall \succ \exists$)

I take that this interpretation requires (i) QR of *every senator* and (ii) reconstruction of *some young lady* in the position DP2.

(43) [$_{DP^1}$ Some young lady] seems to be likely [$_{TP}$ ~~every senator~~ [$_{TP}$ [$_{DP^2}$ ~~some young lady~~] to dance with every senator]]

Barss (1986) noticed that **reconstruction is not possible if the constituent that contains the gap moves over the filler**.

(44) [$_{DegP}$ How likely ~~DP^2~~ to dance with every senator] does [$_{DP^1}$ some young lady] seem to be t$_{DegP}$?
($\exists \succ \forall$; *$\forall \succ \exists$)

The same effect is attested in the following pair: while *any* can be licensed through reconstruction within DP^2 in (45a), it cannot do so in (45b).

(45) a. [$_{DP^1}$ A doctor with any reputation] was certain *(not) ~~DP~~^{2} to be available.
b. *... and [$_{PRED}$ certain not to be ~~DP~~^{2} to be available] [$_{DP^1}$ a doctor with any reputation] was t_{PRED}.

This is a very difficult pattern to capture under the assumptions in (4) as there is no a priori reason to block reconstruction.[10] Basically, if DP^2 contains the phrase *any reputation* in (45a), it should also contain it in (45b), after topicalizing the predicate.

To put it in simple terms: **in a bottom-up derivation, the content of DP^2 must be computed much before the predicate is fronted. Therefore, there is no clear way in which the later can affect the lexico-syntactic structure of DP^2**.

The problem disappears under the proposal introduced so far. If the derivation goes top-down and "from left to right", **at the moment of processing DP^2 there is no proper filler from which the gap can get internal structure**. The alternatives for this position are restricted to the most underspecified type of pronominal.

(46) Alternatives for DP^2 in (45b)
$\underbrace{[_{DP}\ D^{min/max}]}$
THIS ONE!

It follows then that no reconstruction can take place in this type of context.

5 Further extensions: accounting for the distribution of reflexives

The principle in (15) refers to anaphoric DPs, no matter they pertain to movement chains or not. Therefore, we should be able to account for the distribution of anaphoric elements other than gaps.

As Schlenker (2005) originally intended, the minimization principle in (15) allows to account for Condition C.

(47) a. *[$_{DP^1}$ $Cosmo_i$] says that Jerry likes [$_{DP^2}$ $Cosmo_i$].
b. [$_{DP^1}$ $Cosmo_i$] says that Jerry likes [$_{DP^2}$ him_i].

This pattern is the product of a competition between a $D^{min/max}$, a pronoun and the DP *Cosmo* for occupying the DP^2 position.

(48) Alternatives for DP^2 in (47)
$\underbrace{[_{DP}\ him]}$ > [$_{DP}$ Cosmo]
THIS ONE!

The approach can be used to account for the distribution of SE-anaphors in languages like Spanish or German.

(49) $Cosmo_i$ se_i ama.
Cosmo SE loves.3SG
'Cosmo loves himself.'

(50) *$Cosmo_i$ lo_i ama.
Cosmo 3SG.ACC loves.3SG
'Cosmo loves himself.'

[10] Although, see Sauerland & Elbourne (2002) for a proposal.

SE-anaphors are usually φ-defective. Therefore, they are the best candidate to occupy certain positions, i.e., they are "more economical" that lexical DPs and pronouns.

(51) a. [$_{DP^1}$ Cosmo] DP^2 ama.
b. Alternatives for DP^2
$\underbrace{[_{DP}\ se]}$ > [$_{DP}$ lo] > [$_{DP}$ Cosmo]
THIS ONE!

If they are so economical, how is that defective-Ds do not win every competition with pronouns? E.g., how is that there is a pronoun in ()

(52) a. $Cosmo_i$ dice que Gerardo lo_i ama.
Cosmo says.3SG that Gerardo 3SG.ACC loves.3SG
'Cosmo says that Gerardo loves him'.
b. *$Cosmo_i$ dice que Gerardo se_i ama.
Cosmo says.3SG that Gerardo SE loves.3SG
'Cosmo says that Gerardo loves him'.

The reason is that **SE-anaphors do not have a full set of φ-features, so they cannot be licensed through agreement with Case-assigning Probes**. Therefore, their distribution is restricted to Caseless positions, i.e., traces of A-movement.

This leads to analyse SE-anaphors as overt traces of A-movement; the idea that reflexives involve A-movement has been advanced independently by Hornstein (2001), Boeckx et al. (2009), among others. What about SELF-anaphors? Anaphoric elements like *himself* have a complex morphological structure in which the pronoun *him* wins the competition against a lexical DP for occupying the position next to *self*.

(53) a. [$_{DP^1}$ The neighbour] likes DP^2-self.
b. $\underbrace{[_{DP}\ him\ ]}$ > [$_{DP}$ the neighbour]
THIS ONE!

However, this would imply that the unacceptability of (54) is due to the fact that the predicate is not properly marked as reflexive (e.g., Reinhart & Reuland 1993).

(54) *[$_{DP^1}$ $Cosmo_i$] likes [$_{DP^2}$ him_i].

6 Concluding remarks

- The Copy+Merge approach to movement requires countercyclical operations to account for anti-reconstruction.
- Reconstruction phenomena and anaphora constraints can be analysed as pertaining to a single natural class: they both follow from non-redundancy principles.
- Combining this insight with a top-down derivation allows to account for a number of reconstruction/anti-reconstruction phenomena, including those described by Barss Generalization.
- The proposal offer a promising explanation for the distribution of SE-anaphors.

A Appendix

A.1 Rethinking interpretability conditions for wh-gaps

I tend to understand this system as **a framework for the study of reconstruction**, i.e., it provides **the means** to account for reconstruction phenomena in a principled manner; **the proper nature of the interpretability conditions that regulate reconstruction must still be worked out**.

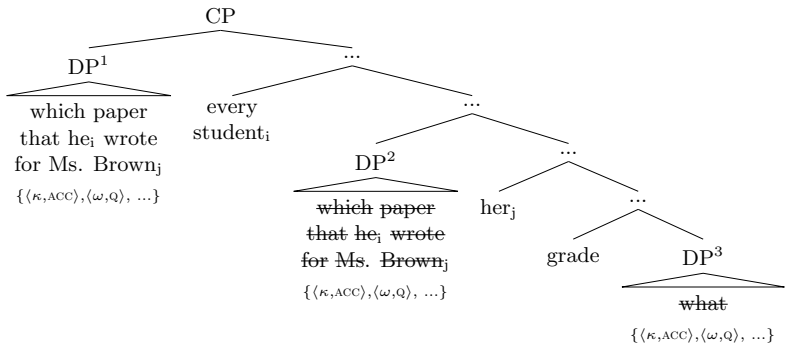
While I have adopted the idea that wh-gaps must be able to be interpreted as anaphoric definite descriptions through Trace Conversion (27), such a requisite does not seem to apply for every single wh-gap. Consider the following pair from Fox (1999:174–175).

(55) 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 (55a) depends on the wh-phrase not being in DP^3. According to my assumptions, a wh-pronoun is able to occupy this position.

(56)



However, this just shows that the system is flexible enough to account for anti-reconstruction. As far as I know, there is no articulated theory explaining the distribution of isomorphic gaps in wh-chains.[11]

Anti-reconstruction effects in long-distance wh-movement are far from being exceptional. As Thoms (2010) observes, **there seem to be no cases of reconstruction in the base position of a wh-chain**. In fact, reconstruction tends to occur in high positions in the tree. The following example is from Huang (1993).

(57) [$_{DP^1}$ 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.

(58) * [$_{DP^1}$ How many pictures of John$_i$] does he think ~~DP^2~~ you$_i$ will like ~~DP^3~~?

It's not 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.

(59) 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.

(60) 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~~?

(61) 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 that gaps are not copies of a moved constituent, but may be structurally simpler. To derive them, I tentatively (and inductively) propose the following interpretability condition for A'-chains.

(62) Given an A'-chain CH = {DP^1, ... , DP^n}, interpret as an anaphoric definite description a chain-member within the clause in which the chain receives its θ-role.

Together with the assumption that long-distance movement dependencies involve a number of smaller chain-links, i.e., *Successive Cyclic Movement*, the condition in (62) allows accounting for the data in (55a) to (61) straightforwardly

A.2 Mechanisms of chain formation

Copy Theory should be able to distinguish between copies (i.e., elements pertaining to the same chain) and (transformationally) unrelated repetitions of the same constituent.[12]

(63) a. Cosmo^1 was arrested ~~Cosmo~~^{2}.

b. Cosmo^1 arrested Cosmo^2.

In previous work (Muñoz Pérez 2017, 2018), I have argued that this distinction can be derived from three assumptions:

i. Syntactic objects are sets of features; phonological matrices are introduced at PF (e.g., Halle & Marantz 1993).

ii. Features are ordered pairs ⟨Atr,VAL⟩ formed by an Attribute and a corresponding VALUE (Gazdar et al. 1985, Adger & Svenonius 2011).

iii. There are activity features for both A and A'-dependencies, i.e., κ and ω-features, respectively.

According to these assumptions, the label of a DP like *which neighbour* looks like (64).[13]

(64) $$[_{DP} \text{ which neighbour}] = \begin{cases} \langle \kappa, \emptyset \rangle & \textit{abstract Case} \\ \langle \omega, \emptyset \rangle & \textit{left-peripheral activity} \\ \langle \text{Quant}, \text{WH} \rangle & \textit{wh-feature} \\ \langle \text{Cat}, \text{D} \rangle & \textit{category} \\ \langle \text{Num}, \text{SG} \rangle & \textit{number} \\ \ldots & \textit{other features} \end{cases}$$

The basic intuition is that we can know whether two constituents are "the same", i.e., part of the same chain, by looking at their features.

[11] Although, see Thoms (2010) for a proposal.

[12] See Collins & Groat (2018) for relevant discussion.

[13] I tentatively follow Rizzi (2004) in assuming that wh-features pertain to the Quantificational class.

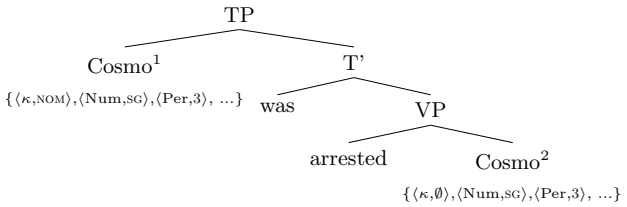
(65) Non-distinctiveness
A constituent β is non-distinct from a constituent α if for every feature-value of β there is an identical feature-value in α.

The definition of Non-distinctiveness in (65) supposes a representational algorithm of chain recognition as the following.

(66) Two constituents α and β are part of the same chain if:
a. α c-commands β,
b. β is non-distinct from α,
c. there is no δ between α and β such as β is non-distinct from δ, or δ is non-distinct from α.

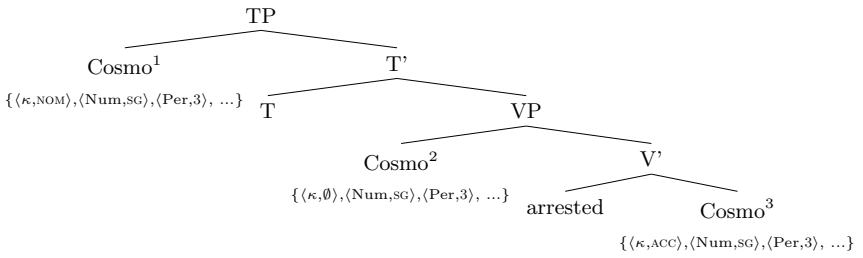
In (63a) both occurrences of *Cosmo* should form a single chain CH = {Cosmo^1,Cosmo^2}.

(67)



While in (63b), the overt occurrences of *Cosmo* pertain to different chains CH_1 = {Cosmo$_1$,Cosmo^2} and C_2 = {Cosmo^3}.

(68)



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