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The Challenges of Copy Theory: an inclusion-based approach

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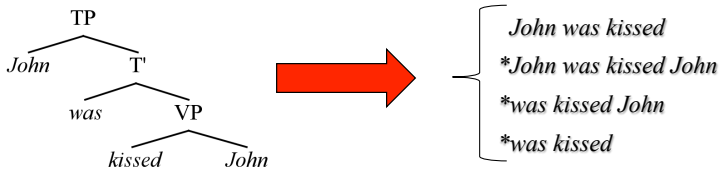
Copy Theory (Chomsky 1993) assumes that movement does not exist as an operation but it is an epiphenomenon of how the PF component phonetically realizes non-trivial chains consisting of *non-distinct* constituents. Thus, Copy Theory should provide part of the "mapping" principles between syntactic and phonological representations.



There are (at least) three questions that any version of Copy Theory should answer. For explicitness, let's call them the **Challenges of Copy Theory**.

The Sameness Challenge

How are distinguished real syntactic copies and occurrences of the same lexical item?

(1) John was kissed ~~John~~.
(2) John kissed John.

The Uniqueness Challenge

Why is it necessary (in most cases) deleting all the copies in a chain except for one?

(3) John was kissed ~~John~~.
(4) *John was kissed John.

The Rank Challenge

Why is it forbidden (in most cases) to delete the highest link in the movement chain?

(5) John was kissed ~~John~~.
(6) *~~John~~ was kissed John.

The "standard" approach to these issues (Chomsky 1993, 1995, Nunes 1995, 2004) has important drawbacks regarding the Sameness and Rank Challenges.

Given the difficulty of distinguishing real syntactic copies from occurrences of the same lexical item, Chomsky (1995) proposed a marking mechanism to signal those elements related by *Internal Merge* (just as in *Trace Theory*). In few words:

> ***Sameness***
> Two or more elements are "the same" if they share the same index.

Such and implementation, besides violating the *Inclusiveness Condition* (Chomsky 1995), does not provide a principled explanation of what Sameness is (cf. Leung 2007, Neeleman & van de Koot 2010): it is just a marking mechanism; a way of implementing Sameness and not a real explanation of what that is.

According to Nunes (1995, 2004), the fact that only one copy is pronounced follows from the *Linear Correspondence Axiom* (LCA) of Kayne (1994). LCA imposes an antisymmetry requirement on syntactic structure and linear orderings:

> ***Antisymmetry***
> If X precedes Y, then Y cannot precede X.

Since two (or more) copies of a constituent are "the same", a PF representation like (4) would not comply with the antisymmetry condition (e.g., *John* precedes *was* and *was* precedes *John*). Thus, to linearize this kind of representations it is necessary to reduce all movement chains to only one link. The operation in charge of doing this is *Chain Reduction*.

Some kind of asymmetry between the links in a chain is necessary in order to explain in a principled fashion why one of them is systematically chosen for pronunciation. This may be done by using uninterpretable features (☹):

(7) $[_{TP}$ John$_{☺}$ $[_{T'}$ was $[_{VP}$ kissed John$_{☹}]]]$

This representation is not legible at PF since, by definition, uninterpretable features cause the crash of the derivation at the interfaces. Thus, it is necessary to assume an additional deletion operation targeting uninterpretable features. Call it *FF-Elimination*. By assuming this operation it is possible to explain the pair in (5) and (6).

(5) $[_{TP}$ John$_{☺}$ $[_{T'}$ was $[_{VP}$ kissed ~~John~~$_{☹}]]]$
(6) $[_{TP}$ ~~John~~$_{☺}$ $[_{T'}$ was $[_{VP}$ kissed John$_{☹}]]]$

The derivation in (5) only requires applying Chain Reduction while (6) also requires FF-Elimination. So, according to Nunes, (6) is blocked by an economy consideration.

The problem here relies in how uninterpretable features are used. Basically, they are just the technical implementation of the *Last Resort Condition*.

> ***Last Resort (Collins 1997: 9)***
> An operation OP involving α may apply only if some property of α is satisfied.

Since Chomsky (1995) assumes that the features in a chain are a unit, his system complies with (8). But the same is not true for Nunes' (1995, 2004) system since, for example, the movement operation that creates the copy of *John* in (5) satisfies no requirement on the original version of *John*. Thus, uninterpretable features are not independently motivated in Nunes' system.

An inclusion-based mechanism of chain formation

The system I am sketching here is based on four main assumptions regarding the nature of syntactic computation: *(i)* syntax is about sets (e.g., Chomsky 1995); *(ii) Late Insertion* (cf. Halle 1997); *(iii)* there are no uFF in *Goals* of *Agree* (cf. Preminger 2011), *(iv)* If an XP enters in an *Agree* relation with a (non-defective) head H^0, H^0 assigns a feature [H] to XP (so, for example, if a DP agrees with an inflected T head, the DP will be assigned a T-feature (nominative Case, following Pesetsky & Torrego 2001); or if a wh-phrase agrees with an interrogative complementizer C_{INT}, the wh-phrase will be assigned a Q-feature).

(8) $[_{YP}\ Y^0_{EPP}\ [_{XP} \dots\ \alpha_{\{\dots\}}]] \rightarrow [_{YP}\ \alpha_{\{Y,\dots\}}\ [_{Y'}\ Y^0_{EPP}\ [_{XP} \dots\ \alpha_{\{\dots\}}]]]$

There is an inclusion relation between both copies of α: the set $\{\dots\}$ is a subset of $\{Y, \dots\}$. This relation between copies is going to arise systematically every time a new copy is generated, so it is possible to use it as one of the conditions on chain formation:

> *Conditions on Chain Formation*
> Two constituents α and β are links in the same chain iff (i) α is a superset of β; (ii) α c-commands β; (iii) there is no syntactic object γ between α y β such as β is a superset of γ and γ is not a superset of α.

Thus, the answer for the *Sameness Challenge* that this system encodes is quite simple: two elements are "the same" if one is included into the other (and some structural requirement is satisfied).

The *Uniqueness Challenge* may be surpassed by assuming an economy condition on *Vocabulary Insertion*. If Vocabulary Insertion may only apply once per chain, the pattern in (3) and (4) is derived.

A simple way to answer the *Rank Challenge* consists on appealing to general conditions on recoverability of deletion, "which we may assume to exist though they are not understood in detail" (Chomsky 1977: 86). The following is an operative definition of these conditions (based in Chomsky's 1964 original postulation):

> *Condition on Recoverability of Deletion*
> An element may be deleted (i.e., not pronounced) if it is totally determined by a structurally related syntactic constituent.

By assuming this condition it is possible to derive the necessity of pronouncing at least one copy and to predict that the higher copy in the chain (the one that entered in more Agree relations) is the one that should receive phonological representation .

In some languages (e.g., some dialects of German) it is possible to pronounce more than one link in a chain:

(9) ***Wen*** glaubt Hans ***wen*** Jakob gesehen hat?
Who thinks Hans who Jakob seen has
'Who does Hans think Jakob saw?'

According to Nunes (2004), this happens when a wh-pronoun is reanalized as part of a bigger word together with an embedded complementizer through an application of the operation *Fusion*. And since the LCA "cannot see" inside words, applying Chain Reduction is unnecessary in these scenarios.

Such an analysis predicts two defining properties of this kind of construction: multiple copy phenomena is restricted to intermediate copies and morphologically simple units.

The same analysis may be implemented in the inclusion-based system: if an embedded complementizer and a wh-pronoun fuse, their features will mix. In this case, the fused pronoun would not be a subset of its c-commanding copy, so two different chains would be formed. And as in any regular case, the head of each chain would receive phonological representation.

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