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HEAD MOVEMENT, REMNANT MOVEMENT AND PHONETIC REALIZATION OF CHAINS*

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1. Introduction

This paper addresses the issue of how to account for the phonetic realization of chains in remnant movement constructions if we assume the revival of the copy theory of movement in the Minimalist Program (Chomksy 1993). Consider the structure of the remnant movement construction in (1a) under the copy theory of movement given in (1b), for instance, where superscripted indices annotate copies.

(1) a. ... and [[elected t_i $]_k$ (Mary said that) [$John_i$ never was t_k]]
b. ... and [[elected $John^i$ $]^k$ (Mary said that) [$John^i$ $[_{T'}$ never was [elected $John^i$ $]^k$]

It is clear from the structure in (1b) that if we attempt to deal with phonetic realization of chains in terms of structural height or purely linear considerations, we obtain undesirable results. If we adopt Brody's (1995) Transparency, stated in (2), or Bobaljik's (1995) Speak-UP, stated in (3), for example, we incorrectly predict that the first instance of *John* in (1b) should be the one to be phonetically realized, yielding (4).

(2) *Transparency* (Brody 1995:106):
"[I]f all chain members c-commanded by the contentive element are copies of the contentive, then it must be the case that only the highest member of such a set of copies (i.e., the contentive itself) is visible for SPELLOUT."

(3) *Speak Up* (Bobaljik 1995:350):
Pronounce the topmost/leftmost copy of each element.

(4) *... and [[elected $John^i$ $]^k$ (Mary said that) [~~$John^i$~~ $[_{T'}$ never was ~~[elected $John^i$ $]^k$~~]

Extending the proposal advanced in Nunes (1995, 1999, 2001), I argue that the remnant movement constructions can be adequately accounted for within the copy theory

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of movement if the phonetic realization of chains is contingent on linearization considerations. The empirical advantage of such an approach is that it not only correctly predicts which copies are to be deleted in standard remnant movement constructions, but also accounts for some special cases involving head movement followed by remnant movement, in which more than one copy is phonetically realized.

The paper is organized as follows. In section 2, I briefly review the general system proposed in Nunes (1995, 1999) regarding linearization of chains. In section 3 I show how this system can also handle phonetic realization in remnant movement constructions, discussing instances with phonetic realization of multiple copies in section 4. Finally, some concluding remarks are presented in section 5.

2. Linearization of Chains and Deletion of Traces

Assuming the general framework of Chomsky (1995), Nunes (1995) attempts to account for why traces must be deleted in the phonological component, once the copy theory of movement is assumed. Given the structure in (5) below, for instance, one must determine why the NP chain cannot be realized with all of its links phonetically realized (cf. (6a)) and why deletion targets traces and not the head of the chain (cf. (6b) *vs.* (6c)).

(5) [$John^i$ [was [arrested $John^i$]]]

(6) a. *John was arrested John.
b. *Was arrested John.
c. John was arrested.

Extending a proposal by Chomsky (1995:227), Nunes (1995) assumes that two lexical items count as nondistinct if they are not distinctively specified in the initial numeration. In the case at hand, the two occurrences of *John* in (5) count as nondistinct if the initial numeration underlying (5) has a single instance of *John* (i.e., the index of *John* in the initial numeration is 1). Assuming this to be so, there is no way for the computational system to linearize the structure in (5) in accordance with Kayne's 1994 Linear Correspondence Axiom (LCA), according to which linear precedence in the phonological component is determined by asymmetric c-command. Since the verb *was* in (5), for instance, asymmetrically c-commands the lower instance of *John*, the LCA requires that *was* precede *John*; by the same token, the LCA requires that *John* precede *was* because the upper copy of *John* asymmetrically c-commands *was*. Given that the two copies of *John* are nondistinct, that amounts to saying that *was* should precede and be preceded by the same element, in violation of the asymmetry condition on linear order. Hence, the structure in (5) cannot surface as (6a) because it cannot be linearized. In order to yield a PF object, the NP-chain in (5) has to undergo the operation Chain Reduction, as described in (7) (see Nunes 1995).[1]

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[1] Although I will assume the formulation in (7) for purposes of presentation, it is actually unnecessary to specify that Chain Reduction must delete the *minimal number* of constituents; that is, Chain Reduction need not count. Economy considerations regarding the length of a derivation may indirectly determine the number of elements to be deleted by enforcing the minimal number of applications of deletion. All things being equal, a short derivation should block a longer derivation (see Chomsky 1995:314, 357); hence, a derivation in which constituents are unnecessarily deleted is longer, therefore less economical, than a

(7) *Chain Reduction*:
Delete the minimal number of constituents of a nontrivial chain CH which suffices for CH to be mapped into a linear order in accordance with the LCA.

Applying to (5), Chain Reduction deletes either the upper or the lower copy of *John*, allowing either resulting structure to be linearized in accordance with the LCA. The choice between these two derivations will depend on the elimination of formal features in the phonological component. Although formal features are relevant for morphological computations, they are not interpretable at PF (only phonological features are); thus, an operation of the phonological component applying after morphology must eliminate formal features which are visible at PF (see Chomsky 1995:230-231). Let us refer to this rule as *FF-Elimination*, which is stated in (8) (see Nunes 1995:291).

(8) *Formal Feature Elimination (FF-Elimination)*:
Given the sequence of pairs $\sigma = <(F, P)_1, (F, P)_2, ..., (F, P)_n>$ such that s is the output of Linearize, *F* is a set of formal features and *P* is a set of phonological features, delete the minimal number of formal features in order for σ to satisfy Full Interpretation at PF.

Extending Chomsky's 1995:sec. 4.5.2 checking theory, Nunes (1995) proposes that a [-interpretable] formal feature becomes invisible at PF after being checked. Thus, a checked feature need not (therefore must not) be eliminated by FF-Elimination, because it has already been rendered invisible at PF by a checking operation (see Nunes 1995).

Bearing these considerations in mind, let us examine the Case-feature of *John* in the course of the derivation of (5), as shown in (9) below. The Case-feature of the upper copy of John becomes invisible at both LF and PF after being checked against the finite T head, as represented by the subscript in (9c).

(9) a. [was [arrested John-**CASE**))
b. [John-**CASE** [was [arrested John-**CASE**]]]
c. [John-$_{\text{CASE}}$ [was [arrested John-**CASE**]]]

After (9c) undergoes Chain Reduction for purposes of linearization, it yields either (10a) or (10b) below, depending on which copy of *John* is deleted. In order to converge, the derivation operating with the structure in (10b) still requires an application of FF-Elimination targeting the unchecked Case-feature, whereas no such application in required for (10a), because its Case-feature became invisible at PF after being checked. The derivation in which Chain Reduction deletes the head of the chain thus ends up being

competing derivation where no such deletion occurs. Similar considerations apply to FF-Elimination, which is discussed below.

more costly than the one in which the trace is deleted; hence, the contrast between (6b) and (6c).[2]

(10) a. [John-$_{\text{CASE}}$ [was [arrested]]]
b. [[was [arrested John-**CASE**]]]

It should be borne in mind is that, as stated in (7), deletion of chain links is triggered by linearization considerations as regulated by the LCA. This predicts that if a given chain link is invisible to the LCA, it will not induce a violation of the asymmetry condition on linear order with respect to the other links and the relevant chain will be allowed to surface with more than one link phonetically realized. For instance, let us assume, following Chomsky (1995:337), that the LCA does not apply word-internally; if so, a given chain link that is below the word level will not be computed by the LCA and should be pronounced regardless of the other links.

That this prediction is correct is suggested by clitic duplication in some dialects of Argentinean Spanish, for instance (see Nunes 1999 for further details and discussion).[3]

(11) a. *Nos* vamos acostumbrando a este pais poco a poco.
us$_{CL}$ go-1PL getting-accustomed to this country little by little
b. Vamos acostumbránd*onos* a este pais poco a poco.
go-1PL getting-accustomed/us$_{CL}$ to this country little by little
c. Vám*onos* acostumbránd*onos* a este pais poco a poco.
go-1PL/us$_{CL}$ getting-accustomed/us$_{CL}$ to this country little by little
d. **Nos* vamos acostumbránd*onos* a este pais poco a poco.
us$_{CL}$ go-1PL getting-accustomed/us$_{CL}$ to this country little by little
'We are getting accustomed to this country little by little.'

The data in (11a-b) illustrate the general paradigm of clitic placement in Spanish, with the object clitic preceding a finite form or following a nonfinite form. What is relevant for our discussion is that in the dialects under consideration, clitic duplication may be allowed, but only if the higher copy is enclitic ((11c) *vs.* (11d)).

Let us assume that when the clitic climbs, it adjoins to left of a functional category F with the verb adjoined to it, as represented in (12) below. As is, the structure in (12) cannot be linearized because the two copies of the clitic induce a violation of the asymmetry condition on linear order; hence the unacceptability of (11d).

(12)
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                 F'
            3
        F0             XP
     2                     3
  CLi      F0       ...CLi ...
        2
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[2] Notice that the choice of the chain link to survive Chain Reduction is determined by *economy* considerations, not *convergence*. This makes the prediction that in instances where the phonetic realization of the head of the chain does not lead to a convergent derivation, another link becomes the optimal option for phonetic realization. See Nunes 2000 for discussion of potential cases.

[3] I am thankful to Monica Zoppi-Fontana and Marcela Depiante for discussion of relevant data.

V F^0

The correlation between exceptional enclisis and clitic duplication in (11c) can in turn be accounted for if we assume that in these dialects, Morphology can reanalyze the three-segment category in (12) as a word, rendering the adjoined clitic invisible to the LCA. Taking enclisis to be the reflex of such morphological restructuring, we would expect clitic duplication to always co-occur with exceptional enclisis: after the three-segment F^0 in (12) is restructured as a word, the only copy of the clitic that is visible to the LCA is the lower one and it need not (therefore must not) be deleted by Chain Reduction; hence, the contrast between (11c) and (11d).[4]

To summarize, data involving phonetic realization of more than one chain link such as the one discussed above (see Nunes 1999, 2000, 2001 for several other cases) constitute independent evidence for the proposal that phonetic realization of chain links is (in part) determined by linearization considerations. Only when chain links become invisible to the LCA can a nontrivial chain surface with more than one link phonetically realized

3. Linearization of Chains and Remnant Movement

Let us take a closer look at the formulation of Chain Reduction in (7), repeated below.

(13) *Chain Reduction*:
Delete the minimal number of constituents of a nontrivial chain CH which suffices for CH to be mapped into a linear order in accordance with the LCA.

As stated, Chain Reduction of a nontrivial chain CH deletes some constituents of CH so that *the surviving constituents of CH* can be mapped into a linear order in accordance with the LCA. That is, Chain Reduction proceeds in a "local" fashion, focusing only on CH without taking into consideration how the whole structure containing CH can be linearized. The intuition behind this formulation is that by forming a given chain CH in overt syntax, the computational system already provides the phonological component with the information that the links of CH will make it impossible for a linear order to obtain, regardless of the structure containing CH. Let us see why this is so, by examining a derivation in which the computational system forms the chain CH = (α^i, α^i) in overt syntax.

Under the natural assumption that an element cannot check its features against itself, Last Resort excludes a syntactic object such as K = [α^i α^i], where the nondistinct copies of α have been merged and stand in a mutual c-command relation. In other words,

[4] Notice that I am not assuming that every head adjunction leads to morphological reanalysis; otherwise, standard verb movement to T, for example, would necessarily involve verb duplication (phonetic realization of both the moved verb and its trace). The fact that clitic duplication in (11c) does not allow concomitant verb duplication indicates that that the moved verb is still visible to the LCA after restructuring. Three possibilities come to mind which would derive the correct results: (i) the clitic and the verb are adjoined to different functional categories; (ii) the clitic adjoins to V and the two-segment V category is the one that is restructured; and (iii) the category resulting from restructuring the three-segment F^0 structure in (12) is actually V, rather than F. I leave the choice between these alternatives pending further research.

the standard c-command condition on chain formation is actually an *asymmetric* c-command condition; the links of the chain CH = (α^i, α^i), for instance, must be in a structural configuration such that one asymmetrically c-commands the other. Since the LCA maps asymmetric c-command into precedence, one of the links of CH should therefore precedes the other; however, given that the links are nondistinct copies, that leads to the contradiction that α should precede itself (see section 2). If the system strives to reduce computational complexity (see Chomsky 1998 for relevant discussion), we should then expect the phonological component to make use of the information already made available by chain formation. That is, deletion of nondistinct constituents for purposes of linearization should proceed locally, taking into consideration only the chain links themselves and not the whole syntactic structure.

There are empirical reasons for assuming that deletion for linearization purposes does indeed operate as in (13). Suppose, for instance, that after assembling K and L in (15) from the simplified numeration N in (14), the computational system makes a copy of the pronoun and merges it with *bought*, as shown in (16). Let us assume for the current purposes that "sideward movement" of *it* in (15)-(16) is a licit operation (see Nunes 1995, 2001 for further discussion). Further computations finally form the structure (17).

(14) N = {$John_1$, $bought_1$, it_1, $before_1$, $Mary_1$, $read_1$}

(15) a. K = [before Mary read it]
b. L = bought

(16) a. K = [before Mary read it^i]
b. M = [bought it^i]

(17) [John [[bought it^i] [before Mary read it^i]

If deletion for linearization purposes should consider the whole syntactic structure and delete nondistinct terms, it could delete either of the copies of the pronoun in (17), yielding the sentences in (18) below, which are nonetheless unacceptable. On the other hand, if deletion for purposes of linearization only targets chain members, as the formulation of Chain Reduction in (13) dictates, it cannot apply to either copy of *John* in (17), because the two copies do not form a chain. Once Chain Reduction is inapplicable, the nondistinct copies of *it* in (17) prevent the structure from being linearized and the derivation is canceled; hence, neither of the unacceptable sentences of (18) can be generated through a derivation along the lines of (14)-(17). By applying in a local fashion (within chains), deletion for purposes of linearization therefore correctly rules out the unwanted instance of sideward movement above (see Nunes 1995, 2001 for further discussion).

(18) a. *John bought it because Mary read.
b. *John bought because Mary read it.

Despite its conceptual attractiveness in reducing computational complexity and empirical adequacy in ruling out the sentences in (18) under the derivation in (14)-(17), Chain Reduction appears to be unable to properly handle cases of remnant movement such as (19) below, as pointed out by Gärtner (1998:20) in a review of Nunes 1995. Assuming that the derivation of (19) unfolds along the lines of (20) (numbered copies are used for purposes of exposition), the chain CH_1 = (John^2, John^1) is formed after the object moves to Spec of TP, and the chain CH_2 = (copy^k, copy^k) is formed after the whole VP is fronted to Spec of XP. The question is how these chains can be reduced, allowing the structure in (20c) to be linearized as (19).

(19) … and elected John never was.

(20) a. $[_{TP}$ never was $[_{VP}$ elected John]
b. $[_{TP}$ John^2 $[_{T'}$ never was $[_{VP}$ elected John^1]]]
c. $[_{XP}$ $[_{VP}$ elected John^3 $]^k$ $[_{X'}$ X $[_{TP}$ John^2 $[_{T'}$ never was $[_{VP}$ elected John^1 $]^k$]

Suppose that Chain Reduction applies first to CH_1 and delete its lower link, as shown in (21a), and then to CH_2, also deleting its lower link, as shown in (21b). Given that *John*^{3} and *John*^{2} in (21b) do not form a chain, Chain Reduction is inapplicable to them. Since these copies are nondistinct, they induce a violation of the asymmetry condition on linear order, preventing the whole structure in (21b) from being linearized. The problem is the same if Chain Reduction applies to CH_2 first; since the lower link of CH_1 is within the lower link of CH_2, deletion of the lower link of CH_2 also eliminates the lower link of CH_1, again resulting in the nonlinearizable structure in (21b).

(21) a. $[_{XP}$ $[_{VP}$ elected John^3 $]^k$ $[_{X'}$ X $[_{TP}$ John^2 $[_{T'}$ never [was $[_{VP}$ elected ~~John^1~~ $]^k$]
b. $[_{XP}$ $[_{VP}$ elected John^3 $]^k$ $[_{X'}$ X $[_{TP}$ John^2 $[_{T'}$ never [was ~~$[_{VP}$ elected John^1 $]^k$~~]]

We therefore appear to face a paradox: on the one hand, we want deletion for linearization purposes to proceed in a local fashion, only targeting chain members, to rule out the sentences in (18) under the relevant derivation; on the other hand, deletion seems to be required to apply in a global fashion, targeting nondistinct terms regardless of chain membership, in order to permit deletion of *John*^{3} in (21b) and derive the remnant movement construction in (19). I argue below, however, that the paradox is only apparent and that it is due to the informal notation to characterize chains used so far.

As discussed by Chomsky (1995:300), the representation of a chain such as CH = (α, α) should be seen as a notational abbreviation of CH = ((α, K), (α, L)), where K and L are each the sister of one occurrence of α. In other words, a chain can be conceived of as multiple occurrences of the same constituent occupying different structural positions; the individual links of a chain must then be identified not only in terms of their content, but also in terms of their local structural configuration.

Bearing this in mind, let us reconsider the chains formed in (20). After *John* moves to the subject position, the chain CH_1 in (22a) is formed; the notation in (22a) encodes the information that one nondistinct occurrence of *John* is the sister of T' and the other occurrence is the sister of *elected*. Movement of VP to Spec of XP then yields the chain CH_2 in (22b), which encodes the information that one chain link is the sister to X' and the other is the sister of *was*.

(22) a. CH_1 = ((John^i, T'), (elected^m, John^i))
b. CH_2 = (([elected^m John^i]^k, X'), (was, [elected^m John^i]^k)

Let us now examine in detail the inner workings of deletion under Chain Reduction. Applying to CH_1 in (22a), Chain Reduction instructs the phonological component to delete the occurrence of *John* that is sister of *elected^m*. Interestingly, there are two elements in (20c) that satisfy this description, namely, *John^1* and *John^3*. In fact, these two copies are technically identical: they are nondistinct in terms of the initial numeration, they have participated in no checking relations, and their sisters are nondistinct. Assuming that the phonological component blindly scans the structure to carry out the deletion instructed by Chain Reduction, it ends up deleting the two copies that satisfy the instruction, as represented in (23a); Chain Reduction of CH_2 then proceeds as illustrated in (23b), and the sentence in (19) is derived.[5]

(23) a. [$_{XP}$ [$_{VP}$ elected ~~John^3~~]^k [$_{X'}$ X [$_{TP}$ John^2 [$_{T'}$ never [was [$_{VP}$ elected ~~John^1~~]^k]
b. [$_{XP}$ [$_{VP}$ elected ~~John^3~~]^k [$_{X'}$ X [$_{TP}$ John^2 [$_{T'}$ never [was ~~[$_{VP}$ elected John^1]^k~~]

Nothing changes regarding the sentences in (18), which are still predicted to be unacceptable. Since the two copies of *it* in (17) do not form a chain, Chain Reduction is inapplicable and neither copy can be targeted for deletion; the structure therefore cannot be linearized and the derivation is canceled.

Notice that, instead of using the elementary relation of sisterhood, the system could perfectly well distinguish *John^1* from *John^3* in (20c), by resorting to nonlocal structural relations such as the set of nodes dominating each copy, for instance. The interesting empirical point is that if that were the case, it would be impossible for a remnant movement construction to be derived. The existence of this kind of construction shows that in its search for computational simplicity in the identification of chain links, the system ends up paying the price of being "fooled" by structures such as (20c), where two copies sitting in different structural configurations are taken to be identical for purposes of Chain Reduction.

As discussed in the next section, this approach has interesting empirical consequences when we combine it with Nunes's (1999) proposal that head movement followed by morphological reanalysis may render a copy invisible to the LCA.

4. Remnant Movement and Phonetic Realization of Multiple Copies

Let us consider the abstract representation of the output of remnant movement illustrated in (24), where the head α moves from within Y, followed by movement of Y to some higher position. Thus far, we have considered cases of remnant movement in which reduction of the chain $CH_1 = (\alpha^2, \alpha^1)$ in (24) ends up deleting α^1 and α^3. Suppose now that α^2 has been morphologically reanalyzed, becoming invisible to the LCA. According

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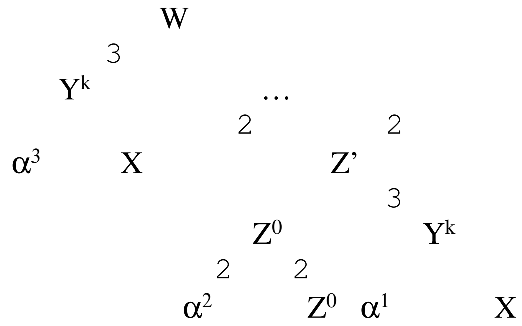
[5] The same result would also obtain if Chain Reduction had first applied to CH_2, yielding (ia), and then to CH_1, yielding (ib). Crucially, *John^3* in (ia) satisfies the description of the chain link of CH_1 that is to be deleted (see (22a)).

(i) a. [$_{XP}$ [$_{VP}$ elected John^3]^k [$_{X'}$ X [$_{TP}$ John^2 [$_{T'}$ never [was ~~[$_{VP}$ elected John^1]^k~~]]]]]
b. [$_{XP}$ [$_{VP}$ elected ~~John^3~~]^k [$_{X'}$ X [$_{TP}$ John^2 [$_{T'}$ never [was ~~[$_{VP}$ elected John^1]^k~~]]]]]

to what we saw in section 2, that would entail that α^2 would not have to be deleted by Chain Reduction, which would apply only to the chain CH_2 = (Y, Y), deleting its lower link, as represented in (25). In other words, the output of such a derivation would surface which both α^3 and α^2 phonetically realized.

(24)


(25) $[_W\ [_Y\ \alpha^3\ X\ ]^k \ldots [_{Z'}\ [_{Z^0}\ \alpha^2\ [_{Z^0}\ Z^0\ ]\ ]\ \sout{[_Y\ \alpha^1\ X\ ]^k}\ ]\ ]$

Predicate clefting in Korean and Japanese illustrated in (26) and (27) can be taken to illustrate this logical possibility (*CON* stands for contrastive particle):[6]

(26) *Korean* (from Nyshiyama and Cho 1997)

John-i	computer-lul	*sa-ss*-ki-nun	*sa-ss*-ta
John-NOM	computer-ACC	*buy-T*-ki-CON	*buy-T*-Mood

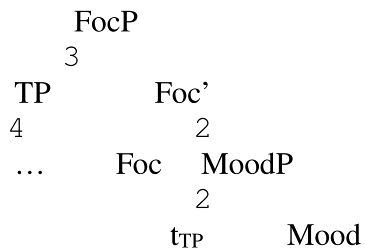
"Indeed, John bought a computer, (but…)'

(27) *Japanese* (from Nyshiyama and Cho 1997)

John-ga	computer-o	*kat-ta*-koto-wa	*ka-ta*
John-NOM	computer-ACC	*buy-T*-koto-CON	*buy-T*-Mood

"Indeed, John bought a computer, (but…)'

Nyshiyama and Cho (1997) propose that the sentences in (26) and (27) are derived through movement of TP to the Spec of a Focus phrase, followed by interspersed applications of Spell-Out and head-movement. The Korean sentence in (26), for instance, is derived in the following way: given the structure in (28), the VP inside the trace of TP is spelled-out as V and head-adjoins to T; the complex T head is then spelled-out as V-T and adjoins to Mood, yielding a construction in which the TP is followed by V-T-Mood.

(28)


[6] Thanks to Fumikazu Niinuma (personal communication), who brought these constructions to my attention.

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VP T

Although I follow Nyshiyama and Cho's (1997) in assuming that the sentences in (26) and (27) involves movement of TP, I will outline an alternative approach that overcomes the complexity and lack of generality of their proposal. More specifically, I propose that predicate clefting in Japanese and Korean involve movement of the T head (with the verb adjoined to it) to some higher projection (perhaps a Focus head), followed by remnant movement of TP, as sketched in (29).[7]

(29) FocP

wo

TP^k Foc'

6 3

… $[V+T]^i$… Foc^0 TP^k

2 6

$[V+T]^i$ Foc^0 … $[V+T]^i$ …

Assuming that the two-segment Foc^0 in (29) is reanalyzed by Morphology, the copy of $[V+T]^i$ adjoined to Foc^0 becomes invisible to the LCA and the chain CH_1 = ($[V+T]^i$, $[V+T]^i$) need not be reduced, for it will have just one link visible to the LCA (see the discussion of (11c)). Reduction of the TP chain then deletes the lower copy of TP, yielding sentences like (26) and (27), where the complex V+T appears duplicated.

Nunes and Quadros (1999) extend this approach to cases of duplication of focalized elements in Brazilian Sign Language, *BSL* (see Quadros 1999), and American Sign Language, *ASL* (see Petronio 1993, Petronio and Lilo-Martin 1997). Consider the BSL examples in (30), for instance, where capital letters in the glosses mark focus.

(30) *Brazilian Sign Language* (from Nunes and Quadros 1999)
  a. (YESTERDAY) JOHN BUY CAR YESTERDAY
     'John bought a car YESTERDAY.'
  b. (WHO) LIKE BANANA WHO
     'WHO likes bananas?'
  c. I (LOSE) BOOK LOSE
     'I LOST the book.'

(30) shows that in BSL, a focalized constituent appears in the rightmost position of the sentence and may optionally be accompanied by a double in the position where it would appear in neutral sentences. According to Nunes and Quadros's 1999 proposal, these sentences are actually remnant movement constructions which may optionally undergo morphological reanalysis. The sentence in (30c), for instance, is derived along the lines of (31), where the verb *LOSE* adjoins to a focus head, as shown in (31b), and the whole TP then moves to Spec of FocP, as shown in (31c).

[7] The issue of whether Foc^0 in (ii) is head-initial or head final is orthogonal to the point under discussion.

(31) a. [$_{FocP}$ Foc [$_{TP}$ I LOSE BOOK]]
b. [$_{FocP}$ LOSE^{i}+Foc [$_{TP}$ I LOSE^{i} BOOK]]
c. [$_{FocP}$ [$_{TP}$ I LOSE^{1} BOOK]^{k} [$_{Foc'}$ LOSE^{2}+Foc [$_{TP}$ I LOSE^{3} BOOK]^{k}]]]

As discussed above, deletion of the trace of the chain CH_1 = (LOSE^{2}, LOSE^{3}) in (31) has the effect of eliminating both *LOSE^{1}* and *LOSE^{3}*, as illustrated in (32a); reduction of CH_2 = ([$_{TP}$ I LOSE^{1} BOOK]^{k}, [$_{TP}$ I LOSE^{1} BOOK]^{k}) then yield (32b), which surfaces as (30c) without duplication.

(32) a. [$_{FocP}$ [$_{TP}$ I ~~LOSE^{1}~~ BOOK]^{k} [$_{Foc'}$ LOSE^{2}+Foc [$_{TP}$ I ~~LOSE^{3}~~ BOOK]^{k}]]]
b. [$_{FocP}$ [$_{TP}$ I ~~LOSE^{1}~~ BOOK]^{k} [$_{Foc'}$ LOSE^{2}+Foc ~~[$_{TP}$ I LOSE^{3} BOOK]^{k}~~]]]

The derivation of (30c) with duplication can be accounted for if the structure [$_{Foc0}$ LOSE [$_{Foc0}$ Foc^{0}]] in (31c) is morphologically reanalyzed as a word, rendering *LOSE^{2}* invisible to the LCA (see section 2). Since only the lower link of CH_1 = (LOSE^{2}, LOSE^{3}) is visible to the LCA, Chain Reduction need not — therefore must not — delete it. Applying only to CH_2, Chain Reduction then deletes the lower copy of TP, yielding the structure in (33), which surfaces as the duplication version of (30c).

(33) [$_{FocP}$ [$_{TP}$ I LOSE^{1} BOOK]^{k} [$_{Foc'}$ LOSE^{2}+Foc ~~[$_{TP}$ I LOSE^{3} BOOK]^{k}~~]]]

Given that morphological reanalysis is taken to be a precondition for phonetic realization of multiple copies, we should expect that if the focalized element adjoined to Foc^{0} is complex enough to prevent morphological reanalysis, all links of the relevant chains should be visible to the LCA and Chain Reduction should apply to both of them, as in (32). In other words, the prediction is that the more complex a focalized element, the less likely the possibility of duplication. The unacceptability of the duplication constructions in (34) confirms this prediction.[8]

(34) a. (*NEXT MONTH) I WILL-GO ESTRELA NEXT MONTH
'I will go to Estrela NEXT MONTH.'
b. (*WHAT MAN OF-THEM) YOU LIKE WHAT MAN OF-THEM
'WHICH OF THOSE MEN did you like?'
c. JOHN (*$_{a}$LOOK$_{b}$) MARY $_{a}$LOOK$_{b}$
'John LOOKED AT Mary'

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[8] The same kind of contrast also holds in ASL, as illustrated below (see Nunes and Quadros for analysis and further discussion).

(i) *American Sign Language* (from Petronio and Lilo-Martin 1997)
a. ANN CANNOT READ CANNOT
b. *ANN CANNOT READ CANNOT READ
'Ann can't read."

c. NANCY HATE ICE-CREAM HATE
d. *NANCY HATE ICE-CREAM HATE ICE-CREAM
'Nancy HATES ice cream.'

Of special interest here is the contrast between the possible duplication of *LOSE* in (30c) with the impossible duplication of $_{a}$*LOOK*$_{b}$, which indicates that agreeing morphology (which is represented by indices) renders a verb morphologically heavy, preventing reanalysis from taking place.

To the extent that phonetic realization of multiple copies in remnant movement constructions is subject to the same analysis employed to account for clitic duplication in Argentinean Spanish, for example, the proposal that Chain Reduction disregards word-internal copies gains further conceptual and empirical support.

5. Concluding Remarks

Remnant movement constructions are adequately handled in Nunes's (1995, 1999) system, reviewed in section 2, under the assumptions that (i) deletion for linearization purposes takes nontrivial chains into consideration, and not simply nondistinct copies; and (ii) chain identification proceeds locally, taking only the sister of a given copy into account. The analysis developed here was able to account not only for deletion of traces in standard remnant constructions, but also for the duplication of focalized elements in LBS and ASL and predicate clefting in Japanese and Korean.

From the perspective of the present system, standard remnant movement constructions arise when the local identification of chain links tricks the system into deleting an extra copy that is not a member of the chain undergoing reduction. An important aspect of the analysis of remnant movement proposed above is that the relevant "unbound trace" must not be obligatorily deleted due to its trace nature; in fact, the unbound trace may be phonetically realized if the circumstances for phonetic realization of traces are met, as is the case with duplication of focalized elements in BSL and ASL and predicate clefting in Japanese and Korean. Rather than being counter-evidence for the analysis reviewed in section 2, remnant movement constructions actually end up bringing further confirmation for the null hypothesis that every chain link can in principle be subject to phonetic realization.

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