Article

Multiple Dominance and the Copy Theory

SATO Hideshi[1]

This article aims to eliminate the Copy Theory of movement, focusing on A-chains. Some issues on the Copy Theory are revealed with respect to the PF-interpretation of A-chains under considerations of computational efficiency. These issues are resolved by extending the framework of Multiple Dominance to A-chains. Specifically, Multiple Dominance, abolishing any movement, correctly accounts for the PF-linearization of A-chains, encapsulated in a structure where a single shared constituent remains in-situ throughout derivation. This proposal is based on Wilder's (2008) insights into the Linear Correspondence Axiom under Multiple Dominance and is reinforced by a current minimalist tenet of the phase-based cyclic derivation, especially advocated in Narita (2014).

Key words: Copy Theory, Cyclic Derivation by Phase, Inclusiveness Condition, Linear Correspondence Axiom, Multiple Dominance, No-Tampering Condition

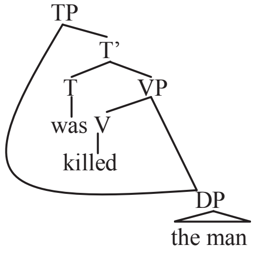
1 Introduction

Recent studies in minimalist syntax explore the biological nature of the human faculty of language (FL). This exploration has been embodied in the pursuit of the Strong Minimalist Thesis (SMT), expressed in (1) below, which demands that principles of Universal Grammar be maximally reduced to the minimal number of external factors such as computational efficiency.

(1) Language is an optimal solution to interface conditions that FL must satisfy.（Chomsky 2008: 135）

The main purpose of this paper is to propose a way to eliminate the Copy Theory of movement. In particular, I will argue for extending Narita's (2014) hypothesis on the phase-based cyclic derivation to an explanation of the PF-/LF-interpretation of A-chains on the basis of Multiple Dominance (MD-)structures, encapsulated in (2)[2].

(2)



In (2), *the man* is no longer a 'moving' copy, but rather a single entity staying in-situ at PF and LF. In the following discussion, I will argue that the PF-/LF-interpretation of the in-situ 'copy' can be accounted for without recourse to the Copy Theory.

This paper is organized as follows. Section 2 argues about (dis)advantages of the Copy Theory. In particular, I argue that the Copy Theory has a number of problems on the PF-realization of copies in terms of computational efficiency although it is effective in explaining reconstruction effects in LF. A pioneering work by Nunes (2004) is examined in the light of Agree-based feature-valuation. Section 3 explores a possible account of the LF-/PF-interpretation of A-chains without recourse to the Copy Theory. Specifically, I will propose that MD-structures can be extended to A-chains, following the perspectives in Wilder (2008; henceforth WILD). An important issue given in WILD will be discussed. Section 4 provides a solution for the problem given in section 3, in favor of Narita's (2014) hypothesis on cyclic derivation by phase. It is argued that PF-/LF-interpretation of A-chains can be explained by MD-based cyclic derivation by phase, eliminating the Copy Theory at least in terms of A-chains. Section 5 concludes the paper.

2 Problems with the Copy Theory

2–1 (Dis)advantages of the Copy Theory

Since the appearance of Chomsky (1993), advantages of the Copy Theory have been investigated[3]. Specifically, it accounts for reconstruction effects without recourse to lowering operations. For instance, in (3a), the anaphor contained in the moved wh-phrase satisfies the Condition A of the Binding Theory. This fact is accounted for by its LF-structure in (3b), where the copy of the moved wh-phrase is retained in its original site, in which the anaphor is correctly bound by its antecedent[4].

(3) a. Which picture of himself$_i$ did John$_i$ like?

b. Which picture of himself$_i$ did John$_i$ like which picture of himself$_i$?

Likewise, A-movement also involves copy-formation[5]. For example, in (4a), the pronoun contained in the raised subject is interpreted as a bound variable. This fact is accounted for by its LF-structure in (4b), where the copy of the raised subject resides in its original position, where the pronoun is bound by the quantifier phrase, and the expected bound-variable reading is accounted for.

(4) a. Someone from his$_i$ class seems to every professor$_i$ to be a genius.

b. Someone from his$_i$ class seems to every professor$_i$ to someone from his$_i$ class be a genius.

In spite of this advantage, the Copy Theory suffers from a number of problems with PF-interpretation of chains. Under the Copy Theory, the spelled-out structure of a sentence 'The man was killed' is illustrated in (5).

(5) The man was killed the man

It is widely assumed that hierarchical structures are linearized at PF by the LCA (Linear Corresponding Axiom). Informally speaking, all the lexical items constituting a sentence must be ordered without contradiction[6]. In this sense, for instance, the structure of (5) above violates the LCA since either of the two identical copies of *the man* precedes and follows *was*. A possible way to avoid this contradiction and to correctly account for the ordering fact is to delete the lower copy, as exhibited in (6).

(6) The man was killed ~~the man~~

However, the reason why the lower copy rather than the higher one should be deleted is still unresolved. In the next section, I will focus my attention to this issue and examine a derivational account of PF-realization of A-chains proposed in Nunes (2004).

2‒2 Nunes (2004) Revisited

In Nunes (2004), PF-realization of chains is accounted for by Chain Reduction (CR) and FF-Elimination (FFE), defined in (7) and (8), respectively.

(7) Delete the minimal number of constituents of a nontrivial chain CH that suffices for CH to be mapped into a linear order in accordance with the LCA. (Nunes 2004: 27)

(8) Given the sequence of σ=<$(F, P)_1$, $(F, P)_2$..., $(F, P)_n$> such that σ 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 features of each set of formal features in order for σ to satisfy Full Interpretation at PF. (Nunes 2004:32)

It is important to note here that these conditions work under the assumption of the Checking Theory (Chomsky 1995). Suppose that the derivation has reached (9), whence it proceeds to either (10) or (11).

(9) T was killed the man$_{[CASE]}$

(10) a. the man~~$_{[CASE]}$~~ T was killed the man$_{[CASE]}$

b. ~~the man$_{[CASE]}$~~ T was killed the man$_{[CASE]}$

c. ~~the man$_{[CASE]}$~~ T was killed the man~~$_{[CASE]}$~~

(11) a. the man~~$_{[CASE]}$~~ T was killed the man$_{[CASE]}$

b. the man~~$_{[CASE]}$~~ T was killed ~~the man$_{[CASE]}$~~

In (10a), *the man* is raised to the Spec of TP, where its Case-feature is checked and eliminated from the derivation. In (10b), the higher copy is deleted by CR for LCA-reasons. In (10c), the Case-feature of the lower copy is deleted by FFE. Since all the uninterpretable features are eliminated, the derivation converges at PF. In (11a), the Case-feature of *the man* is checked in the Spec of TP. In (11b), CR deletes the lower copy rather than the higher one for LCA-reasons. Since CR deletes the whole constituent containing the Case-feature, the derivation converges at PF without FFE. Therefore, the derivations in (10) and (11) both converge. As a result of a comparison between them, (11) is adjudged to be a more economical option since (11) does not require FFE for convergence and relies on fewer operations than (10). Consequently, the higher copy rather than the lower one is realized at PF, accounting for the ordering fact in (6).

2‒3 Against Nunes (2004)

Nunes's hypothesis mentioned above, however, has some problems. To begin with, FFE applied in (10c) and CR applied in (11b) both destroy the structures once built, hence a violation of the Non-Tampering Condition (NTC), defined in (12)[7].

(12) No elements introduced by syntax are deleted or modified in the course of syntactic derivation. (Narita 2014: 20)

Under considerations of computational efficiency, these operations should be barred.

Furthermore, Nunes's explanation does not hold under the Agree-based feature-valuation (Chomsky (2000) et seq.). The mechanism of Agree is simply depicted in (13).

(13) T~~$_{[\varphi]}$~~ was killed the man$_{\{[\varphi]\ }$~~$_{[CASE]}$~~$_{\}}$

|_______ Agree ________|

As demonstrated in (13), $T_{[\varphi]}$ probes its matching goal $DP_{[\varphi]}$. As a result of this, unvalued features, [φ] and [Case], are valued and eliminated from the derivation. Within this assumption in mind, let us reexamine

Nunes's system. The derivations in (14) and (15) are the Agree-based counterparts of those in (10) and (11), respectively.

(14) a. the man~~$_{[CASE]}$~~ T~~$_{[\varphi]}$~~ was killed the man~~$_{[CASE]}$~~

b. ~~the man~~~~$_{[CASE]}$~~ T~~$_{[\varphi]}$~~ was killed the man~~$_{[CASE]}$~~

(15) a. the man~~$_{[CASE]}$~~ T~~$_{[\varphi]}$~~ was killed the man~~$_{[CASE]}$~~

b. the man~~$_{[CASE]}$~~ T~~$_{[\varphi]}$~~ was killed ~~the man~~~~$_{[CASE]}$~~

In (14a), the Case-feature of *the man* is valued and eliminated in-situ by Agree, prior to movement. Since the Copy Theory produces featurally identical copies, the EPP-raising of *the man* to the Spec of TP creates a copy whose Case-feature is also valued. In (14a), all the unvalued features are, therefore, valued. In the PF-structure of (14b), the higher copy is deleted by CR for LCA-reasons. In (15a), as well, all the Case-features of *the man* are valued. In (15b), unlike in (14b), the lower copy is deleted by CR for LCA-reasons. Notice that (14) and (15) are both convergent and equally economical since they employ the same number of operations: one CR and no FFE. Consequently, it would be predicted that copies can be realized in any position, contrary to the fact.

One might argue that Nunes's system can be maintained if we assume a model of the checking-theoretical feature-valuation (see Bošković (2007)). This strategy is, however, untenable. Let us consider (16):

(16) the man~~$_{[CASE]}$~~ T was killed the man$_{[CASE]}$

In (16), a checking configuration is established and the Case-feature of *the man* is valued only in the Spec of TP. Crucially, the Case-feature of the lower copy still survives. This remaining Case-feature must be deleted in one way or another prior to Transfer, otherwise the derivation would crash in LF. This feature-deletion, however, violates the NTC since it destroys the structure once built. In contrast, under the Agree-based feature-valuation, unvalued Case-features are valued in-situ prior to Transfer, avoiding problematic feature-deletion.

2–4 Against the Copy Theory

The analysis mentioned above reveals that any featural determination of copy-realization is unsustainable. Since all the features of copies are identical in PF, after the valuation of unvalued features, they will provide us no clue to decide PF-realization of the copies. This suggests that formal features, Case-features in particular, are not available for determining PF-realization of the copies and that another alternative device other than formal features is necessary. Since features are the only ingredients the computation can access, this alternative should be avoided in favor of the Inclusiveness Condition, defined in (17)[8].

(17) No elements absent from the Lexicon are introduced in the course of syntactic derivation.

(Narita 2014: 20)

To sum up this section, we have discussed that although the Copy Theory is a convenient tool to account for reconstruction effects in LF, some devices, incompatible to the NTC and the IC, are required to account for the PF-realization of the chains. In the following sections, I will propose a method to account for LF-/PF-interpretation of A-chains without recourse to the Copy Theory.

3 Multiple Dominance and Linearization of A-chains

This section investigates a system of the MD-based LCA. I first review a set of definitions of the LCA in Kayne (1994), and then examine WILD's attempts as a specimen of the MD-based LCA.

3–1 Defining the LCA

Kayne (1994) defines the LCA as in (18)-(23).

(18) d(*A*) is a linear ordering of *T*. (*T* is the set of terminals.)

(19) d(X) is the set of terminals that X dominates. (X is a nonterminal)

(20) *A* is the set of ordered pairs <X_j, Y_j> such that for each *j*, X_j asymmetrically c-commands Y_j.

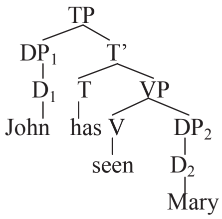
(21) X asymmetrically c-commands Y iff X c-commands Y and Y does not c-command X.

(22) X c-commands Y iff X and Y are categories and X excludes Y and every category that dominates X dominates Y.

(23) For any x, y, z∈T, (i)x>y or y>x, (ii) if x>y then not y>x, (iii) not x>x, (iv) x>y and y>z, then x>z[9].

The LCA defined above determines the linear ordering of a sentence ‘John has seen Mary,’ as exhibited in (24).

(24)



A	d(*A*)
<DP_1, T>	John>has
<DP_1, VP>	John>seen, Mary
<DP_1, V>	John>seen
<DP_1, DP_2>	John>Mary
<T, V>	has>seen
<T, DP_2>	has>Mary
<V, D_2>	seen>Mary

In (24), the set *A* of asymmetric c-command relations between non-terminals and the set d(*A*) of precedence relations between terminals that *A* dominates are represented in the left box and in the right box, respectively[10]. For example, <DP_1, T> in the set *A* means that DP_1 asymmetrically c-commands T, which corresponds to the precedence relation *John>has*, where *John* precedes *has*[11]. The set d(*A*) in (24) finally results in a linear ordering *John>has>seen>Mary*, which fully satisfies the four criteria in (23)[12]. The structure in (24) is, thus, properly linearized by the LCA.

3–2 Multiple Dominance

WILD argues that the facts concerning Right Node Raising (RNR) constructions, exhibited in (25)-(27), are accounted for on the basis of MD-structures.

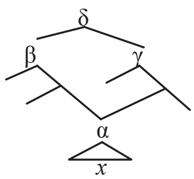
(25) John has bought ___ and Mary will read *the paper*.

(26) *John can ___ your book and Mary will *read* the paper.

(27) *John should give ___ the book and congratulate *that girl*. (WILD: 244)

As shown in (25)-(27), RNR constructions have the following properties; (i) The gap obligatorily appears in the right edge of the first conjunct, and (ii) The moving element obligatorily appears in the second conjunct. He argues that well-formed RNR constructions can be integrated into the MD-structure, depicted abstractly in (28).

(28)



In (28), the raised material α is actually not moving, but rather stays in-situ. In his terms, α is a shared constituent of the two nodes, β and γ, standing for the first conjunct and the second conjunct, respectively[13].

3–3 Multiple Dominance and the LCA

WILD makes some assumptions to handle grammatical relations in MD-structures, which I will assume throughout this paper. First, we assume that β c-commands α in (28). A familiar definition of c-command prohibits this c-command relation (since β dominates α), whereas a derivational model of c-command (see Epstein, Groat, Kawashima and Kitahara (1998)) permits it (since β merges with γ, of which α is a term.) Second, we assume that a notion ‘full-dominance’ holds in MD-structures. Suppose that, in (28), β asymmetrically c-commands γ. This implies that *A* contains <β, γ>, which results in the precedence relation *x*>*x*, since d(*β*) and d(*γ*) both contain *x*. Since this ordering would be excluded as a violation of the criterion of irreflexivity in (23), any MD-structure cannot be linearized, incompatible with the LCA. This obstacle can be circumvented by introducing the notion of full-dominance, defined in (29)-(30).

(29) β fully dominates α iff β is a member of every dominance path of α. (WILD: 239)

(30) A dominance path of α is a sequence of categories $<C_1, ..., C_n>$ such that C_1 = the root, $C_n = \alpha$, and for all j ($1 \leq j \leq n$) C_j immediately dominates C_{j+1}. (ibid.)

According to these definitions, neither β nor γ *fully dominates* α in (28), although they both do *dominate* it. β does not fully dominate α since the dominance path from α to the root δ has another route via γ. In the same way, γ also does not fully dominate α since the dominance path from α to the root δ has another route via β. In (28), therefore, it is only δ that fully dominates α. We assume that the notion of dominance relevant for the LCA is actually full-dominance, as defined in (31).

(31) d(X) is the set of terminals *fully dominated* by X.

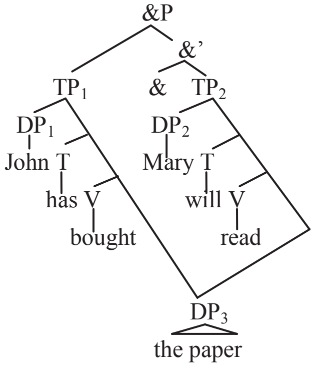
This modification overcomes the problem of irreflexivity mentioned above. Even if the *A* contains <β, γ>, it does not result in the precedence relation *x*>*x* since neither β nor γ fully dominates α.

3–4 An MD-based Account of RNR Constructions

WILD explains the facts in (25)-(27) as summarized below. The well-formed example of (25), repeated in (32), has the MD-structure depicted in (33).

(32) John has bought ___ and Mary will read *the paper*.

(33)



A	d(*A*)
<TP_1, &’>	John, has, bought > &, Mary, will, read
<TP_1, &>	John, has, bought > &
<TP_1, TP_2>	John, has, bought > Mary, will, read
<TP_1, DP_2>	John, has, bought > Mary
<TP_1, T>	John, has, bought > will
<TP_1, V>	John, has, bought > read
<TP_1, DP_3>	John, has, bought > the paper

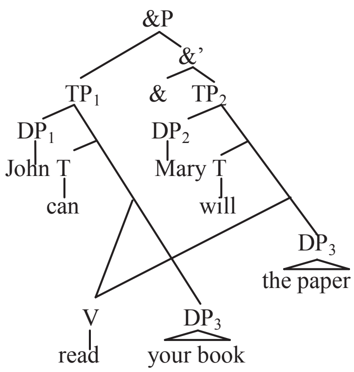
In (33), DP_3 is a shared constituent of TP_1 and TP_2. Since the internal structure of TP_1 is similar to that of (24), terminals inside TP_1 should be ordered as *John>has>bought>the paper*. Likewise, terminals inside TP_2 should be ordered as *Mary>will>read>the paper*. The relevant asymmetric c-command relations between TP_1 and the terms of &’ are summarized in (33)[14]. Notice that none of d(TP_1), d(&’) and d(TP_2) contains *the paper* because of the absence of full dominance. The set d(*A*) in (33), therefore, results in a linear ordering of {*John, has, bought*}>{*&, Mary, will, read*}. In total, the linear ordering of this example is as illustrated in (34) below, which is nothing other than a configuration where the shared constituent *the paper* surfaces in the second conjunct and the ‘gap’ surfaces in the right-edge of the first conjunct.

(34) John>has>bought>&>Mary>will>read>the paper

The ill-formed example of (26), repeated in (35), has the MD-structure, exhibited in (36).

(35) *John can ___ your book and Mary will *read* the paper.

(36)



A	d(*A*)
<TP_1, &’>	John, can, your book>&, Mary, will, the paper
<TP_1, &>	John, can, your book>&
<TP_1, TP_2>	John, can, your book>Mary, will, the paper
<TP_1, DP_2>	John, can, your book>Mary
<TP_1, T>	John, can, your book>will
<TP_1, V>	John, can, your book>read
<TP_1, DP_3>	John, can, your book>the paper

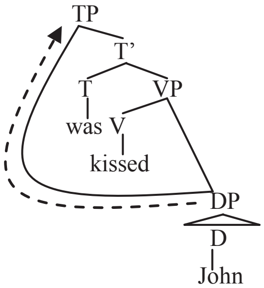
In (36), V is a shared constituent of TP_1 and TP_2. The linear ordering inside TP_1 and the one inside TP_2 are *John>can>read>your book* and *Mary>will>read>the paper*, respectively. Relevant asymmetric c-command relations between TP_1 and the terms of &’ are summarized in (36). Notice that none of d(TP_1), d(&’) and d(TP_2) contains *read* because of the absence of full dominance. Since the set *A* contains <TP_1, V>, it yields the linear ordering {*John, can, your book*}>*read*. This ordering, however, directly contradicts the linear ordering inside TP_1, namely *John>can>read>your book*. This falls into a violation of the criterion of antisymmetry, hence the ill-formedness of (35).

This implies that any MD-structure in which a shared constituent is followed by another material in the first conjunct should be excluded. In other words, the ‘gaps’ in RNR constructions must reside in the right edge of the first conjuncts. This accounts for the ill-formedness of (27).

3−5 A Conjecture

WILD attempts to extend the MD-based LCA to explaining PF-linearization of A-chains. He conjectures that if A-chains are assigned with MD-structures, their PF-orderings are deducible by the LCA. Let us consider the structure in (37) in detail.

(37)



A
<DP, T’>
<DP, VP>
<T, V>
<T, D>
<V, D>

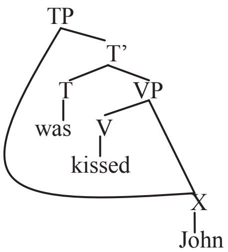
d(*A*)
John> was, kissed
John>kissed
was>kissed
was>John
kissed>John

This structure has the following properties. First, [$_{DP}$ John] is not a copy at all but rather a shared constituent in-situ, having the status of both the complement of V and the Spec of TP. Second, neither T’ nor VP fully dominates DP since the dominance path from DP can be bypassed to the root TP, as illustrated by a dotted arrow directly connecting them. Neither d(T’) nor d(VP), therefore, contains *John*. As a result, <DP, T’> and <DP, VP> are translated into the linear orderings *John>was, kissed*, and *John>kissed*, respectively[15]. Third, DP does not asymmetrically c-command T and V, which, in turn, c-command DP, the complement of V. As a result of this, <DP, T>, <T, DP>, <DP, V>, and <V, DP> are not contained in the set *A*. Finally, <DP, DP> is not contained in the set *A* because of a general ban against self-c-command.

Unfortunately, this structure fails to correctly account for the linear ordering of ‘John was kissed.’ First, although T does not asymmetrically c-command DP, it does asymmetrically c-command D. This would result in <T, D>, which yields the linear ordering *was>John*. Second, although V does not asymmetrically c-command DP, it does asymmetrically c-command D. This would result in <V, D>, which yields the linear ordering *kissed>John*. These results directly contradict the linear ordering *John>was, kissed*, resulting from <DP, T’>. Consequently, this structure violates the criteria of antisymmetry of the LCA, and this sentence would be excluded, contrary to expectations.

Although WILD fails to achieve the desired result, it leaves us a significant conjecture. Interestingly, if shared constituents are non-phrasal categories, the expected results will occur. Let us consider the structure in (38), where the shared constituent is a non-phrasal category, abstractly indicated by X.

(38)



A
<X, T’>
<X, VP>
<T, V>

d(*A*)
John>was, kissed
John>kissed
was>kissed

Notice that the offending asymmetric c-command relations we have seen in (37), namely <T, D> and <V, D>, disappear in (38). Instead, mutual c-command relations occur between X and T, and between X and V. This implies that <T, X>, <X, T>, <V, X> and <X, V> are removed from the set *A*. As shown in (38), no ordering conflict occurs here. Consequently, the expected linear ordering *John>was>kissed* is correctly accounted for, as desired. This conjecture, however, must guarantee that the shared constituent is indeed a non-phrasal category. We will address this issue in the next section.

4 Strengthening Wilder's Conjecture

4–1 Cyclic Derivation by Phase

In this section, I will demonstrate that the system of cyclic derivation by phase (see Chomsky (2001, 2004, 2008), and Uriagereka (1999)) nicely fulfills the puzzle given in the previous discussion. I will particularly adopt a phase-based model advocated in Narita (2014)[16]. His hypotheses relevant for the present discussion are summarized as follows; (i) A nominal phrase, headed by K, can constitute a phase, (ii) The phase head K, with its interior transferred, can be sent to a subsequent step of derivation on its own, and (iii) The transferred interior is inaccessible to the computation but its structural information of constituency is preserved in the interface levels.

4–1–1 KP-Phase

Let us first look at the hypotheses in (i)-(iii) in order. In any phase-based model, what constitutes a phase is a controversial issue. While some researchers assume v*P and CP are phases (see Chomsky (2001 et seq.)), others assume that DP is also a phase (see Bošković (2014)). With respect to this issue, Narita (2014) proposes a more radical view that every phrase can be a phase if its interior is convergent[17]. Under this hypothesis, a nominal phrase is certified as a phase if its interior is convergent. A noun phrase 'the man', for instance, is built in (39) under this scenario.

(39) a. $[_{DP}\ [_{D}\ \text{the}_{\{[vQ],\ [v\varphi]\}}][_{N}\ \text{man}_{\{[v\varphi]\}}]]$

b. $[_{KP}\ \text{K}_{\{[uCase],\ [uQ],\ [u\varphi]\}}\ [_{DP}\ [_{D}\ \text{the}_{\{[vQ],\ [v\varphi]\}}][_{N}\ \text{man}_{\{[v\varphi]\}}]]]$

c. $[_{KP}\ \text{K}_{\{[uCase],\ [vQ],\ [v\varphi]\}}\ \boxed{[_{DP}\ [_{D}\ \text{the}_{\{[vQ],\ [v\varphi]\}}][_{N}\ \text{man}_{\{[v\varphi]\}}]]}]$

d. $\text{K}_{\{[uCase],\ [vQ],\ [v\varphi]\}}$

In (39a), D initially merges with N. The former has valued features [vQ] and [vφ], and the latter has a valued feature [vφ][18]. In (39b), the Agree-inducing head K, bearing unvalued features, i.e. [uCase], [uQ], and [uφ], is introduced into the structure. Next, in (39c), Agree applies between K and D/N. This application of Agree values the unvalued features of K, [uQ] and [uφ], as indicated by [vQ] and [vφ]. As a result of this valuation, DP, the interior of the KP-phase becomes convergent, and thus is subject to Transfer[19]. The transferred interior is excluded from the workspace and is no longer accessible to the computation, as a well-known result of the PIC (Phase-Impenetrability Condition), defined in (40).

(40) After Transfer applies to a phase Σ, the interior of Σ becomes inaccessible to further computation of Narrow Syntax. (Narita 2014: 36)

Finally, in (39d), the unvalued feature [uCase] remains on the head K and is still active enough to access the next step of derivation. The head K, then, is sent to a derivation in the next phase.

What is important here is that the transferred interior preserves its structural information of constituency at interface levels. This implies that even if the head K is sent to the derivation of the next phase, the structural relation once established between K and its interior will survive throughout the derivation. In other words, the interior is pied-piped and interpreted at the position where its exterior is interpreted in PF and LF.

4–1–2 CP-Phase

Let us next consider derivations in a CP-phase. As mentioned above, the head K, a residue of the previous derivation in the KP-phase, enters into a derivation of the CP-phase. An illustration of the insertion of K into the derivation is exemplified in (41), where K is employed as an object of a sentence 'The man was kissed.'

(41) a. $[_{TP}$ was $[_{VP}$ kissed $K_{\{[uCase], [vQ], [v\varphi]\}}]]$
b. $[_{CP}$ $C_{[u\varphi]}$ $[_{TP}$ was $[_{VP}$ kissed $K_{\{[uCase], [vQ], [v\varphi]\}}]]]$
c. $[_{CP}$ C $[_{TP}$ $was_{[u\varphi]}[_{VP}$ kissed $K_{\{[uCase], [vQ], [v\varphi]\}}]]]$
d. $[_{CP}$ C $[_{TP}$ $was_{[v\varphi]}$ $[_{VP}$ kissed $K_{\{[NOM], [vQ], [v\varphi]\}}]]]$

In (41a), K merges with V as its complement and the derivation proceeds until the creation of TP. Here, I will assume that, following Chomsky (2004 et seq.), T inherits unvalued features from C. By assuming this, the [uφ] of the phase head C, introduced in (41b), is inherited by T, as in (41c). The [uφ], now inherited by T, invokes Agree between T and K. As a result of this, in (41d), [uφ] of T and [uCase] of K both get valued.

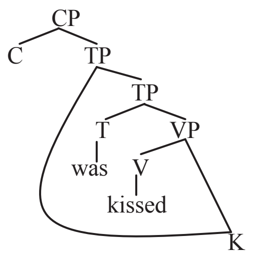
Another illustration of the insertion of K into the derivation of a CP-phase is exemplified in (42), where K is introduced into the Spec of v*P as the subject of a sentence 'The man has left,' under the vP-internal-subject hypothesis.

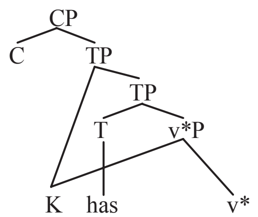
(42) a. $[_{v*P}$ $K_{\{[uCase], [vQ], [v\varphi]\}}$ v* $[_{VP}$ left$]]$
b. $[_{CP}$ $C_{\{[u\varphi]\}}$ $[_{TP}$ has $[_{v*P}$ $K_{\{[uCase], [vQ], [v\varphi]\}}$ v*$]]]$
c. $[_{CP}$ C $[_{TP}$ $has_{\{[u\varphi]\}}$ $[_{v*P}$ $K_{\{[uCase], [vQ], [v\varphi]\}}$ v*$]]]$
d. $[_{CP}$ C $[_{TP}$ $has_{\{[v\varphi]\}}$ $[_{v*P}$ $K_{\{[NOM], [vQ], [v\varphi]\}}$ v*$]]]$

In (42a), K is introduced into the Spec of v*P, and VP, the interior of v*P-phase, is convergent and is subject to Transfer. Only the edges of the v*P-phase, K and v*, are accessible to the next step of derivation. In (42d), Agree applies between T and K, and [uφ] of T, inherited from C, and [uCase] of K both get valued.

4–2 MD-based Linearization of A-chains

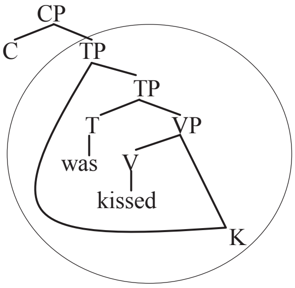
While familiar assumptions make a copy of K and raise it to the Spec of TP for EPP-reasons, we no longer assume the Copy and Merge here. I propose, instead, that K directly remerges as the Spec of TP in an MD-structure. I assume here, following Kayne (1994), that the specifier of TP is actually an adjunct of it. The resulting structures of (41) and (42) are exhibited in (43a) and (43b), respectively.

(43) a.


b.


These structures provide us with correct accounts of the expected linearization facts. The structure of (43a) is repeated in (44), where TP, the interior of the CP-phase, is transferred[20].

(44)



A	d(*A*)
<K, TP>	K>was, kissed
<K, VP>	K>kissed
<T, V>	was>kissed

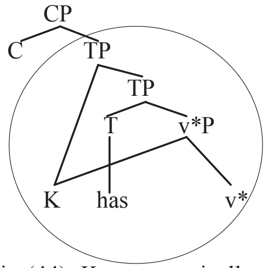
In this transferred domain, K resides both in the complement of V and in the Spec of TP. In LF, K is interpreted in-situ, hence reconstruction effects follow. In PF, K is also interpreted in situ, but realized in the Spec of TP, as a result of the LCA. A crucial point here is an observation that K asymmetrically c-commands TP. On the one hand, K c-commands TP since K excludes TP and the first category dominating K, namely CP, dominates TP. On the other hand, TP does not c-command K since the former does not exclude the latter. This results in <K, TP> in the set *A*. As anticipated in (38), the set *A* in (44) yields the set d(*A*), resulting in the linear ordering *K>was>kissed*. Recall that we are assuming that the structural relation once established between K and its interior still survives at the interface levels. The interior of K, namely [$_{DP}$ the man], should be pied-piped and interpreted in PF, as shown in (45).

(45) K > the man > was > kissed

This ordering is consistent with the fact, as desired.

The structure of (43b) is repeated in (46).

(46)



A	d(*A*)
<K, TP>	K> has, v*
<K, v*P>	K >v*
<T, v*>	has > v*

In the same way as in (44), K asymmetrically c-commands TP. This results in <K, TP> in the set *A*. K and T c-command each other, and K and v* do so, too. Therefore, <K, T>, <T, K>, <K, v*>, and <v*, K> are not contained in the set *A*. Consequently, the set *A* yields the set d(*A*), resulting in the linear ordering *K>has>v**. In the same way as in (44), the final linear ordering of this structure will be the following.

(47) K > the man > has > v* > left

This ordering is consistent with the fact, as desired.

5 Conclusion

In conclusion, I have argued that, assuming A-chains produce MD-structures, the PF-/LF-interpretation of the A-chains can be accounted for without recourse to the Copy Theory. MD-structures no longer involve movement. Apparent copies of a ‘moving’ element are solely a single shared constituent, residing and interpreted in-situ both at PF and at LF. In the LF-site, the shared constituent results in reconstruction effects, as expected. In the PF-site, the shared constituent is linearized in the Spec of TP as a result of the LCA. This analysis depends on the hypothesis of WILD's MD-based LCA, reinforced by Narita's (2014) system of cyclic derivation by phase. If this strategy is on the right track, we can eliminate the Copy Theory at least with respect to A-chains. In this sense, the results of this paper provide the SMT with empirical and theoretical corroboration.

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Notes

[1] Faculty of International Studies and Regional Development, University of Niigata Prefecture (hidesato@unii.ac.jp)

[2] See Citko (2011), Chen-Main (2006), and Wilder (2008) for details of MD-structures.

[3] See Corver and Nunes (2007), Fox (2002), Nunes (2004), Lasnik (2003) and Takahashi and Hulsey (2009) for details and issues of the Copy Theory.

[4] Indices are exploited only for convenience.

[5] This paper assumes that reconstruction effects are also involved in A-movement. See Takahashi and Hulsey (2009) for this matter.

[6] The definition of the LCA is discussed in section 3 in detail.

[7] The NTC given in (12), assumed throughout the paper, is stronger than Chomsky’s original formulation, given in (i).
(i) Merge of α and β leaves the two syntactic objects unchanged. (Chomsky 2008: 138)

[8] Chomsky (2000) defines the Inclusiveness Condition as follows:
(i) No new features are introduced by C_{HL}. (Chomsky 2000: 113)

[9] This paper, following a revision in WILD, adds the criterion of irreflexivity in (iii) to Kayne’s original formulation since, as WILD mentions, it is trivial that an element does not precede nor follow itself.

[10] I will use these indications throughout the paper.

[11] Strictly speaking, the set *A* should contain <DP$_1$, D$_2$> and <T, D$_2$>. These are omitted as irrelevant here for convenience.

[12] Kayne (1994) assumes that the set *A* does not contain <T’, D> since T’ is not a category but a segment, hence c-commands nothing. Kayne (1994) also assumes that DP does not asymmetrically c-command T’. In contrast, WILD assumes that DP does asymmetrically c-commands T’. In this paper, I will follow the latter assumption, with a detailed discussion in section 4.

[13] A shared constituent is defined as follows:
(i) α is shared by X and Y if neither of X and Y dominates the other, and both X and Y dominate α. (Wilder 2008: 238)

[14] As mentioned previously, WILD assumes that specifiers, in general, asymmetrically c-command their sister nodes. For, instance, in (33), TP$_1$ asymmetrically c-commands &’. In the next section, I will discuss this matter in more detail.

[15] We assume, following WILD, DP asymmetrically c-commands T’. This matter will be discussed in detail in the next section.

[16] Narita (2014) argues for the label-free syntax. In this paper, however, I will not adopt this hypothesis in favor of the label-based syntax. See Chomsky (2013) and Cecchetto and Donati (2015) for details on Labeling.

[17] Narita (2014) assumes the following:
(i) An Syntactic Object Σ is subjected to Transfer as soon as a certain term Σ’ (i.e., the interior) of Σ becomes convergent.

[18] In the subsequent discussion, following Narita (2014), I will demonstrate feature-specifications in the following way; [vF], [uF], and [Q] stand for a valued feature, an unvalued feature, and a quantificational feature, respectively.

[19] The transferred interior is shaded in (39) and (42).

[20] The transferred interior is circled in (44) and (46).