

# Asymmetries in doubling and Cyclic Linearization\*

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## Abstract

This paper investigates the asymmetries in doubling among verbs, objects and subjects in Cantonese. It is shown that each of these elements has a distinct doubling profile in topic constructions and right dislocation: doubling is sometimes prohibited, required or optional. Couched in terms of the copy theory of movement, I suggest that the operation responsible for erasing copies in a movement chain is regulated by phonological requirements that follow from a version of cyclic linearization. Particularly, I propose that the copy-erasing operation can be suspended as a last resort in cases where its application would otherwise violate phonological requirements imposed by cyclic linearization. The differences in doubling possibility among verbs, objects and subjects follow from the availability of the edge position of a phase to these elements. The proposal derives the Cantonese doubling pattern without recourse to the phrase-structural status of the (non-)doubling elements and maintains that the mechanism that determines copy pronunciation is the same for heads and phrases. I take this as a further piece of evidence for the unification of head and phrasal movement, resonating with much recent work in this regard.

*Keywords: doubling, cyclic linearization, copy deletion, head movement, phrasal movement, Cantonese*

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# 1 Introduction

With the emergence of the copy theory of movement (Chomsky 1995, *et seq.*), an interesting line of research has focused on how the copies in a movement chain are phonetically realized (see Bošković and Nunes 2007; Nunes 2011, and references therein). The doubling phenomenon in verb/predicate fronting yields many proposals making reference to different components in the grammar to derive the doubling effects (Landau 2006; Aboh and Dyakonova 2009; Trinh 2009; Cheng and Vicente 2013; Hein 2018). This paper hopes to contribute to the discussion by investigating the doubling patterns of not only verbs, but also subject and objects in Cantonese. These elements each have a distinct doubling profile. The diverse patterns call for an analysis not only on how doubling is made possible, but also, more importantly, on how the pattern of doubling is regulated in the grammar.

As has been noticed in the literature, there is an asymmetry between verb and objects in topic constructions. When the verb *soeng* ‘want’ in (1) undergoes topicalization, it is (and must be) doubled.<sup>1</sup>

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## (1) Verb topicalization in Cantonese

**soeng**, Aaming hai \*(**soeng**) sik jyu ge2 (Cheng and Vicente 2013)  
want Aaming FOC want eat fish SFP  
‘As for (whether he) wants, Aaming wants to eat fish (but...)’

The doubling requirement seems to be specific to verbs. As noted in Cheng and Vicente (2013) for Mandarin (which also applies to Cantonese), when an object is topicalized, doubling is not required (and indeed dispreferred), as in (2).

## (2) Object topicalization in Cantonese

**ni-tiu jyu**, Aaming soeng sik (??**ni-tiu jyu**)  
this-CL fish, Aaming want eat this-CL fish  
‘This fish, Aaming wants to eat.’

The contrast between (1) and (2) might appear to suggest a difference between head and phrasal displacement, where, for example, displaced heads must be doubled while displaced phrases must not. This suggestion, however, is empirically challenged by the observation that a verb can be displaced to the end of the sentence with or without doubling as in (3). Associating the doubling possibility with the head/phrase distinction thus overgeneralizes to disallow the non-doubling case of verbs in right dislocation.

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1. Throughout the paper, I consistently omit the tones in the romanization of Cantonese for simplicity, except of sentence-final particles, in avoidance of ambiguity.

2. The phenomenon is called *verb doubling clefts* in Cheng and Vicente (2013) in Mandarin, which involves both a topic reading of the verb and a verum focus reading. Since the precise discourse interpretive effect does not bear on the argument in this paper, I use verb topicalization as a convenient label.

(3) Right dislocation of verbs in Cantonese

Aaming (sik) ni-di je aa4 sik?

(Lee 2017; Lai 2019)

Aaming eat this-CL thing Q eat

‘Aaming eats this thing?’

Another side of the empirical challenge is that it is possible to double a phrase in right dislocation (also called *Dislocation Copying* in Cheung 2015). If phrases are inherently incompatible with doubling, right dislocation of subjects should never allow two occurrences of the dislocated subjects. These two initial observations suggest that the phrasal structural status is not adequate in explaining the (non-)doubling pattern in Cantonese.

(4) Right dislocation of subjects

(Aaming) soeng sik ni-tiu jyu aa3 Aaming

(Cheung 2009, 2015)

Aaming want eat this-CL fish SFP Aaming

‘Aaming wants to eat this fish.’

Against this background, this paper pursues an account on how and why doubling is *prohibited*, *required*, or *optional* in different cases. Specifically, I propose that the operation responsible for erasing copies in a movement chain (i.e. Copy Deletion) is regulated by phonological requirements that follow from, with some qualifications, the version of phase theory advocated in Fox and Pesetsky (2005), namely, Cyclic Linearization (CL). The core idea will be that Copy Deletion can be *suspended* as a last resort in cases where its application would otherwise violate a phonological requirement relating to Cyclic Linearization. Doubling occurs as a result of the suspension of Copy Deletion. The differences in doubling possibility among verbs, objects and subjects are derivable from the availability of the edge position of a phase to these elements.

The implications of the proposal are two-fold. First, it lends further support to Cyclic Linearization, an alternative to Chomsky’s version of phase theory (Chomsky 2000, 2001) in the study of syntactic locality. Second, the proposal derives the Cantonese doubling pattern without recourse to the phrase-structural status of the (non-)doubling elements and maintains that the mechanism that determines copy pronunciation is the same for heads and phrases. This provides a further argument for the limited role of the phrase structural status in movement theories, resonating with recent efforts in unifying head and phrasal movement (Hartman 2011; Funakoshi 2012, 2014; Harizanov 2019; Harizanov and Gribanova 2019; Pesetsky 2020).

This rest of the paper is organized as follows: §2 describes the pattern of doubling in Cantonese with regard to two constructions: topic constructions and right dislocation. §3 introduces the framework and details the proposal. §4 illustrates how the proposal derives the doubling asymmetries in topic constructions and right dislocation. §5 discusses three existing accounts on doubling, which, as I argue, fall short of explaining the fine-grained doubling patterns in Cantonese. §6 serves as an

extension of the proposal and addresses the question as to why verb doubling is not always required or allowed across languages. §7 concludes the paper with remarks.

## 2 Asymmetries in doubling in Cantonese

The pattern of doubling in Cantonese is highly nuanced. In what follows, I discuss the pattern of subjects, verbs and objects in topic constructions and right dislocation, where each of them has its own doubling profile. Also, the contrast between the doubling possibilities in topicalization and right dislocation also suggests that the directionality of displacement play an important role in determining whether doubling is possible.

The first asymmetry in doubling is already noted in the introduction. The relevant examples (1) and (2) are repeated below in (5). The crucial observation is that while both verbs and objects can be topicalized, verbs must be doubled<sup>3</sup>, objects resist to be doubled.

### (5) Topic constructions

- a. **soeng**, Aaming hai \*(**soeng**) sik jyu ge2 verbs, =(1)  
 want Aaming FOC want eat fish SFP  
 ‘As for (whether he) wants, Aaming wants to eat fish (but...)’
- b. **ni-tiu jyu**, Aaming soeng sik (??**ni-tiu jyu**) objects, =(2)  
 this-CL fish, Aaming want eat this-CL fish  
 ‘This fish, Aaming wants to eat.’

Two remarks are in order. First, verb topicalization is different from object topicalization in that when a verb is topicalized, the presence of the copula *hai* is strongly preferred. No such preference is observed in object topicalization. While it is clear that the copula contributes to a verum focus reading (Cheng and Vicente 2013), it is less clear why it is associated with verb topicalization, but not object topicalization. I will not pursue an explanation of this difference, however.

Second, there is a difference in terms of acceptability with regard to the absence of doubling in verb topicalization (i.e. (5a) without the second occurrence of *soeng* ‘want’) and the presence of doubling in object topicalization (i.e. (5b) with the second occurrence of *ni-tiu jyu* ‘this fish’). While both are judged as deviant, the latter is judged as highly redundant and is slightly more acceptable to the

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3. Note that it is also possible to topicalize the lower verb *sik* ‘eat’, where doubling is also obligatory.

- (i) **sik**, Aaming hai soeng \*(**sik**) jyu ge2  
 eat Aaming FOC want eat fish SFP  
 ‘As for (whether he wants to) eat, Aaming wants to eat fish (but...)’

former.<sup>4</sup> I mark sentences with a reported sense of redundancy with ??, instead of \*, to indicate the difference in acceptability. The difference seems to suggest a different violation of grammatical principles. I will return to this point in section 4.3.

To see a second asymmetry of a similar kind, let us turn to right dislocation. It has been reported that both verbs and objects can be right dislocated, i.e. displacement of elements to the right of sentence-final particles (Lee 2017; Lai 2019). However, we observe that verbs are *optionally* doubled, whereas objects can hardly be doubled (as it gives rise to a sense of redundancy).

(6) Right dislocation

- a. Aaming (**sik**) ni-di je aa4 **sik**? verbs, =(3)  
 Aaming eat this-CL thing Q eat  
 ‘Aaming eats this thing?’
- b. Aaming sik (??**ni-di je**) aa4 **ni-di je**? objects  
 Aaming eat this-CL thing Q this-CL thing  
 ‘Aaming EATS this thing?’

Note that for (6a), the sentences with and without a doubled verb show different focus interpretations. When the verb is doubled, the verb receives focus interpretations. In contrast, when the verb is right dislocated without doubling, the object receives focus interpretation. I will pick up this observation again in section 4.2.

Finally, let us take the pattern of subjects into consideration, where we observe yet another asymmetry: topicalized subjects do not go well with doubling (as it similarly gives rise to an air of redundancy), whereas right-dislocated subjects are *optionally* doubled. Note that doubling of the subjects in (7b) is *not* judged as redundant, unlike and (5b) and (6b). Again, there is an interpretive difference in whether or not the subject is doubled in right dislocation: the subject is focused when doubled. When it is not, the whole verb phrase is focused.

(7) a. Topic constructions

- Aaming** (ne), (??**Aaming**) soeng sik ni-tiu jyu subjects  
 Aaming TOP Aaming want eat this-CL fish  
 ‘As for Aaming, (he) wants to eat this fish.’

b. Right dislocation

- (**Aaming**) soeng sik ni-tiu jyu aa3 **Aaming** subjects, =(4)  
 Aaming want eat this-CL fish SFP Aaming  
 ‘Aaming wants to eat this fish.’

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4. I thank \*\*\*\* for pointing out this difference to me.

Table 1 below provides a summary of the doubling profile with regard to verbs, subjects and objects. The patterns can alternatively be described as follows: (i) *object* doubling is generally prohibited (in both topic constructions and right dislocation); (ii) *verb* doubling is obligatory in topic constructions, but optional in right dislocation; (iii) *subject* doubling is prohibited in topic constructions, but optional in right dislocation.

	Subject	Verb	Object
Topic constructions	prohibited	obligatory	prohibited
Right dislocation	optional	optional	prohibited

Table 1: Doubling asymmetries in Cantonese

Capturing such diverse patterns doubling in Cantonese in a non-trivial way present a significant challenge. One thing that seems clear, however, is that doubling possibility does not immediately follow from a head/phrase distinction, because it is not the case that heads always require doubling (e.g. (6a)) or that phrases can never be doubled (e.g. (7b)).

### 3 The proposal

Under the copy theory of movement, while it is generally agreed that some operation is responsible for deleting redundant copies in the process of linearization (e.g. Copy Deletion, see Chomsky 1995; Nunes 1995, 2004), opinions vary as to what in the grammar allows or even requires the survival of a second copy. I propose that the deletion of a (lower) copy may be suspended if it violates the linearization requirement imposed by Cyclic Linearization (Fox and Pesetsky 2005). I first overview the proposal of Cyclic Linearization, followed by the details of my proposal.

#### 3.1 Cyclic Linearization

Fox and Pesetsky (2005) propose that syntactic structure is linearized cyclically. Particularly, in each domain where all (necessary) syntactic operations are applied and the structure is ready to be linearized (e.g.  $\nu$ P and CP), it is *Spelled-Out*. Upon Spell-Out, Ordering Statements (OS), the ordering information among overt elements, is established. Crucially, OS must be preserved by overt elements in the final output. OS can thus be considered as phonological requirements derived along the syntactic derivation. Also, OS are cumulative and cannot be overwritten.

Departing from a remerge/multidominance approach to movement as is originally proposed, I implement the idea of CL under the copy theory of movement. I suggest that two operations take place at each Spell-Out:

(8) A copy-theoretic implementation of CL

At each Spell-Out domain, two independent operations apply one after the other:

- (i) **Copy Deletion** (CD, typically deleting the low copies), followed by
- (ii) **Linearization** (LIN, establishing Ordering Statements).

Let us consider the two scenarios in (9) and (10). In both scenarios, LIN occurs at domain D, establishing the  $OS_D: X < Y < Z$ . In the next domain D', some element  $\alpha$  is merged. The two scenarios diverge from here. In Scenario 1, movement of X to D' and the deletion of its lower copy (marked in gray color) would not violate the previously established OS, i.e. X still precedes both Y and Z. However, in Scenario 2, movement of Y to D' poses a linearization problem. This is because when CD applies to the low copy of Y at the Spell-Out of D', the requirement that X precedes Y is no longer obeyed.

(9) Scenario 1 ( $LIN_D \rightarrow Move_X \rightarrow CD \rightarrow LIN_{D'}$ )

$[_{D'} \dots X \alpha [_{D'} \text{X} Y Z]]$   $OS_{D'}: X < \alpha < D_{(X < Y < Z)}$



(10) Scenario 2 ( $LIN_D \rightarrow Move_Y \rightarrow CD \rightarrow LIN_{D'}$ )

$* [_{D'} \dots Y \alpha [_{D'} X \text{Y} Z]]$   $*OS_{D'}: Y < \alpha < D_{(X < Y < Z)}$



Importantly, it is not the case that movement of non-edge elements is never possible. It is possible if a non-edge element proceeds successive cyclically. For example, if Y moves to the edge of D before it moves out to D', then the OS established at D would be different from Scenario 1 and 2:  $Y < X < Z$ . Subsequent movement of Y to a higher domain as depicted in Scenario 3 is possible, as applying CD to the low copies of Y would not violate any OS, i.e. Y still precedes X and Z when Spelled-Out at D'.

(11) Scenario 3 (**Move<sub>Y</sub> within D**  $\rightarrow CD \rightarrow LIN_D \rightarrow Move_Y \rightarrow CD \rightarrow LIN_{D'}$ )

$[_{D'} \dots Y \alpha [_{D'} \text{Y} X \text{Y} Z]]$   $OS_{D'}: Y < \alpha < D_{(Y < X < Z)}$



Differing from standard assumptions about phases (particularly the version in Chomsky 2000, 2001), CL opens certain other possibilities for movement of non-edge elements. In Scenario 4, non-edge elements can move across edge elements if the movement of the former is followed by some “compensating movement” of the latter that preserves the ordering relations. For example, the movement of Y is allowed if X also moves to a position higher than Y. Consequently, the order between X and Y is preserved and hence no violation of any OS.<sup>5</sup>

(12) Scenario 4 ( $LIN_D \rightarrow Move_Y \& Move_X \rightarrow CD \rightarrow LIN_{D'}$ )

$[_{D'} \dots X \dots Y \alpha [_{D'} \text{X} \text{Y} Z]]$   $OS_{D'}: X < Y < \alpha < D_{(X < Y < Z)}$



5. This is arguably the case for object shift in Scandinavian languages, see Fox and Pesetsky (2005) for extensive discussions.

### 3.2 Copy Deletion suspension

Against this background, I propose that the application of Copy Deletion is constrained by linearization requirements imposed by CL.

(13) Copy Deletion suspension

Copy Deletion is suspended *as a last resort* if its application violates linearization requirements imposed by CL.

Crucially, the doubling phenomenon arises as a result of the suspension of CD. Recall that when a non-edge element exits a domain D to another domain D', the OS established at D is violated. However, the violation is avoided if the non-edge element is multiply pronounced (i.e. doubled). Schematically, consider Scenario 5 below:

(14) Scenario 5 ( $\text{LIN}_D \rightarrow \text{Move}_{\text{non-edge}} \rightarrow \text{CD suspension} \rightarrow \text{LIN}$ )

$[_{D'} \dots Y \alpha [_D X Y Z]]$

$\text{OS}_{D'}: Y < \alpha < D_{(X < Y < Z)}$

When D is Spelled-Out, the OS:  $X > Y$  is satisfied by the pronunciation of the lower copy of Y. At a later Spell-Out of D', the OS:  $Y > X$  is also satisfied by virtue of the higher copy of Y. As such, the movement of Y does not violate any OS.

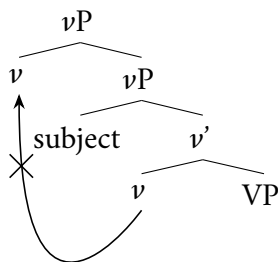
A potential concern, however, is that the two OS above require that Y must precede X and X must precede Y, and crucially, by transitivity, Y must precede Y. Under a multi-dominance/remerge approach to movement as is originally assumed in Fox and Pesetsky (2005), this requirement constitutes a linearization contradiction since a precedence relation cannot be reflexive, i.e. there is no way for Y to precede or to be preceded by itself. With the adaptation of CL to the copy theory of movement, that Y must precede Y need not be a contradiction. The two copies while being identical to each other (in terms of featural makeup), are two elements. A precedence relation between two copies is in principle possible. The question is how the computational system differentiates the two copies if they are identical. One way is to introduce indexes to copies, but this would violate the Inclusiveness Condition (Chomsky 1995); another is suggested in Nunes (2004, p.165 fn. 15): if a new term is introduced into the computation *without* reducing the numeration, the computational system then “knows” that a copy of some syntactic object is created. The proposal here does not hinge on the choice. Relevant to us is that the requirement “Y must precede Y” can be satisfied, provided that the computational system is capable of differentiating copies and establishing a precedence relation among them.

Before discussing the consequences of the proposal, I will make a few assumptions in the subsequent discussion. First, I assume that right dislocation in Cantonese involves syntactic movement in a mono-clausal structure, a position defended in Cheung (2009), Lee (2017), and Lai (2019). Second, following Cheng and Vicente (2013), Lee (2017), and Lai (2019), I assume that verb movements are involved in both verb topicalization and right dislocation of verbs, since the displaced verbs show



connectivity effects (e.g. island effects and identity effects). For concreteness, I further assume that both involve head-to-specifier movement (see Cheng and Vicente 2013; Lee 2017).<sup>6</sup> Lastly, I assume that a head cannot move into its own specifier. This assumption may follow from a version of anti-locality constraint which prohibits movement operations that are too “local” (Abels 2003, i.a.); or it may be due to the lack of motivation: a head need not move to its own specifier to check features (if there is any). Either way would rule out the movement step illustrated below, using the  $\nu$  head as an example.

(15) Illicit  $\nu$ -movement



## 4 Deriving the asymmetries in doubling

Now, we have all the ingredients we need to account for the doubling asymmetries in Cantonese. The first two subsections illustrate how the proposal derives doubling asymmetries in topics constructions and right dislocation, respectively. The third subsection discusses one more asymmetry which also falls out from the current proposal.

### 4.1 Licit and illicit cases in topic constructions

I start with the doubling case in verb topicalization, followed by the obligatory absence of doubling for subjects and objects. Recall that verb doubling in topic constructions is obligatory. The relevant example is repeated below as (16).

(16) Verb topicalization

**soeng**, Aaming hai **soeng** sik jyu ge2 =(1)  
 want Aaming FOC want eat fish SFP  
 ‘As for (whether he) wants, Aaming wants to eat fish (, but...)’

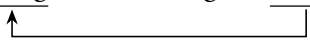
Under the current proposal, (16) has a derivation given in (17). First, in (17a), the  $\nu$ P headed by *soeng*

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6. Indeed, this assumption receives empirical support from recent works on different languages (e.g. Toyoshima 2001; Vicente 2007; Harizanov 2019; Harizanov and Gribanova 2019), where they reveal that some instances of head movement (especially concerning predicate fronting) behaves similar to phrasal movement: a head can move long-distance into a specifier position without obeying Head Movement Constraint (Travis 1984).

‘want’ is built, with *Aaming* being the subject and *sik jyu* ‘eat fish’ the (clausal) complement.<sup>7</sup> The copula *hai* is assumed to occupy a  $\nu$ P-internal position sandwiched between the main verb and the subject. Note that *soeng* does not (and cannot) move to the edge of  $\nu$ P. In (17b), the  $\nu$ P is Spelled-Out, and the order between the subject/*hai* and the verb *soeng* ‘want’ is fixed. (17c) indicates the movement of *soeng* to a Topic position, one that is higher than the subject.<sup>8</sup> In (17b), at the final Spell-Out domain TopicP, crucially, CD on *soeng* ‘want’ is suspended, because deleting its lower copy would violate the OS established in  $\nu$ P. The whole structure is thus linearized with the presence of two copies of *soeng*.<sup>9</sup>

(17) Derivation of (16)

- a. Building of  $\nu$ P (headed by *soeng* ‘want’)  
 $[_{\nu P} \text{ Aaming hai soeng sik jyu }]$
- b. Spell-Out of  $\nu$ P (CD does not apply or applies vacuously)  
(CD)  $\rightarrow \text{LIN}_{\nu P}$ ; OS $_{\nu P}$ : **Aaming < hai < soeng < sik < jyu**
- c. Verb movement for topicalization  
 $[_{\text{TopicP}} \text{ soeng ... } [_{\nu P} \text{ Aaming hai soeng sik jyu } ]]$   

- d. Spell-Out of TopicP  
CD suspension  $\rightarrow \text{LIN}_{\text{TopicP}}$ ;  
OS $_{\text{TopicP}}$ : **soeng < Aaming < hai < soeng < sik < jyu**

On the other hand, objects behave different from verbs in topic constructions. Doubling of objects is disallowed. Recall (2), repeated below as (18).

(18) Object topicalization

**ni-tiu jyu**, Aaming soeng sik (??**ni-tiu jyu**) =(2)  
this-CL fish, Aaming want eat this-CL fish  
‘This fish, Aaming wants to eat.’

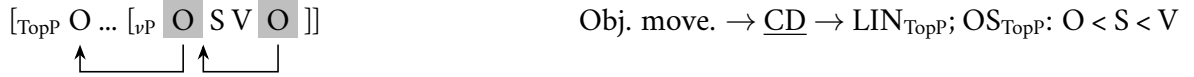
I suggest the crucial difference between verbs and objects does not lie in their phrase structural status, but in their movement possibility to Spec  $\nu$ P. While verbs cannot move to its own specifier, the Spec position is available to objects. In cases where the object moves to Spec  $\nu$ P, the OS upon the Spell-Out of  $\nu$ P becomes: **O < S < V**. Movement of the object to a higher domain would not suspend CD upon the Spell-Out. Lower copies are deleted by CD, resulting in absence of doubling (cf. Scenario 3). The derivation is schematically represented in (19).

7. It is compatible with an analysis where *soeng* ‘want’ is base generated at V and then undergoes head movement to  $\nu$  (Huang 1994, 1997; Tang 1998), but this step does not bear on the proposal.

8. I abstract over the standard subject movement to Spec TP for its irrelevance.

9. For simplicity, the sentence-final particle *ge2* which is external to the  $\nu$ P is not shown in the derivation.

(19) The schematic derivation of object topicalization



The same line of reasoning applies to subjects in topic constructions where doubling is not allowed. The only difference is that subjects do not move into Spec  $\nu\text{P}$ ; instead, they are base generated there. Independently of their derivational histories, movement of neither subjects nor objects would trigger suspension of CD.

(20) The schematic derivation of subject topicalization



Two remarks are in order. First, while the availability of a successive cyclic movement path of objects renders doubling unnecessary, one may wonder why doubling is disallowed. Concretely, the object seems to have the option to move without stopping at Spec  $\nu\text{P}$  such that the object is linearized relative to the subject and the verb. This would result in CD suspension in the same way as verb topicalization. I suggest that this is because CD can only be suspended *as a last resort*. If successive cyclic movement is available to objects, it must apply (hence no suspension of CD). The last resort nature of CD suspension is probably related to an economy principle that prefers a structure with minimal number of copies, which in turn prefers the application of CD wherever possible.

In sum, under the current proposal, the asymmetry between verbs on one hand and objects and subjects on the other in topic constructions is derivable from the structural position (i.e. the launching site). It hinges on the possibility to occupy Spec  $\nu\text{P}$ . Verbs are “special” not because they are heads, but because they fail to move to Spec  $\nu\text{P}$ . In contrast, the Spec  $\nu\text{P}$  position is available to objects and subjects, hence the absence of doubling. The approach to the doubling phenomenon makes no reference to the head-phrase distinction, which in turn avoids the overgeneralization problem mentioned in the introduction.

## 4.2 Licit, illicit and optional cases in right dislocation

The situations in right dislocation are more complicated since doubling is optional in some cases. Let us start with the licit and illicit cases. The line of reasoning will be largely similar to what we have seen for topic constructions, with the only difference being the movement direction. We have seen that doubling of a *leftward-moving* verb is licit because it is *preceded* by some  $\nu\text{P}$ -internal elements, we now have the opposite case, where a *rightward-moving* verb is doubled because it is *followed* by some  $\nu\text{P}$ -internal elements. Doubling of moving verbs are possible in the presence of objects or embedded verbs (as in (21a) and (22a), respectively), which is otherwise degraded (as in (21b) and (22b)).

(21) Verb doubling allowed in the presence of objects

- a. keoi **sik** ni-di je aa4 **sik?**                      b. ??keoi **sik** aa4 **sik?**  
 he eat this-CL thing Q eat                      he eat Q eat  
 ‘He EATS this thing?’                      Intended: ‘He EATS?’

(22) Verb doubling allowed in the presence of embedded verbs

- a. keoi **soeng** heoi gaa3 **soeng**                      b. ??keoi soeng **heoi** gaa3 **heoi**  
 he want go SFP want                      he want go SFP go  
 ‘He WANTS to go.’                      ‘He wants to GO.’

The contrast follows from the current proposal: when the  $\nu$ P headed by the moving verb is Spelled-Out, the order of the verb with regard to the object and the embedded verb is fixed. The verb must precede them in the final word order. Accordingly, at the final Spell-Out, CD on the lower copy of the moving verb has to be suspended (hence doubling), or it would violate the OS. The derivation of these cases are schematically represented in (23) and (24), respectively.<sup>10 11</sup>

(23) The schematic derivation of (21)

$[\nu_P \text{ S V O } ] \text{ SFP V}$                       OS $_{\nu P}$ : S < V < O  
 └──────────┘  
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(24) The schematic derivation of (22)

$[\nu_P \text{ S V1 [TP ... V2 ... ] } ] \text{ SFP } \{V1/??V2\}$                       OS $_{\nu P}$ : S < V1 < V2

In a similar vein, subjects are doubled in right dislocation for the same reason as why verbs are doubled in right dislocation: subjects are at least followed by a verb (and potentially an object). This gives rise to the OS $_{\nu P}$  which dictates **S < V < O**. Right dislocating the subject to the right of the verb triggers CD suspension at a later Spell-Out, resulting in doubling. The relevant example and its derivation are given below.

(25) Subject doubling in right dislocation

- Aaming** soeng sik ni-tiu jyu aa3 **Aaming**  
 Aaming want eat this-CL fish SFP Aaming  
 ‘AAMING wants to eat this fish.’

10. In what follows, for simplicity, I only detail the operations within  $\nu$ P (if any) and the OS established at the Spell-Out of  $\nu$ P. Since OS cannot be overwritten, the final word order must observe this OS.

11. Note that for illustrative purposes, I assume a rightward movement analysis of right dislocation, but the analysis is compatible with whatever mechanism that renders the verb ending up in the rightmost position (e.g. a Kaynean-style multiple leftward movement).

- (26) The schematic derivation of (25)

OS<sub>vp</sub>: S < V < O

Turning to the illicit doubling cases specific to objects, the unavailability of object doubling follows from the fact that objects are at the right edge of  $\nu$ P. Right dislocation of the object after the Spell-Out of  $\nu$ P would be subject to CD.

- (27) a. No doubling in right dislocation of objects

Aaming sik (??**ni-di je**)      aa4 **ni-di je**      =(6b)

Aaming eat this-CL thing Q this-CL thing  
'Aaming EATS this thing?'

- b. The schematic structure of (27a)


$$\text{OS}_{\nu\text{P}}: S < V < O$$

A straightforward prediction is that if there are some elements that follow the objects, doubling objects should be possible. This is indeed the case. Witness the following examples with a duration phrase and an indirect object (in a ditransitive structure), respectively:

- (28) a. Aaming tai-zo      **ni-bun syu**    saam-go zong laa3 **ni-bun syu**  
 Aaming read-PERF this-CL book three-CL hour SFP this-CL book  
 ‘Aaming has read THIS BOOK for three hours.’
- b. Aaming bei-zo      **ni-bun syu**    Aafan laa3 **ni-bun syu**  
 Aaming give-PERF this-CL book Aafan SFP this-CL book  
 ‘Aaming has given THIS BOOK to Aafan.’

Given sufficient contexts (e.g. one that the speaker is contrasting the book under discussion with other books), both sentences are acceptable, at least displaying a contrast with (27a). Assuming that both the duration phrase and the indirect object are within the  $\nu$ P, doubling is possible for the object since it is no longer at the right edge of  $\nu$ P.

It is instructive to note that Lai (2019) argues that object doubling (e.g. the case in (27a)) cannot be ruled out by a pure phonological consideration, such as the avoidance of phonological identity. He supports the claim by the following example. In (29), the object *keoi* ‘s/he’ is phonologically identical to the right dislocated element (which is co-indexed with the subject). Yet, the sentence is acceptable.<sup>12</sup>

12. Interestingly enough, Lai (2019) observes that co-indexation between the object and the right dislocated element is disallowed, which is in line with the observation that objects cannot be doubled.

- (29) **keoi<sub>i</sub>** zungji keoi<sub>i</sub> aa3 **keoi<sub>i</sub>**  
 s/he like her/him SFP s/he  
 ‘S/he likes her/him.’

Lai 2019, p.246, with adaptations

Accordingly, the sentence in (27a) with a doubled object is not ruled out by phonological identity but by an economy consideration in which lower copies have to be deleted in general. The same can be said for the two sentences in (21b) and (22b).

The remaining question is why there are optional cases. More specifically, how can verbs and subjects move without doubling (in a way similar to right dislocating objects)? I propose that this is made possible by independent movement operations that re-arrange the elements in the  $\nu$ P before Spell-Out, as will be described below. As a result of these movements, verbs and subjects may appear on the right edge upon Spell-Out of  $\nu$ P and may move without doubling, like the case of objects.

Let us start with the case with non-doubling verbs. In cases like (30a), I suggest that there is *object movement* before the Spell-Out of  $\nu$ P, establishing a different  $OS_{\nu P}$ : **S < O < V**.<sup>13</sup> Subsequent right dislocation of the verb is followed by CD, which is not suspended, resulting in no doubling.

- (30) a. No doubling in right dislocation of verbs

keoi t<sub>i</sub> ni-di je aa4 **sik<sub>i</sub>?**  
 he this-CL thing Q eat  
 ‘He eats THIS THING?’

- b. The schematic derivation of (30a)

[ $\nu$ P S O **V** **O**] SFP V

**Object movement** → CD → LIN $\nu$ P;  $OS_{\nu P}$ : S < O < V

There is independent evidence for the proposed object movement. First, the object movement under discussion is not parasitic on right dislocation and can be applied independently.

- (31) keoi [**ni-di je**]<sub>i</sub> sik t<sub>i</sub> gaa4?  
 he this-CL thing eat Q  
 ‘He eats THIS THING?’

Importantly, if the nominal in the object position cannot undergo object movement (e.g. bare noun indefinites) as in (32a), the verb cannot be right dislocated either as in (32b). This suggests that right dislocation of verbs counts on the successful application of object movement.

- (32) a. \*Aaming **je**<sub>i</sub> sik t<sub>i</sub> aa4  
 Aaming thing eat Q  
 Int.: ‘Aaming eats?’

- b. \*Aaming je t<sub>i</sub> aa4 **sik<sub>i</sub>?**  
 Aaming thing Q eat  
 Int.: ‘Aaming eats?’

13. I assume that the object movement is achieved by some ‘tucking-in’ operation, landing on a position below the subject (Richards 2001).

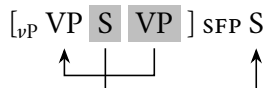
Second, it is suggested that the object movement that gives rise to the (non-canonical) SOV word order renders the object a contrastive focus (Ernst and Wang 1995, i.a.). We observe a similar interpretive effect in case of right dislocation of verbs where there is no doubling. In (30a), *ni-di ye* ‘this thing’ is contrastively focused. The speaker is clarifying the thing that Aaming eats. Crucially, such effect is absent if the verb is doubled, as in (21a), where the verb receives focus interpretation instead. The speaker is clarifying whether Aaming really *eats* the thing or not.

We are now left with the case of right dislocation of a subject without doubling. Similar to the proposed analysis for verbs above, I suggest that doubling of the subject is not obligatory because the VP can be fronted to the left edge of  $\nu$ P, rendering the subject on the right edge of the  $\nu$ P. The subject, consequently, is right dislocated with its lower copy being deleted by CD. The sentence in (33) has a derivational history given in (34).

(33) No doubling in right dislocation of subject

soeng sik ni-tiu jyu aa3 **Aaming**  
 want eat this-CL fish SFP Aaming  
 ‘Aaming wants to eat this fish.’

(34) The schematic derivation of RD of subjects



**VP movement**  $\rightarrow$  CD  $\rightarrow$  LIN $_{\nu P}$ ; OS $_{\nu P}$ : VP < S

Arguments for VP movement come in two ways. First, VP can move independently of right dislocation.

(35) [sik ni-tiu jyu]<sub>i</sub>, Aaming soeng t<sub>i</sub> aa3  
 eat this-CL fish Aaming want SFP  
 (Lit.) ‘To eat this fish, Aaming wants.’

Second, the VP in (33) receives focus interpretation, a discourse effect that is extensively discussed in Cheung (2009) (referred to as *Dislocation Focus Construction*). If the subject is doubled as in (25), then it is the subject that receives focus interpretation, instead of the VP. Such patterns are similar to those found with the doubling/non-doubling cases of right dislocation of verbs, as previously discussed.

To sum up, the current proposal derives the doubling asymmetries in right dislocation in a way largely similar to that in topic constructions. The additional complication comes from the optionality of doubling which is only observed in right dislocation. Replying on some independently motivated  $\nu$ P-internal movements, I suggest that optionality arises as a consequence of whether these movements occur or not. Crucially, the explanation of doubling asymmetries does not resort to the phrase structural status of the moving elements.

### 4.3 A remark on the difference in acceptability

As noted in section 2, there is a difference in acceptability between the unacceptable cases. On one hand, if an element must be doubled in case of movement (e.g. verb topicalization) but it is not, the sentence is strictly out (as in (1)). On the other hand, if an element strongly prefers not to be doubled (e.g. object topicalization and right dislocation), doubling this elements lead to a less severe unacceptability (relevant examples marked with ??, such as (2)). In other words, failing to double what should be doubled is more severely degraded than doubling what should not be doubled, i.e. failing to delete what should be deleted. I refer to the former case as *fail-to-double cases* and the latter as *fail-to-delete cases*. The question is why there is such a difference.

I suggest that the difference indeed indicates that the two cases violate different principles in the grammar. For the *fail-to-double cases*, the absence of the lower copy in verb topicalization directly violates the phonological requirements imposed by CL. For example, in derivation in (17), the step in (17b) dictates that the lower copy of *soeng* ‘want’ must be preceded by *Aaming* and *hai*. Failing to double (i.e. deleting the lower copy) violates the established OS. Violation of OS requirement leads to linearization failure and consequently the structure cannot be linearized.

In contrast, the *fail-to-delete cases* do not constitute such a violation. Consider the schematic derivation in (19), failing to delete the lowest copy of the object (i.e. the most embedded one) would not lead to failures in linearization - nothing forbids the verb from preceding the object. Instead, the structure is degraded because the operation that is responsible for minimizing copies (e.g. CD). This may violate an economy principle in the grammar such as the one given below:<sup>14</sup>

(36) Economy on identical copies

Minimize pronunciation of identical copies.

So the *fail-to-delete cases* violates an economy condition, rather than requirements related to linearization. Assuming that economy conditions are more “tolerant”, it therefore leads to a less severe unacceptability. On a relevant note, I have proposed that the suspension of CD is the last resort to ensure successful linearization in section 4.1. The last resort nature can be considered as an indication of this economy condition which prefers the application of CD, unless its application leads to ungrammaticality.

### 4.4 Resolving a further asymmetry in doubling

Before I end this section, I discuss a prediction and a further asymmetry in doubling, which also follow from the current proposal. Let us first consider a prediction concerning objects. We have seen that an object cannot be doubled when right dislocated (because it is on the right edge). But if this object

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14. A similar condition is proposed in Landau (2006, p.57).



also moves for topicalization, then the object movement within  $\nu P$  will establish a different  $OS_{\nu P}$ :  $O < S < V$ . In such case, we expect to see doubling of the object in right dislocation to be possible. This prediction is borne out in (37).

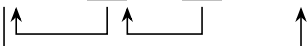
(37) Left-dislocated topics in right dislocation

**ni-di je** Aaming sik aa4 **ni-di je**  
 this-CL thing Aaming eat Q this-CL thing  
 ‘Aaming eats THIS THING?’

The derivation history given in (38) suggests that the object first stops at Spec  $\nu P$ , which, after the Spell-Out of  $\nu P$ , moves further for topicalization. The object continues to move for right dislocation (indicated by the rightward movement). In order to preserve the OS established in  $\nu P$ , the copy in the topic position must not be deleted by CD (such that there is a copy of the object that precedes the subject and the verb). The suspension of CD leads to two copies in the sentence.

(38) The schematic derivation of (37)

$[_{TopP} O \dots [_{\nu P} O S V O ]_{SFP} O ]$       Obj. move.  $\rightarrow$  CD  $\rightarrow$  LIN $_{\nu P}$ ;  $OS_{\nu P}$ :  $O < S < V$



While (37) shows that a left-dislocated topic can be doubled when it further undergoes right dislocation, it should be noted that not all types of topics can be doubled when right dislocated. For example, a base generated topic (e.g. a hanging topic or an aboutness topic) must not be doubled when it is right dislocated. The relevant example is given in (39) where *seoigwo* is considered as an aboutness topic, as it does not correspond to a gap in the sentence.

(39) Base generated topics in right dislocation

(??**seoigwo**) Aaming zungji lei aa3 **seoigwo**  
 fruit Aaming like pear SFP fruit  
 ‘As for fruits, Aaming likes pears.’

The asymmetry between a left dislocated topic and a base generated one follows from the current proposal. Crucially, a base generated topic have a different derivational history to a left-dislocated topic: a base generated topic does not originate within the  $\nu P$ , and thus it is not linearized relative to the elements within  $\nu P$ . Instead, it is base generated in the topic position in the CP domain. When it is right-dislocated, CD applies upon the Spell-Out of the TopicP and it deletes the copy in the topic position). As a result, a base generated topic is right dislocated without doubling, schematically shown in (40).

(40) The schematic derivation of (39)

$[_{TopP} Topic \dots [_{\nu P} S V O ]_{SFP} Topic ]$        $OS_{\nu P}$ :  $S < V < O$



The current proposal thus not only captures the patterns described in section 2, but it also makes a precise prediction on different doubling profiles for different types of topics which follow from their derivational histories.

## 5 Alternative explanations

In this section, I discuss three alternative explanations to the analysis of doubling proposed here. For expository purposes, I focus on how these alternatives fail to derive the doubling pattern of verbs in Cantonese, which demonstrate the most complicated pattern found (i.e. obligatory doubling and optional doubling). It should be noted that I am not arguing against the role of these alternatives in potentially deriving doubling patterns in other languages, but that they fall short of explaining the cases we have seen so far.

The first two alternatives stress the role of the phonological component (similar to the current proposal). Nunes (2004) and Corver and Nunes (2007) take advantage of an independently motivated operation in the phonological component, namely, *morphological fusion*, which applies to two adjacent terminals and leads to the formation of a complex head. This operation has an effect of rendering a member in a chain to be “invisible” to Copy Deletion, because, as they suggest, a morphologically fused element is no longer identical to its other copy. To see how it may work in verb topicalization in Cantonese, it could be the case that the higher copy is morphologically fused with a null Topic head, forming a complex head #V-TOP#. Consequently, it is regarded as distinct from the lower copy, i.e. V. CD does not apply since there are no identical copies. The same might be suggested for the doubling case in right dislocation, except that the null head being a different one, say, a head  $\kappa_D$ , that hosts right dislocated element in its specifier. However, the non-doubling case of verb in right dislocation poses a challenge to such an approach. To maintain a morphological fusion account, one would be forced to say that morphological fusion is optional. Importantly, it is only optional for the head  $\kappa_D$ , but not TOP, because we have seen that doubling in verb topicalization is obligatory. The optionality of the application of morphological fusion, together with the idiosyncratic nature of different functional heads, weakens the explanatory power of such an approach.<sup>15</sup>

Another potential alternative is proposed by Trinh (2009). He proposes a constraint on CD, which

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15. Further challenges have been discussed in Cheng and Vicente (2013), where they suggest that it is puzzling that morphological fusion does not apply to objects (i.e. no doubling in object topicalization). Citing an example from Brazilian Sign Language (Nunes and Quadros 2006), they note that it is possible to double *wh*-expressions (in addition to heads), which presumably have a complex internal structure (Cable 2007). Words in capital letters indicate the glosses for Brazilian Sign Language.

- (i) JOHN SEE **WHO** YESTERDAY **WHO**  
 ‘Who exactly is it that John saw yesterday?’

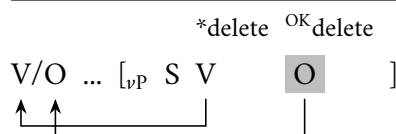
suggests that a lower copy can be deleted only if it “ends” an XP.

(41) Constraint on Copy Deletion (CCD, Trinh 2009)

A chain  $(\alpha, \beta)$  is deletable only if  $\beta$  is at the right edge of an XP.

Applying the idea to the Cantonese data, this constraint would capture the asymmetry between verbs and objects in topicalization: the lower copy of an object is deleted because it ends the  $\nu$ P, while that of a verb is not, because it does not end the  $\nu$ P. Schematically,

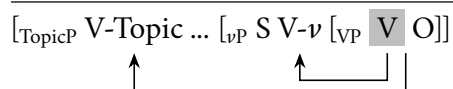
(42) A schematized illustration of verb and object topicalization in Cantonese



This approach, however, would also predict that verb doubling is obligatory when the verb is right dislocated, just like the case of verb topicalization. This is because the verb is not at the right edge. However, as we have seen, verb doubling is optional in right dislocation in Cantonese. Note that object movement within  $\nu$ P (like the one we have seen in §4.2) does not help since covert elements count in the calculation of what “ends” an XP, according to Trinh’s proposal (p.195, fn. 18).

A third possible alternative explanation might be a resort to the notion of parallel chains in Narrow Syntax. Following Chomsky (2008), Kandybowicz (2008), and Aboh and Dyakonova (2009), Lai (2019) proposes that doubling is due to the creation of parallel chains. The idea is that an element moves to two higher positions, creating two independent chains that have the same tail (i.e. the lower copy). When CD applies, only the lower copy is deleted, since both higher copies survive CD and hence there is doubling. While Lai primarily discusses the doubling cases in right dislocation, the same reasoning might be used to apply to verb doubling as follows. In verb topicalization, a verb might be suggested to move independently to both the  $\nu$  head and the Topic head, creating two separate chains. When CD applies, only the V head is deleted, resulting in two occurrences of the verb in  $\nu$  and Topic head.

(43) A schematized illustration of parallel chains in verb topicalization in Cantonese



Analogously, parallel chains might also be able to account for verb doubling in right dislocation, if we assume the verb moves to a counterpart of the Topic head that hosts right dislocation. However, this approach does not predict the optionality of doubling in right dislocation. To account for the absence of doubling in right dislocation, one must suggest that the higher copy of the chain  $\{V-\nu, V\}$  can sometimes be deleted. Such deletion is technically challenging under a parallel chain approach as we have to stipulate an unconventional deletion operation that targets the whole chain.

In sum, I conclude that existing accounts on doubling primarily focus on how to ensure the second

occurrence of a copy, but they are less adaptable to the optional nature of verb doubling in Cantonese. Further challenges to these alternative accounts are posed by the doubling pattern of objects and subjects where doubling is not strictly prohibited or required. The current proposal, by way of contrast, offers a more comprehensive account on the doubling patterns in Cantonese.

## 6 Extension: verb movement without doubling

So far, we have only discussed data in Cantonese and we now turn to some cross-linguistic data. Given the current explanation of (verb) doubling, the relative position of the verb to the subject is always fixed at the Spell-Out of  $\nu$ P. The proposal seems to predict that the word order of a language is either S-V-O (i.e. the verb does not move across the subject in the  $\nu$ P) or V-S-V-O (i.e. the verb moves across the subject and is doubled).

### (44) Verb movement without doubling

- a. **hittade** han faktist (\*hittade) pengarna under sängen? Swedish  
found he actually found money.the under bed.the  
‘Did he actually find the money under the bed?’ (Takita 2010, p.40, with adaptations)
- b. **razkazvala** beše često Marija (\*razkazvala) тази istorija Bulgarian  
told was often Maria told this story  
‘Maria had often told this story.’ (Harizanov 2019, p.8, with adaptations)

Following Takita (2010), I suggest the cross-linguistic difference results from the parameter of Spell-Out domain. Substantially, while Spell-Out invariably applies at  $\nu$ P, languages may differ in the size of the linearization domain.<sup>16</sup> I suggest that languages like Swedish and Bulgarian have a *different linearization domain* from Cantonese. For these languages, upon Spell-Out, only the complement of  $\nu$  but not the whole  $\nu$ P is linearized.

### (45) Spell-Out Domain Parameter for $\nu$ P (Takita 2010)

When Spell-Out applies to  $\nu$ P,


- a. Linearize the whole  $\nu$ P, including the elements on its edge, or
- b. Linearize the complement of  $\nu$ .

If Swedish and Bulgarian take the value of (45b), when Spell-Out applies to the  $\nu$ P, only the VP is linearization (as opposed to the  $\nu$ P in Cantonese). Consequently, the order between S and V is not fixed upon Spell-Out of  $\nu$ P. This is illustrated with the Swedish example in (44a). (46b) only gives the

16. The idea that the linearization domain of  $\nu$ P varies across languages has its root in Ko (2005, 2007), who proposes that the linearization domain of Korean is  $\nu$ P, rather than VP (which is assumed to be the linearization domain for some Scandinavian languages; see also discussions in Fox and Pesetsky (2005, section 5).

OS upon the the first SepII-Out, where the OS only contains ordering information of V, O and PP, to the exclusion of S. The verb is thus free to move at a later stage of the derivation. The same applies to Bulgarian data as well.

(46) The derivation of (44a)

- a.  $[_{CP} \text{ hittade } [_{TP} \text{ han faktist } [_{VP} \text{ han } [_{VP} \text{ hittade } \text{ pengarna under sängen? } ]]]]$   
  
b.  $LIN_{VP}; OS_{VP}: V < O < PP$

If this line of reasoning is on the right track, the availability of verb doubling is correlated with the size of Spell-Out domain in the following way:

(47) Verb doubling possibility

- a. Languages that allow verb doubling take the value of (45a); e.g. Cantonese  
b. Languages that disallow verb doubling take the value of (45b). e.g. Swedish, Bulgarian

Interestingly, the parameter is originally proposed in Takita (2010) to explain illicit cases of remnant movements in Japanese and licit ones in English and German. Specifically, he proposes that languages that take the value of (45a), i.e.  $\nu P$  is linearized upon Spell-Out, would disallow remnant movement. This describes the case of Japanese. Consider the following paradigm (adapted from Takita (2010, p.11-12)). (48a) is the baseline. (48b) shows that long distance scrambling of PP is possible. (48c) shows that CP scrambling is also possible. (48d), however, shows that once the PP is scrambled out of the embedded CP, the (remnant) CP cannot be scrambled.

(48) a. Baseline

Taroo-ga  $[_{CP}$  Hanako-ga  $[_{PP}$  Sooru-ni ] i-ru to ] omottei-ru  
Taroo-NOM Hanako-NOM Seoul-in be-PRES that think-PRES  
‘Taroo thinks [that Hanako lives [in Seoul] ].’

b. (Long distance) PP scrambling

$[_{PP}$  Sooru-ni ]<sub>i</sub>, Taroo-ga  $[_{CP}$  Hanako-ga  $t_i$  i-ru to ] omottei-ru  
Seoul-in Taroo-NOM Hanako-NOM be-PRES that think-PRES  
‘(lit.) [In Seoul]<sub>i</sub>, Taroo thinks [that Hanako lives  $t_i$ ].’

c. CP scrambling

$[_{CP}$  Hanako-ga  $[_{PP}$  Sooru-ni ] i-ru to ]<sub>j</sub> Taroo-ga  $t_j$  omottei-ru  
Hanako-NOM Seoul-in be-PRES that Taroo-NOM think-PRES  
‘(lit.) [That Hanako lives [in Seoul] ]<sub>j</sub>, Taroo thinks  $t_j$ .’

d. PP scrambling followed by CP scrambling

\*[<sub>CP</sub> Hanako-ga t<sub>i</sub> i-ru to ]<sub>j</sub> [<sub>PP</sub> Sooru-ni ]<sub>i</sub> Taroo-ga t<sub>j</sub> omottei-ru  
 Hanako-NOM be-PRES that Seoul-in Taroo-NOM think-PRES  
 ‘(lit.) [That Hanako lives t<sub>i</sub> ]<sub>j</sub> , [in Seoul]<sub>i</sub>, Taroo thinks t<sub>j</sub>.’

The unacceptability of (48d) has been attributed to versions of the Proper Binding Condition (PBC, Fiengo 1977; Saito 2003), which states that traces must be bound. Takita (2010) casts doubt on the precise nature of PBC in the grammar and instead proposes that the PBC-effects observed above follow from some general principle concerning linearization. Substantially, adopting the idea of Cyclic Linearization, he proposes that remnant scrambling is ruled out because it leads to conflicts in linearization. To see why, consider first the (long distance) scrambling of the PP in (48d), which requires the PP to move to the edge of the  $\nu$ P. Since Japanese takes the value of (45a), the whole  $\nu$ P is linearized, giving to OS <sub>$\nu$ P</sub>: **PP** < **S** < **V**. The PP is further scrambled out of the CP. Then, the remnant CP is scrambled to a position higher than the PP. This establishes another OS at the final Spell-Out: **CP** < **PP**. Note that this CP contains the subject and the verb whose order is relativized to the PP already. So the scrambling of CP would give rise to OS like this: **S** < **V**<sub>CP</sub> < **PP**. This results in linearization conflicts and hence the unacceptability of (48d). Remnant movement/scrambling in Japanese is thus systematically ruled out by Cyclic Linearization and the supplementary assumption that the linearization domain of Japanese is  $\nu$ P.

Now consider remnant movement in English and German. In contrast to Japanese, these languages allow remnant movement.

(49) Licit remnant cases

- a. *English: A-movement followed by remnant  $\nu$ P movement*  
 [Criticized t<sub>i</sub> by his boss]<sub>j</sub> , John<sub>i</sub> has never been t<sub>j</sub>.
- b. *German: object scrambling followed by remnant  $\nu$ P/VP topicalization*  
 [t<sub>i</sub> Zu lesen]<sub>j</sub> hat keiner [das Buch]<sub>i</sub> t<sub>j</sub> versucht  
 to read has no.one the book tried  
 ‘No one has tried to read the book’

Takita (2010) suggests that English and German have a different linearization domain, where only the elements in the VP are linearized upon Spell-Out of  $\nu$ P. Take the English case in (49a) as an example. Assuming that the object *John* can move to the edge of  $\nu$ P due to passivization, its linear order with regard to other elements is not fixed upon the Spell-Out of  $\nu$ P. This is because only the elements in VP are linearized in English, which gives rise to the OS <sub>$\nu$ P</sub>: **V** < **PP**. Following this, the object *John* undergoes further movement to Spec TP. Subsequent (remnant) movement of the  $\nu$ P would not result in linearization conflicts: no OS forbids V or PP from preceding the object. As a result, remnant movement is allowed in languages with a linearization domain of VP under Cyclic Linearization.

The cases of Japanese and English/German can be summarized as follows: the availability of remnant movement is correlated with the size of the Spell-Out domain in a way specified in (50).

(50) Remnant movement possibility

- a. Languages that disallow remnant movement take the value of (45a); e.g. Japanese
- b. Languages that allow remnant movement take the value of (45b). e.g. German, English

Returning to our discussion on verb doubling, (50) and (47) combine to predict the distribution of verb doubling and remnant movement, since they require a language to take different values on the Spell-Out domain parameter suggested in (45). The predictions are given in (51):

(51) Predicted distribution of verb doubling and remnant movement

- a. Languages that allow verb doubling will disallow remnant movement.
- b. Languages that allow remnant movement will disallow verb doubling.

(51a) is borne out by the unavailability of remnant  $\nu$ P movement in Cantonese. (52a) shows that  $\nu$ P-fronting is disallowed if the subject is moved out from the  $\nu$ P, i.e.  $\nu$ P fronting is disallowed in raising constructions. This follows the same line of reasoning as the explanation of why remnant scrambling is disallowed in Japanese. Note that (52b) is supplied to show that  $\nu$ P-fronting is allowed if the subject of the  $\nu$ P is not moved out, i.e.  $\nu$ P fronting is allowed in control constructions.

(52)  $\nu$ P fronting in Cantonese

- a. \* $[_{\nu P} t_i \text{ bin } \text{hak } ]_j$  , go tin<sub>i</sub> hoici t<sub>j</sub> laa3 Raising  
           become dark,      CL sky begin      SFP  
           Intended: ‘To become dark, the sky begins.’
- b.  $[_{\nu P} \text{ PRO } \text{pau } \text{coengpau } ]_i$ , keoi soengsi-gwo t<sub>i</sub> laa3 Control  
           run long.run,      keoi try-EXP      SFP  
           ‘To run long distance, he tried.’

(51b) is borne out in English. While remnant movement is allowed, verb doubling is not, as in (53). With a smaller Spell-Out domain, the V is occupying the edge position and thus free to move. Doubling is not required, hence disallowed (due to the last resort nature).<sup>17</sup>

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17. It should be noted that movement of the verb without doubling is disallowed either:

(i) \*Criticized, John t<sub>i</sub> his boss.

This should not be regarded as a counterexample to the current proposal, since, the current proposal states the *necessary* condition for doubling, but not the *sufficient* condition for doubling. While verb movement without doubling is allowed in Swedish and Bulgarian, sentences like (i) in English may be ruled out on independent grounds. I do not pursue further in this paper.

(53) Verb doubling in English

\***Criticize(d)**, John **criticized** his boss.

As a final remark, I briefly discuss what the current proposal does not necessarily predict, listed in (54). The current proposal concerns the *necessary* condition for doubling. If a language disallows verb doubling, it need not allow remnant movement, as there may be independent reasons to rule out verb doubling. Likewise, if a language disallows remnant movement, it need not allow verb doubling either.

(54) Some non-predictions

- a. Languages that disallows verb doubling will allow remnant movement.
- b. Languages that disallows remnant movement will allow verb doubling.

It is, however, interesting to see that if a language disallows verb doubling *precisely* because of its Spell-Out domain being a VP, we do expect to see remnant movement to be possible. This has already been seen in English and we also observe remnant VP topicalization in Swedish, as in (55).

(55) Remnant movement in Swedish (Fox and Pesetsky 2005, p.25)

?[Gett henne t<sub>i</sub>] har jag den<sub>i</sub> inte ...  
given her have I it not  
'I have not given it to her.'

Whether (54b) holds is less clear, however. To the best of my knowledge, there is no Japanese/Korean counterpart of the Cantonese verb doubling. The closest examples that I am aware of are discussed in Nishiyama and Cho (1998), where both languages display some doubling effects in predicate cleft constructions:

(56) Japanese

John-ga computer-o **kai**-wa **si**-ta  
John-NOM computer-ACC buy-CON do-T  
'Indeed, John bought a computer, (but...).'

(57) Korean

John-i computer-lul **sa**-ki-nun **sa**-ss-ta  
John-NOM computer-ACC buy-KI-CON buy-T-M  
'Indeed, John bought a computer, (but...).'

In the Japanese case, the verb is associated with a dummy verb instead of an identical copy, whereas the Korean case comes closer to a case of verb doubling, but the first verb is marked with the morpheme *-ki*. For reasons of space, I will leave the full investigation of these examples to future research. The following table summarizes the findings in this section:



Parameter	(45a) Linearize $\nu$ P			(45b) Linearize VP		
Language	Cantonese	Japanese	Korean	Swedish	English	German
Verb doubling	Yes	?	?	No	No	No
Remnant movement	No	No	No	Yes	Yes	Yes

Table 2: Verb doubling and remnant movement across languages

Summing up, this section began with cases of verb movement without doubling in languages like Swedish and Bulgarian. Following Takita (2010), I proposed that the difference between languages with/without verb doubling lies in the Spell-Out domain parameter given in (45). I then suggested that such an explanation is further corroborated by a correlation between verb doubling and remnant movement, the availability of which depends on the parametric value for (45) that the language takes.

## 7 Concluding remarks

In this paper, I began with a consideration of an asymmetry in verb topicalization and object topicalization. I set up the empirical foundation by giving a description of various patterns of doubling in Cantonese. I discussed the doubling profiles of verbs, subjects and objects with regard to topic constructions and right dislocation. I then proposed an account based on Cyclic Linearization. Specifically, I proposed that doubling is a consequence of the suspension of Copy Deletion. Copy Deletion is suspended as a last resort to avoid violation of linearization requirements imposed by CL. In the final section, I discussed cases where verb movement does not display doubling effects in languages other than Cantonese, and suggested an account based on the parameter of the linearization domain, following the ideas in Takita (2010).

The implications of the current proposal are two-fold. First, it lends further support to Cyclic Linearization, which has been argued to capture different phenomena in different languages, e.g. object shift in Scandinavian languages (Fox and Pesetsky 2005), quantifier floating in Korean (Ko 2005, 2007), remnant movement in Japanese (Takita 2010), preposition stranding in English (Drummond, Hornstein, and Lasnik 2010), constraints on the scrambling of genitive-marked argument in Korean (Simpson and Park 2019) and intermediate stranding in a number of languages (Davis 2020). CL stresses the role of the phonological component in the study of syntactic locality, serving as an alternative direction to Chomsky’s version of phase theory (Chomsky 2000, 2001), one that suggests that a syntactic domain is inaccessible both to syntactic and phonological operations.

Second, the proposal derives the Cantonese doubling pattern without recourse to the phrase-structural status of the (non-)doubling elements and maintains that the mechanism that determines copy pronunciation is the same for heads and phrases. This resonates with recent efforts in unifying head and phrasal movement. For example, it is argued that all movement operations leave a trace that

feed interpretation (Hartman 2011); substitution, in addition to adjunction, is available to both head and phrasal movement (Funakoshi 2012, 2014); head movement can target specifier positions just like phrasal movement (Harizanov 2019; Harizanov and Gribanova 2019); and dependencies between arguments, non-arguments, and heads may lead to structure reduction in the formation of infinitival clauses (Pesetsky 2020). This paper provides a further piece of evidence along this line.

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