Verb Doubling and Cyclic Linearization

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1. Introduction

Movement generally leaves behind a gap, but there are cases where a copy is employed (i.e. doubling of the moved element). The paper examines the pattern of doubling in Cantonese in two constructions, namely, topic constructions (leftward displacement) and right dislocation (rightward displacement), with regard to the different behaviours of verbs, subject and objects. In this paper, I model how doubling is prohibited, required, or optional. The proposal is built on two ideas: Cyclic Linearization (CL, Fox & Pesetsky (2005)), which suggests that syntactic structures are linearized cyclically, and Chain Reduction (CR, Nunes (1995, 2004)), which governs the pronunciation of different copies of the moving elements. In particular, I suggest that doubling is resolved when CR is required to be suspended, which is a last resort to avoid violation of Linearization Preservation.

This rest of the paper is organized as follows: §2 discusses the patterns of doubling in Cantonese. §3 details the proposal. §4 and §5 derive the different doubling patterns in topic constructions and right dislocation, respectively. §6 discusses some predictions made by the proposal and §7 concludes the paper with remarks.

2. The pattern of doubling in Cantonese

Let us begin with a contrast between verbs and objects. As mentioned in Cheng & Vicente (2013), while both verbs and objects can be topicalized, verbs must be doubled, objects must not. Note that the topic marker ne is optional in topic constructions.¹

(1) Topic constructions²

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

b. ni-tiu jyu (ne), Aaming soeng sik (ni-tiu jyu) objects this-CL fish TOP, Aaming want eat this-CL fish ‘This fish, Aaming wants to eat.’

On the other hand, it has been reported that both verbs and objects can be right dislocated (displacement of elements to the right of sentence-final particles, see Cheung (2009, 2015); Lee (2017), i.a.). A slightly different asymmetry, however, arises: verbs are optionally doubled, whereas objects must not be doubled.

¹ When a verb is topicalized, the presence of the copula hai (after the subject) is strongly preferred. No such preference is observed in object topicalization. For discussions, see Cheng & Vicente (2013).

² Throughout the paper, I consistently omit the tones in the romanization of Cantonese for simplicity, except of sentence-final particles, in avoidance of ambiguity.
Right dislocation

a. Aaming (sik) ni-di je aa4 sik?
   Aaming eat this-CL thing Q eat
   ‘Aaming eats this thing?’

b. Aaming sik (*ni-di je) aa4 ni-di je?
   Aaming eat this-CL thing Q this-CL thing
   ‘Aaming EATS this thing?’

Taking subjects into considerations, we observe yet another different pattern: topicalized subjects must not be doubled, whereas right-dislocated subject are optionally doubled.

Topic constructions

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

Right dislocation

(Aaming) soeng sik ni-tiu jyu aa3 Aaming subjects (Cheung, 2009, 2015)

Aaming want eat this-CL fish SFP Aaming
   ‘Aaming wants to eat this fish.’

The patterns above can be alternatively described as follows: (i) object doubling is generally banned (in both topic constructions and right dislocation); (ii) verb doubling is obligatory in topic constructions, but optional in right dislocation; (iii) subject doubling is banned in topic constructions, but optional in right dislocation. Table 1 below provides a summary.

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<thead>
<tr>
<th></th>
<th>Subject</th>
<th>Verb</th>
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<tr>
<td>Topic constructions</td>
<td>S, (*S-)V-O</td>
<td>V, S-*(V-)O</td>
<td>O, S-V-(*O)</td>
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<tr>
<td>Right dislocation</td>
<td>(S-)V-O, S</td>
<td>S-(V-)O, V</td>
<td>S-V-(*O), O</td>
</tr>
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</table>

Table 1: Doubling possibilities (Keys: dark gray - banned; light gray - optional; white - obligatory)

3. A constraint on Chain Reduction

In this section, I propose a way to derive the different patterns of doubling observed in Cantonese. I will first start with discussing the idea of Cyclic Linearization (Fox & Pesetsky, 2005), followed by illustrations couched in terms of the copy theory of movement (Chomsky, 1995; Nunes, 1995, 2004). I then turn to the proposal.

3.1. A primer on Cyclic Linearization

Fox & Pesetsky (2005) proposes that syntactic structure is linearized cyclically. At each domain, Ordering Statements (OS) that contain ordering information among (overt) elements are issued. OS, once established, must be respected by overt elements in the final output, a requirement called Linearization Preservation. OS are cumulative, and once established, cannot be over-written. A crucial property of CL is that movement across domains is generally allowed, as long as it does not create an OS that would violate Linearization Preservation.

In more substantial terms, let me go through different scenarios that illustrate licit and illicit movements under CL. The idea is implemented under a copy-theoretic approach to movement (Chomsky,
I suggest that two operations take place at the end of each domain (i.e., Spell-Out):

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

(i) **Chain Reduction** (CR, standardly deleting the low copies), followed by

(ii) **Linearization** (LIN, establishing Ordering Statements).

Consider the two scenarios below. At domain D, LIN occurs, establishing the OS$_D$ of $X < Y < Z$. In the next domain D' where some other element (i.e., $\alpha$) is merged, an ‘edge’ movement (X-movement) is allowed, as it does not alter the previously established OS, i.e., $X$ still precedes both $Y$ and $Z$ (see Scenario 1). However, a ‘non-edge’ movement (Y-movement) is disallowed, crucially because when CR applies to the low copy of $Y$, the OS that requires $X$ precede $Y$ is no longer obeyed (see Scenario 2, CR marked with brackets).

**Scenario 1** (LIN$_D$ $\rightarrow$ Move$_{edge}$ $\rightarrow$ CR $\rightarrow$ LIN$_{D'}$)

\[
[D' \ldots X \alpha [D (X) Y Z]]
\]

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

**Scenario 2** (LIN$_D$ $\rightarrow$ Move$_{non-edge}$ $\rightarrow$ CR $\rightarrow$ LIN$_{D'}$)

\[
[* [D' \ldots Y \alpha [D X (Y) Z]]
\]

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

Y-movement is possible if it proceeds successive cyclically: it moves to the edge of D before it moves out to D’ such that the OS established at D is now different from Scenario 1 and 2: $Y < X < Z$. Subsequent Y-movement to a higher domain as depicted in Scenario 3 is possible, as applying CR to the low copies of Y would not contradict any OS.

**Scenario 3** (Move within D $\rightarrow$ CR $\rightarrow$ LIN$_D$ $\rightarrow$ Move$_{edge}$ $\rightarrow$ CR $\rightarrow$ LIN$_{D'}$)

\[
[D' \ldots Y \alpha [D (Y) X (Y) Z]]
\]

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

Different from standard assumptions about phases (particularly the version in Chomsky (2000, 2001)), CL opens some other possibilities for Y-movement. In Scenario 4, a non-edge movement from within D is licit if it is followed by some ‘compensating movement’: Y movement is allowed if X also moves to position higher than Y. Consequently, the ordering between X and Y is preserved and hence no violation of Linearization Preservation.

**Scenario 4** (LIN$_D$ $\rightarrow$ Move$_{edge}$ $+$ Move$_{non-edge}$ $\rightarrow$ CR $\rightarrow$ LIN$_{D'}$)

\[
[D' \ldots Y \alpha [D (X) (Y) Z]]
\]

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

Another relevant scenario concerns ellipsis, which rescues Scenario 2 by not pronouncing some elements, q.v. “Salvation by Deletion”. Elements marked for ellipsis are immune to Ordering Statements.

**Scenario 5** (LIN$_D$ $\rightarrow$ Move$_{non-edge}$ $\rightarrow$ Ellipsis $\rightarrow$ LIN$_{D'}$)

\[
[D' \ldots Y \alpha [D X Y Z]]
\]

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

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3 The original version of CL is couched in terms of multi-dominance, leaving little room for the discussion on doubling possibilities. I adapt the idea to the copy theory of movement.

4 This is arguably the case for object shift in Scandinavian languages, see Fox & Pesetsky (2005) for extensive discussions.
3.2. The proposal

With this much background, the crux of my proposal is that Linearization Preservation takes priority over CR, which may potentially suspend the application of CR.

(10) Chain Reduction suspension
Chain Reduction on a copy is suspended as a last resort if it violates Linearization Preservation.

In effect, it opens up a new way for non-edge movements: multiple pronunciation (i.e. doubling). Movement of a non-edge element to a higher domain would not violate any OS if its low copy is not targeted by Chain Reduction. Scenario 6 below is minimally different from Scenario 2 in that Y-movement is accompanied by CR suspension, resulting in doubling of Y.

(11) Scenario 6 (LIND \text{→} \text{Move}_{\text{non-edge}} \text{→ CR suspension} \text{→ LIN})
\[ [D' \ldots Y \alpha [D X Y Z]] \]
\[ \overset{\text{OS}_{D'}}{< \alpha < D(X < Y < Z)} \]

I further specify how OS is obeyed in cases with multiple copies. The original proposal of CL is silent on elements with more than one copy. Substantially, (12) suggests that if any one copy in a chain \{\alpha, \alpha\} satisfied the established OS (that involves \alpha), the other one copy is set free from that OS. In (11), the high copy of Y is free from the OS\(_D\): X < Y and does not constitute a violation.\(^5\)

(12) Minimal Compliance to Ordering Statements
For successful linearization, each OS only needs to be satisfied once.

4. Deriving the doubling pattern in topic constructions

In this section, I will demonstrate how this proposal derives the doubling pattern in topic constructions, namely, the obligatory verb doubling and the obligatory absence of doubling for subjects and objects. I will additionally make two assumptions which carry over to the next section on right dislocation: (i) \(v\)P and CP are Spell-Out domains; (ii) \(v\) cannot move to Spec \(v\)P, illustrated below.

(13) Illicit \(v\)-movement to Spec \(v\)P

\[ \overset{\text{\(v\)P}}{\text{\(v\)}} \]
\[ \overset{\text{\(v\)P}}{\text{\(v\)}} \]
\[ \overset{\text{\(v\)}}{\text{\(v\)}} \]
\[ \overset{\text{\(v\)}}{\text{\(v\)}} \]
\[ \overset{\text{\(v\)P}}{\text{\(v\)}} \]
\[ \overset{\text{\(v\)P}}{\text{\(v\)}} \]
\[ \overset{\text{\(v\)P}}{\text{\(v\)}} \]
\[ \overset{\text{\(v\)P}}{\text{\(v\)}} \]

\(^5\) (12) follows the spirit of Principle of Minimal Compliance, which can be regarded as its linearization counterpart (given in (ii)).

(i) Principle of Minimal Compliance (Richards, 1998)
For any dependency D that obeys constraint C, any elements that are relevant for determining whether D obeys C can be ignored for the rest of the derivation for purposes of determining whether any other dependency D’ obeys C.

(ii) Principle of Minimal Compliance, linearization version
For any two elements \(\alpha\) and \(\beta\) that obey an Ordering Statement (OS), any other (identical) copy that is relevant for determining whether it obeys that OS can be ignored for the rest of the linearization for purposes of determining whether it obeys that OS.
4.1. Obligatory doubling of verbs

The relevant example is repeated in (14) with the derivational steps in (15). I abstract away from the topic marker *ne* and sentence-final particles *ge*. I assume that they are both vP-external.

(14) Obligatory verb doubling

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

(15) Derivation of (14)

a. Building of vP (headed by soeng ‘want’)
   \[vP Aaming hai soeng sik jyu \]

b. Spell-Out of vP
   \(\text{(CR)} \rightarrow \text{LIN}_{vP}; \ \text{OS}_{vP}: \ Aaming < hai < soeng < sik < jyu\)

c. (Non-edge) verb movement for topicalization⁶
   \[\text{[TopicP soeng ... } [vP Aaming hai soeng sik jyu ]}\]

d. Spell-Out of TopicP
   \(\text{CR suspension } \rightarrow \text{LIN}_{\text{TopP}}; \ \text{OS}_{\text{TopP}}: \ \text{soeng} < Aaming < hai < \text{soeng} < \text{sik} < jyu\)

The first two steps in (14) establish a set of Ordering Statements. Importantly, verbs cannot move to its own Spec by assumption. Then, a non-edge movement occurs at (15c), where *soeng* ‘want’ moves to a higher domain. Here, CR is suspended to avoid violation of Linearization Preservation. The lower copy of *soeng* thus remains overt. The OS *hai < soeng* in (15b) is thus obeyed. On the other hand, the high copy of ‘want’, by virtue of Minimal Compliance to OS in (12), is now free from the OS *hai < soeng* because it is already satisfied once (by the low copy). It also survives CR because its deletion would violate another OS established in (15d), i.e. *soeng < Aaming < hai < ... .*

What allows the low copy of the verb to escape from CR is the fact that it is preceded by some element in the vP such that CR on it would violate Linearization Preservation. It follows that the presence of *Aaming* or *hai* is crucial to doubling. This is borne out below, as we see that either of them can be absent (as in 16a and 16b), but not both (as in 17).

(16) a. soeng (ne), hai soeng sik jyu ge2 absence of the subject
    want TOP FOC want eat fish SFP
    ‘As for (whether I) want, (I) want to eat fish.’

b. soeng (ne), Aaming soeng ge2 absence of *hai*
    want TOP Aaming want SFP
    ‘As for (whether he) wants, Aaming wants.’

(17) *soeng (ne), soeng (sik jyu) ge2 absence of both the subject and *hai*
    want TOP, want eat fish SFP
    ‘As for (whether I) want, (I) want (to eat fish).’

The structure allowing for doubling is schematically represented as follows (i.e. Scenario 6).

(18) Verb topicalization

\[\text{[TopP V [ ... [vP *(S/hai) V XP ]]]} \quad \text{CR suspension } \rightarrow \text{LIN}_{\text{TopP}}; \ \text{OS}_{\text{TopP}}: \ V < S/hai < V < XP\]

⁶ I abstract over the standard subject movement for its irrelevance.
4.2. Illicit doubling of subjects and objects

Objects are different from verbs in terms of movement possibility to Spec vP. Since objects can move to Spec vP, CR applies as usual (not suspended), resulting in absence of doubling. The derivation of (19) is schematically represented in (20) (i.e. Scenario 3).

(19) **ni-tiu jyu** (ne), Aaming soeng sik (**ni-tiu jyu**) Object topicalization, = (1b)
    this-CL fish TOP, Aaming want eat this-CL fish
    ‘This fish, Aaming wants to eat.’

(20) Object topicalization
    \[
    \text{Object movements} \rightarrow \text{CR} \rightarrow \text{LIN}_{\text{TopP}}; \text{OS}_{\text{TopP}}: O < S < V
    \]
    The same line of reasoning applies to subjects in topic constructions, with no suspension of CR (i.e. Scenario 1).

(i) Subject topicalization
    \[
    \text{Subject movement} \rightarrow \text{CR} \rightarrow \text{LIN}_{\text{TopP}}; \text{OS}_{\text{TopP}}: S < V < O
    \]
    To sum up, the current proposal derives the asymmetry in topic constructions between verbs and objects/subjects from their structural positions (i.e. their launching sites): it hinges on the possibility to stop at Spec vP. It makes no reference to the head/phrase distinction between the topicalized elements (a possibility mentioned but rejected in Cheng & Vicente (2013)): verbs are “special” not because they are heads, but because they cannot stop at Spec vP, as opposed to objects and subjects.

5. Deriving the doubling pattern in right dislocations

5.1. Optional doubling of verbs

If doubling of a leftward-moving verb is triggered by preceding vP-internal elements, we expect to see that doubling of a rightward-moving verb will be triggered by vP-internal elements that follow it. This is borne out in the following cases. Doubling of (matrix) verbs are possible in the presence of objects or embedded verbs (as in (21a) and (22a), respectively), which is otherwise impossible (as in (21b) and (22b)).

(21) Verb doubling allowed in the presence of objects
    a. keoi sik ni-di je aa4 sik?
    he eat this-CL thing Q eat
    ‘He EATS this thing?’
    b. *keoi sik aa4 sik?
    he eat Q eat
    Intended: ‘He EATS?’

(22) Verb doubling allowed in the presence of embedded verbs
    a. keoi soeng heoi gaa3 soeng
    he want go SFP want
    ‘He WANTS to go.’
    b. *keoi soeng heoi gaa3 heoi
    he want go SFP go
    ‘He wants to GO.’

An explanation under the current proposal is that since the established OS in vP dictates that V must precede O/the embedded V in the final output, CR is suspended (hence doubling), or it would violate Linearization Preservation. Assuming a rightward movement analysis of right dislocation, the derivation of these cases are represented below:\(^7\)

\(^7\) For simplicity, I will only give the OS in vP, which is crucial to the final word order. Subsequent movement that violates OS in vP would result in doubling, under the current proposal.
(23) a. The (simplified) structure of (21)  
\[ [v_P \ S \ V \ (O) \ ] \ AA4 \ V \]  
OS_{v_P}: S < V < (O) 

b. The (simplified) structure of (22)  
\[ [v_P \ S \ V1 \ [TP ... \ V2 \ ] \ GAA3 \ \{V1*/V2\} \]  
OS_{v_P}: S < V1 < V2 

An immediate question arises as to why doubling for verbs in right dislocation optional. In cases like (24a), I suggest that there is object movement before the Spell-Out of vP, establishing a different OS_{v_P}: S < O < V. After object movement, the verb is on the right edge of vP, subsequent rightward movement does not suspend CR, resulting in no doubling.

(24) A non-doubling case of right dislocation of verbs  
\begin{enumerate}
\item a. keoi ti ni-di je aa4 sik?  
   he this-CL thing Q eat  
   ‘He eats THIS THING?’  
\item b. The simplified structure of (24a)  
\[ [v_P \ S \ O \ (V) \ (O) \ ] \ AA4 \ V \]  
   object movement → CR → LIN_{v_P}; OS_{v_P}: S < O < V 
\end{enumerate}

It is noteworthy that the object movement is independently motivated. First, it can occur independent of right dislocation. Such an object preposing rule is necessary to derive SOV word order in Chinese, which renders the object a contrastive focus (Ernst & Wang, 1995).

(25) keoi [ni-di je] ti sik gaa4?  
   he this-CL thing eat Q  
   ‘He eats THIS THING?’ 

Importantly, objects that cannot under object preposing (e.g. bare nouns that are used as indefinites) cannot undergo right dislocation either, suggesting that right dislocation of objects is parasitic on object movement.

(26) a. *Aaming jei sik ti aa4  
   Aaming thing eat Q  
   Int.: ‘Aaming eats?’  
\item b. *Aaming sik ti aa4 jei?  
   Aaming eat Q thing  
   Int.: ‘Aaming eats?’ 

Second, the object in (24a) is interpreted as a focus in an identical way as the object in (25), which follows from the presence of object movement in both cases. In the absence of such movement, as in (21a), it is the verb that receives focus interpretation. I therefore conclude that optional doubling of verbs in right dislocation follows from the optional nature of object movement: if object movement is present, there is no verb doubling; if it is absent, there is verb doubling.

5.2. Illicit doubling of objects  

The illicit doubling specific to objects as in (27a) is due to the fact that objects are at the right edge of vP. Rightward movement after the Spell-Out of vP would be subject to CR.

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8 I assume that the object movement is achieved by some ‘tucking-in’ operation, landing on a position below the subject (Richards, 2001).
(27) a. Aaming sik (*ni-di je) aa4 ni-di je
Aaming eat this-CL thing Q this-CL thing
‘Aaming EATS this thing?’

b. The simplified structure of (27a) [vP S V (O) ] SFP O

It is noteworthy that Lai (2019) has pointed out that object doubling cannot be ruled out by avoidance of phonological identity. In (28), the subject is right dislocated (and doubled). Importantly, it is phonologically identical to the object. The fact that this sentence is well formed suggests that phonological identity between the object and the right dislocated element would not lead to unacceptability.

(28) keoii zungji keoij aa3 keoii
she like her SFP her
‘Shei likes herj.’ (Lai, 2019:p.246), with adaptations

5.3. Optional doubling of subjects

Finally, recall that right-dislocated subjects are optionally doubled:

(29) Right dislocation
(Aaming) soeng sik ni-tiu jyu aa3 Aaming
Aaming want eat this-CL fish
‘Aaming wants to eat this fish.’

Subjects are doubled in right dislocation for the same reason as why verbs are doubled in right dislocation: subjects are followed by V and O and this gives rise to the OS\_vP of S < V < O in the vP. Rightward movement of subjects would lead to CR suspension and hence doubling.

The interesting case is the non-doubling one. I suggest that the reason why doubling is not obligatory for subjects is that there is optional VP movement to the edge of vP such that the subject is on the right edge of the vP, comparable to object movement which renders verb doubling optional in right dislocation. This is illustrated below:

(30) The (simplified) structure of (29) [vP VP (S) (VP) ] SFP S

The movement is evidenced by the focus interpretation of the VP (or some elements within the VP) in (29), a reading that is extensively discussed in Cheung (2009) and earns it the name of Dislocation Focus Construction. This is also supported by the fact that if the focus interpretation of VP is absent if the subject is doubled (i.e. no VP fronting for focus). It is the subject that receives focus interpretation (Lai, 2019).

In sum, all the six doubling patterns observed in Cantonese can be derived via the proposed version of CL, supplemented by some independently motivated movement operations within vP.

6. Predictions on topicalization and right dislocation

The proposal makes a few predictions on the interaction between topicalization and right dislocation. First, it predicts that doubling of objects in right dislocation is possible if the object undergoes topicalization at the same time. To see an example, (31) involves both object topicalization and object right dislocation:
While we have seen that object doubling is illicit in right dislocation, this is possible because the movement within vP establishes the OS$v_p$: $O < S < V$. Subsequent rightward movement of the object after the Spell-Out of vP would require CR suspension, illustrated below:

(32) The simplified structure of (31)

Second, we predict that a base generated topic cannot be doubled in right dislocation: since it does not originate within the vP, it is not linearized relative to elements within vP. When it is right-dislocated, CR applies without violating any OS.

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

Third, object topicalization would block verb doubling in right dislocation, as shown in (34b). This is because the verb is on the right edge of vP upon Spell-Out in case of object movement. Doubling is thus disallowed in a way similar to right dislocation of a non-topicalized object.

(34) a. Aaming sik ni-di je aa4 sik
Aaming eat this-CL thing Q eat
‘Aaming EATS this thing?’

b. *ni-di je Aaming sik aa4 sik
this-CL thing Aaming eat Q eat
‘Aaming EATS this thing?’

7. Concluding remarks

In this paper, I have examined the doubling patterns in Cantonese, and derive them via a slightly revised version of Cyclic Linearization. Crucially, Linearization Preservation takes priority to Chain Reduction such that CR is suspended if its application would violate OS established in a previous domain.

The proposal is by no means be specific to Cantonese, but for space reason I can only mention one prediction on OV languages. In VO languages like Cantonese, objects cannot be doubled because the object is already at the right edge; however, in OV languages, it does not start out at the right edge. We predict that object doubling is possible even in the absence of object topicalization. This is borne out in Japanese right dislocation.

(35) John-wa Barriers-o yonda yo, Barriers-o
John-TOP Barriers-ACC read SFP Barriers-ACC
(Lit.) ‘John read Barriers, Barriers.’ (Abe, 2019)

Further investigation in doubling patterns in other languages is much needed, but must await another occasion.
References


