Verb doubling and Cyclic Linearization[*]

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Abstract

This talk proposes that verb doubling is a consequence of the interaction between Cyclic Linearization (Fox and Pesetsky 2005, where syntactic structure is linearized cyclically) and Chain Reduction (CR, Nunes 1995, 2004). Substantially, I propose CR is constrained by Linearization Preservation such that CR is suspended *as a last resort* if it violates Linearization Preservation. The proposal explains the asymmetries between verbs and objects with regards to doubling possibilities in Cantonese.

1　Doubling possibilities in Cantonese

Movement generally leaves behind a gap, but there are cases where a copy is employed (i.e. doubling of the moved element). This talk tries to model when a copy is prohibited, required, or allowed.

Asymmetry 1 | While both verbs and objects can be <u>topicalized</u>, verbs *must* be doubled, objects *must not*.

(1)　a.　**想** (呢)，阿明係*(**想**)食魚嘅

　　　　soeng (ne), Aaming hai *(**soeng**) sik jyu ge2　　　Verb topicalization (Cheng and Vicente 2013)

　　　　want　TOP　Aaming FOC want　　eat fish SFP

　　　　'As for (whether he) wants, Aaming wants to eat fish (but...)'

　　b.　**呢條魚**(呢)，阿明想食(*__呢條魚__)

　　　　ni-tiu jyu (ne), Aaming soeng sik (*__ni-tiu jyu__)　　　　　　　Object topicalization

　　　　this-CL fish TOP, Aaming want　eat this-CL　fish

　　　　'This fish, Aaming wants to eat.'

Asymmetry 2 | While both verbs and objects can be <u>right dislocated</u>, verbs are *optionally* doubled, objects *must not* be doubled.

(2)　a.　阿明(**食**)呢啲野呀 **食**

　　　　Aaming (**sik**) ni-di　je　　aa4 **sik**?　　　　　　　　　　RD of verbs (Lee 2017)

　　　　Aaming eat　this-CL thing Q　eat

　　　　' Aaming eats this thing?'

　　b.　阿明食 (*__呢啲野__) 呀 **呢啲野**

　　　　Aaming sik (*__ni-di je__)　　aa4 **ni-di　je**?　　　　　　　　　　　RD of objects

　　　　Aaming eat this-CL thing Q　this-CL thing

　　　　'Aaming EATS this thing?'

Asymmetry 3 | Topicalized subjects *must not* be doubled, whereas right-dislocated subject are *optionally* doubled.

(3) a. **阿明**(呢)，(*阿明)想食呢種魚

      Aaming (ne), (***Aaming***) soeng sik ni-tiu jyu   Subject topicalization

      Aaming TOP Aaming   want eat this-CL fish

      'As for Aaming, (he) wants to eat this fish.'

   b. (**阿明**)想食呢種魚呀 **阿明**

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

      Aaming   want eat this-CL fish

      'Aaming wants to eat this fish.'

Summary (i) Object doubling is generally banned.

       (ii) Verb doubling is obligatory in topic constructions, but optional in RD.

       (ii) Subject doubling is banned in topic constructions, but optional in RD.

	Subject	Verb	Object
Topic construction	**S**, (*S-)V-O	**V**, S-*(V-)O	**O**, S-V-(*O)
Right dislocation	(S-)V-O, **S**	S-(V-)O, **V**	S-V-(*O), **O**

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

Goal   The talks accounts for these asymmetries based on a more elaborated version of Cyclic Linearization (CL, Fox and Pesetsky 2005) and Chain Reduction (**CR**; Nunes 1995, 2004). In particular, I propose that **doubling is a consequence of suspension of Chain Reduction, which is constrained by Linearization Preservation**.

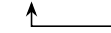## 2 A primer on Cyclic Linearization

(4) <u>Cyclic Linearization (Fox and Pesetsky 2005)</u>

   a. Syntactic structure is linearized cyclically, by establishing Ordering Statements (OS) at each domain.

   b. Movement across domains is allowed, as long as it obeys Linearization Preservation.

   c. Linearization Preservation (a "filter" on word order):
      OS must be obeyed by overt elements in the final output.

   d. OS are cumulative, and once established, cannot be over-written.

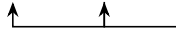**Scenarios: licit and illicit movements under CL**

(5) <u>A copy-theoretic implementation of CL (Chomsky 1995; Nunes 1995, 2004)</u>
   At each Spell-Out, two independent operations apply one after the other:
   (i) **Chain Reduction** (CR, standardly targeting the low copies), followed by
   (ii) **Linearization** (LIN, establishing OS).

   Under CL, 'edge' movements (i.e. X-movement), but not 'non-edge' ones (Y-movement), are allowed.
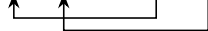
(6) Scenario 1 ($LIN_D \rightarrow Move_{edge} \rightarrow CR \rightarrow LIN_{D'}$)

$[_{D'} ... X \alpha [_D <X> Y Z]]$ $OS_{D'}: X < \alpha < D_{(X < Y < Z)}$

(7) Scenario 2 ($LIN_D \rightarrow Move_{non\text{-}edge} \rightarrow CR \rightarrow LIN_{D'}$)

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

Y-movement is allowed if Y moves to the edge of D before it moves out (i.e. successive cyclic movement).

(8) Scenario 3 (**Move within D** $\rightarrow CR \rightarrow LIN_D \rightarrow Move_{edge} \rightarrow CR \rightarrow LIN_{D'}$)

$[_{D'} ... Y \alpha [_D <Y> X <Y> Z]]$ $OS_{D'}: Y < \alpha < D_{(Y < X < Z)}$

Alternatively, a non-edge movement from within D is licit if followed by some 'compensating movement'.

(9) Scenario 4 ($LIN_D \rightarrow$ **$Move_{edge}$** $+ Move_{non\text{-}edge} \rightarrow CR \rightarrow LIN_{D'}$)

$[_{D'} ... X ... Y \alpha [_D <X> <Y> Z]]$ $OS_{D'}: X < Y < \alpha < D_{(X < Y < Z)}$

Ellipsis ($\neq$ CR) also rescues Scenario 2 by not pronouncing some elements, *q.v.* 'Salvation by Deletion'.

(10) Scenario 5 ($LIN_D \rightarrow Move_{non\text{-}edge} \rightarrow$ **Ellipsis** $\rightarrow LIN_{D'}$)

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

3   A constraint on Chain Reduction

3.1   Proposal and assumptions

Proposal   First, I propose that Chain Reduction is constrained by Linearization Preservation.

(11) 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 movement: Multiple pronunciation (i.e. doubling) of Y

(12) Scenario 6 ($LIN_D \rightarrow Move_{non\text{-}edge} \rightarrow$ **CR suspension** $\rightarrow LIN$)

$[_{D'} ... \mathbf{Y} \alpha [_D X \mathbf{Y} Z]]$ $OS_{D'}: Y < \alpha < D_{(X < \mathbf{Y} < Z)}$

Second, I specify how OS is obeyed. [1]

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1. (13) follows the spirit of Principle of Minimal Compliance, with can be regarded as its linearization counterpart.

(i) Principle of Minimal Compliance (Richards 1998, p.601)
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 α and β 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.

(13) Minimal Compliance to Ordering Statements

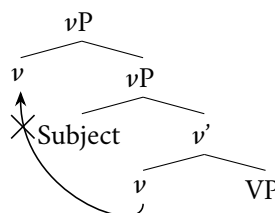For successful linearization, each OS only needs to be satisfied once.

Substantially, (13) suggests that if any one copy in a chain $\{\alpha, \alpha\}$ satisfied the established OS (that involves α), the other one copy is set free from that OS. In (12), the higher copy Y is free from the OS **X < Y**.

Assumptions   I also make the following assumptions:

(14) Assumptions

    a. *v*P and CP are Spell-Out domains.

    b. There is V-*v* movement in Cantonese.

    c. *v* cannot move to Spec *v*P.

(15) Illicit *v*-movement

3.2 Doubling effects in verb topicalization

Derivation   Verb doubling in topic constructions is derived via (17), abstracting away from the topic marker *ne* and sentence-final particles *ge*. I assume that they are both *v*P-external.

(16) Obligatory verb doubling
想 (呢)，阿明係*(**想**) 食魚嘅

soeng (ne),	Aaming	hai	*(**soeng**)	sik	jyu	ge2
want TOP	Aaming	FOC	want	eat	fish	SFP

Verb topicalization, =(1a)

'As for (whether he) wants, Aaming wants to eat fish (, but...)'

(17) Derivation of (16)

    a. Building of *v*P (headed by *soeng* 'want')
       [$_{v}$P Aaming hai soeng sik jyu]   (14c) bans verb movement to Spec *v*P

    b. Spell-Out of *v*P
       (CR) → LIN$_{v}$P; OS$_{v}$P: **Aaming < hai < <u>soeng</u> < sik < jyu**

    c. (Non-edge) verb movement for topicalization[2]
       [$_{TopicP}$ <u>soeng</u> ... [$_{v}$P Aaming hai <u>soeng</u> sik jyu]]

    d. Spell-Out of TopicP
       CR suspension → LIN$_{TopP}$; OS$_{TopP}$: **<u>soeng</u> < Aaming < hai < <u>soeng</u> < sik < jyu**

Low copy : CR is suspended and the lower copy of *soeng* is not deleted. The OS **hai < soeng** in (17b) is obeyed.
High copy : by virtue of Minimal Compliance to OS in (13), it is free from the OS **hai < soeng** because it is already satisfied once.

Predictions   What allows the low copy of the verb to escape from CR is the fact that it is preceded by some element in the *v*P. We predict that the presence of *Aaming* or *hai* is crucial to doubling.

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2. I abstract over the standard subject movement for its irrelevance.

(18) a. **想** (呢)，係**想**食魚嘅
          soeng (ne), hai **soeng** sik jyu ge2
          want TOP FOC want eat fish SFP
          'As for (whether I) want, (I) want to eat fish.'

      b. **想** (呢)，阿明**想**嘅
          soeng (ne), Aaming **soeng** ge2
          want TOP Aaming want SFP
          'As for (whether he) wants, Aaming wants.'

(19) ***想** (呢)，**想**(食魚)嘅
       ***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:

(20) Verb topicalization
      $[_{\text{TopP}}$ V $[... [_{v\text{P}}$ *(S/*hai*) V XP $]]]$ CR suspension $\rightarrow$ LIN$_{\text{TopP}}$; OS$_{\text{TopP}}$: V $<$ S/*hai* $<$ V $<$ XP

3.3   Subject and object topicalization

Object   Verbs are different from objects in terms of movement possibility to Spec vP. In cases where the object moves to Spec vP, CR applies as usual (not suspended), resulting in absence of doubling.[3]

(21) **呢條魚**(呢)，阿明想食(***呢條魚**)
      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.'

(22) Object topicalization
      $[_{\text{TopP}}$ O ... $[_{v\text{P}}$ <O> S V <O> $]]$ Object movements $\rightarrow$ CR $\rightarrow$ LIN$_{\text{TopP}}$; OS$_{\text{TopP}}$: O $<$ S $<$ V

Upshot

> Asymmetry 1 observed in (1) is derivable from the structural position (i.e. the launching site) of the verbs and objects.
>
> Verbs are "special" not because they are heads, but because they cannot stop at Spec vP. Objects can stop at Spec vP, hence the absence of doubling (note that CR suspension is the *last resort*).
>
> The head-phrase distinction bears a limited role in accounting for doubling possibility.

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3. The same line of reasoning applies to subjects in topic constructions, with no suspension of CR.

(i)   Subject topicalization
      $[_{\text{TopP}}$ S ... $[_{v\text{P}}$ <S> V O $]]$ Subject movement $\rightarrow$ CR $\rightarrow$ LIN$_{\text{TopP}}$; OS$_{\text{TopP}}$: S $<$ V $<$ O

4   Right dislocation

4.1   Licit doubling in RD

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:
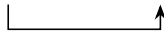
(23)   a.   佢**食**呢啲野呀**食**
        keoi **sik** ni-di   je   aa4 **sik**?
        he   eat this-CL thing Q   eat
        ' He EATS this thing?'

b. *佢**食**呀 **食**
    *keoi **sik** aa4 **sik**?
    he   eat Q   eat
    Intended: 'He EATS?'

Similarly, an embedded verb enables doubling of an embedding verb (but not *vice versa*):

(24)   a.   佢**想**去架 **想**
        keoi **soeng** heoi gaa3 **soeng**
        he   want go   SFP want
        'He WANTS to go.'

b. *佢想**去**架 **去**
    *keoi soeng **heoi** gaa3 **heoi**
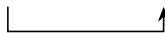   he   want go   SFP go
    'He wants to GO.'

Since the established OS in vP dictates that V must precede O/the embedded V in the final output, CR is suspended, or it would violate Linearization Preservation, resulting in verb doubling.

Assuming a rightward movement analysis of RD,[4] these cases are schematically represented below:[5]

(25)   a.   The simplified structure of (23)
        [$_{vP}$ S V *(O)]] AA4 V   OS$_{vP}$: S <V < (O)

b.   The simplified structure of (24)
    [$_{vP}$ S V1 [$_{TP}$ ... V2 ...]] GAA3 {V1/*V2}
                                OS$_{vP}$: S <V1 <V2

4.2   No doubling in RD

Verbs   Why is doubling for verbs (and subjects) in RD optional?

(26)   a.   佢 _ 呢啲野呀 **食**
        keoi t$_i$ ni-di   je   aa4 **sik$_i$**?
        he   this-CL thing Q   eat
        'He eats THIS THING?'

b.   The simplified structure of (26a)
    [$_{vP}$ S O <V> <O>] AA4 V

    Object movement $\rightarrow$ CR $\rightarrow$ LIN$_{vP}$;
    OS$_{vP}$: S < O < V

I suggest that verb movement is preceded by **object movement** before the Spell-Out of vP. After the object movement, the verb is on the *right* edge of vP, subsequent rightward movement does not suspend CR, resulting in no doubling.[6]

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4. Rightward movement is compatible with Cyclic Linearization, which only imposes restrictions on the final word order.
5. The same applies to subjects in RD, as a subject is followed by V and O. This is the case for (3b), with the subject doubled.
6. I assume the object movement is achieved by some 'tucking-in' operation, landing on a position below the subject (Richards 2001).

The object movement is independently motivated. First, an object preposing rule is necessary to derive SOV word order in Chinese, which renders the object a contrastive focus (Ernst and Wang 1995, i.a.).

(27) 佢**呢啲野**食 _ 㗎
      keoi [**ni-di je**]ᵢ sik tᵢ gaa4?
      he   this-CL thing eat   Q
      'He eats THIS THING?'

Objects that cannot under object preposing (e.g. bare noun indefinites) cannot undergo RD either.

(28) a. *阿明**野**食 _ 呀   b. *阿明食 _ 呀**野**
          *Aaming **je**ᵢ   sik tᵢ aa4   *Aaming sik tᵢ aa4 **je**ᵢ?
          Aaming   thing eat   Q   Aaming   eat   Q thing
          Int.: 'Aaming eats?'   Int.: 'Aaming eats?'

Second, the movement in (26a) has a similar effect of object focus. In the absence of such movement, as in (23a), the verb receives focus interpretation. In contrast, in (26a), the object is focused.[7]

4.3   Illicit doubling in RD

Objects   The illicit doubling specific to objects can be attributed to the fact that objects are at the right edge of vP.[8] Rightward movement after the Spell-Out of vP would be subject to CR.

(29) a. 阿明食 (***呢啲野***) 呀 **呢啲野**
          Aaming sik (***ni-di je***)   aa4 **ni-di   je**   =(2b)
          Aaming eat this-CL thing Q   this-CL thing
          'Aaming EATS this thing?'

      b. The simplified structure of (29a)
          [$_{vP}$ S V <O>] SFP O   LIN$_{vP}$; OS$_{vP}$: S < V < O

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7. As for RD of subjects without doubling, I suggest that the VP is fronted to the edge of vP such that the subject is on the right edge of the vP. The VP in (3b), without subject doubling, receives focus interpretation, a reading that is extensively discussed in Cheung (2009) and earns it the name of *Dislocation Focus Construction*. If the subject is doubled (i.e. no VP fronting for focus), then the subject receives focus interpretation.

(i)   The simplified structure of RD of subjects
      [$_{vP}$ VP <S> <VP>] SFP S   VP movement → CR → LIN$_{vP}$; OS$_{vP}$: VP < S
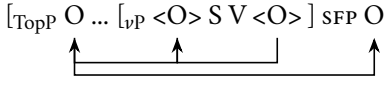
8. Note that Lai (2019) points out that object doubling cannot be ruled out by avoidance of phonological identity .

(i)   **佢**中意佢呀**佢**
      keoiᵢ zungji keoiⱼ aa3 **keoi**ᵢ
      she   like   her SFP her
      'She likes her.'   p.246, with adaptations

5 Predictions on object topicalization

First, if the object does move (e.g. for topic), doubling is required for RD. This is because the movement within vP establishes the OS$_{v\text{P}}$: **O < S < V**. (30a) involves both object topicalization and object RD.

(30) a. **呢啲野**阿明食呀 **呢啲野**
     ni-di je   Aaming sik aa4 **ni-di je**
     this-CL thing Aaming eat Q   this-CL thing
     'Aaming eats THIS THING?'

b. The simplified structure of (30a)
[$_{\text{TopP}}$ O ... [$_{v\text{P}}$ <O> S V <O>] SFP O

Object movement → CR →LIN$_{v\text{P}}$;
OS$_{v\text{P}}$: O < S < V

Second, we predict that a base generated topic cannot be doubled: as it does not originate within the vP, it is not linearized relative to elements within vP. When it is right-dislocated, CR applies.

(31) (*水果)阿明中意梨呀 水果
     (*seoigwo) Aaming zungji lei   aa3 **seoigwo**
     fruit   Aaming like   pear SFP fruit
     'As for fruits, Aaming likes pears.'

Third, object topicalization would consequently block verb doubling in RD, since, in case of object movement, the verb is on the right edge of vP upon Spell-Out. Doubling is disallowed in a way similar to a non-topicalized object.

(32) a. 阿明**食**呢啲野呀 **食**
     Aaming sik ni-di je   aa4 **sik** =(23)
     Aaming eat this-CL thing Q   eat
     ' Aaming EATS this thing?'

b. *呢啲野阿明**食**呀 **食**
     *ni-di je   Aaming sik aa4 **sik**
     this-CL thing Aaming eat Q   eat
     ' Aaming EATS this thing?'

6 Extension: when is verb movement allowed?

The current proposal is too strong in predicting that verb movement across the subject must be doubled.

(33) 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) tazi istorija   Bulgarian
    told   was often Maria told   this story
    'Maria had often told this story.'   (Harizanov 2016, with adaptations)

Parameter   I suggest, following Takita (2010), that these languages have *a different linerization domain* from Cantonese. For these langauges, upon Spell-Out, only the complement of v but not the whole vP is linearized. Accordingly, the order between S and V is not fixed upon Spell-Out of vP.

(34)   Spell-Out Domain Parameter for *v*P (Takita 2010)
        When Spell-Out applies to *v*P,

    a.   Linearize the whole *v*P, including the elements on its edge, or

    b.   Linearize the complement of *v*.

If Swedish and Bulgarian take the value of (34b), when Spell-Out applies to the *v*P, only the VP is linearization (as opposed to *v*P in Cantonese), illustrated with the Swedish data:

(35)   The structure of (33a)
        [$_{CP}$ **hittade** [$_{TP}$ han faktist [$_{vP}$ <han> [$_{VP}$ <hittade> pengarna under sängen?]]] LIN$_{VP}$; OS$_{VP}$: V < O < PP

Predictions   Interestingly, the parameter was originally proposed to explain illicit cases of remnant movements in Japanese and licit ones in English and German. Takita (2010) suggests (36), whereas the current proposal suggests (37).

(36)   Remnant movement possibility

    a.   Languages that <u>disallow</u> remnant movement must take the value of (34a);   e.g. Japanese

    b.   Languages that <u>allow</u> remnant movement must take the value of (34b).   e.g. German, English

(37)   Verb doubling possibility

    a.   Languages that <u>allow</u> verb doubling must take the value of (34a);   e.g. Cantonese

    b.   Languages that <u>disallow</u> verb doubling must take the value of (34b).   e.g. Swedish, Bulgarian

(36) and (37) combine to predict (38):

(38)   Predicted complementary distribution of verb doubling and remnant movement

    a.   Languages that allows verb doubling will disallow for remnant movement.

    b.   Languages that allows remnant movement will disallow for verb doubling.

(38a) is borne out by the unavailability of remnant *v*P movement in Cantonese, as in (39a). Note that *v*P-fronting is allowed if the *v*P does not contain a trace, as in (39b).

(39)   a. *變黑，個天開始喇   Raising   b.   跑長跑，佢開始咗喇   Control
        *[$_{vP}$ t$_i$ bin   hak   ]$_j$, go-tin$_i$ hoici t$_j$ laa3   [$_{vP}$ PRO pau coengpau]$_i$, keoi hoici-zo   t$_i$ laa3
            become dark,   CL-sky begin   SFP   run long.run,   keoi begin-PERF   SFP
        Intended: 'To become dark, the sky begins.'   'To run long distance, he began.'

(38b) is borne out in Swedish: remnant VP topicalization is possible in (40) (Fox and Pesetsky 2005).

(40)   Remnant movement in Swedish, from Fox and Pesetsky (2005, p.25)
        ?[Gett henne t$_i$] har   jag den$_i$ inte ...
        given her   have I   it   not
        'I have not given it to her.'

Something similar is observed in English, where remnant movement is possible and verb doubling is disallowed:

(41) Remnant movement in English
      [Criticized t_i by his boss]$_j$, John$_i$ has never been t_j.
      (Takita 2010)

(42) Verb doubling in English
      ***Criticize(d)**, John **criticized** his boss.

7 Take-home messages

This talk proposed that verb doubling is a consequence of interaction between Cyclic Linearization and Chain Reduction. I showed that the proposal (repeated below) explained doubling possibilities for S, V and O in both topic constructions and right dislocations in Cantonese.

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

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

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