Emergence of the Faithful by Consonant Copying in a Tagalog Language Game

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1 Introduction

- Tadbaliks
  o one of a number of language games (Garcia 1934; Conklin 1956), aka ‘ludlings’ (Laycock 1972), in Tagalog (Austronesian, Philippines)
  o transposes the last syllable to the beginning of the word (1), schematised in (2):²

1 (tagálog) → (logtága) Tagalog, N
2 \( \sigma_1 \ldots \sigma_{n-1} \sigma_n \rightarrow \sigma_n \sigma_1 \ldots \sigma_{n-1} \)

- Consonant copying (3)
  o compared to the corresponding root word (a)...
  o in words suffixed with either of Tagalog’s two suffixes, -in or -an (b)...
    ▪ the final consonant of the root moves with the suffixed syllable to the beginning of the word, as expected
    ▪ but in addition, a copy remains in root-final position

3 (a) palít → litpá *litpá! exchange, V
    (b) palít-án → tànpalít *tànpalí exchange (object focus), V

- Data
  o collected by the author
  o two native speakers of Tagalog
    ▪ born and raised in the Philippines and childhood players of Tadbaliks
    ▪ emigrated as teenagers (to Singapore/US), now in their mid-20s
  o some variation in early elicitation; stable pattern reported here

¹ Tadbaliks derived from baligtad ‘reverse’ by (2), plus optional game -s and voicing assimilation; cf. the similar French language game Verlan (Lefkowitz 1991; Plénat 1995; i.a.) from l’envers, ‘the reverse’.
² Tagalog words \( \rightarrow \) Tadbaliks words; transposed syllables underlined; copied consonants in bold; part of speech abbreviations: A = adjective, N = noun, Num = number, P = preposition, V = verb.
³ Many of the data points in this paper were inspired by Tagalog data in French (1992), Sabbagh (2004), and Zuraw (2012).
• Outline:
  o 2. Suffixation conditions consonant copying
    ▪ rather than: number of syllables, consonant/vowel finality, stress
  o 3. Analysis
    ▪ couched in Optimality Theory
    ▪ emergent faithfulness to the root as the driving force
  o 4. Emergence of the faithful
    ▪ cf. The Emergence of The Unmarked
  o 5. Alternative analyses
    ▪ Previous analyses of Tadbaliks do not speak to consonant copying; predict it to be impossible; or offer no motivation for it
    ▪ Final consonants: debated whether Tagalog syllables are always closed
    ▪ In terms of an anchoring constraint independently needed for reduplication
  o 6. Root faithfulness
    ▪ all-or-nothing; and sensitive to linearity not contiguity
  o 7. Conclusion

2 Suffixation conditions consonant copying

• Suffixation conditions consonant copying, rather than:
  o number of syllables
  o consonant or vowel finality
  o position of stress

(4) Number of syllables
• anti-locality effect?
• copying only possible in words beyond a certain length?
• no

(a) 3 syllables, root, ❌ copying
tahánan → nantáha home, N

(b) 3 syllables, suffixed, ✓ copying
hawák-an → kanháwak take hold of something, V

(c) 2 syllables, root, ❌ copying
háwak → wákha grip, N

(d) 2 syllables, suffixed, ✓ copying
tren-in → nintrén travel somewhere by train, V

(5) Consonant or vowel finality
• maintain C-V word shape?
• consonant-final Tagalog word remains consonant-final in Tadbaliks?
• no
(a) C-final, 3 syllables, suffixed, ✓ copying
   hawá-k-án → kanháwák take hold of something, V

(b) C-final, 2 syllables, root, ✗ copying
   háwak → wákha grip, N

(c) C-final, 3 syllables, root, ✗ copying
   tahán-an → nantáha home, N

(d) V-final, 3 syllables, root, ✗ copying
   dosé-na → nadóse dozen, N

(6) Position of stress
   • stressed syllables more prominent
   • so final stress triggers consonant copying?
   • no

   (a) Penult, 3 syllables, suffixed, ✓ copying
       hawá-k-án → kanháwák take hold of something, V

   (b) Penult, 2 syllables, root, ✗ copying
       háwak → wákha grip, N

   (c) Final, 3 syllables, suffixed, ✓ copying
       takíp-án → pântakíp cover, V

   (d) Final, 2 syllables, root, ✗ copying
       takíp → kiptá cover, N

   (e) Final, 3 syllables, root, ✗ copying
       mabilís → lísmabí quick, A

(7) Suffixation
   • yes!
   • root words (i) do not exhibit consonant copying…
   • but corresponding suffixed words (ii) do exhibit consonant copying

   (a) (i) palít → lítpá exchange, V
       (ii) palít-án → tânpalít exchange (object focus), V

   (b) (i) háwak → wákha grip, N
       (ii) hawá-k-án → kanháwák take hold of something, V

   (c) (i) takíp → kiptá cover, N
       (ii) takíp-án → pântakíp cover, V

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4 There are no vowel-final suffixed words, since the only suffixes in Tagalog are -in and -an.
5 Consonant type does not condition copying: the broad range of consonants that are copied in the (ii) examples in (7), [t, k, p, n, y, g, l], do not form a natural class smaller than that of consonants.
(d) (i) tren-trén → tren train, N
   (ii) tren-íñ → nintrén travel somewhere by train, V

(e) (i) ?áway → wáy?a fight, N
   (ii) ?áway-án → ?án?áway fighting (one another), N

(f) (i) túlog → lógtu sleep, N
   (ii) tulóg-an → gánltulóg sleep in/on something, V

(g) (i) sampál → palsám slap on the face, N
   (ii) sampal-íñ → línsampál slap someone, V

- Consonant copying is conditioned by suffixation
- Motivation: a faithful representation of the root
  - achieved economically by copying a single consonant in suffixed words
    - moved syllable mostly an affix
  - would be achieved uneconomically by copying a whole syllable in root words
    - moved syllable all part of the root

3 Analysis

- Five Optimality Theoretic constraints (Prince & Smolensky 1993)
- Emergent faithfulness to the root drives consonant copying

- Game constraints:

(8) LAST-σ-1st:
  * no movement of last syllable of Tagalog output to front of Tadbaliks output.

(9) LINEARITY
  (McCarthy & Prince 1995)
  * metathesis.

- LAST-σ-1st ensures the last-to-first syllable Tadbaliks game is played
- LAST-σ-1st a transderivational constraint (Benua 1997)
  - operates on syllables, so must access the syllabified output of non-game Tagalog
  - (/palit/ → [pa.lit] → [lit.pa], *[it.pal])
- All-or-nothing LINEARITY the low-ranked faithfulness constraint corresponding to undominated LAST-σ-1st

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6 Monosyllabic words are unaffected by syllable transposition for my speakers. However, in other dialects of Tadbaliks (Garcia 1934, Conklin 1956) the last-to-first syllable manipulation rule is supplemented by a rule particular to monosyllables, which inverts the order of the segments, e.g. mag → gam ‘to’, P. The French language game Verlan works similarly (Lefkowitz 1991; Plénat 1995; i.a).
• Consonant copying constraints:

(10) *STRUC(σ)  
* per syllable in the output.

(11) ID-ROOT  
* no faithful representation of the underlying Tagalog root in the Tadbaliks output.\(^7\)

(12) INTEGRITY  
(McCarthy & Prince 1995)\(^8\)  
* multiple output correspondents of input segments.

• ID-ROOT drives consonant copying by enjoining faithfulness to the underlying root
• ID-ROOT a transderivational constraint (Benua 1997), but not like LAST-σ-1\(^{st}\)
  ○ assesses faithfulness of Tadbaliks game output – e.g. ([pa.li.tan] \(\rightarrow\) [tan.pa.lit]) –
    to underlying Tagalog root – /palit/
• Satisfaction of ID-ROOT must be economical
  ○ copying a single consonant is fine: ID-ROOT >> INTEGRITY
  ○ copying more than a consonant is too much: *STRUC(σ) >> ID-ROOT

• Tableaux: root (13) – no copying; vs. suffixed (14) – copying\(^9\)

| (13) /palit/ | LAST-σ-1\(^{st}\) | *STRUC(σ) | ID-ROOT | INTEGRITY | LINEARITY |
| [pa.lit] | | | | | |
| a. palit | *! | ** | | | |
| b. itpal | *! | ** | | * | |
| c. \(\varnothing\) lita | ** | * | | | *
| d. litpal | ** | | * | | *
| e. litpalit | ***! | | | | *

| (14) /palit-an/ | LAST-σ-1\(^{st}\) | *STRUC(σ) | ID-ROOT | INTEGRITY | LINEARITY |
| [pa.li.tan] | | | | | |
| a. palitan | *! | *** | | | |
| b. anpalit | *! | *** | | | |
| c. tanpali | *** | | * | | *
| d. \(\varnothing\) tanpalit | *** | | | | *
| e. tanpalitan | ****! | | | | *

\(^7\) §6 elaborates on this definition. We will see that ID-ROOT is (i) all-or-nothing, enjoining faithfulness to all segments of the underlying root; and (ii) sensitive to linearity not contiguity, enjoining faithfulness to relations of precedence – though not immediate precedence – among root segments.

\(^8\) Cf. Itô, Kitagawa & Mester’s (1996: 258f.) implementation of vowel copying in the Japanese ludling Zuuja-go as violating BIJECTIVITY.

\(^9\) Though not shown here, I assume high-ranking MAX to temper *STRUC(σ). For two-syllable inputs, as in (13), a monosyllabic candidate such as lit would lose on LAST-σ-1\(^{st}\), since syllable transposition would not be recoverable. But for longer inputs, as in (14), a two-syllable candidate tanpa would satisfy LAST-σ-1\(^{st}\) and win on *STRUC(σ) – were it not for high-ranking MAX.
LAST-σ-1st forces the game to be played, ruling out no (a) or partial (b) movement of the last syllable to the beginning of the word

Satisfying ID-ROOT by repeating the whole syllable (e) loses on *STRUC(σ)

Root words (13): ID-ROOT hopelessly violated on both (c) and (d)
  o plain (c) preferred over consonant copying (d) by INTEGRITY

Suffixed words (14): consonant copying (d) economically satisfies ID-ROOT
  o consonant copying (d) preferred over plain (c), despite violating INTEGRITY

4 Emergence of the faithful

Cf. The Emergence of the Unmarked (TETU) (McCarthy & Prince 1995)

Language games often show TETU effects (pace Vaux 2011: 727)

E.g. ONSET in Dhochi (Borowsky & Avery 2009)\textsuperscript{10}
  o syllable reversing ludling in Dholuo (West Nilotic, western Kenya)
  o čier $\rightarrow$ reči ‘to rise from the dead’ repairs onsetless first syllable of čier $\rightarrow$ *erči by segment reversal, despite Dholuo elsewhere permitting onsetless first syllables.

TETU consonant copying in last-to-first syllable game English (Treiman and Danis 1988)
  o copying more likely if initial stress, orthographic geminate, short first vowel
  o e.g. comma $\rightarrow$ macom

  o single mora bases rendered in optimal three-mora form
  o e.g. hi $\rightarrow$ i:hi, ‘cigarette light, lit. fire’

Tadbaliks consonant copying as The Emergence of The Faithful (cf. Lee 1996)
  o moving the last syllable to the front of the word usually ruins any reasonably economical chance of realising a faithful form of the root in the output
  o but with suffixed words, all but the onset of the last syllable is an affix
  o thus the opportunity emerges to both play the game and faithfully realise the root by copying just one consonant

Possible TETF consonant copying elsewhere
  o Norwegian last-to-first syllable ludling Smoi (Jahr 2003: 294)
  o when the transposed syllable is predominantly a suffix – e.g. the suffixal definite article – consonant copying offers the opportunity to faithfully realise the root
  o e.g. bank-en $\rightarrow$ kenbank ‘the bank’

\textsuperscript{10} TETU of ONSET could also account for consonant copying in minority outputs in Nevins and Vaux’s (2003) survey of Pig Latin (ig-pay atin-lay), e.g. 1% enter $\rightarrow$ ter-ent-ay; pace their serial Steriadean (1988) full copy plus deletion analysis.
5 Alternative analyses

- Previous analyses
  - do not speak to consonant copying (Sanders 2000)
  - predict consonant copying to be impossible (Bagemihl 1989)
  - can implement copying, but where? why? (Raimy 2000)
- FINAL-C
  - not viable for Tadbaliks
  - potential bearing on debate whether Tagalog syllables always closed
- R-ANCHOR
  - constraint independently needed for Tagalog foot-sized reduplication
  - dismissed after more detailed consideration of root faithfulness in §6

5.1 Correspondence Theory

- Correspondence Theory (McCarthy and Prince 1995) of reduplication
  - output-output correspondence between surface forms of base and RED
- Applied to language games:
  - Base-Game (Barlow 1997, 2001)
  - Base-Argot (Itô, Kitagawa & Mester 1996; Borowsky and Avery 2009)
  - Base-Ludligant (Sanders 1999, 2000; Friesner 2005)
- Sanders (2000) forces last-to-first movement to realise LUD(ligant) λ in Tadbaliks by:
  - ALIGN-LEFT(λ, PrWd): left edge of λ at left edge of prosodic word
  - IO-ANCHOR-RIGHT(BASE, λ): rightmost segment of base = rightmost segment of ludligant
- Problems with Sanders:
  - syllable transposition really like reduplication? realisation of a morpheme, λ?
  - nothing enforces size of λ = σ
  - consonant copying not noticed, and in fact punished by *COPY
  - constraints referring to λ no less game specific than LAST-σ-1st
    - game constraints much more likely spontaneous than universal members of CON (cf. Vaux 2011: 734)

5.2 Crossing Constraint

- Bagemihl (1988, 1989) predicts consonant copying impossible
- Crossing Constraint, the central tenet of autosegmentalism (Goldsmith 1976):
  - association lines must not cross
- Crossing Constraint parameterised in language games, requiring association lines to cross
- Last-to-first syllable transposition games, including Tadbaliks (Bagemihl 1989: 513ff.):
  - a prefixed empty syllable template is filled by crossing association lines maximally through to the last syllable of the word
- Original syllable must then delete to restore non-contradictory precedence relations (Sagey 1986, 1988); i.e. movement must be total
  - consonant copying ruled out (Nevins & Vaux 2003; Vaux 2011: 740)

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(15) maganda → damagan beautiful, A (Bagemihl 1989: 514)

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ad 1. NL form
     
     \sigma
     /         \sigma
    C V       C V
   /         /         \sigma
  m a g a n d a

adr 2. Prefixation

     /         \sigma
    C V       C V
   /         /         \sigma
  m a g a n d a
```

5.3 Directed graphs

- Raimy (1999, 2000): directed graph model of precedence relations as serial rule-based loops in underlying temporal precedence structures
- Can formally implement consonant copying, as in (16)
- But unlike emergent root faithfulness, does not address when/why consonants are copied

(16) # → p → a → l → i → t → a → n → %

5.4 FINAL-C

- Debated whether final syllables are ever truly open in Tagalog, or closed with [h] (Llamzon 1966, Schachter and Otanes 1972, French 1988, Coombs 2017)
- An abstract reviewer suggests that Tadbaliks consonant copying could be TETU driven by the markedness constraint FINAL-C
  - but why then should root words (h-epenthesis) and suffixed words (root-consonant copying) behave differently?
- [h] definitely present (as hiatus resolution) between vowel-final roots and suffixes -inl-an

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12 For other copy(-and-truncation)-type models, see references in Nevins and Vaux (2003).
• The Tadbaliks data in (17) support phonological $h$-epenthesis for hiatus resolution only
  o root words (i): no $h$ in first syllable coda in Tadbaliks
    • no phonological $h$-epenthesis to satisfy FINAL-C in Tagalog
  o suffixed words (ii): $h$ moved but not copied in Tadbaliks
    • phonological $h$-epenthesis resolves hiatus in Tagalog
    • but no underlying root final $-/h/$
  o though detailed phonetic work à la Coombs (2017) required

(17)  $-hin$ and $-han$, $\times$ copying

(a)  (i)  sábi   $\rightarrow$  bisá  *bihsá  saying, N
     (ii) sabí-$hin$  $\rightarrow$  hinsábi  *hinsábih  say, V

(b)  (i)  tása   $\rightarrow$  sáta  *sáhta  cup, N
     (ii) tása-$han$  $\rightarrow$  hantása  *hantásah  measure, V

5.5 R-ANCHOR

• Another abstract reviewer suggests that Tadbaliks consonant copying could be driven by emergent R-ANCHOR (cf. §5.1) rather than ID-ROOT
• R-ANCHOR of reduplicant to rightmost segment of base independently needed for Tagalog foot-sized reduplication (18) on disyllabic roots (19):

(18)  CVCV foot-sized reduplication

(a)  (i)  dalawa  two, Num (ii) dala-dalawa  two-by-two, A

(b)  (i)  baligtad  reversed, A (ii) mag-pa-bali-baligtad  to tumble, V

(19)  CVCVVC foot-sized reduplication on disyllabic C-final roots

(a)  (i)  jakap  embrace, V (ii) jakap-jakap  lovingly embrace, V

(b)  (i)  patid  broken, A (ii) patid-patid  disjointed, A

• A (transderivational) R-ANCHOR for Tadbaliks?
  o rightmost segment of Tadbaliks word $= $ rightmost segment of underlying root
  o e.g. ([pa.li.t-an] $\rightarrow$ [tan.pa.lit], $\checkmark$ /palit/)
• Would still be emergent faithfulness$^{13}$
• And (19) could be interpreted in terms of ID-ROOT – copy entire root, where economical
• Distinguishing between R-ANCHOR and ID-ROOT:
  o R-ANCHOR only cares about the root-final consonant
  o ID-ROOT cares about the whole underlying root
• Evidence for ID-ROOT in §6…

$^{13}$ Contrary to the reviewer, who claimed this would be TETU, ANCHOR is faithfulness in Correspondence Theory (McCarthy and Prince 1995); in prohibiting peripheral deletion and epenthesis, ANCHOR constraints are contextually restricted versions of MAX and DEP (McCarthy 2003: 80f.).
6 Root faithfulness

(11) ID-ROOT

* no faithful representation of the underlying Tagalog root in the Tadbaliks output.

- Transderivational ID-ROOT drives consonant copying
- Further, ID-ROOT is:
  - all-or-nothing evidence = deletion ~ ✗ copying
  - sensitive to linearity, not contiguity evidence = infixation ~ ✓ copying

1. ID-ROOT is all-or-nothing
- In some Tagalog words, the root-final vowel deletes under suffixation
- These shortened suffixed words do not exhibit consonant copying in Tadbaliks

(20) Shortened suffixed words, ✗ copying

<table>
<thead>
<tr>
<th>Shortened suffixed words</th>
<th>✗ copying</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)14</td>
<td></td>
</tr>
<tr>
<td>(i) bukás</td>
<td>kasbú</td>
</tr>
<tr>
<td>(ii) buks-án</td>
<td>sanbúks</td>
</tr>
<tr>
<td>(b)15</td>
<td></td>
</tr>
<tr>
<td>(i) lagáy</td>
<td>gaylá</td>
</tr>
<tr>
<td>(ii) lagy-án</td>
<td>vanlág</td>
</tr>
</tbody>
</table>

- Tableau (21) – all-or nothing ID-ROOT correctly predicts no consonant copying in (20):

<table>
<thead>
<tr>
<th>(21)/bukas-an/ [buk-san]</th>
<th>LAST-σ-1st</th>
<th>*STRUC(σ)</th>
<th>ID-ROOT</th>
<th>INTEGRITY</th>
<th>LINEARITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. buksan</td>
<td>**</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. anbukas</td>
<td>**</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. sanbuk</td>
<td>**</td>
<td>*</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>d. sanbuk</td>
<td>**</td>
<td>*</td>
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<td>*</td>
<td></td>
</tr>
<tr>
<td>e. sanbuksan</td>
<td>***!</td>
<td>*</td>
<td>***</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>f. buksan</td>
<td>**</td>
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<tr>
<td>g. sanbuk</td>
<td>***!</td>
<td>*</td>
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<td></td>
<td></td>
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<tr>
<td>h. sanbukas</td>
<td>***!</td>
<td>*</td>
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<td>*</td>
<td></td>
</tr>
<tr>
<td>i. sanbukasan</td>
<td>**<em>!</em></td>
<td>***</td>
<td></td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

- As before, (a) and (b) don’t play the game; syllable copying (e) falls to *STRUC(σ)
- Syllabified Tagalog output [buk-san] already violates ID-ROOT to /bukas/
- Consonant copying (d) and plain (c) tie on ID-ROOT; (c) preferred by INTEGRITY
- Candidates (f)-(i) reintroducing the /a/ of /bukas/ to [buk-san] fall to *STRUC(σ)16

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14 Final -ks would not be ill-formed. Recall Tadbaliks from footnote 1, with optional game -s. Hence we cannot rely on a constraint along the lines of *CC] or *COMPLEXCODA to rule out consonant copying in (20aii). This stylistic -s was semi-productive, though seemingly unsystematically, for one of my speakers; e.g. palitán → tánpaltás ‘exchange’ (object focus), V.
15 Compare (20b) with its unreduced form, which has a different meaning, and does exhibit consonant copying: lagá-an → vanlág gay ‘place where you put something’, N.
16 And perhaps high-ranking DEP.
• ID-ROOT cares about faithfulness to all segments of the underlying root  
  o not just the final consonant, as R-ANCHOR would have it  
• So ID-ROOT preferable to R-ANCHOR  
2. ID-ROOT is sensitive to linearity, not contiguity  
• ID-ROOT unaffected by infixation  
• When suffixed, infixed words still exhibit consonant copying (22)  
• ID-ROOT enjoins faithfulness to linearity rather than contiguity of root segments  
  o e.g. /palit/: p -> a -> l -> i -> t; where -> = ‘precedes’, not ‘immediately precedes’  
(22) (a) (i) palit + -in- + -an (‘exchange’, perfect, directional focus)  
(ii) pinalitan \rightarrow tanpinalit /*tanpinali  
(b) (i) tâwag + -in- + -an (‘call’, perfect, directional focus)  
(ii) tinawagan \rightarrow gantinawag /*gantinawa  

7 Conclusion  
• 1. Tadbaliks: a last-to-first syllable transposition game in Tagalog  
• 2. Suffixation conditions consonant copying  
• 3. Analysis: emergent faithfulness to ID-ROOT  
  o in suffixed words – economical violation of INTEGRITY  
  o but not root words – uneconomical violation of *STRUC(σ)  
• 4. Emergence of the faithful; cf. TETU (copying) (in language games)  
• 5. Alternative analyses of (Tadbaliks) consonant copying  
  o Sanders – not captured; Bagemihl – predicts impossible; Raimy – no motivation  
  o FINAL-C cannot distinguish root from suffixed words  
  o R-ANCHOR only cares about root-final consonants  
• 6. Root faithfulness: ID-ROOT enjoins faithfulness to linearity of all root segments  

Acknowledgements  
This paper has grown out of term papers for graduate phonology classes at UCLA. Thanks to Professors Robert Daland, Bruce Hayes and Kie Zuraw; attendees of UCLA Phonology Seminar; and Seth Ronquillo. Hearty thanks to Joji Mendoza.  

References  


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