

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

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1 Introduction

- Tadbaliiks¹
 - one of a number of language games (Garcia 1934; Conklin 1956), aka ‘ludlings’ (Laycock 1972), in Tagalog (Austronesian, Philippines)
 - transposes the last syllable to the beginning of the word (1), schematised in (2):²

(1) tagálog → logtága Tagalog, N

(2) $\sigma_1 \dots \sigma_{n-1} \sigma_n \rightarrow \sigma_n \sigma_1 \dots \sigma_{n-1}$

- Consonant copying (3)
 - compared to the corresponding root word (a)...
 - 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 *litpál exchange, V

(b) palit-án → tãnpalít *tãnpalí exchange (object focus), V

- Data³
 - collected by the author
 - two native speakers of Tagalog
 - born and raised in the Philippines and childhood players of Tadbaliiks
 - emigrated as teenagers (to Singapore/US), now in their mid-20s
 - some variation in early elicitation; stable pattern reported here

¹ *Tadbaliiks* 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 → Tadbaliiks 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:
 - 2. Suffixation conditions consonant copying
 - rather than: number of syllables, consonant/vowel finality, stress
 - 3. Analysis
 - couched in Optimality Theory
 - emergent faithfulness to the root as the driving force
 - 4. Emergence of the faithful
 - cf. The Emergence of The Unmarked
 - 5. Alternative analyses
 - Previous analyses of Tadbaliiks 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
 - 6. Root faithfulness
 - all-or-nothing; and sensitive to linearity not contiguity
 - 7. Conclusion

2 Suffixation conditions consonant copying

- Suffixation conditions consonant copying, rather than:
 - number of syllables
 - consonant or vowel finality
 - 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
 trenn-ín → nintrén travel somewhere by train, V
- (5) Consonant or vowel finality
- maintain C-V word shape?
 - consonant-final Tagalog word remains consonant-final in Tadbaliiks?
 - no

- (a) C-final, 3 syllables, suffixed,⁴ ✓copying
hawák-an → kanháwak take hold of something, V
- (b) C-final, 2 syllables, root, ✗copying
háwak → wákha grip, N
- (c) C-final, 3 syllables, root, ✗copying
tahánan → nantáha home, N
- (d) V-final, 3 syllables, root, ✗copying
doséna → nandóse dozen, N
- (6) Position of stress
- stressed syllables more prominent
 - so final stress triggers consonant copying?
 - no
- (a) Penult, 3 syllables, suffixed, ✓copying
hawák-an → kanháwak take hold of something, V
- (b) Penult, 2 syllables, root, ✗copying
háwak → wákha grip, N
- (c) Final, 3 syllables, suffixed, ✓copying
takip-án → pàntakíp cover, V
- (d) Final, 2 syllables, root, ✗copying
takip → kiptá cover, N
- (e) Final, 3 syllables, root, ✗copying
mabilís → lismabí quick, A
- (7) Suffixation
- yes!
 - root words (i) do not exhibit consonant copying...
 - but corresponding suffixed words (ii) do exhibit consonant copying⁵
- (a) (i) palít → litpá exchange, V
(ii) palit-án → tànpalít exchange (object focus), V
- (b) (i) háwak → wákha grip, N
(ii) hawák-an → kanháwak take hold of something, V
- (c) (i) takíp → kiptá cover, N
(ii) takip-án → pàntakíp cover, V

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) ⁶	trén	→	trén	train, N
	(ii)	tren-ín	→	nìntren	travel somewhere by train, V
(e)	(i)	ʔáway	→	wáyʔa	fight, N
	(ii)	ʔaway-án	→	yànʔawáy	fighting (one another), N
(f)	(i)	túlog	→	lógtu	sleep, N
	(ii)	tulóg-an	→	gàntúlog	sleep in/on something, V
(g)	(i)	sampál	→	palsám	slap on the face, N
	(ii)	sampal-ín	→	linsampál	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 Tadbaliqs output.*
- (9) LINEARITY (McCarthy & Prince 1995)
* *metathesis.*
- LAST- σ -1st ensures the last-to-first syllable Tadbaliqs 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

⁶ Monosyllabic words are unaffected by syllable transposition for my speakers. However, in other dialects of Tadbaliqs (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) (Riggle 2006; Zoll 1993, 1994)
* *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 -1st
 - assesses faithfulness of Tadbaliks game output – e.g. ([pa.li.tan] →) [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) – copying⁹

(13) /palit/ [pa.lit]	LAST- σ -1 st	*STRUC(σ)	ID-ROOT	INTEGRITY	LINEARITY
a. palit	*!	**			
b. itpal	*!	**	*		*
c.  litpa		**	*		*
d. litpal		**	*	*!	*
e. litpalit		***!		***	*

(14) /palit-an/ [pa.li.tan]	LAST- σ -1 st	*STRUC(σ)	ID-ROOT	INTEGRITY	LINEARITY
a. palitan	*!	***			
b. anpalit	*!	***			*
c. tanpali		***	*!		*
d.  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 -1st, since syllable transposition would not be recoverable. But for longer inputs, as in (14), a two-syllable candidate *tanpa* would satisfy LAST- σ -1st 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)
 - plain (c) preferred over consonant copying (d) by INTEGRITY
- Suffixed words (14): consonant copying (d) economically satisfies ID-ROOT
 - 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)¹⁰
 - syllable reversing ludling in Dholuo (West Nilotic, western Kenya)
 - *čier* → *reči* ‘to rise from the dead’ repairs onsetless first syllable of *čier* → **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)
 - copying more likely if initial stress, orthographic geminate, short first vowel
 - e.g. *comma* → *macom*
- TETU vowel copying in Japanese ludling Zuuja-go (Itô, Kitagawa & Mester 1996; cf. Tateishi 1989: 396f.)
 - single mora bases rendered in optimal three-mora form
 - e.g. *hi* → *i:hi*, ‘cigarette light, lit. fire’
- Tadbalks consonant copying as The Emergence of The Faithful (cf. Lee 1996)
 - 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
 - but with suffixed words, all but the onset of the last syllable is an affix
 - thus the opportunity emerges to both play the game and faithfully realise the root by copying just one consonant
- Possible TETF consonant copying elsewhere
 - Norwegian last-to-first syllable ludling Smoi (Jahr 2003: 294)
 - when the transposed syllable is predominantly a suffix – e.g. the suffixal definite article – consonant copying offers the opportunity to faithfully realise the root
 - e.g. *bank-en* → *kenbank* ‘the bank’

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* → *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

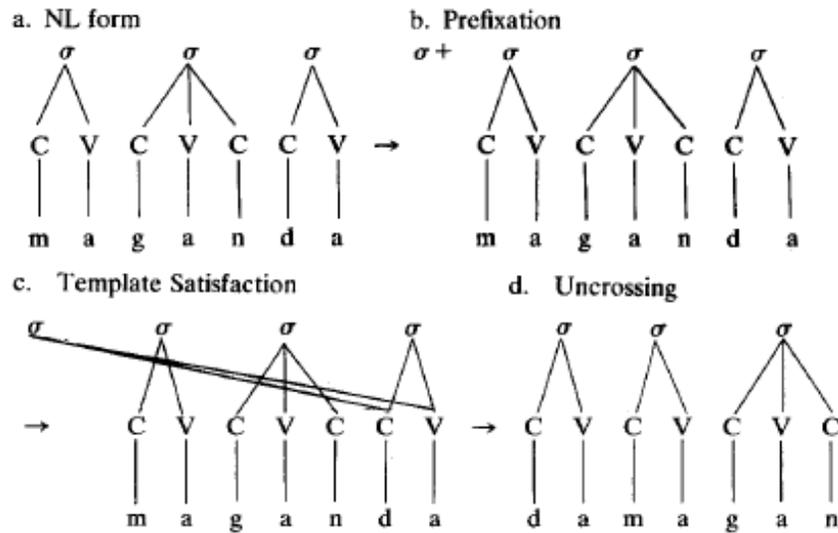
- Correspondence Theory (McCarthy and Prince 1995) of reduplication
 - output-output correspondence between surface forms of base and RED
- Applied to language games:
 - Base-Game (Barlow 1997, 2001)
 - Base-Argot (Itô, Kitagawa & Mester 1996; Borowsky and Avery 2009)
 - Base-Ludligant (Sanders 1999, 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 $\lambda = \sigma$
 - 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,¹¹ 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)

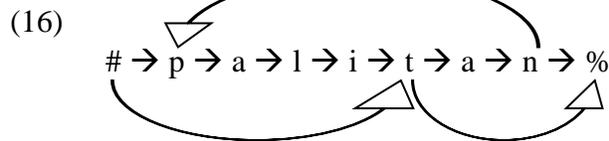
¹¹ cf. Itô, Kitagaawa & Mester's (1996) Cross Anchoring.

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



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)¹²
- But unlike emergent root faithfulness, does not address when/why consonants are copied



5.4 FINAL-C

- Debated whether final syllables are ever truly open in Tagalog, or closed with [h] (Llamzon 1966, Schachter and Otones 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 *-in/-an*

¹² For other copy(-and-truncation)-type models, see references in Nevins and Vaux (2003).

- The Tadbaliiks data in (17) support phonological *h*-epenthesis for hiatus resolution only
 - root words (i): no *h* in first syllable coda in Tadbaliiks
 - no phonological *h*-epenthesis to satisfy FINAL-C in Tagalog
 - suffixed words (ii): *h* moved but not copied in Tadbaliiks
 - phonological *h*-epenthesis resolves hiatus in Tagalog
 - but no underlying root final /-h/
 - though detailed phonetic work à la Coombs (2017) required

(17) *-hin* and *-han*, ✕ copying

(a)	(i)	sábi	→	bisá	*bihsá	saying, N
	(ii)	sabí- <u>hin</u>	→	<u>h</u> insábi	* <u>h</u> insábih	say, V
(b)	(i)	tása	→	sáta	*sáhta	cup, N
	(ii)	tása- <u>han</u>	→	<u>h</u> antása	* <u>h</u> antásah	measure, V

5.5 R-ANCHOR

- Another abstract reviewer suggests that Tadbaliiks 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) CVCVC 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 Tadbaliiks?
 - rightmost segment of Tadbaliiks word = rightmost segment of underlying root
 - e.g. ([pa.li.t-an] →) [tan.pa.lit], ✓ /palit/
- Would still be emergent faithfulness¹³
- And (19) could be interpreted in terms of ID-ROOT – copy entire root, where economical
- Distinguishing between R-ANCHOR and ID-ROOT:
 - R-ANCHOR only cares about the root-final consonant
 - 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 Tadbaliiks 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 Tadbaliiks

(20) Shortened suffixed words, ✗ copying

(a) ¹⁴	(i)	<u>bukás</u>	→	<u>kasbú</u>		open, A
	(ii)	<u>buks-án</u>	→	<u>sanbúk</u>	* <u>sanbúks</u>	to open something, V
(b) ¹⁵	(i)	<u>lagáy</u>	→	<u>gaylá</u>		to put, V
	(ii)	<u>lagy-án</u>	→	<u>yanlág</u>	* <u>yanlág</u>	to put somewhere, V

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

(21)/bukas-an/ [buk.san]	LAST-σ-1 st	*STRUC(σ)	ID-ROOT	INTEGRITY	LINEARITY
a. buksan	*!	**	*		
b. anbuks	*!	**	*		*
c. ☞ sanbuk		**	*		*
d. sanbuks		**	*	*!	*
e. sanbuksan		***!	*	***	*
f. buksan	*!	***			
g. sanbuka		***!	*		*
h. sanbukas		***!		*	*
i. sanbukasan		***!*		***	*

- 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

¹⁴ Final *-ks* would not be ill-formed. Recall Tadbaliiks from footnote 1, with optional game *-s*. Hence we cannot rely on a constraint along the lines of *CC]_w or *COMPLEXCODA to rule out consonant copying in (20aai). This stylistic *-s* was semi-productive, though seemingly unsystematically, for one of my speakers; e.g. *palitán* → *tánpalits* 'exchange' (object focus), V.

¹⁵ Compare (20b) with its unreduced form, which has a different meaning, and *does* exhibit consonant copying: *lagáy-an* → *yanlágay* 'place where you put something', N.

¹⁶ And perhaps high-ranking DEP.

- ID-ROOT cares about faithfulness to all segments of the underlying root
 - 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
 - e.g. /palit/: p -> a -> l -> i -> t; where -> = ‘precedes’, not ‘immediately precedes’
- (22) (a) (i) palít + -in- + -an (‘exchange’, perfect, directional focus)
 (ii) pinalítan → tánpinalít / *tánpinali
- (b) (i) táwag + -in- + -an (‘call’, perfect, directional focus)
 (ii) tinawagan → gántinawag / *gántinawa

7 Conclusion

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

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