

Altruistic inversion and doubling in Tiwa morphology*

Emily Clem
University of California, San Diego
eclem@ucsd.edu

Nicholas Rolle
Princeton University
nrolle@princeton.edu

Virginia Dawson
University of California, Berkeley
virginia.dawson@berkeley.edu

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1 Introduction

- A long tradition of work in syntax has sought to understand the motivations for narrow syntactic movement
 - Movement is *greedy* – an element moves to satisfy its own requirements (Bošković, 1995, 2007; Chomsky, 1995, a.o.)
 - Movement can be *altruistic* – an element can move to satisfy requirements of a distinct element (Lasnik, 1995, 2003; Zyman, 2017, a.o.)
- In addition to movement that occurs in the narrow syntax, various instances of displacement and reordering occur in the post-syntax (Marantz, 1988; Embick and Noyer, 2001; Matushansky, 2006; Arregi and Nevins, 2012, 2018, a.o.)
- We argue that, just as narrow syntactic movement can be greedy or altruistic, so can post-syntactic displacement
- We present evidence for altruism in the post-syntax from a process of morpheme inversion and doubling in Tiwa (Tibeto-Burman; India)
 - In Tiwa verbal morphology, focus marking can sometimes intervene between tense and agreement in the base-generated order
 - When T-FOC-AGR base order occurs, T doubles or inverts with FOC in the post-syntax to result in surface adjacency between T and AGR

- (1) a. Base-generated order
V-ASP-**T**-FOC-AGR
- b. Surface order with inversion
V-ASP-FOC-**T**-AGR
- c. Surface order with doubling
V-ASP-**T**-FOC-**T**-AGR

- We argue that inversion and doubling of T is altruistic: it is motivated by requirements of AGR
- The Tiwa data thus suggest that post-syntactic displacement can be altruistic just as narrow syntactic movement can be
- **Roadmap:**
 - §1: Introduction
 - §2: Tiwa verbal morphology and allomorphy
 - §3: Inversion and doubling in Tiwa
 - §4: The analysis: Post-syntactic altruism
 - §5: Comparison to post-syntactic greed
 - §6: Post-syntactic altruism crosslinguistically

2 Tiwa verbal morphology and allomorphy

- The finite verb in Tiwa can host several affixes that occur in a fixed order
 - The slot closest to the root can be occupied by either aspect or negation (but not both)
 - Tense follows aspect
 - Subject agreement¹ follows tense

(2) [root - ASP/NEG - TENSE - AGR]

-do	IPFV	-∅	NPST	-ng/-âng	1SG
-ga	PFV	-m	PST		
-o/-w	NEUT				
-ya	NEG				

- Subject agreement is only overt for first person singular subjects and is optional

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¹Here we do not take a stance on whether this marker is the result of true agreement or clitic doubling and use the term "agreement" for convenience.

(3) *khôna-ya-m(-âng)*
hear-NEG-PST-1SG

‘I did not hear.’

- Agreement can double a full pronoun and is derived transparently from the 1SG pronoun

(4) *âng hât-jíng lí-do-m-âng*
I market-to go-IPFV-PST-1SG

‘I had gone to market.’

- 1SG agreement has two allomorphs: *-ng* [-ŋ] or *-âng*, the latter with a full vowel and falling tone

(5) a. *lí-ya-Ø-ng*
go-NEG-NPST-1SG

‘I will not go.’

b. *lí-ya-m-âng*
go-NEG-PST-1SG

‘I did not go.’

- The *-âng* allomorph of 1SG only surfaces after the tense marker *-m* PST

► We therefore analyze 1SG allomorphy as being morphosyntactically conditioned

(6) a. [1SG] ↔ *-âng* / [PST]__
b. *-ng* / elsewhere

- Jose (2014) analyzes 1SG allomorphy as being phonologically conditioned

– *-âng* appears after consonants

– *-ng* appears after vowels

- While phonological conditioning can account for the surface distribution of the allomorphs of 1SG, it leaves unexplained a pattern of morpheme inversion and doubling that occurs only in the presence of the *-âng* allomorph

3 Inversion and doubling in Tiwa

- Further evidence for the close relationship between subject agreement and tense comes from patterns of tense inversion and doubling

- Tiwa has several focus clitics that are typically merged outside agreement

(7) ‘I did not go.’

a. *-bo*
/root-NEG-PST-AGR-FOC/
/lí-ya-m-âng-**bo**/ [líyamângbo]

b. *-se*
/root-NEG-PST-AGR-FOC/
/lí-ya-m-âng-**se**/ [líyamângse]

c. *-lo*
/root-NEG-PST-AGR-FOC/
/lí-ya-m-âng-**lo**/ [líyamânglo]

- Focus can sometimes instead adjoin to a smaller structure and be merged *inside* agreement

- When focus merges inside agreement it splits tense and agreement, triggering two operations: inversion or doubling of tense

– *-m* PST can invert with focus to appear adjacent to *-âng* 1SG on the surface

– *-m* PST can double to occur on both sides of focus, also yielding surface adjacency between *-m* PST and *-âng* 1SG

– Typologically, the doubled X-Y-X pattern resembles ‘alternating multiple exponence’ (Harris, 2017)

(8) ‘I did not go.’

a. High FOC, No Displacement
/root-NEG-PST-AGR-FOC/
/lí-ya-**m-âng-lo**/ [líyamânglo]

b. Low FOC, Inversion
/root-NEG-PST-FOC-AGR/
/lí-ya-**m-lo-âng**/ → lí-ya-lo-**m-âng** [líyalomâng]

c. Low FOC, Doubling
/root-NEG-PST-FOC-AGR/
/lí-ya-**m-lo-âng**/ → lí-ya-**m-lo-m-âng** [líyamlomâng]

- Inversion and doubling ensure that in all surface forms there is adjacency between *-m* PST and *-âng* 1SG

- Crucially, without overt 1SG agreement, *-m* PST can never invert with focus or double

(9) ‘(S)he did not go.’

- a. /root-NEG-PST-FOC/
/lí-ya-**m**-lo/ [líyamlo]
- b. /root-NEG-PST-FOC/
/lí-ya-**m**-lo/ → *lí-ya-lo-**m** *[líyalom]
- c. /root-NEG-PST-FOC/
/lí-ya-**m**-lo/ → *lí-ya-**m**-lo-**m** *[líyamlom]

- The ungrammaticality of the order FOC-PST in the absence of *-âng* 1SG indicates that focus does not simply have a lower possible adjunction site below tense (i.e. */root-NEG-FOC-PST/)
 - The unavailability of inversion and doubling without *-âng* 1SG suggests that these instances of displacement are post-syntactic
 - Assuming a realizational morphological model, all allomorphy is decided post-syntactically
 - The post-syntactic insertion of the allomorph *-âng* 1SG appears to feed displacement, with inversion and doubling of *-m* PST strictly dependent upon the presence of *-âng* 1SG
 - If T underwent narrow syntactic movement as a precondition for the insertion of the allomorph *-âng* 1SG, we would expect syntactic movement to be possible without subsequent insertion of *-âng* 1SG
- We argue that *-m* PST undergoes inversion and doubling altruistically in the post-syntax, to meet requirements of *-âng* 1SG

4 The analysis: Post-syntactic altruism

- We assume that Vocabulary Items (i.e. morphs) can be specified with two types of conditions that reference their local context (following ongoing work in Kalin and Rolle, in prep.)
 - **Conditions on insertion:** The pre-conditions that must exist in an environment in order for insertion of a Vocabulary Item to be possible (used to license contextual allomorphy)

- **Conditions on position:** The conditions that a Vocabulary Item imposes on its linear environment (used to govern relative position, e.g. 2nd position clitics, infixes, templatic effects, etc.)

► We argue that a condition on insertion licenses the insertion of the allomorph *-âng* 1SG, while a condition on position of *-âng* triggers the altruistic inversion or doubling of *-m* PST

- We couch our analysis of post-syntactic altruistic displacement within a hybrid framework OT-DM (Rolle, 2019), combining the core architectural assumptions of Distributed Morphology (DM; Halle and Marantz, 1993), but with constraint-based input-output computation allowing for parallel application of operations (à la Optimality Theory; Prince and Smolensky, 1993)²
 - Non-lexicalist (“syntax all the way down”)
 - Realizational (“late insertion” of phonological primitives via Vocabulary Items)
 - Constraint-based and output-oriented

4.1 Conditions on insertion

- Each Vocabulary Item may contain a condition on insertion, which specifies the context within which it can be inserted
 - These are the contextual realization rules of DM
- As stated, for 1SG we assume that its allomorphs differ in their conditions on insertion

- (10) a. [1SG] ↔ -âng / [PST]__
b. -ng / elsewhere

- When FOC is merged between PST and 1SG, general linearization principles (e.g. the Mirror Principle; Baker, 1985) will yield the order in (11a)

²The OT-DM framework is recently supported in Rolle 2019, with many predecessors (Noyer, 1992; Trommer, 2001a,b, 2002; Wolf, 2008; Dawson, 2017; Foley, 2018, a.o.). This framework may come in a strong version in which all post-syntactic operations take place in parallel at spell-out, or a weaker version in which one set of post-syntactic operations takes place at spell-out, while another takes place in a later input-output computation. This latter computation can be interpreted either as a separate pre-phonology morphological module, or interleaved within the phonological module itself. Within this analytic range, post-syntactic altruism remains regardless, our main point here.

- In this context, *-âng* is still inserted rather than the default *-ng*, yielding the post-exponence structure in (11b)

(11) a. /...-PST-FOC-1SG/
 b. /...-m-lo-âng/ * /...-m-lo-ng/

- These data demonstrate that the locality conditions on insertion need not be evaluated in terms of strict linear adjacency
 - This follows a growing body of work demonstrating similar patterns, whose empirical content require us to minimally loosen locality restrictions in allomorphy (Merchant, 2015; Moskal, 2015a,b; Moskal and Smith, 2016; Kastner and Moskal, 2018; Božič, 2019; Smith et al., 2019, a.o.)
- Crucially, conditions on insertion do not alter the structure within which they are placed
- ▶ “No self-licensing principle”:³
 - At exponence, individual Vocabulary Items cannot facilitate their own licensing by altering the context (e.g. by reordering elements, copying elements, adding or deleting elements, etc.)

4.2 Conditions on position

- We propose that the Vocabulary Item *-âng* 1SG has an additional requirement that it be surface-adjacent to its allomorphy trigger, *-m* PST
 - For the learner, all tokens of *-âng* appear adjacent to *-m*, but not all tokens of *-m* are adjacent to *-âng* (e.g. when there is no overt agreement)
- We call such requirements **conditions on position**
 - Conditions on position specify the morphological or phonological structure that must be linearized to the right or left of a Vocabulary Item

³We take this principle to be an implicit assumption of analyses of contextual allomorphy in the literature. Further, Embick and Noyer (2001) are explicit that Local Dislocation – a similar formalism related to our conditions on position that *can* change the local environment of a morph – “occurs after Vocabulary Insertion” (562), and thus, after allomorphy selection.

- These conditions are part of a long lineage of work on post-syntactic morph order manipulation, particularly in DM via Local Dislocation (Embick and Noyer, 2001; Embick, 2007; Embick and Marantz, 2008, a.o.) and other metathesis operations (Guseva and Weisser, 2018; Arregi and Nevins, 2018)

- Conditions on position can be understood as a sub-type of subcategorization frame (Lieber, 1980; Inkelas, 1990; Booij and Lieber, 1993; Zec, 2005; Paster, 2006; Yu, 2007; Bennett et al., 2018; Brinkerhoff, 2019; Rolle and Hyman, 2019; Tyler, 2019, a.o.)
 - Subcategorization approaches are ideal for accounting for idiosyncratic quirks of lexical items, which cannot be reduced to a more general system
- This condition on position for *-âng* 1SG can be conceptualized as an abstract pre-linearized string in its lexical entry, along which correspondence relations can be established with output candidates
 - The underlying representation of the allomorph is in white
 - Morphological or phonological structure which is subcategorized for is in gray⁴

(12) *-âng* Vocabulary Item

SC	UR
-m	-âng
[T:PST]	[φ:1SG]

- If the condition on position is not (incidentally) satisfied by the merge position corresponding to the Vocabulary Item, post-exponence repairs can occur to satisfy this condition
 - In Tiwa, inversion and doubling are repairs that serve to satisfy the condition on position for *-âng* 1SG⁵

⁴Recently, Rolle and Lionnet (2019) introduced “Phantom Structure” to capture subcategorization-like requirements in grammatical tone alignment. Phantom structure would correspond to the grayed-out SC portion of the lexical entry. We leave this possibility aside here, but note its connection.

⁵A potential alternative to attributing inversion and doubling to a property of *-âng* 1SG would be to adopt Ryan’s (2010) analysis of morphotactics involving bigram constraints, in which the locus of morphotactic idiosyncrasy is in the constraint set and not attributable to an individual Vocabulary Item itself. Under this model, notions of post-syntactic “altruism” and “greed” do not appear to be appropriate.

- The second allomorph of Tiwa 1SG, *-ng*, lacks a condition on position entirely, represented by a lack of a subcategorized structure

(13) *-ng* Vocabulary Item

UR
-ng
[ϕ :1SG]

- Consequently, *-ng* 1SG never triggers post-syntactic displacement

4.3 Altruistic inversion/doubling via constraint interaction

- As stated, if *-âng* 1SG is not adjacent to *-m* PST, inversion and doubling are post-exponence repairs that can satisfy its condition on position
- These instances of post-syntactic displacement are *altruistic* in the following way
 - The trigger of inversion and doubling is *-âng* 1SG (i.e. it has the condition on position requiring adjacency with *-m* PST)
 - The target of inversion and doubling is not *-âng* 1SG itself, but rather *-m* PST
 - Therefore, *-m* dislocates *altruistically* to satisfy *-âng*
- One reason the altruistic pattern in Tiwa could have developed could be due to a locality bias in allomorphy (Božič, 2019)
 - Allomorphy of 1SG is conditioned by tense, even in the absence of underlying adjacency
 - The condition on position for *-âng* 1SG serves to bring about surface adjacency between the trigger and target of allomorphy
- Post-syntactic altruistic movement can be captured through simple constraint interaction in an Optimality Theoretic approach (Prince and Smolensky, 1993)
 - We assume that inversion and doubling are freely available operations, whose outputs are selected only if they are output optimizing
- The attested patterns of inversion and doubling can be modeled using four constraints

- (14)
- POSITION-OV: For all morphs in an output candidate (O), it is part of a string which corresponds to the string stored in its Vocabulary Item (V) (i.e. the string consisting of the SC and the UR)
 - ANCHOR-R(MORPH,WORD): A morph at the right edge of a word in the input (I) corresponds to a morph at the right edge in the output (O) (adapted from Yip, 2002: 161)
 - LINEARITY-IO(MORPH): The precedence structure of the morphs in the input (I) is preserved in the output (O) (adapted from Kager, 1999: 63, a.o.)
 - INTEGRITY-IO(MORPH): No morph in the input (I) has multiple correspondents in the output (O) (adapted from McCarthy and Prince, 1995)

- These constraints allow both inversion and doubling as possible outputs

(15)

Input: /lí-ya-m-lo-âng/		POS	ANCH	LIN	INT
a. lí-ya-m-lo-âng	fully faithful	*!			
b. lí-ya-lo-m-âng	<i>-m</i> inversion			*	
c. lí-ya-m-lo-m-âng	<i>-m</i> doubling				*
d. lí-ya-m-âng-lo-âng	<i>-âng</i> doubling	*!			*
e. lí-ya-m-âng-lo	<i>-âng</i> inversion		*!	*	

- POS is highly ranked, meaning that the condition on position for *-âng* 1SG must be satisfied in the output
 - Because POS is a universal constraint (not an existential constraint), all instances of *-âng* must be part of the corresponding string -m-âng in its Vocabulary Item
- *-âng* 1SG itself cannot undergo displacement to satisfy POS
 - If *-âng* 1SG doubled, one instance of *-âng* would still not be adjacent to *-m* PST, violating POS
 - If *-âng* 1SG inverted with FOC, it would violate ANCH since *-âng* would be at the right edge in the input but not in the output
- Instead, *-m* PST undergoes displacement altruistically, with both inversion and doubling as equally optimal possibilities
 - Inversion of *-m* PST and FOC only violates LIN governing linear precedence relations
 - Doubling of *-m* only violates INT governing multiple correspondents

- The Tiwa facts illustrate a “resolution of a basic tension between two competing pressures” (Hyman, 2003), one of which is ‘morphotactic’, the other being some general principle which holds across the language
 - **Morphotactic:** A pressure to satisfy the condition on position of *-âng* 1SG
 - **General:** A pressure for the surface order to match the default linearization of the syntactic structure
- This is comparable to Chichewa (Hyman, 2003), where the tension is specifically understood as between the Mirror Principle (a syntactic mapping principle; Baker, 1985) and obeying the C-A-R-P template (a morphotactic constraint)⁶
- In both languages, both morpheme inversion and morpheme doubling emerge as possible resolution strategies

5 Comparison to post-syntactic greed

- While the Tiwa pattern of inversion and doubling is altruistic, similar surface patterns can arise due to *greedy* post-syntactic displacement
- In some dialects of Spanish, imperatives show plural inversion and doubling (Harris and Halle, 2005; Kayne, 2010; Postma, 2013; Harris, 2017: 212; Arregi and Nevins, 2018, a.o.)

(16)	‘Sit down! (imperative plural)’	(Arregi and Nevins, 2018: 626)
a.	/root-PL-CL.REFL/ /siénte- n -se/	Standard Order
b.	/root-PL-CL.REFL/ /siénte- n -se/ → siénte-se- n	Inversion
c.	/root-PL-CL.REFL/ /siénte- n -se/ → siénte- n -se- n	Doubling

- Arregi and Nevins (2018) argue that the plural *-n* is subject to a constraint NONINITIALITY within the post-verbal clitic group

⁶The Chichewa syntactic structure [[[verb root] RECIP] APPL] maps to /V-A-R/ (inversion) ~/V-R-A-R/ (doubling). The string /R-A/ satisfies the Mirror Principle, and the string /A-R/ satisfies the Morphotactics.

- Inversion with a pronominal clitic (such as reflexive *-se*) or doubling both result in at least one occurrence of *-n* PL that is non-initial⁷
- These post-syntactic operations are greedy
 - The trigger of displacement is *-n* PL due to its NONINITIALITY requirement
 - The undergoer of inversion and doubling is also *-n* PL
 - Thus the element that undergoes displacement does so to satisfy its own requirements
- This case is different from Tiwa where the trigger (*-âng* 1SG) and target (*-m* PST) of displacement are distinct
- Post-syntactic displacement can show greed or altruism, just like narrow syntactic movement

6 Post-syntactic altruism crosslinguistically

- Altruistic patterns of post-syntactic displacement occur beyond Tiwa and can result in reordering, doubling, or optionality between the two

6.1 Ergative displacement in Basque

- Basque (isolate) auxiliaries display a cluster of displacement phenomena (Arregi and Nevins, 2012)
 - Arregi and Nevins (2012) propose that T is subject to a PENINITIALITY constraint
 - Post-syntactic displacement operations serve to ensure that T is in second position within the auxiliary
- For example, in the Alboniga Basque dialect, ergative displacement occurs when T would be initial

⁷Unlike our POSITION constraint, this NONINITIALITY constraint must be interpreted as an existential constraint (Arregi and Nevins, 2018: 627) rather than a universal constraint: not *all* copies of *-n* PL must be non-initial, just one.

- (17) Ergative displacement in Alboniga Basque
(de Yrizar, 1992: Vol. 1, 470, as cited in Arregi and Nevins, 2012: 284)
- a. Base-generated order
/T-DAT-ERG-C/
 - b. Ergative metathesis
ERG-T-DAT-C
s -eun -tz -n
CL.ERG.2.SG -PST.3.SG -CL.DAT.3.SG -CPST
 - c. Ergative doubling
ERG-T-DAT-ERG-C
s -eu -ku -su -n
CL.ERG.2.SG -PST.3.SG -CL.DAT.1.PL -CL.ERG.2.SG -CPST
- The ergative agreement affix undergoes displacement altruistically to satisfy the positional requirements of T

6.2 Suffix doubling in Bole

- The Bole (West Chadic) verb displays a pattern of suffix doubling (Ryan, 2019)
 - Subject agreement suffixes or the ventive may double to appear on both sides of a set of potential intervening suffixes
 - Doubling occurs only in the context of certain aspectual suffixes (perfective or totality) that appear after the doubled copy

- (18) Bole suffix doubling (Ryan, 2019: 144)
- a. ḡḡòr-**an**-ko-yi
tie-PLS-PFV-NULLO
'they tied it'
 - b. ḡḡòr-**an**-to-**an**-ko
tie-PLS-3FEM.SGO-PLS-PFV
'they tied her'

- If aspectual suffixes trigger the post-syntactic doubling of agreement and ventive suffixes, then doubling happens altruistically to satisfy the needs of the suffix that follows the doubled copy

6.3 Mobile affixation in Moro

- Moro (Kordofanian) displays a process of mobile affixation (Jenks and Rose, 2015)
 - The default linearization of object markers is as suffixes on the verb
 - High-toned object markers can undergo post-syntactic displacement to surface as prefixes to result in a high tone on the verb macrostem
- (19) Moro mobile affixation (Jenks and Rose, 2015: 271)
- a. g-a-vələð-á-ḡá
SM.CL-RTC-PULL-PFV-2SG.OM
's/he pulled you'
 - b. g-a-ḡá-vələð-a
SM.CL-RTC-2SG.OM-PULL-IPFV
's/he is about to pull you'
- Object markers undergo displacement altruistically to satisfy the tonal requirements of the verb macrostem

6.4 Phonologically conditioned affix order in Washo

- Washo (isolate) shows a pattern of affix ordering that is sensitive to prosodic constraints (Benz, 2019)
 - Inclusive agreement suffixes and the causative typically appear closer to the verb root than the near future suffix
 - In the presence of the negative or interrogative suffixes, inclusive and causative exceptionally appear outside of both near future and negative/interrogative

- (20) Washo phonologically conditioned affix ordering (Jacobsen, 1964: 590, 1973, as cited in Benz, 2019: 5)
- a. le-íme?-**hu**-áša?-i
1SBJ-drink-PL.INCL-NEAR.FUT-IND
'We (incl.) are going to drink.'
 - b. le-íme?-áša?-és-**hu**-i
1SBJ-drink-NEAR.FUT-NEG-PL.INCL-IND
'We (incl.) aren't going to drink.'

- This reordering has been analyzed as the result of the prosodic subcategorization of the negative and interrogative morphemes (Paster, 2006: 229) or a ban on stem-final stress (Benz, 2019)
- The inclusive and causative undergo altruistic displacement to satisfy the prosodic requirements of another morpheme or the verb stem

6.5 Summary of crosslinguistic patterns

- We have demonstrated that altruistic post-syntactic displacement occurs across multiple unrelated languages,
- Post-syntactic altruism can yield multiple displacement patterns
 - Morpheme reordering (Moro, Washo)
 - Morpheme doubling (Bole)
 - Optionality between reordering and doubling (Basque, Tiwa)
- Additionally, similar patterns of reordering and doubling can be the result of greedy post-syntactic displacement (Spanish)
- ▶ The existence of altruistic displacement patterns in Tiwa and beyond thus supports a view of post-syntactic displacement that allows for both greed and altruism, paralleling the existence of both greedy and altruistic movement in the narrow syntax

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Appendix: Phonological accounts of 1SG agreement Phonologically conditioned allomorphy

- Allomorphy of Tiwa 1SG agreement is described in Jose (2014) as showing sensitivity to whether the preceding segment is a consonant or vowel
 - 1SG surfaces as *-ng* after vowels
 - 1SG surfaces as *-âng* after consonants
- This treatment requires a non-allomorphic account of the form of neutral aspect, which surfaces as *-o* after consonants and *-w* after vowels

- If the *-o/-w* alternation were a case of phonologically conditioned allomorphy, we would expect NEUT to be realized as *-w* between a V-final root and 1SG agreement
 - In this context, *-w* NEUT would be the final consonant before 1SG
 - From Jose (2014), we expect the form of 1SG to be *-âng*
 - Instead, we find that 1SG is realized as *-ng*
 - *-w* NEUT is deleted due to a ban on complex codas

(21) /root-NEUT-NPST-AGR/
 /lí-w-Ø-ng/ [líng] *[líwâng]
 'I will go.'

- If, instead, the *-o/-w* alternation were due to a gliding rule that applied after all Vocabulary Insertion, a phonological account of 1SG allomorphy could be preserved
 - At the time of allomorph selection, the element preceding 1SG would be the vowel /o/, leading to the insertion of *-ng*
 - Gliding would result in the complex coda [wng], which is avoided through deletion of *-w* NEUT
- Under this phonological account of 1SG allomorphy, the inversion and doubling of *-m* PST are more difficult to account for
 - In order for *-âng* 1SG to be inserted, *-m* PST would have to undergo displacement prior to Vocabulary Insertion for 1SG
 - However, displacement only occurs in the context of the *-âng* allomorph, which would not yet be present to trigger displacement

Non-allomorphic accounts

- Given the phonological similarity of the two proposed allomorphs of 1SG it may be tempting to treat them as not truly showing allomorphy
 - Only one Vocabulary Item for 1SG agreement is available
 - The realization of the vowel (and tone it hosts) is predictable by fully regular phonological processes of the language
- There are two possibilities for such a phonological account
 - The underlying form is /-ng/ with epenthesis of [â]

- The underlying form is /-âng/ with deletion of [â]
- An epenthesis account could assume that [â] is epenthesized to repair an illicit *Cng cluster after *-m* PST
- An epenthesis account leaves unexplained the quality of the epenthesized material
 - There is no Tiwa-internal evidence that [a] is a default vowel
 - The falling tone realized on *-âng* 1SG does not seem to be the default tone in Tiwa
- An epenthesis account does not provide an explanation for inversion and doubling
 - Inversion and doubling would actually serve to create the illicit *Cng cluster that epenthesis repairs
 - The merge order of tense, focus, and agreement would require neither displacement nor epenthesis and should be preferred
- A deletion account could assume that [â] is deleted from *-âng* 1SG to repair an illicit *VV sequence
- A deletion account struggles to capture data like (22)
 - Neutral aspect is typically realized as *-o* after consonants but *-w* after vowels
 - Realization of NEUT as *-w* would break up the VVV sequence, eliminating the need for [â] deletion
 - Instead, [â] does not surface and NEUT has no overt realization

(22) /root-NEUT-NPST-AGR/
 /lí-w-Ø-ng/ [líng] *[líwâng]
 'I will go.'

- To account for inversion and doubling, a deletion account could posit that *-m* PST undergoes displacement to avoid a dispreferred deletion of [â]
- However, if MAX is a highly ranked constraint, it is unclear why it would not be obeyed in (22)
- Interestingly, a deletion account would still, in a sense, involve altruism, with *-m* PST undergoing displacement to allow all segments of *-âng* 1SG to be realized