Post-syntactic altruism

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It has been observed that narrow syntactic movement can be altruistic, with an element α undergoing movement to satisfy the requirements of a distinct element β, rather than the needs of the moving element α itself (Lasnik 1995, 2003; Zyman 2017, a.o.). In this paper, we argue based on evidence from morpheme inversion and doubling in Tiwa (Tibeto-Burman; India) that post-syntactic movement can also be altruistic. We demonstrate that, in Tiwa, the positional requirement of one morpheme can cause a different morpheme to undergo inversion or doubling. Thus, the inverting/doubling morpheme moves altruistically.

Tiwa agreement allomorphy. We focus on Tiwa verbal morphology, (1).

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

The only agreement suffix is 1SG, with two allomorphs: *-âng* and *-ng*. Jose (2014) attributes agreement allomorphy to phonology: *-âng* appears after consonants, *-ng* after vowels. However, this account makes an unexpected prediction with the realization of 1SG after *-w* NEUT (aspect). The expected form after *-w* would be *-âng* in examples like (2). Instead, *-ng* surfaces, with NEUT unexpressed (due to a ban on wC codas).

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

(3) /root-NEUT-PST-**AGR**/
/lí-w-m-**âng**/ [líwmâng]
'I would have gone'

Further scrutiny of Tiwa morphology reveals that the *-âng* allomorph only appears after *-m* PST, (3). We therefore attribute the *-âng/-ng* allomorphy to non-phonological factors: *-âng* exclusively appears after *-m* PST, while *-ng* appears elsewhere.

Inversion and doubling. Evidence for the close relationship between *-âng* and *-m* PST comes from focus-marked contexts. Focus clitics (*-bo*, *-se*, *-lo*) are typically merged outside of agreement, (4a). However, FOC can instead adjoin to a smaller structure, appearing *inside* agreement. In such instances, two special patterns emerge: either PST inverts with FOC, (4b), or PST doubles appearing both before and after FOC, (4c).

(4) 'I would have gone'

a. /root-NEUT-**PST**-AGR-FOC/ No Movement
/lí-w-**m**-âng-bo/ [líwmângbo]

b. /root-NEUT-**PST**-FOC-AGR/ Inversion
/lí-w-**m**-bo-âng/ → lí-w-bo-**m**-âng [líwbomâng]

c. /root-NEUT-**PST**-FOC-AGR/ Doubling
/lí-w-**m**-bo-âng/ → lí-w-**m**-bo-**m**-âng [límbomâng]

In all patterns, *-âng* appears directly after *-m* PST. The surface order PST-FOC-AGR, with *-ng* (i.e. */...m-bo-ng/) or *-âng* (i.e. */...m-bo-âng/), is unattested.

Crucially, inversion/doubling occur only in the presence of *-âng*. All non-1SG contexts in Tiwa have no overt agreement exponents. In these contexts, *-m* PST never appears after FOC, with or without doubling:

(5) '(S)he would have gone'

a. /root-NEUT-**PST**-FOC/
/lí-w-**m**-bo/ [límbo]

b. /root-NEUT-**PST**-FOC/
/lí-w-**m**-bo/ $\not\rightarrow$ *lí-w-bo-**m** *[líwbom]

c. /root-NEUT-**PST**-FOC/
/lí-w-**m**-bo/ $\not\rightarrow$ *lí-w-**m**-bo-**m** *[límbom]

VI: Conditions on insertion. We analyze Tiwa allomorphy with the contextual realization rules in (6).

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

We assume that the context of insertion need not be evaluated in terms of strict adjacency (Merchant 2015; Moskal 2015; Božič to appear, a.o.). Thus intervening FOC does not prevent realization as *-âng*, (4b)-(4c).

Post-VI: Conditions on position. Independent of realization rules, vocabulary items can have 'conditions on position', which are evaluated after VI and govern the surface location of morphs post-syntactically. The condition on position for *-âng* is that it be immediately preceded by *-m* PST. We analyze inversion and doubling as post-exponence repairs to satisfy this positional requirement of *-âng*: when FOC intervenes, *-m* inverts with FOC or doubles to create adjacency with *-âng*. The positional requirement that triggers inversion/doubling is a feature of *-âng*, but the undergoer of inversion/doubling is a different morph, *-m*. We refer to this situation as *altruistic* inversion and doubling.

This post-spell-out altruistic movement can be generated by assuming that operations such as inversion/doubling are freely available but only selected if they are output-optimizing, such as to satisfy a condition on position. To capture the Tiwa patterns, we utilize the constraints in (7).

(7) a. POSITION: Conditions on position for each morph are satisfied in the output

b. INTEGRITY-IO(MORPH): No morph in the input has multiple correspondents in the output (adapted from McCarthy & Prince 1995)

c. LINEARITY-IO(MORPH): The precedence structure of the morphs in the input is reflected in the output (adapted from Kager 1999:63, a.o.)

d. ANCHOR-R(MORPH,WORD): A morph at the right edge of a word in the input has a correspondent at the right edge in the output (adapted from Yip 2002:161)

This OT analysis is illustrated in (8). Both inversion, (8b), and doubling, (8c), emerge as possible outputs.

(8)

Input: /lí-w-m-bo-âng/			POS	ANCH	LIN	INT
a.	lí-w-m-bo-âng	fully faithful	*!			
b. ☞	lí-w-bo-m-âng	*-m* inversion			*	
c. ☞	lí-w-m-bo-m-âng	*-m* doubling				*
d.	lí-w-m-âng-bo-âng	*-âng* doubling	*!			*
e.	lí-w-m-âng-bo	*-âng* inversion		*!	*	

Even though *-âng* possesses the condition on position, *-m* undergoes inversion/doubling altruistically due to a high ranked constraint (ANCH) against inverting *-âng* because it is at the right edge.

Comparison to "greedy" inversion/doubling. We compare the altruistic patterns found in Tiwa to inversion/doubling in dialectal Spanish (Arregi & Nevins 2018). The 'standard' morph order in verbs is plural inflection before enclitics, (9a), but dialects have innovated plural inversion, (9b), and doubling, (9c).

(9) 'Sit down!' (Arregi & Nevins 2018: 626)

a. /root-**PL**-ENCL/ Standard Order
/siénte-**n**-se/

b. /root-**PL**-ENCL/ Inversion
/siénte-**n**-se/ → siénte-se-**n**

c. /root-**PL**-ENCL/ Doubling
/siénte-**n**-se/ → siénte-**n**-se-**n**

The interesting difference between the Spanish and Tiwa cases is that in Spanish, inversion/doubling is triggered by the target of the operation itself. The plural *-n* has a second-position requirement within the post-verbal clitic group, which can be satisfied by any second-position occurrence of *-n* (Arregi & Nevins 2018). This causes *-n* to invert or double to meet this positional requirement. In Tiwa, however, the positional requirement of *-âng* triggers the altruistic inversion/doubling of *-m*.

Conclusions. This case study of Tiwa demonstrates that altruism in the post-syntax can arise via conditions on position and competing constraints. The positional condition of *-âng* serves to bring about adjacency between the trigger (*-m*) and target (*-âng*) of allomorphy (reflecting the 'locality bias' in allomorphy; Božič to appear). However, the constraint ANCH prevents *-âng* from moving to satisfy its own condition on position, instead causing *-m* to move altruistically. Thus, just as narrow syntactic movement can be either greedy or altruistic, so can post-syntactic movement operations such as inversion and doubling.