Post-syntactic altruism

Emily Clem (UC San Diego), Nicholas Rolle (Princeton University), and Virginia Dawson (UC Berkeley)

It has been observed that narrow syntactic movement can be altruistic, with an element $\alpha$ undergoing movement to satisfy the requirements of a distinct element $\beta$, rather than the needs of the moving element $\alpha$ 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/ /lî-w-Ø-ng/ [lîng] *[lîwâng] /lî-w-m-âng/ [lîwmâng]

‘I will go’ ‘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/ /lî-w-m-âng-bo/ [lîwmângbo] No Movement
   b. /root-NEUT-PST-FOC-AGR/ /lî-w-m-bo-âng/ → /lî-w-bo-m-âng [lîwbomâng] Inversion
   c. /root-NEUT-PST-PST-AGR/ /lî-w-m-bo-âng/ → /lî-w-m-bo-m-âng [lîmbomâng] Doubling

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/ /lî-w-m-bo/ [lîmbo]
   b. /root-NEUT-PST-FOC/ /lî-w-m-bo/ /lîw-bo-m *[lîwbom] *lîwbomâng
   c. /root-NEUT-PST-FOC/ /lî-w-m-bo/ /lîw-m-bo-m *[lîmbom] *lîmbomâng

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

<table>
<thead>
<tr>
<th>Input: /root-PL-ENCL/</th>
<th>Standard Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. /siénte-n-se/</td>
<td>Inversion</td>
</tr>
<tr>
<td>b. /siénte-n-se/ → siénte-se-n</td>
<td></td>
</tr>
<tr>
<td>c. /siénte-n-ENCL/</td>
<td>Doubling</td>
</tr>
<tr>
<td>/siénte-n-se/ → siénte-se-n</td>
<td></td>
</tr>
</tbody>
</table>

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.