The Ins and Outs of Allomorphy in Turoyo (Neo-Aramaic)*

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1 Introduction

This talk is about (non-surface) contextual allomorphy, where the form of a morpheme...

(i) varies based on the morpheme’s context, but
(ii) this variation cannot be explained by appealing to the general phonological system/processes of a language

Such allomorphy can show up in two basic ways:

• Suppletive allomorphy (replacive form)

(1) child-PL → child-ren / *child-s

• A morphophonological alternation (non-replacive form)

(2) a. leaf-PL → lea[v]-es / *lea[f]-s
b. house-PL → hou[z]-es / *hou[s]-es

nb. Both functional morphemes and roots can display both types of allomorphy.

What are the (proposed) constraints on contextual allomorphy?

A. Locality:

• The triggers of allomorphy must be structurally (and/or linearly) local to the morpheme/allomorph

(i) Within the same X⁰ (Bobaljik 2012, Thornton 2017)
(ii) Within the same (min.) XP (Bobaljik and Harley 2017)
(iii) Linearly adjacent/concatenated within the same spell-out domain (Embick 2010, Arregi and Nevins 2012)
(iv) Within a series of adjacent heads in an extended projection (Merchant 2015) (this constitutes a “span”; Svenonius 2012)

B. Directionality:

(3)

(3) Z Y X

• If exponents are chosen starting from the root and proceeding outwards (Carstairs 1987, Bobaljik 2000, Carstairs-McCarthy 2001, Adger et al. 2003, Embick 2010, i.a.), then:

(i) Outwardly-sensitive allomorphy can only have a morphosyntactic trigger (e.g., number, tense)
   ◊ “Outward” (Carstairs 1987) = triggered by something less embedded/further from the root of the word
   ◊ E.g., in (3), allomorphy of Y triggered by Z

• And if morphosyntactic features are entirely replaced by their exponent (Halle 1990, Noyer 1992, Bobaljik 2000, i.a.), then:

(ii) Inwardly-sensitive allomorphy can only have a morphophonological trigger (e.g., verb class, phonological form)
   ◊ “Inward” (Carstairs 1987) = triggered by something further embedded/closer to the root of the word
   ◊ E.g., in (3), allomorphy of Y triggered by X

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The goals of this talk:

- **Empirical:** To characterize a complex system of allomorphy found in Tuwo verbs that *seems* to instantiate the exact inverse of both directionality constraints.
- **Theoretical:** To pursue an analysis of this allomorphy.
  - I will argue that the verbal complex in Tuwo is a series of adjacent heads that do *not* constitute a syntactic word.
  - Consequences:
    - The strongest form of **directionality** is maintained.
    - But, the **locality** condition on allomorphy must be looser than is often proposed.
  - An alternative proposal—under which the strictest locality can be maintained—comes at the cost of directionality.

## 2 The data

Tuwo is an endangered Central Neo-Aramaic language\(^1\) spoken originally in southeastern Turkey, and spoken today mainly in a widespread diaspora community (Weaver and Kiraz 2016).

### 2.1 The components of the Tuwo verb

Like all Neo-Aramaic languages, Tuwo has rich verbal morphology, especially w.r.t. agreement.

\[(4)\] z\(\text{\textcircled{\text{pl}}}\)t\(\text{\textcircled{\text{pl}}}\)t -\(\text{\textcircled{\text{sg}}}\) -\(\text{\textcircled{\text{sg}}}\) -\(\text{\textcircled{\text{sg}}}\) -\(\text{\textcircled{\text{sg}}}\) -\(\text{\textcircled{\text{sg}}}\) -\(\text{\textcircled{\text{sg}}}\) -\(\text{\textcircled{\text{sg}}}\) -\(\text{\textcircled{\text{sg}}}\) -\(\text{\textcircled{\text{sg}}}\)

\[\text{catch} \text{ IMPF} - B. F. S.G - S2 S.G - L. 3 M. S.G\]

\['\text{you (fem. sg.) catch him}' (p. 135)\]

\(^1\)The genetic classification of Neo-Aramaic languages/dialects is not uncontroversial; see e.g. Coghill (1999) and references therein.

\(^2\)We see two general phonological processes in the language at work here: vowel hiatus resolution (deletion of \(\text{a}\)) and \(a\rightarrow \text{a}\) in closed syllables.

\(\text{nb. Throughout the handout:}\)

- Pronunciations are given in parentheses for each example.
- Subject agreement is in red; object agreement is in blue.

- **The bold italic** capital letter in the agreement glosses indicates different paradigms/patterns of agreement:
  - (i) the **“base”** set (**B**), always adjacent to the verb base
    - encodes \# and **gender** of an argument
  - (ii) the **“simple”** set (**S**)
    - encodes \# and \# of an argument
    - always indexes the **same** argument as **B**
  - (iii) the **“l-initial”** set (**L**)
    - encodes \#, \#, and **gender** of an argument
    - always indexes a **different** argument than **B/S**

### Table 1: B suffixes in Tuwoyo (p. 125)

<table>
<thead>
<tr>
<th>Form</th>
<th>B form(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.SG</td>
<td>-(\text{\textcircled{\text{sg}}})</td>
</tr>
<tr>
<td>F.SG</td>
<td>-(\text{\textcircled{\text{sg}}})</td>
</tr>
<tr>
<td>PL</td>
<td>-(\text{\textcircled{\text{sg}}})</td>
</tr>
</tbody>
</table>

### Table 2: S and L suffixes in Tuwoyo (p. 128–129)

<table>
<thead>
<tr>
<th>S form</th>
<th>L form(^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1SG</td>
<td>-(\text{\textcircled{\text{sg}}})</td>
</tr>
<tr>
<td>1PL</td>
<td>-(\text{\textcircled{\text{sg}}})</td>
</tr>
<tr>
<td>2M.SG</td>
<td>-(\text{\textcircled{\text{sg}}})</td>
</tr>
<tr>
<td>2F.SG</td>
<td>-(\text{\textcircled{\text{sg}}})</td>
</tr>
<tr>
<td>2PL</td>
<td>-(\text{\textcircled{\text{sg}}})</td>
</tr>
<tr>
<td>3M.SG</td>
<td>-(\text{\textcircled{\text{sg}}})</td>
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<td>-(\text{\textcircled{\text{sg}}})</td>
</tr>
<tr>
<td>3PL</td>
<td>-(\text{\textcircled{\text{sg}}})</td>
</tr>
</tbody>
</table>

\(^3\)The \(\text{L}\) forms are bimorphemic, consisting of an \(\text{l}\) piece plus a “personal suffix”, the latter of which is found on prepositions and in pronominal possessors.
This basic template (V-B-S-L) is complexified in a number of ways, which (for the most part) won’t centrally concern us here:

- The finite verb base’s vocalic “pattern” varies based on aspect
- The verb can bear non-agreement-related affixes, e.g., negation (prefix), future tense (prefix), and past tense (suffix?)
- Which agreement suffixes agree with which arguments changes based on transitivity and aspect (we’ll return to this in §3.2)
  - Ergative alignment with the perfective base
  - Accusative alignment with the imperfective base

The allomorphy of interest (bolded in Tables 1 and 2):

- The form of the B agreement suffix is sensitive to phonological material that follows it in the verbal complex, §2.2
- The form of the L agreement suffix is sensitive to phonological material that follows it and morphosyntactic features that precede it in the verbal complex, §2.3

### 2.2 B allomorphy

There is one clear case of non-surface allomorphy within the B set, the form of the B suffix when it indexes a plural argument:

(5) a. \( B^{PL} \rightarrow -i / \_CV \) (6a) or \( \_\# \) (6b) (p. 127)
   = (in an open syllable)

b. \( B^{PL} \rightarrow -\text{an} / \_\text{CC} \) (6c)
   = (in a closed syllable)

4Jastrow (1993) refers to the (finite) verb bases as varying based on tense, but it is clear from the existence of separate tense morphemes (and the effect these morphemes have on the interpretation of the verb) that the primary semantic contribution of the verb base is not temporal but rather aspectual. This accords with findings about the verb base in other closely related Neo-Aramaic languages (see, e.g., Hoberman 1989, Coghill 1999).

5One could argue that the whole suffix series is a massive portmanteau, learned idiosyncratically/idiomatically. However, this seems implausible to me, as even considering just basic intransitive and transitive finite verbs without the past tense morpheme (see Appendix A), this would comprise 129 suffix forms.

- I will take the elsewhere allomorph to be \(-i, (5a)/(6a–b)\).
- The \(-\text{an} \) allomorph, (5b)/(6c) is not plausibly derived from \(-i\) by a general phonological process in the language.
  - No general process of nasal-insertion (or deletion)
  - Not phonologically motivated
    ◦ In fact, this allomorph choice always creates a phonotactic violation, *CCC
    ◦ This violation is repaired by deleting one of the first two consonant slots (impossible to tell which)

\[ nB. \text{The past tense morpheme,} -wa, \text{which is invisible for the} \]
\[ \text{purposes of contextual allomorphy, allows us to see all 3 Cs survive on the surface:} \]

(7) a. našq -i -\text{0} -l-a (=našqila)
   kiss.IMPF -B^{PL} -S^3 -L-3F.SG
   ‘they kiss her’ (p. 133)

b. gaḥık -i -\text{0} (=gaḥiki)
   laugh.PFV -B^{PL} -S^3
   ‘they laughed’ (p. 129)

c. našq -\text{an} -\text{0} -\text{n-xu} (=našqantxu)
   kiss.IMPF -B^{PL} -S^3 -L-2PL
   ‘they kiss you (pl)’ (p. 127)

6It is in fact common for allomorph choice, even phonologically-conditioned allomorphy, to not be phonologically optimizing (e.g., Paster 2006), which can be taken as evidence against global approaches to allomorphy (Embick 2010).

(6) a. našq -i -\text{0} -l-a (=našqila)
   kiss.IMPF -B^{PL} -S^3 -L-3F.SG
   ‘they kiss her’ (p. 133)

b. gaḥık -i -\text{0} (=gaḥiki)
   laugh.PFV -B^{PL} -S^3
   ‘they laughed’ (p. 129)

c. našq -\text{an} -\text{0} -\text{n-xu} (=našqantxu)
   kiss.IMPF -B^{PL} -S^3 -L-2PL
   ‘they kiss you (pl)’ (p. 127)

\[ nB. \text{The past tense morpheme,} -wa, \text{which is invisible for the} \]
\[ \text{purposes of contextual allomorphy, allows us to see all 3 Cs survive on the surface:} \]

(7) a. našq -\text{an} -\text{0} -\text{wa} -\text{n-xu} (=našqantxu)
   kiss.IMPF -B^{PL} -S^3 -\text{PST} -L-2PL
   ‘they used to kiss you (pl)’ (p. 134)

- Shows us that \(-i/\text{-an} \) allomorphy can’t be reduced to \(-i/\text{-an} \) allomorphy (alongside L allomorphy, §2.3).
- Suggests that past tense \(-\text{wa} \) is in(ter)fixed; see more details in Appendix A.
The -i/-an Bpl alternation is best characterized as:

- **Suppletive allomorphy**
- Triggered by the **phonological form of the following overt morpheme** in the verbal complex (ignoring past, Appendix A)

Note that preliminarily, this looks problematic for the basic form of directionality:

- B is sensitive to the phonological form of S and L, which are linearly further away from the verb root

**Is this allomorphy outwardly sensitive to phonology?**

- A preview of the answer (§3): **No**, this outward sensitivity is only apparent; it’s really inward sensitivity.

### 2.3 L allomorphy

#### 2.3.1 Introducing the l/n alternation

Two of the L suffixes, L²pl and L³pl, begin with two consonant slots, with the first consonant typically being l (as is characteristic).

(8) The elsewhere l form of L³pl and L²pl

a. našq -o -∅ -l-le (=našqalle)  
   kiss.IMPF -Bf.SG -S³ -L-3PL  
   ‘she kisses them’ (p. 133)

b. našq -o -∅ -l-xu (=našqälxu)  
   kiss.IMPF -Bf.SG -S³ -L-2PL  
   ‘she kisses you (pl)’ (p. 133)

Unlike the other L suffixes, these two L suffixes behave exceptionally in that they **undergo an alternation**, schematized in (9)

(9) a. L³pl → -l-le (elsewhere)  
   → -n-ne / PL

b. L²pl → -l-xu (elsewhere)  
   → -n-xu / PL

- As shown in (10)–(12), whenever -l-le and -l-xu follow a plural morpheme, they surface as -n-ne and -n-xu.

(10) L³pl and L²pl following B/S₂pl

a. zabt -i -utu -n-ne (=zabtutne)  
   catch.IMPF -Bpl -S₂pl -L-3PL  
   ‘you (pl) catch them’ (p. 135)

b. zabt -i -utu -n-xu (=zabtutanxu)⁷  
   catch.IMPF -Bpl -S₂pl -L-2PL  
   ‘you (pl) catch yourselves’ (p. 135)

(11) L³pl and L²pl following B/S₁pl

a. zabt -i -na -n-ne (=zabtinanne)  
   catch.IMPF -Bpl -S₁pl -L-3PL  
   ‘we catch them’ (p. 136)

b. zabt -i -na -n-xu (=zabtinanxu)  
   catch.IMPF -Bpl -S₁pl -L-2PL  
   ‘we catch you (pl)’ (p. 136)

(12) L³pl and L²pl following B/S₃pl

a. našq -an -∅ -n-ne (=našqanne)  
   kiss.IMPF -Bpl -S³ -L-3PL  
   ‘they kiss them’ (p. 127)

b. našq -an -∅ -n-xu (=našqänxu)  
   kiss.IMPF -Bpl -S³ -L-2PL  
   ‘they kiss you (pl)’ (p. 127)

- **This allomorphy is independent of B allomorphy** (*it’s not assimilation*), as seen most clearly in (10).

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⁷The final vowel of the S suffix is deleted in (10a)/(15a) but is reduced in (10b)/(15b). This seems to be a result of vowel deletion in a closed syllable being blocked when it will necessitate consonant deletion (vs. shortening). However, this may not be the right characterization, as it makes the wrong prediction w.r.t. the placement of the past tense morpheme, cf. Appendix A and fn. 17.

⁸I assume that the S suffix, though not overtly displaying a number distinction in 3rd person, cf. Table 2, still abstractly contains number in 3rd person.
• All other L suffixes stay l-initial in all morphological environments, including immediately following a plural, (13)

(13) a. nošq -i -∅ -l-a (=nošquila)
    kiss.IMPF -BPL -S3 -L-3F.SG
    ‘they kiss her’ (p. 133)

b. zobt -i -utu -l-e (=zobtutle)
    catch.IMPF -BPL -S2PL -L-3M.SG
    ‘you (pl) catch him’ (p. 135)

c. zobt -i -na -l-an (=zobtinalan)
    catch.IMPF -BPL -S1PL -L-1PL
    ‘we catch ourselves’ (p. 135)

– These L suffixes even stay l-initial when following an n (showing l’s resistance to progressive assimilation): (14)

(14) som -l-an -l-e (=sømlanle)
    make.PFV -L-1PL -L-3M.SG
    ‘we made him’ (p. 139)

⇒ The l/n alternation seems to be best characterized as:

• A morphophonological alternation
  • Triggered (at least in part) by the morphosyntactic features of the preceding morpheme in the verbal complex

This finding is problematic for the stronger form of directionality, which rules out not only outward sensitivity to phonology, but also inward sensitivity to morphosyntactic features.

• L is sensitive to the features of B/S, which are linearly closer to the verb root

• Does this allomorphy display inward sensitivity to morphosyntactic features?
  – A preview of the answer (§3): No, this inward sensitivity is only apparent; it’s really outward sensitivity.

2.3.2 The l/n alternation is fully general

The l/n alternation occurs in the context of any (immediately) preceding plural feature, not just a plural B/S suffix.

• In plural imperatives, where the plural marker is distinct from that of canonical perfectives/imperfectives, we find the n forms of the L suffixes:

(15) a. zobt -u -n-ne (=zobtne)
    catch.IMPER -IMPER.PL -L-3PL
    ‘you (pl) catch him’ (addressed to you (pl)) (p. 141)

b. zobt -u -n-xu (=zobtxnux)
    catch.IMPER -IMPER.PL -L-2PL
    ‘catch yourselves!’ (addressed to you (pl)) (p. 141)

• When two L suffixes are stacked, and the first is PL, the second appears in its n form:

(16) a. som -l-xu -n-ne (=sømoxnne)
    make.PFV -L-2PL -L-3PL
    ‘you (pl) made them’ (p. 139)

b. som -l-xu -n-xu (=sømoxnux)
    make.PFV -L-2PL -L-2PL
    ‘you (pl) made yourselves’ (p. 139)

⇒ The -l-xu/-n-xu and -l-le/-n-ne alternations are fully general.

2.3.3 What exactly is alternating?

The l/n alternation looks like it crosses a morpheme boundary:

(17) -l -le → -n -ne (cf. -l -xu → -n -xu)
    -L -3PL -L -3PL -L -2PL -L -2PL

• Does the alternation need to be stated over the whole L form (including the person marker)?

• No: the l/n alternation targets just the L-marker itself.
A closer look at the phonology of the “personal suffixes”:

- The “personal suffixes” (the piece of the L suffix that encodes person, number, and gender) occur in other environments, e.g.:

<table>
<thead>
<tr>
<th></th>
<th>min ‘with X’</th>
<th>xtoθ ‘as X’</th>
</tr>
</thead>
<tbody>
<tr>
<td>1SG</td>
<td>min-i</td>
<td>xtoθ-i</td>
</tr>
<tr>
<td>1PL</td>
<td>min-an</td>
<td>xtoθ-an</td>
</tr>
<tr>
<td>2M.SG</td>
<td>min-ax</td>
<td>xtoθ-ax</td>
</tr>
<tr>
<td>2F.SG</td>
<td>min-ax</td>
<td>xtoθ-ax</td>
</tr>
<tr>
<td>2PL</td>
<td>mən-xu</td>
<td>xtaθ-xu</td>
</tr>
<tr>
<td>3M.SG</td>
<td>min-e</td>
<td>xtoθ-e</td>
</tr>
<tr>
<td>3F.SG</td>
<td>min-a</td>
<td>xtoθ-a</td>
</tr>
<tr>
<td>3PL</td>
<td>mən-ne</td>
<td>xtaθ-θe</td>
</tr>
</tbody>
</table>

- They all straightforwardly appear as their L form minus the l, except for 3PL, bolded above.
  - The first C of the 3PL personal suffix is always identical to the C that precedes it.
  - A more accurate representation of the 3PL suffix:
    \[(18) \text{3PL} \rightarrow \text{-Ce} \quad (\text{C} = \text{empty consonant slot})\]

Recognizing the 3PL form as (18), we can locate the l/n alternation entirely in the L component.

- Enables us to formalize the l/n alternation as in (19):
  \[(19) \quad L \rightarrow \text{-n / PL}_C\text{-l / (elsewhere)}\]

  = The L marker is realized as n when it follows a plural feature and precedes a consonant.
  - Captures the fact that the l/n alternation occurs only before C-initial personal suffixes (2PL and 3PL).

2.4 Interim summary

The Turoyo finite verb:

\[(20) \quad \text{V.ASP} \rightarrow B \rightarrow S \rightarrow L \rightarrow \#.\text{GEN} \rightarrow \pi.\# \rightarrow l+\pi.\#.\text{GEN}\]

There are two independent cases of contextual allomorphy in (20):

1) Suppletive allomorphy in the B suffix series:
\[(21) \quad B_{\text{PL}} \rightarrow -i \quad (\text{elsewhere})\]
\[\rightarrow -\omega n / \_\_C\]
  - Looks like outward sensitivity to phonological form

2) A morphophonological alternation in the L suffix series:
\[(22) \quad l \rightarrow n / \text{PL}_C\]
  - Looks like inward sensitivity to morphosyntactic features and outward sensitivity to phonological form

We can now ask: Is this pattern truly directionally deviant?

3 Analysis

The backdrop for the analysis is the basic workings of the framework of Distributed Morphology (Halle and Marantz 1993, 1994):

- The syntax operates over abstract morphemes:
  - Roots (lexical morphemes)
  - Functional morphemes (morphosyntactic features)

- The output of syntax feeds...
  - Logical Form (LF)
  - Morphological Structure (MS) / Phonological Form (PF)

\[\text{10This could just as easily be modeled as suppletive allomorphy, as in (19).}\]
Phonological forms are paired with morphemes via Vocabulary Insertion, in accordance with the Subset Principle (Halle 1997).

- Suppletive allomorphy = VI selecting a more highly specified spell-out of (vocabulary item for) a morpheme.
- Morphophonological rules alter the phonological form of an already-inserted vocabulary item.

In this section:

§3.1 Two possible analyses of the Tuyoyo verbal complex
§3.2 Supporting the Adjacent Head Analysis
§3.3 Theoretical implications

3.1 Two possible analyses

3.1.1 The Syntactic Word Analysis (SWA): L > B/S

The surface-obvious analysis of Tuyoyo verbs would be to take all the morphemes in the verbal complex to be within a complex X₀.

\[ z@bt \quad -\circ \quad -\circ \quad -l\varepsilon \quad (=z@bt\text{te}) \]
\[ \text{catch.IMPf} \quad -Bf.SG \quad -S2SG \quad -L-3M.SG \]
\[ \text{you (fem. sg.) catch him}' \quad \text{(p. 135)} \]

\[ V \quad BAgr \quad SAgr \quad LAgr \]
\[ \text{catch} \quad zbt \quad Bf.SG \quad S2SG \quad L-3M.SG \quad -l\varepsilon \]

Under this analysis:

- VI (choosing an exponent) at BAgr is outwardly sensitive to the phonological form of SAgr and LAgr, as per (21)
- A morphophonological rule at LAgr is inwardly sensitive to the morphosyntactic features of BAgr/SAgr, as per (22)

⇒ This necessitates that VI starts at the highest node in this structure and works from the outside in.

- If (24) is derived by head movement, the (rough) syntactic structure feeding (24) will be one in which LAgr is the highest:

\[ LAgrP \]
\[ L\varepsilon-3M.SG \quad -l\varepsilon \]
\[ SAgr \quad B\varepsilon-\varepsilon \]
\[ S2SG \quad -\circ \quad VAgr \quad VP \]
\[ Bf.SG \quad -\circ \quad S\varepsilon \]
\[ V \quad \text{CATCH} \quad zbt \]

3.1.2 The Adjacent Head Analysis (AHA): B/S > L

A second analysis worth considering is one in which the morphemes in the verbal complex are not, in fact, one syntactic word.

- Rather, agreement appears in its first-merge order, (26).

\[ BAgrP \]
\[ BAgr \quad S\varepsilon \]
\[ Bf.SG \quad -\circ \quad S2SG \quad -\circ \]
\[ LAgr \quad L\varepsilon-3M.SG \quad -l\varepsilon \]
\[ VP \quad \text{CATCH} \quad zbt \]

Not shown: V/VP needs to raise/move past BAgr; the surface morpheme order can then be read left-to-right off the structure.
Under this analysis (AHA), we see the exact opposite directionality as that under SWA.

- VI at BAgr is inwardly sensitive to the phonological form of SAgr and LAgr, as per (21)
- A morphophonological rule at LAgr is outwardly sensitive to the morphosyntactic features of BAgr/SAgr, as per (22)

⇒ This necessitates that VI starts at the lowest node in this structure and works from the inside out.

* Note that the inflectional structure underlying the AHA, (26), is the reverse of that underlying the SWA, (25). *

- Syntactic Word Analysis: The L suffix is structurally highest
- Adjacent Head Analysis: The L suffix is structurally lowest

3.2 Supporting the Adjacent Head Analysis

In this section, I will use evidence from agreement to argue for the Adjacent Head Analysis (the inflectional heads in the verb do NOT constitute a syntactic word).

nb. The precise structures are speculative. What’s important is just the relative heights of the agreement morphemes.

The supporting data: Turoyo has an aspect-based agreement split, with a person restriction in the perfective.

- Preliminaries (Jastrow 1993, Coghill 2016):
  - Pronouns in Turoyo are null, except when focused.
  - Subject agreement occurs whether or not the subject is overt/null or a pronoun/full DP.
  - Object agreement cannot co-occur with a full DP object, only a pronominal object (null or non-null).
  - Which agreement morpheme(s) agree with which argument varies based on the aspectual form of the verb base.

<table>
<thead>
<tr>
<th>Agreement on the imperfective base:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• B/S index the subject, (27a–c)</td>
</tr>
<tr>
<td>• L indexes the object, (27b–c)</td>
</tr>
<tr>
<td>(27) b. našq  -i  -∅  -l-a  (=našqila)</td>
</tr>
<tr>
<td>kiss.IMPF -BPL -S3 -L-3F.SG</td>
</tr>
<tr>
<td>‘they kiss her’ (p. 133)</td>
</tr>
<tr>
<td>(27) c. zabt  -∅  -at  -l-i  (=zabtätli)</td>
</tr>
<tr>
<td>catch.IMPF -BM.SG -S2SG -L-1SG</td>
</tr>
<tr>
<td>‘you (masc. sg.) catch me’ (p. 135)</td>
</tr>
</tbody>
</table>

- Imperfective base agreement (summary):

(28) V.IMPF -B/-S -L

subj obj

- Preliminary hypothesis for the structure of imperfectives:
  - BAgr and SAgr are calculated from the same ϕ-probe.
  - BAgr/SAgr, on Asp, c-command the subject, while LAgr, on v, c-commands the object (with no interveners).

(29)

```
TP
  T  AspP
     Asp
    vP
  BAgr/SAgr
      SBJ
  v'
      v
  VP
    v
  LAg
```
Agreement on the perfective base:

(i) In intransitives, \(B/S\) index the subject, (30).

\[
\begin{align*}
\text{(30) } & \text{gahik} -o -\text{no} \quad (=\text{gahikono}) \\
& \text{laugh.PFV -}B_\text{f.SG} -S_1\text{SG} \\
& \text{‘I (fem.) laughed’ (p. 129)}
\end{align*}
\]

→ Hypothesis: As before, Asp agrees with the subject, (31).

\[
\begin{align*}
\text{(31) } & \text{TP} \\
& \text{T} \quad \text{AspP} \\
& \text{Asp} \quad \text{vP} \\
& \text{BAgr/SAgr} \quad \text{SBJ} \\
& \quad \text{v} \quad \text{VP} \\
& \quad \text{L Agr} \quad \text{VP} \ldots
\end{align*}
\]

(ii) In transitives with a 3rd person object, \(B/S\) index the object, while \(L\) indexes the subject, (32).

\[
\begin{align*}
\text{(32) } & \text{n\text{\'}siq} -o -\emptyset -l\text{-le} \quad (=n\text{\'}siqalle) \\
& \text{kiss.PFV -}B_\text{f.SG} -S_3 -L_\text{-3PL} \\
& \text{‘they kissed her’ (p. 130)}
\end{align*}
\]

→ Hypothesis: Transitive \(v\) agrees with its spec in the pfv, (33).

\[
\begin{align*}
\text{(33) } & \text{TP} \\
& \text{T} \quad \text{AspP} \\
& \text{Asp} \quad \text{vP} \\
& \text{BAgr/SAgr} \quad \text{SBJ} \\
& \quad \text{v} \quad \text{VP} \\
& \quad \text{L Agr} \quad \text{VP} \\
& \quad \text{LAgr} \quad \text{VP} \ldots
\end{align*}
\]

(iii) In transitives with a 1st/2nd person object, \(L\) indexes the subj, and a second \(L\) indexes the object, (34) (see also (16)).

\[
\begin{align*}
\text{(34) } a. \quad & \text{n\text{\'}siq} -l\text{-e} -l\text{-ax} \quad (=n\text{\'}siqlelax) \\
& \text{kiss.PFV -}L_\text{3M.SG} -L_\text{-2M.SG} \\
& \text{‘he kissed you (masc.)’ (p. 137)} \\
\text{b. } & \text{s\text@om} -l\text{-ax} -l\text{-i} \quad (=s\text@omlaxli) \\
& \text{make.PFV -}L_\text{2F.SG} -L_\text{-1SG} \\
& \text{‘you (f.) made me’ (p. 138)}
\end{align*}
\]

→ Hypothesis: Since \(BAgr/SAgr\) reach the object over an intervener, (33), this object can only be 3rd person.

\[\diamond \approx \text{Person Case Constraint effect} \quad \text{(Bonet 1991, Anagnostopoulou 2003, Béjar and Rezac 2003, i.a.)}\]

⇒ A head lower than \(v\) (\(Appl^{11}\) or an iteration of \(v\)) is available as a last-resort strategy for agreeing with a 1st/2nd person object (à la Rezac 2008, Kalin T \text{\textac Roappear}).

\[
\begin{align*}
\text{(35) } & \text{TP} \\
& \text{T} \quad \text{AspP} \\
& \text{Asp} \quad \text{vP} \\
& \text{BAgr/SAgr} \quad \text{SBJ} \\
& \quad \text{v} \quad \text{VP} \\
& \quad \text{ApplP} \\
& \quad \text{Appl} \quad \text{L Agr} \\
& \quad \text{VP} \quad \text{OBJ}
\end{align*}
\]

\[^{11}\text{Support for the Appl analysis comes from the fact that datives can also agree in this second} \text{L slot (p. 137); such agreement is thus ambiguous.} \]
What’s actually important in the analysis of the Turoyo agreement split:

- $BAgr/SAgr > LAg$; supported by:
  - No person restriction when $BAgr/SAgr$ agree w/subj
  - 3rd p. restriction when $BAgr/SAgr$ agree with an obj
  - No person restriction for $LAgr$ in any aspect

- **Implication:** The split-ergative and person-restricted agreement pattern rules out SWA in favor of AHA.
  - In the underlying syntactic structure, $BAgr/SAgr$ must be higher than $LAgr$.
    - This does not hold of SWA, under which the verbal complex is a syntactic word built by head movement.
    - This does hold of AHA, under which the verbal complex is a series of adjacent heads.

Final hypothesized structure:

```
(36) TP
    T
    AspP
        Asp
            vP
                $BAgr/SAgr$
                    SBJ
                        v
                            VP
                                $LAgr$
                                    OBJ
```

- In order to fully support this analysis, it would need to be shown that:
  1. The subject raises out of the way, to allow the agreement heads to be adjacent.
  2. The V/VP raises to a position between the subject and T.
     - If it’s VP raising, then the object must evacuate VP, or the object must not be in the (minimal projection of) VP to begin with (Borer 2005, Alexiadou 2014, i.a).
     - This is left for future work.

### 3.3 Theoretical implications

Core assumptions of Distributed Morphology:

(37) Bobaljik (2000:(3)) [footnotes added]

a. **Separation:** Morphology interprets syntactic structures, rather than feeding them\(^{12}\)

b. **Cyclicity:** This interpretive procedure (vocabulary insertion) proceeds root-outwards\(^{13}\)

c. **Rewriting:** As morphosyntactic features are expressed by vocabulary items, these features are used up and no longer a part of the representation\(^{14}\)

- If VI proceeds root-outwards, (37b), and VI rewrites morphemes as phonological forms, (37c), ...
  - ...then it necessarily follows that contextual sensitivity will be **directionally constrained**:
    - **Inwardly-sensitive** allomorphy can only have a morpho-phonological trigger (e.g., verb class, phonological form)
    - **Outwardly-sensitive** allomorphy can only have a morphosyntactic trigger (e.g., number, tense)

---


Locality constraints on allomorphy:

- Bobaljik (2012:90) proposes the condition in (38) (with $\beta$ conditioning allomorphy of $\alpha$) to capture (39)/(40) (ibid:(88)).

(38) a. $\alpha \ldots X^0 \ldots \beta$
b. $\star \alpha \ldots X^P \ldots \beta$

(39) The Root Suppletion Generalization: Root suppletion is limited to synthetic (i.e., morphological) comparatives

(40) a. good / better
b. good / *more bett

- The idea is that root suppletion is possible in (40a)/(41a) (a synthetic comparative), but not (40b)/(41b) (analytic).

(41) a. CMPR
b. CMPRP

- Part of a general pattern: “[a] suppletive allomorph is selected when the conditioning feature is an affix, but not when the conditioning feature is expressed periphrastically, with a word boundary intervening” (p. 139), (42)

(42) a. Leo went/*goed swimming on Sundays.
b. Leo didn’t go/*went swimming on Sunday.

(See also Bobaljik and Harley 2017, Thornton 2017.)

- Other (somewhat looser) locality conditions:


Two possible syntactic structures for Turoyo, adapted from §3.1–2:

(43) SWA structure (before V-to-v-to-Asp head movement)

```
TP
  T
    AspP
      Asp
        vP
          v'
            v
              VP
                V
                  OBJ
```

(44) AHA structure (before V(P) movement past Asp)

```
TP
  T
    AspP
      Asp
        vP
          v'
            v
              VP
                V
                  OBJ
```

- If we adopt SWA, (43) ($Lagr > SAg / BAg$), then we...
  - Maintain a strict locality condition, like (38).
  - Give up strict cyclicity within the phase (and rewriting?)
    (à la Deal and Wolf 2017, Gribanova and Harizanov 2017).

- If we adopt AHA, (44) ($BAgr / SAg > Lagr$), then we...
  - Maintain the strictest directionality constraint, (37c), and strict cyclicity, (37b).
  - Give up highly constrained locality.

$\Rightarrow$ AHA is supported by the agreement facts; and so locality (at least for non-root allomorphy) must be looser than (38)
4 Conclusion

In this talk, I have examined a complex case of allomorphy in the verbal complex of the Neo-Aramaic language Turoyo.

- On the surface, this pattern seems to necessitate that (some subset of) cyclicity, rewriting, and directionality are incorrect.
- However, using evidence from the split agreement system, I argued that...
  - The verbal complex in Turoyo does not constitute a syntactic word (an $X^0$).
  - Cyclicity, rewriting, and directionality can be maintained.
- A consequence of this analysis is that we need a looser definition of locality than is often proposed: adjacent heads can condition allomorphy across an XP boundary.
  - Locality as defined by Embick (2010), Arregi and Nevins (2012), and Merchant (2015) seems to be sufficient.
  - But this then raises the question of how to explain the Root Suppletion Generalization, (39).

⇒ Perhaps root suppletion has more constrained locality than suppletion of morphosyntactic features?

There is a lot left to understand about the Turoyo verb:

- The nature of the “leaning” of these agreement heads such that they appear to form one verb word (does an additional MS/PF operation come into play?)
- Stress patterns (penultimate... except in certain complex verbs)
- Long-distance head movement of V? Or movement of VP?
- The mood/aspect-conditioned templatic form of the verb base
- Suffixation/infixation of past tense -wa (see Appendix A)

References


Svenonius, Peter. 2012. Spanning. Ms., University of Tromsø, CASTL.

Thornton, Abigail. 2015. If verbal number is lo-low…. Florida Linguistics Papers 2.


Appendix A: A closer look at past tense -wa

We saw in (7) that past tense -wa, mysteriously, seems to be completely invisible (ignored) for the purposes of contextual allomorphy.

- Linearly-intervening -wa does not block B allomorphy, i.e., doesn’t bleed the ___CC environment that triggers it:

(45) a. našq -on -0 -wa -n-xu (=našqonwanxu)
   kiss.IMPF -BPL -S3 -PST -L-2PL
   ‘they used to kiss you (pl)’ (p. 134)

b. našq -on -0 -wa -n-ne (=našqonwanne)
   kiss.IMPF -BPL -S3 -PST -L-3PL
   ‘they used to kiss them’ (p. 134)

- Linearly-intervening -wa also does not block L allomorphy, i.e., doesn’t bleed the PL___ part of its environment:

(46) a. zábț -i -tu -wa -n-ne (=zábțutwanne)
   catch.IMPF -BPL -S2PL -PST -L-3PL
   ‘you (pl) used to catch them’ (p. 135)

b. zábț -i -tu -wa -n-xu (=zábțutxnxu)
   catch.IMPF -BPL -S2PL -PST -L-2PL
   ‘you (pl) used to catch yourselves’ (p. 135)

- As noted w.r.t. (7), -wa shows us that B allomorphy must take place separately from/in addition to L allomorphy.
  - Without the data above, a simpler analysis of Turoyo would be to have L allomorphy do all the work, with the supposed B allomorphy being a surface phenomenon (vowel reduction; phonologically-derived).

-Wa differentiates the morphological from the phonological.

- As we saw in (45)–(46), -wa appears to be absent from (not linearly intervening during) contextual allomorphy calculations, i.e., during morphological operations.

- In contrast to morphological processes, -wa is not ignored for (most) phonological processes.

  - -wa blocks phonological rules, e.g., (47), when -wa linearly intervenes in the triggering environment, e.g., (48):

(47) o → a / ___C|σ

(48) a. našq -o -0 -l-le (=našqalle)
   kiss.IMPF -Bf.SG -S3 -L-3PL
   ‘she kisses them’ (p. 133)
   ⇒ no -wa; (47) applies: o → a

b. našq -o -0 -wa -l-le (=našqowalle)
   kiss.IMPF -Bf.SG -S3 -PST -L-3PL
   ‘she used to kiss them’ (p. 133)
   ⇒ -wa appears; (47) does not apply: o → a

- -wa is visible for calculating penultimate stress, (49).

(49) a. gahik -o -0 (=gâhâk)
   laugh.PFV -Bm.SG -S3
   ‘he laughed’ (p. 154)

b. gahik -o -0 -wa (=gâhâkwa)
   laugh.PFV -Bm.SG -S3 -PST
   ‘he had laughed’ (p. 154)

(50) a. gahik -o -0 (=gâhîko)
   laugh.PFV -Bf.SG -S3
   ‘she laughed’ (p. 154)

b. gahik -o -0 -wa (=gâhîkova)
   laugh.PFV -Bf.SG -S3 -PST
   ‘she had laughed’ (p. 154)

- -wa is visible for (blocking) phonological assimilation (taken up in Appendix B).
⇒ -wa is visible in its surface position in the phonology, but not in the morphology.

- This provides further evidence that the L suffix -lxu/-nxu and -lle/-nne alternations are not purely phonological in nature, as they persist across -wa, (45)–(46).

We can make sense of -wa by positing that it is a phonological infix originating outside agreement.

- Further support for an infixation analysis comes from the variable morphological position of -wa in the suffix series.

  - -wa follows the S suffix when it is 2nd person, (46), but precedes the S suffix when it is 1st person, (51)

    (51) zabt -i -wa -na -l-a (=zəbtiwaynala)


appendix B: A closer look at the L marker

The L marker that combines with the C-initial personal suffixes is phonologically weak in a way that is different from other ls and the L marker elsewhere.

- The l of -l-le (L3PL) fully assimilates, obligatorily, to any immediately preceding consonant (and then the extra-long consonant shortens), (53a)/(54a), while other ls do not, (53b)/(54b).

  (53) a. nṣaq -∅ -∅ -l-le (=nṣaqqe)
      kiss.PFV -Bm.SG -S3 -L-3PL
      ‘they kissed him’ (p. 130)

  b. nṣaq -∅ -∅ -l-e (=nṣaqle)
      kiss.PFV -Bm.SG -S3 -L-3m.SG
      ‘he kissed him’ (p. 130)

  (54) a. zabt -∅ -∅ -l-le (=zəbtatte)
      catch.IMPF -Bm.SG -S2sg -L-3PL
      ‘you (masc. sg.) catch them’ (p. 135)

  b. zabt -∅ -∅ -l-e (=zəbtatle)
      catch.IMPF -Bm.SG -S2sg -L-3m.SG
      ‘you (masc. sg.) catch him’ (p. 134)

- Using our -wa diagnostic, Appendix A, we can see that the assimilation in (53a) and (54a) is phonological, not morphological, as -wa does bleed this assimilation.

  (55) nṣaq -∅ -∅ -wa -l-le (=nṣaqwalle/
      kiss.PFV -Bm.SG -S3 -PST -L-3PL
      *nṣaqwaqqe)
      ‘they had kissed him’ (p. 155)

  (56) zabt -∅ -∅ -wa -l-le (=zəbtatwalle/
      catch.IMPF -Bm.SG -S2sg -PST -L-3PL
      *zəbtatwate)
      ‘you (masc. sg.) used to catch them’ (p. 135)

- The assimilation in (53)–(54) is phonological.

- Phonological assimilation applies late, after -wa infixation.
In contrast to assimilation with the CC-initial L-suffixes, manner assimilation between alveolars is generally probabilistic (not required), and when it occurs, it is always regressive (p. 19–20):

(57) a. mar -l-an (=marlan~mällan)
    say.PFV -L-1PL
    'we said’ (p. 19)

b. maḥat -∅ -no (=maḥatno~maḥanno)
    lie.down.IMPF -B.M.SG -S1SG
    'I lie down/am lying down’ (p. 19)

The l of -l-xu (L-2PL) readily deletes (or perhaps CC shortens after assimilation) in CCC environments, while consonant deletion is otherwise quite constrained (cf. fn. 7):

(58) nšoq -∅ -∅ -l-xu (=nšoxu)
    kiss.PFV -B.M.SG -S3 -L-2PL
    'you (pl) kissed him’ (p. 130)

The l of -l-xu and -l-le even assimilates to a preceding n that is separated from the suffix by a short vowel:

(59) a. zobaṭ -∅ -no -l-le (=zobaṭnanne)
    catch.IMPF -B.M.SG -S1SG -L-3PL
    'I (masc. sg.) catch them’ (p. 135)

b. zobaṭ -∅ -no -l-xu (=zobaṭnaxu)
    catch.IMPF -B.M.SG -S1SG -L-2PL
    'I (masc. sg.) catch you (pl)’ (p. 136)

  Note that this is not a plural environment.

In sum, in contrast to the general phonological processes of the language and all other ls in the language, the ls in -lru and -lle (except in PL environments)...  
  - Participate in progressive assimilation
  - Assimilate obligatorily
  - Tolerate deletion/shortening

A proposal for a more accurate representation of the L marker (updated from (19)):

\[
L \rightarrow n / \text{PL}_-C \\
C / =C \\
l / (\text{elsewhere})
\]

  What this captures:
  - The L marker, usually, is just an l (i.e., for all cases except for the C-initial personal suffixes, L=L)
  - The L marker, for C-initial personal suffixes...
    - ...is a C in the general case (and so is phonologically “weak”, as shown in (53)–(54)).
    - ...is an n following a plural B/S suffix.

nb. Also needed: A rule that fills an empty consonantal timing slot that has survived to the very end of the derivation (after all phonological processes) with the features of l.

The data discussed in this section support the characterization of the l/n alternation as morphological, not phonological.

  - The choice of allomorph for the L marker in the context of following a plural feature bleeds all of the phonological “weakness” seen above.
    - -nne obligatorily does not assimilate, (10a)/(15a)
    - -nxu does not tolerate n deletion, seen in (10b)/(15b)
    - -wa does not bleed plural-triggered -nxu/-nne, as seen in (45)/(46)

⇒ Whatever derives the -nxu/-nne contextual allomorphs, (60), must precede all general phonological processes.

  This follows naturally from an account in which (60) takes place in the morphological component of the grammar, which precedes the phonological component.