

## Prosodic Subcategorization, Infixation, and Relation-Specific Alignment

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In Yu's (2007) prosodic subcategorization approach to infixation, a Generalized Alignment (GA; McCarthy and Prince 1993) constraint is used to position an infix with respect to its "pivot", the prosodic category to which the infix appears to be anchored. The basic pattern of Tagalog *-um-* infixation provides a simple illustration. As (1) indicates, the affix *-um-* anchors at the right edge of the stem-initial onset. The stem-initial onset is the pivot.

- (1) Stem: *sulat*      Infixed form: *sumulat*, \**umsulat*, \**sulumat*, \**sulatum*      'to write'

To account for the basic Tagalog pattern, the prosodic subcategorization account uses a constraint like  $\text{ALIGN}(-um-, L, \text{ONS}_1, R)$ , given in (2), to align the left edge of *-um-* with the right edge of a stem's initial onset, as in (3a) below.

- (2)  $\text{ALIGN}(-um-, L, \text{ONS}_1, R)$ : The left edge of every *-um-* affix corresponds with the right edge of some stem-initial onset.

The use of GA constraints presents two difficulties, however, one general and one specific to the prosodic subcategorization account. First, GA constraints in general are capable of producing a well-known pathology, the "Midpoint Pathology", where one of the aligned categories can seek out the center of a form regardless of the form's length (Eisner 1997, Hyde 2015). GA's Midpoint Pathology effect is sufficiently problematic to warrant abandoning GA constraints in general, including in the context of prosodic subcategorization. Second, the particular GA constraints employed in the prosodic subcategorization approach are more complex than standard GA constraints in that they almost always require special stipulations about the position of the pivot category.  $\text{ALIGN}(-um-, L, \text{ONS}_1, R)$  does not merely require alignment with *some* onset, for example, the situation that would be found under the standard formulation, but it requires alignment with a particular onset: the *first* onset of the base. Without the special stipulation concerning the onset's position,  $\text{ALIGN}(-um-, L, \text{ONS}_1, R)$  could be satisfied by alignment with *any* onset, as in (3b), and the analysis would fail.

	um + <i>sulat</i>	ALIGN(-um-, L)		um + <i>sulat</i>	ALIGN(-um-, L) <i>without stipulation</i>
(3a)	a. <i>um-sulat</i>	*!	(3b)	a. <i>um-sulat</i>	*!
	b. <i>s-um-ulat</i>			b. <i>s-um-ulat</i>	
	c. <i>sul-um-at</i>	*!*		c. <i>sul-um-at</i>	
	d. <i>sulat-um</i>	*!***		d. <i>sulat-um</i>	

Replacing GA constraints with Relation-Specific Alignment (RSA; Hyde 2012) constraints avoids these problems. RSA constraints do not produce Midpoint Pathology effects (Hyde 2012, 2015), and they can capture prosodic subcategorization effects without a special stipulation concerning the position of the pivot. The facts of Tagalog *-um-* infixation can be captured by ranking the RSA constraint *um*-INFIX-DEPTH, given in (4a), above the RSA constraint *ALIGN-um*-RIGHT, given in (4b).

- (4) a. *um*-INFIX-DEPTH: \*⟨*ons*, *-um-*, *seg*⟩ / *ons* ... *seg* ... *-um-*  
 'Assess a violation mark for every \*⟨*cons*, *um*, *seg*⟩ such that an *onset* precedes *-um-* with *segment* intervening.'
- b. *ALIGN-um*-RIGHT: \*⟨*um*, *S*, *stem*⟩ / [...*um*...*segment*...]<sub>stem</sub>  
 'Assess a violation mark for every \*⟨*um*, *seg*, *stem*⟩ such that *um-* precedes a *segment* within a *stem*.'

As (5) demonstrates, *um*-INFIX-DEPTH determines the pivot category. The affix *-um-* is one of the aligned categories, and the pivot, *onset*, is simply the other aligned category. Though *um*-INFIX-DEPTH restricts the affix to a position near the initial onset, the position of the relevant onset is not stipulated in the constraint. Since the constraint prohibits an onset from preceding the affix with a segment intervening, a candidate only satisfies the constraint when *-um-* precedes the initial onset, as in (5a), or occurs at its right edge, as in (5b). If *-um-* occurs any further to the

right, as in (5c,d), a segment will intervene between the affix and a preceding onset. The decision to locate *-um-* immediately after the initial consonant, rather than before it, is made by the second RSA constraint, ALIGN-*um*-RIGHT. Since the prefix position violates ALIGN-*um*-RIGHT more than the infix position, the infix position is optimal.

(5)

um + sulat	<i>um</i> -INFIX-DEPTH	ALIGN- <i>um</i> -RIGHT
a. um-sulat		*****!
b. s-um-ulat		****
c. sul-um-at	*!*	**
d. sulat-um	*!*** **	

Using RSA constraints has the advantages of avoiding Midpoint Pathology effects and avoiding special stipulations about the position of the pivot, but it also has the advantage of providing a general, uniform analysis for infixation and seemingly unrelated phenomena such as accent windows. RSA constraints similar to those used to position the *-um-* affix in (5) have been shown to play a key role in creating trisyllabic accent windows and positioning accents within those windows (Hyde 2012, Hyde 2015).

Ranking the RSA constraint INITIAL-WINDOW, (6a), above the RSA constraint ACCENT-RIGHT, (6b), for example, produces post-peninitial accent, a configuration that arises in Kashaya (Buckley 1994) and Azkoitia Basque (Hualde 1998).

- (6) a. INITIAL-WINDOW:  $*\langle A, F, \sigma \rangle / F \dots \sigma \dots X_w$   
 ‘Assess a violation mark for every  $\langle A, F, \sigma \rangle$  such that a *foot* precedes an *accent* with a *syllable* intervening.’
- b. ACCENT-RIGHT:  $*\langle A, \sigma, \omega \rangle / [\dots A \dots \sigma \dots]_w$   
 ‘Assess a violation mark for every  $\langle A, \sigma, \omega \rangle$  such that an *accent* precedes a *syllable* within a *prosodic word*.’

As (7) demonstrates, INITIAL-WINDOW causes an initial foot to act as sort of pivot for accents. INITIAL-WINDOW is satisfied when the accent occurs within the initial foot, (7a,b), or on the syllable adjacent to the initial foot, (7c). The lower ranked ACCENT-RIGHT insists that the accent occur in the rightmost of these positions, resulting in post-peninitial accent.

(7)

	INITIAL-WINDOW	ACCENT-RIGHT
a. (óσ)(σσ)		**!*
b. (σó)(σσ)		**!
c. (σσ)(óσ)		*
d. (σσ)(σó)	*!	

The extension the RSA approach to both accent windows and infixation has the advantage of providing a general, uniform analysis of both, and it suggests that it may be possible to extend the approach to other, potentially related phenomena, such as second position clitics and second position verbs, where a peripheral word or phrase acts as pivot.

## References

- Buckley, Eugene. 1994. Persistent and cumulative extrametricality in Kashaya. *NLLT* 12, 423-464.
- Eisner, Jason. 1997. What constraints should OT allow? ROA-204.
- Hualde, José I. 1998. A gap filled: postpostinitial accent in Azkoitia Basque. *Linguistics* 36, 99-117.
- Hyde, Brett. 2012. Alignment Constraints. *NLLT* 30, 1-48.
- Hyde, Brett. 2015. The Midpoint Pathology: what it is and what it isn't. ROA-1231.
- McCarthy, John J. and Alan Prince. 1993. Generalized alignment. In Geert Booij and Jaap van Marle (eds.) *Yearbook of Morphology* 1993. Dordrecht: Kluwer.
- Yu, Alan C. L. 2007. *A Natural History of Infixation*. Oxford: Oxford University Press.