Post-Peninitial Accent in Kashaya: An Alternative to Initial Extrametricality

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1 Introduction

Perhaps the most significant feature of the basic Kashaya (Oswalt 1961, 1988) stress pattern, from a typological perspective, is the location of its accent on the post-peninitial syllable. While previous analyses (Buckley 1994, 2009) have employed initial extrametricality to derive the accent's location—designating the initial syllable as extrametrical and then constructing iambs from left to right—we argue that the evidence suggests an approach based on a trisyllabic stress window: the accent is oriented towards the word's right edge but cannot move any further to the right than the third syllable.[1] Our account adopts the approach to trisyllabic stress windows provided by Relation-Specific Alignment (RSA; Hyde 2008, 2011) constraints.

Before presenting the analysis of Kashaya in fuller detail, we briefly discuss the RSA formulation, which differs in several respects from the more familiar Generalized Alignment (GA; McCarthy and Prince 1993) formulation. (For a more detailed presentation, see Hyde 2011.) Like GA constraints, RSA constraints prohibit misalignment, but they only do so when the misaligned categories occur in a specific configuration. In the RSA schemas in (1), *ACat1* and *ACat2* are the categories being aligned and *SCat* is the "separator" category, the category whose intervention between the relevant edges of the aligned categories constitutes misalignment. An RSA constraint is violated whenever the categories identified in the set to the left of the slash occur in the configuration indicated to the right of the slash.

(1) Relation-Specific Alignment Constraint Schemas[2]

a. Left-edge: *⟨*ACat1*, *ACat2*, (*SCat*)⟩ / [… *SCat* … *ACat2* …]$_{ACat1}$
'Assess a violation mark for every ⟨*ACat1*, *ACat2*, (*SCat*)⟩ such that *SCat* precedes *ACat2* within *ACat1*.'

b. Right-edge: *⟨*ACat1*, *ACat2*, (*SCat*)⟩ / [… *ACat2* … *SCat* …]$_{ACat1}$
'Assess a violation mark for every ⟨*ACat1*, *ACat2*, (*SCat*)⟩ such that *ACat2* precedes *SCat* within *ACat1*.'

c. Opposite-edge: *⟨*ACat1*, *ACat2*, (*SCat*)⟩ / *ACat1* … *SCat* … *ACat2*
'Assess a violation mark for every ⟨*ACat1*, *ACat2*, (*SCat*)⟩ such that *ACat1* precedes *ACat2* with *SCat* intervening.'

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[1] Besides Kashaya, Azkoitia Basque (Hualde 1998) is another language that appears to have a trisyllabic stress window at the left edge. Trisyllabic stress windows at the right edge are more common, however. They can be found in Latin, Macedonian (Comrie 1976), Maithili (Jha 1940-1944, 1958), Pirahã (Everett 1988), and numerous other languages.

[2] Parentheses indicate that inclusion of *SCat* in the set to the left of the slash is optional. When *SCat* is included in the set, instances of *SCat* are taken into account in assessing violations, and assessment is distance-sensitive. When *SCat* is omitted from the set, instances of *SCat* are not taken into account in assessing violations, and assessment is distance-insensitive. See Hyde 2011 for discussion.

By prohibiting one aligned category from either preceding or following *SCat* within the other aligned category, the same-edge alignment schemas, (1a,b), produce the simple directionality effects most often associated with alignment constraints. By prohibiting *ACat2* from preceding *SCat* within *ACat1*, the (1b) schema aligns the right edges of *ACat2* and *ACat1*. The constraint MAIN-STRESS-RIGHT, for example, which will play an important role in the analysis of Kashaya below, prohibits a prosodic word-level gridmark (primary stress) from preceding a syllable within a prosodic word.

(2) MAIN-STRESS-RIGHT: $*\langle \omega, X_\omega, \sigma \rangle$ / [… X_ω … σ …]$_\omega$
'Assess a violation mark for every $\langle \omega, X_\omega, \sigma \rangle$ such that X_ω precedes σ in ω.'

The effect of prohibiting configurations where a primary stress precedes a syllable within the prosodic word, as (3) indicates, is to draw the right edge of the primary stress to the right edge of the prosodic word, so that no syllable intervenes.

(3)

σσσσσ	MAIN-STRESS-RIGHT
☞ a. σσσσσ́	
b. σσσσ́σ	*!
c. σσσ́σσ	*!*
d. σσ́σσσ	*!**
e. σ́σσσσ	*!***

The effects of the same-edge schema in (1a) are similar, except that (1a) encourages left-edge alignment. By prohibiting *ACat2* from following *SCat* within *ACat1*, (1a) prohibits misalignment between the left edges of *ACat1* and *ACat2*.

By prohibiting *ACat1* from preceding *ACat2* with *SCat* intervening, the opposite-edge alignment schema, (1c), prohibits misalignment between the right edge of *ACat1* and the left edge of *ACat2*. It does so, however, only when *ACat1* precedes *ACat2*, not when they occur in any other configuration.[3] This sensitivity to the configuration in which misaligned categories occur has the interesting effect of confining one aligned category to a window established by the second aligned category. To illustrate, consider the effects of INITIAL-WINDOW, which will help to establish a trisyllabic stress window in the analysis of Kashaya below. It prohibits a foot from preceding a prosodic word-level gridmark with a syllable intervening.

(4) INITIAL-WINDOW: $*\langle F, X_\omega, \sigma \rangle$ / F … σ … X_ω
'Assess a violation mark for every $\langle F, X_\omega, \sigma \rangle$ such F that precedes X_ω with σ intervening.'

As (5) indicates, INITIAL-WINDOW draws the primary stress to the syllable adjacent to the initial foot, (5d), or to one of the two syllables that make up the initial foot, (5e,f). The constraint is satisfied when the stress occurs in these positions because any misaligned foot either follows the stress or contains it and, therefore, fails to produce violation marks. The result is that INITIAL-WINDOW confines the primary stress to a three-syllable window at the left edge of the word.

[3] Although it does not play a central role in this context, same-edge constraints are also sensitive to the configuration in which misaligned categories occur. In particular, same-edge constraints only assess violations when one aligned category contains the other. They do not assess violations when one aligned category precedes the other.

(5)

σσσσσσ	INITIAL-WINDOW
a. (σσ)(σσ)(σσ́)	*!* *
b. (σσ)(σσ)(σ́σ)	*!*
c. (σσ)(σσ́)(σσ)	*!
☞ d. (σσ)(σ́σ)(σσ)	
☞ e. (σσ́)(σσ)(σσ)	
☞ f. (σ́σ)(σσ)(σσ)	

In this brief introduction to RSA constraints, we have seen how they can establish a directional orientation for primary stress and how they can confine primary stress to a three-syllable window at an edge of the word. In the next section, we will see how they help to establish the post-peninitial accent in Kashaya.

2 Kayasha

In the basic stress pattern of Kashaya, a Pomoan language spoken on the central Pacific coastline of California, primary stress falls on the third syllable of the prosodic word, and secondary stresses alternate rightward from the primary stress, as illustrated in (6). Stressed syllables are indicated by rhythmic lengthening, except in the case of the final syllable, which can be stressed but does not lengthen, as in (6b) and (6d)[4].

(6) Example forms

a.	libuˈtaːdu	‘keep whistling’
b.	dukʼiˈliːʧʼaˌla	‘point at yourself while going down!’
c.	ʧohtoˈʧiːduˌʧeːdu	‘keep going away!’
d.	ʔahqoˈlaːmaˌdaːdaˌdu	‘to get longer and longer’

Our analysis of Kashaya has two objectives: to position primary stress on the post-penitital syllable, and to locate secondary stresses on the appropriate syllables subsequent to the primary stressed syllable and not before it.

The proposed analysis assumes the Weak Bracketing (Hyde 2002) approach to prosodic structure, which differs in three ways from more standard OT approaches.[5] The first is that it requires exhaustive parsing. All syllables must be parsed into feet; all feet must be parsed into prosodic words; and so on. Second, feet are allowed to overlap, as in (7a), and even to share a stress when they overlap, as in (7b). (In the remainder of this section, stress will be represented with a metrical grid (Liberman and Prince 1977, Prince 1983), and feet will be represented with association lines.)

[4] This basic Kashaya pattern can be perturbed by the presence of heavy syllables and other factors. We set aside these issues here.

[5] The standard OT approach to prosodic structure is the Weak Layering approach of Itô and Mester (1992). It is assumed, for example, in the Generalized Alignment approach of McCarthy and Prince (1993), the Asymmetrical Alignment approach of Alber (2005), and the Rhythmic Licensing approach of Kager (2001, 2005). Under the Weak Layering approach, prosodic categories need not always be parsed into the next higher category. A syllable may remain unfooted, for example, and be included directly in the prosodic word. The Weak Layering approach also excludes the possibility of prosodic categories overlapping. It excludes the overlapping feet of (7), for example.

(7) a. Overlapping Iambs

b. Gridmark Sharing Configuration

Finally, feet are allowed to remain stressless, as in (8b).

(8) a. Stressed Iamb

b. Stressless Iamb

To simplify the presentation of the proposal, we assume that feet are always iambic in Kashaya without discussing the particular constraints and rankings that result in iambic footing. In the tableaux that follow, only forms with iambic feet are considered.

The proposed account relies on four constraints, two of which were introduced in Section 1: INITIAL-WINDOW and MAIN-STRESS-RIGHT. INITIAL-WINDOW confines primary stress to a word's first three syllables, and MAIN-STRESS-RIGHT draws the primary stress as close as possible to the word's right edge. As we shall see, these are the two constraints responsible for positioning primary stress on the post-peninitial syllable. The third constraint, *CLASH, functions primarily to restrict the positions of secondary stresses. It prohibits stress on adjacent syllables.

(9) *CLASH: No adjacent stressed syllables.

The final constraint, MAPGRIDMARK, requires that each foot contain a stress. It is satisfied by feet that share a stress, as well as by feet that have their own stress. In the analysis of Kashaya, MAPGRIDMARK is responsible for establishing the pattern of secondary stresses that follows the primary stress.

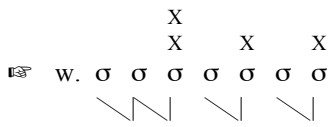
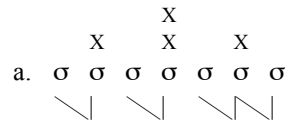
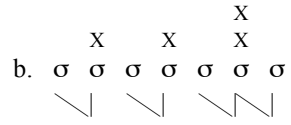
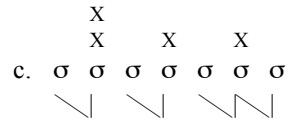
(10) MAPGRIDMARK: Every foot has a foot-level gridmark within its domain.

To locate primary stress in the appropriate position over the post-peninitial syllable, the analysis relies primarily on the interaction of INITIAL-WINDOW and MAIN-STRESS-RIGHT. When INITIAL-WINDOW ranks above MAIN-STRESS-RIGHT, the former ensures that the primary stress occurs no further right than the first three syllables, and the latter draws it as far to the right within this window as possible—to the third syllable.

(11) INITIAL-WINDOW >> MAIN-STRESS-RIGHT

To illustrate, in (12), INITIAL-WINDOW establishes a trisyllabic window for primary stress, eliminating candidates (12a) and (12b), where the primary stress occurs further to the right than the first three syllables. In both of the excluded candidates, at least one syllable intervenes between the prosodic word-level gridmark and the right edge of the initial foot. Candidate (12c), where primary stress occurs on the peninitial syllable, satisfies INITIAL-WINDOW but loses to (12w) on MAIN-STRESS-RIGHT. Since the primary stress in (12c) occurs on the second syllable, rather than the third, it does not occur as far to the right within the trisyllabic window as possible.

(12)

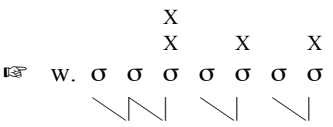
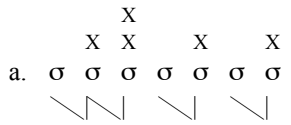
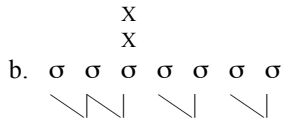
σσσσσσσ	INITIAL-WINDOW	MAIN-STRESS-RIGHT
 ☞ w. σ σ σ σ σ σ σ	0	4
 a. σ σ σ σ σ σ σ	W 1	L 3
 b. σ σ σ σ σ σ σ	W 3	L 1
 c. σ σ σ σ σ σ σ	0	W 5

Having completed the first objective—locating primary stress on the post-peninitial syllable—we move to the second—obtaining the correct distribution for secondary stress. Two additional constraints, *CLASH and MAPGRIDMARK, are responsible for the presence and location of secondary stresses. When *CLASH ranks above MAPGRIDMARK, *CLASH prevents a secondary stress from occurring before the primary stress, but MAPGRIDMARK can still insist that an alternating pattern emerges on the syllables that follow.

(13) *CLASH >> MAPGRIDMARK

To illustrate, in (14), *CLASH eliminates candidate (14a) where a secondary stress occurs to the left of the main stress. Stressing the immediately preceding iambic foot results in clash with the primary stress. MAPGRIDMARK rejects candidate (14b), where the feet following the primary stress occur without stress, in favor of candidate (14w), where stressed iambs establish the desired alternating pattern.

(14)

σσσσσσσ	*CLASH	MAPGRIDMARK
 ☞ w. σ σ σ σ σ σ σ	0	1
 a. σ σ σ σ σ σ σ	W 1	L 0
 b. σ σ σ σ σ σ σ	0	W 3

Finally, notice that in order to maintain primary stress in its correct position on the post-peninitial syllable MAIN-STRESS-RIGHT must also dominate MAPGRIDMARK.

(15) MAIN-STRESS-RIGHT >> MAPGRIDMARK

To illustrate, consider the possibilities for positioning a stress before the third syllable. The assumption that all feet are iambic bars the first syllable of the prosodic word from receiving a stress. The second syllable, however, might be stressed—and MAPGRIDMARK satisfied for the initial foot—in one of two ways. The first is to maintain the position of the primary stress on the third syllable, as in candidate (16a), resulting in a clash. This option is excluded by the high-ranked *CLASH. The second option is to shift the primary stress itself to the second syllable, as in (16b), to satisfy MAPGRIDMARK for the initial foot. Because MAIN-STRESS-RIGHT dominates MAPGRIDMARK, however, it eliminates (16b) in favor of (16w), which maintains the post-peninitial primary stress and leaves the initial foot stressless.

(16)

σσσσσσσ	*CLASH	MAIN-STRESS-RIGHT	MAPGRIDMARK
☞ w. σ σ σ σ σ σ σ	0	4	1
a. σ σ σ σ σ σ σ	W 1	4	L 0
b. σ σ σ σ σ σ σ	0	W 5	L 0

In this section, we have seen that the proposed analysis of Kashaya accomplishes two objectives. It positions the primary stress on the post-peninitial syllable, and it positions secondary stresses on alternating syllables after the primary stress, but not before. The proposed analysis achieves the first objective with the RSA constraints, INITIAL-WINDOW and MAIN-STRESS-RIGHT. INITIAL-WINDOW creates a three-syllable stress window at the left edge of the word, and the MAIN-STRESS-RIGHT draws primary stress as far right as possible within that window. The second objective is achieved through the MAPGRIDMARK and *CLASH constraints. MAPGRIDMARK insists that the feet following the primary stress each be stressed themselves, establishing a pattern of secondary stresses, but the higher-ranked *CLASH prevents a secondary stress from occurring before the primary stress.

3 An initial extrametricality approach

So far, we have seen that the RSA approach to trisyllabic stress windows allows the proposed analysis to correctly position primary stress on the post-peninitial syllable in Kashaya, and we have seen that the MAPGRIDMARK and *CLASH constraints produce the correct distribution for secondary stress. However, the proposed analysis stands in contrast to an account that employs initial extrametricality, which, for the purpose of comparison, we outline now. The first step in an initial extrametricality analysis of Kashaya is the designation of the first syllable as extrametrical. Iambs are then iteratively constructed from left to right, excluding the initial syllable, until the prosodic word has been exhaustively parsed into feet. Finally, the head of the leftmost foot is designated as the primary stressed syllable.

(17) Example derivations

4 σ: ⟨σ⟩σσσ → ⟨σ⟩(σσ́)σ

5 σ: ⟨σ⟩σσσσ → ⟨σ⟩(σσ́)σσ → ⟨σ⟩(σσ́)(σσ̀)

6 σ: ⟨σ⟩σσσσσ → ⟨σ⟩(σσ́)σσσ → ⟨σ⟩(σσ́)(σσ̀)σ

7 σ: ⟨σ⟩σσσσσσ → ⟨σ⟩(σσ́)σσσσ → ⟨σ⟩(σσ́)(σσ̀)σσ → ⟨σ⟩(σσ́)(σσ̀)(σσ̀)

This approach produces a stress pattern identical to that of the RSA approach: there is no stress before the primary stressed third syllable, and the secondary stresses alternate rightward after it. Although the end result is the same, initial extrametricality poses a number of problems that RSA does not.

While it effectively produces the stress pattern of Kashaya, including the post-peninitial primary stress, there are significant problems with the initial extrametricality approach. Stress windows are known to occur at both the right and left edges of words (see footnote 1), but the same is not true of extrametricality effects. It has long been recognized that extrametricality/non-finality effects occur predominantly, perhaps exclusively, at the right edge of prosodic domains (Hayes 1981, Prince & Smolensky 1993). In most of the few cases where initial extrametricality has been proposed, as in cases of onset-sensitive stress (Halle & Vergnaud 1987), non-extrametricality alternatives are readily available (Smith 2005, Topintzi 2010).

As Hyde (2002), Altschuler (2009), and others demonstrate, including initial extrametricality in an OT constraint set leads to significant, even pathological, overgeneration in predicted stress typologies. Consider, for example, the mirror image iambic and trochaic patterns in (18). The (18b) patterns are predicted when final extrametricality or non-finality prevents a final syllable from being stressed in an iambic system. In the even-parity form in (18bi), an expected final stress shifts leftward in an 'iambic reversal'. In (18bii), an expected final stress is absent altogether. Both patterns are attested. In contrast, the mirror image patterns in (18a), are predicted when initial extrametricality or non-initiality prevents an initial syllable from being stressed in trochaic systems. In (18ai), an expected initial stress shifts rightward in a 'trochaic reversal'. In (18aii), an expected initial stress is absent altogether. Both patterns are unattested.

(18) a. Trochaic + initial extrametricality

i. σσ́σσ́σ
σσ́σσ́σσ́σ
Unattested

ii. σσσ́σσ́σ
σσ́σσ́σσ́σ
Unattested

b. Iambic + final extrametricality

i. σσ́σσ́σ
σσ́σσ́σσ́σ
Aguaruna (Hung 1994)

ii. σσ́σσ́σσ
σσ́σσ́σσ́σ
Choctaw (Nicklas 1972, 1975)

The situation illustrated in (18) appears to be typical throughout the attested typology of stress systems. Systems that might be produced by final extrametricality or non-finality are frequently attested. Related systems that might be produced by initial extrametricality or non-initiality are unattested.

4 Summary and Conclusions

The location of its accent on a word's post-peninitial syllable is one of the most interesting aspects of the Kashaya stress pattern. Previous analyses (Buckley 1994, 2009) have derived the correct location for the accent by employing initial extrametricality and iambic footing. The initial syllable is designated as extrametrical and then iambic feet are constructed from left to right. When the leftmost foot in a word is designated as the head foot, the primary stress is correctly located on the third syllable.

While it produces the correct stress pattern for Kashaya, there are significant problems with the initial extrametricality approach. There is little evidence for initial extrametricality in other contexts, and the inclusion of initial extrametricality or non-initiality in the grammar leads to significant, even pathological, overgeneration in predicted stress typologies.

Rather than relying on initial extrametricality, the proposed approach derives the correct location for the Kashaya accent by employing the Relation-Specific Alignment constraint INITIAL-WINDOW to establish a trisyllabic stress window at the word's left edge. INITIAL-WINDOW restricts primary stress to a word's first three syllables, and the RSA constraint MAIN-STRESS-RIGHT draws it as far to the right within this window as possible, ensuring that it occurs on the third syllable. Unlike extrametricality effects, trisyllabic stress windows can be found at both right and left edges.

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