Stative Allomorph Selection and Raised Pitch in ʔayʔaǰuθəm*

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Abstract: In this paper, we examine the morphology associated with stative aspect in ʔayʔaǰuθəm (Comox-Sliammon). Stative aspect may be marked by *-it*, *-i-*, or by raised pitch alone (with no overt segmental content). The choice of allomorph is sensitive to root shape and co-occurring morphology. We propose that all allomorphs of the stative morpheme are associated with an underlying H tone, and that allomorph selection is motivated by a combination of constraints on suprasegmental content and a preference among (listed) allomorphs. If stative allomorphy in ʔayʔaǰuθəm is posited to have tonal properties associated with raised pitch, ʔayʔaǰuθəm may be characterized as a pitch accent language in the sense of Hyman (2006).

Keywords: Comox-Sliammon, stative aspect, listed allomorphs, alignment, Salish, pitch accent

1 Introduction

In this paper, we examine stative allomorphy in ʔayʔaǰuθəm (Comox-Sliammon), providing a constraint-based phonological analysis that accounts for allomorph selection between /i/ or /it/ and a divergent prosodic pattern where raised pitch is observed on the first two (adjacent) syllables of a stative predicate.

Stative aspect in ʔayʔaǰuθəm can be realized in one of three ways according to Watanabe (2003:410–449): an *-it* suffix, an *-i-* infix, or secondary stress on the second syllable. The distribution of these allomorphs is summarized in Table 1.[1]

Table 1: Examples of Stative Allomorphy from Watanabe (2003)

Allomorph	Type	Example	Translation	Page
-it	Intransitive (CVC Root)	təq-**it**	‘closed’	p. 25
-i-	Intransitive (CVCC Root)	ƛəp<**i**>xʷ	‘broken’	p. 412
-i-	Transitive (weak)	qəp-**i**-t	‘touching it’	p. 431
Secondary stress	Transitive (strong)	ʔim-ì́t	‘stepping on it’	p. 434

* We are deeply grateful to the ʔayʔaǰuθəm speakers we work with: Joanne Francis, Elsie Paul, Freddie Louie, Karen Galligos, Betty Wilson, Marion Harry, Margaret Vivier, Jerry Francis, Phyllis Dominic, Mary Harry, Herman Francis, late Maggie Wilson, late Dave Dominic, and late Eva Francis. We would also like to thank the dictionary team: Betty Wilson, Randolph Timothy, Koosen Pielle for their tireless efforts documenting the language and making this documentation available. Finally, we would like to thank Suzanne Urbanczyk for helpful comments on an earlier draft, Henry Davis, and the Salish and ʔayʔaǰuθəm working groups for ongoing support and input. All errors are our own.

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[1] Primary stress falls in a fixed initial position and is unmarked. Following Watanabe (2003), the acute accent [’] is used to mark secondary stress in Table 1, but is unmarked throughout the rest of the paper.

Paper of the International Conference on Salish and Neighbouring Languages 54,
D. K. E. Reisinger and Gloria Mellesmoen (eds.). Vancouver, BC: UBCWPL, 2019.

On intransitive stems, the *-it* suffix is found with roots of the shape CVC.[2] The *-i-* infix marks stative aspect with CVCC roots and is positioned between the second and third consonants. For transitive forms, stative aspect is marked by an *-i-* infix between the root and the transitivizer if the root is weak, or by secondary stress on the transitivizer vowel if the root is strong. The realization of each of these allomorphs often includes raised pitch, which is the main phonetic correlate of stress in the language (Watanabe 2003:22).

While Blake (2000:111) proposes a phonological analysis that stipulates that the stative suffix is always bimoraic, she focuses only on the *-it* allomorph in combination with strong CVC roots. It is not clear that positing a similarly lexically footed underlying form could account for the realization of the stative morpheme in the other environments given in Table 1. Our goal in this paper is to provide a unified account of stative marking in ʔayʔaǰuθəm that accounts for the *-it*, *-i-*, and non-segmental (raised pitch) allomorphs.

We build on the description and analysis presented in Mellesmoen (2017) and Mellesmoen and Andreotti (2017). Departing from the accounts given in Watanabe (2003) and Blake (2000), which focus more on the position of stress, we propose that the stative allomorph in ʔayʔaǰuθəm has tonal properties. We find that raised pitch is common across all variants of the stative morpheme, which is predicted if a high tone is present in the underlying form. This tone, in combination with listed allomorphs that are sensitive to a PRIORITY constraint (e.g., Mascaró 2007), accounts for the range of stative allomorphy.

In Section 2, we combine original fieldwork data with previous documentation to provide a brief overview of the semantic contribution of the stative morpheme, and summarize the distribution of stative allomorphs across environments. In Section 3, a constraint-based analysis of stative allomorph selection is given, focusing on bare (intransitive) roots and control transitive predicates. We conclude the paper in Section 4 by discussing how this analysis can be extended to account for the other documented patterns and the more general role that pitch plays in the language.

2 Stative Aspect in ʔayʔaǰuθəm

Stative allomorphy in ʔayʔaǰuθəm diverges from other Salish languages. Kinkade (1996:10) reconstructs **ʔac-* in Proto-Salish, which has reflexes across the family that are also described as prefixes. He notes that ʔayʔaǰuθəm is an exception to this pattern; however, the loss of the stative prefix in ʔayʔaǰuθəm is expected because the language has lost prefixes under the influence of Kwak'wala (Northern Wakashan) (Kinkade 1996:10). Instead, of the expected prefixal stative marker, ʔayʔaǰuθəm has developed infixed and suffixed allomorphs to serve a parallel function.

2.1 Semantics

The stative form of unaccusative roots typically describes result state, as shown in (1).

(1)	Root		Stative	
	c̓əχ	'get cooked'	c̓əχit	'cooked'
	təq	'get closed'	təqit	'closed'
	x̌akʷ	'turn off/go out'	x̌akʷit	'turned off/gone out'

[2] This is true of both strong and weak roots. Strong roots are defined as those that have a full vowel (/a, i, u/), while weak roots have /ə/.

While it is straightforward enough to see how ‘cooked’ is the resulting state of a ‘get cooked’ event, not all stative forms are obviously resultative. This is highlighted by Watanabe (2003:414–415) in relation to the examples given in (2).

(2)

Root		Stative	
ƛ̓uχʷt	‘cry’	ƛ̓uχʷit	‘crying’
ƛum	‘enough’	ƛumit	‘be enough, fit’
qətxʷ	‘run out of’	qətixʷ	‘be insufficient’

Andreotti (2018) argues that the stative forms may also be used in contexts that are more consistent with a purely stative, rather than resultative, meaning. Furthermore, control transitive predicates in stative aspect usually do not refer to a result state, but instead to an ongoing action (where an action is initiated but not progressing to a culmination) (see also Watanabe 2003:430–434).[3] A set of relevant examples are given in (3).

(3)

Transitive		Transitive Stative	
k̓ʷə-t	‘see s.t.’	k̓ʷənit	‘be looking at s.t.’
qəp-t	‘touch s.t.’	qəpit	‘be touching s.t.’
ǰuθ-ut	‘push s.t.’	ju:θut	‘hold in place by pushing on s.t.’
ʔim-it	‘step on s.t.’	ʔi:mit	‘hold in place by stepping on s.t.’

There is more work to be done to understand the semantic contribution of the stative morpheme; this is beyond the scope of the present paper.

2.2 Morphology

2.2.1 Bare Roots (Instransitives)

With weak roots, stative aspect is marked by *-it*. The vowel in this suffix carries a high pitch.[4] This is shown in (4).[5,6]

[3] Suttles (2004) and Galloway (1993) distinguish durative and resultative forms in Musqueam and Upriver Halkomelem, respectively. The durative forms frequently occur with the control transitive and have parallel interpretations to the stative control transitives in ʔayʔaǰuθəm. However, in ʔayʔaǰuθəm, there is no evidence for separate morphological categories for durative and resultative.

[4] The H notation corresponds to raised pitch linked to a phonological H tone, not necessarily its acoustic realization. The pitch associated with syllables marked as H is associated with a higher Hz value than would otherwize be expected.

[5] If there is a glottalized consonant root finally, a glottal stop may be transcribed in the realization of the stative form. This follows the vowel in the root as a coda, while the glottalized consonant is parsed as an onset to the following syllable (see Blake 2000:236). The vowel in the root is realized as [a] in these forms due to the lowering effect of an adjacent glottal stop.

[6] We only report on forms that we have also recorded ourselves and for which we have sound files to reference for accurate transcription of pitch patterns.

(4) Bare Weak Roots with Stative Morphology

ƛəm̓	[ƛəm̓]		‘get wet’
ƛəm̓it	[ƛa?mit]	H H	‘soaked’
ǰəkʲʷ-t	[ǰɛkʲʷt]		‘to paint s.t.’
ǰəkʲʷit	[ǰɛ?kʲʷɛt]	H H	‘painted’
c̓əχ	[c̓ɛχ]		‘get ripe/cooked’
c̓əχit	[c̓ɛχɛt]	H H	‘cooked’
məq̓	[məq̓]		‘get full’
məq̓it	[maq̓ɛt]	H H	‘to be full’
χʷəẇ	[χʷo?]		‘get turned on’
χʷəẇit	[χʷa?wɪt]	H H	‘lit’
kʲʷəq	[kʲʷʊq]		‘get split’
kʲʷəqit	[kʲʷaqɛt]	H H	‘split’
təq	[təq]		‘get closed’
təqit	[təqɛt]	H H	‘closed’
kʲʷəṗ-t	[kʲʷuṗt]		‘to pull out of the ground’
kʲʷəṗit	[kʲʷa?ṗɛt]	H H	‘pulled out of the ground’
həkʷ-t	[hakʷt]		‘hang s.t. out’
həkʷit	[hakʷɛt]	H H	‘hung out’
c̓ət-t	[c̓ɪtt]		‘cut s.t. (with a knife)’
c̓ətit	[c̓ɪtɛt]	H H	‘cut (with a knife)’
kʲəp-t	[kʲɪpt]		‘cut s.t. (with scissors)’
kʲəpit	[kʲɪpɛt]	H H	‘cut (with scissors)’

In determining where to transcribe raised pitch, we relied on several diagnostics: (i) the pitch on one syllable relative to the pitch associated with other vowels in the word, and (ii) the pitch (F0) of a syllable relative to the pitch of a comparable syllable in a minimally different word. Initial syllables are associated with raised pitch across all lexical items and the pitch of the vowel in the stative morpheme can have a comparable F0. Even when it is lower, it is nevertheless high relatively to the pitch found on the vowel in second syllables. This is especially apparent where there are (near) minimal pairs (examples are found in (5) and (8). See Appendix A for illustrative spectograms).

Strong roots also take the stative suffix *-it*, with raised pitch on the vowel in the suffix, as shown in (5). In addition to this, the root vowel is longer in the stative forms.

(5) Bare Strong Roots with Stative Morphology

ƛ̓akʷ	[ƛ̓aƛ̓ʷ]		‘get turned off’
ƛ̓akʷit	[ƛ̓a:ƛ̓ʷit]	H H	‘turned off’
kʷay-iš	[kʷayıš]	H L	‘hide s.t.’
kʷayit	[kʷa:yıt]	H H	‘hidden’
ǰaqʷ-aθut	[ǰɛqʷaθot]	H L M	‘warm oneself up’
ǰaqʷit	[ǰa:qʷɛt]	H H	‘be warmed up’
ƛ̓um	[ƛ̓om]		‘get to be enough’
ƛ̓umit	[ƛ̓o:mɛt]	H H	‘be enough/to fit’
χim-it	[χɛmɛt]	H L	‘scratch s.t.’
χimit	[χɛ:mɛt]	H H	‘scratched’
t̓ap	[t̓ap]		‘get beached’
t̓apit	[t̓a:pɛt]	H H	‘beached’
muƛ̓-ut	[moƛ̓ot]	H L	‘prop or wedge s.t.’
muƛ̓it	[mo:ƛ̓ɛt]	H H	‘propped/wedged’

Roots of shape CəCC form statives with the infixation of *-i-* between the final two consonants. As with the previous stative forms, the second syllable bears raised pitch. This is shown in (6).

(6) Bare CəCC Roots with Stative Morphology

c̓əyk̓	[c̓ik̓]		‘get fried’
c̓əj<i>k̓	[c̓ıǰık̓]	H H	‘fried’
k̓əlt	[k̓ılt]		‘get hooked’
k̓əl<i>t	[k̓ɛlɛt]	H H	‘hooked’
ƛ̓əpxʷ	[ƛ̓əpxʷ]		‘get broken’
ƛ̓əp<i>xʷ	[ƛ̓əpıxʷ]	H H	‘broken’
məsq̓ʷ-at	[məsq̓ʷat]	H L	‘to soften s.t.’
məs<i>q̓ʷ	[məsɛq̓ʷ]	H H	‘softened’
p̓əƛ̓š	[p̓əƛ̓š]		‘rise to the surface’
p̓əƛ̓<i>š	[p̓əƛ̓ıš]	H H	‘floating at the surface’

(6) (cont.)

pəqʷs	[poqʷs]		‘fall into the water’
pəqʷ<i>s	[poqʷɛs]	H H	‘fallen into water’
məɬk̓-at	[məɬk̓ɛt]	HL	‘to squish s.t.’
məɬ<i>k̓	[maʔɬɪk̓]	H H	‘squished’

Roots of the shape CVCC occur relatively less frequently in the language, and many of these roots are not eventive roots and therefore cannot be marked for stative aspect. When CVCC roots can co-occur with stative aspect, the *-i-* allomorph occurs between the final two consonants of the root and bears high pitch, as for CəCC roots. This is shown in (7). As with strong roots, the root vowel is lengthened.

(7) Bare CVCC Roots with Stative Morphology

ɬayš	[ɬayš]		‘cover with a blanket’
ɬay<i>š	[ɬa:yɪš]	H H	‘covered with a blanket’
tayq	[tayq]		‘get moved’
tay<i>q	[ta:yɪq]	H H	‘moved’

2.2.2 Transitives

When CVC roots with the control transitivizer are stativized, they are marked by raised pitch on the second syllable, as in (8). The root vowel is also longer in the stative form.

(8) Strong Roots with Control Transitivizer and Stative Morphology

q̓ʷup-ut	[q̓ʷopot]	H L	‘hold s.t.’
	[q̓ʷo:pot]	H H	‘holding onto s.t.’
ǰuθ-ut	[ǰuθot]	H L	‘push s.t.’
	[ǰu:θot]	H H	‘hold s.t. in place by pushing’
ʔim-it	[ʔɛmɛt]	H L	‘step on s.t.’
	[ʔɛ:mɛt]	H H	‘hold s.t. in place by stepping on it’
ƛ̓iɬ̓ᶿ-it	[ƛ̓ɛɬ̓ᶿɛt]	H L	‘push s.t. down’
	[ƛ̓ɛ:ɬ̓ᶿɛt]	H H	‘hold s.t. down by pushing ’

The stative form of control transitives with weak roots have *-i-* preceding the control transitivizer (which would not normally be preceded by a link vowel since these are weak roots). As observed with the previous stative forms, the *-i-* bears raised pitch, as in (9).

(9) Weak Roots with Control Transitivizer and Stative Morphology

k̓ʷə-t	[k̓ʷʊt]		‘see s.t.’
k̓ʷən-it	[k̓ʷʊnɛt]	H H	‘look at s.t.’
qəp-t	[qəpt]		‘touch s.t.’
qəp-it	[qəpɛt]	H H	‘be touching/feeling s.t.’
həqʷ-t	[hoqʷt]		‘smell s.t.’
həqʷ-it	[hoqʷɛt]	H H	‘be smelling s.t.’

The stative form of non-control predicates is marked by raised pitch, as shown in (10). The vowel in the transitivizer behaves like the full vowel in the control transitive cases in (8). We follow Mellesmoen (2017) in analyzing the final *xʷ* as an overt third person object suffix.

(10) Non-Control Transitivizer and Stative Morphology

yəṗ-u-xʷ	[yɛṗoxʷ]	H H	`have broken s.t.'
pəχ-u-xʷ	[paχoxʷ]	H H	`have ripped s.t.'
pən-u-xʷ	[panoxʷ]	H H	`have buried'
ʔaq̓-u-xʷ	[ʔaq̓oxʷ]	H H	`have caught'

3 Analysis

3.1 First Pass Analysis of Allomorph Selection

One of the key components of our analysis, couched in Optimality Theory (Smolensky and Prince 1993), is the use of listed allomorphs, in the style of Mascaró (2007). In this approach, potential allomorphs can be ordered in a preference relation, such that one allomorph is ranked higher, and thus is more optimal, than others. Violation marks are assigned under a PRIORITY constraint, given in (11), for candidates that have any allomorph other than the highest ranked one.[7]

(11) PRIORITY Constraint (Mascaró 2007:726)

PRIORITY — Respect lexical priority (ordering)
Given an input containing allomorphs m_1, m_2,..., m_n, and a candidate m_i', where m_i' is in correspondence with m_i, PRIORITY assigns as many violation marks as the depth of ordering between m_i and the highest dominating morph(s).

The PRIORITY constraint accounts for the choice between the *-it* suffix and the *-i-* infix allomorphs of the stative. This alternation is most clear in the comparison of the bare roots.[8] The choice between

[7] Mascaró (2007) argues that this constraint is gradient, such that the PRIORITY constraint may assign multiple violation marks if there are more than two potential allomorphs. Choosing the allomorph ranked second will result in one violation mark under this constraint, while the third ranked one will have two. The violation marks are therefore assessed as the distance of the chosen allomorph from the preferred one. In our analysis, we assume two ranked allomorphs and therefore PRIORITY will maximally incur one violation in each form.

[8] See Section 3.3.2 for an explanation of the parallel situation with causative statives, which select *-it* with roots of shape CVC and *-i-* for those of shape CVCC.

-it and *-i-* appears to be phonologically conditioned, such that the *-it* allomorph is found with the CVC roots, while the CVCC roots take the *-i-* infix between the final two consonants. The difference in position (suffixal vs. infixal) is motivated by a constraint against vowel-final stems. The FINAL-C_{STEM} constraint in (12) plays a role in determining the choice of allomorph and position of the stative morpheme.[9]

(12) Final-C_{Stem} Constraint: Align(Stem, Right, Consonant, Right)

FINAL-C_{STEM} The right edge of a stem must align with the right edge of a consonant. Assign a violation mark for every segment between the right edge of a stem and the right edge of a consonant.

This is a modification of the FINAL-C constraint in McCarthy and Prince (1994:22), which is an alignment constraint that states that every right edge of a prosodic word should align with the right edge of a consonant. Any prosodic word that ends in a vowel will incur a violation mark under this FINAL-C constraint.

There is crosslinguistic support in the Salish literature for this type of constraint. Urbancyzk (2001:63) proposes a similar constraint to account for the phonology of Lushootseed, another Salish language. She argues that a C-FINAL-ROOT constraint is active in C_2 reduplication (which yields a -VC- shaped 'out of control' infix, ensuring that the final segment in a root will be a consonant. Dyck (2004:71) also employs this constraint in her analysis of the basic root shape in Squamish. We adopt a similar approach in this paper, though we refer to a morphological stem instead of the root.[10] Watanabe (2003:167) includes the root, reduplicative processes, lexical suffixes, indirective and relational affixes, and markers of transitivity within the stem. Given that the stative marker is often infixed into the root or into a transitivizer, we assume that stative aspect is within the morphological stem in ʔayʔaǰuθəm as well.

The tableau in (13) shows how the combination of the PRIORITY and the FINAL-C_{STEM} constraints predict the correct allomorph (13b) with (bare) CVCC roots by eliminating the candidate (13a) that selects the lower ranked stative allomorph (*-it*) and the one (13c) that chooses the preferred (*-i-*) allomorph but places it on the right edge, resulting in a vowel-final stem. The winning candidate (13b) is the one that selects the preferred stative allomorph (*-i-*) and positions it before the final consonant, avoiding a vowel-final stem.[11]

[9] This constraint is worded in a manner that is consistent with the other alignment constraints in this paper, which are assessed in a gradient fashion. However, all syllables in ʔayʔaǰuθəm must have an onset, meaning that adjacent vowels do not occur and therefore this constraint is never violated more than once.

[10] It is worth acknowledging that an undominated ONSET constraint requires syllable onsets and means that stem-final consonants will necessarily be resyllabified as an onset proceeding a vowel-initial suffix (such as subject affixes). However, Czaykowska-Higgins (1998:154) considers object and subject morphology as part of the phonological stem in her analysis of Nxaʔamxcín, but posits that they are outside of the morphological stem. A similar assumption can be adopted for ʔayʔaǰuθəm. The Final-C_{Stem} constraint makes reference to the morphological stem, not the phonological one. Therefore, a consonant may be stem-final in the morphological word, but still be parsed as an onset with following material in the phonological word.

[11] Morphological stem boundaries are unmarked in the tableaux as they align with the end of the prosodic word in the examples given in this section. The position of the boundary is discussed when considering the causative statives in Section 4.

(13) Stative Allomorphy (*-i-*) with Bare CVCC Roots

	ƛ̓ayš + (i_1 > it_2)	PRIORITY	FINAL-C_{STEM}
a.	ƛ̓ayš**it**$_2$	*!	
b. ☞	ƛ̓ay**i**š$_1$		
c.	ƛ̓ayš**i**$_1$		*!

Migration of the stative morpheme further leftward into the root is blocked by high ranked constraints on onsets; every syllable must have an onset and clusters may not occupy an onset position.[12] The constraints on onsets are given in (14) and paired with the basic faithfulness constraints DEP and MAX (McCarthy and Prince 1995), which are violated when segments are epenthesized or deleted.[13]

(14) Main Faithfulness and Onset-Related Constraints

ONSET	All syllables must have an onset. Assign a violation mark for any syllable that does not have an onset.
* COMPLEX	Syllables may only have one segment in the onset position. Assign a violation mark for every onset consisting of two or more segments.
DEP	All segments in the output have a correspondent in the input. Assign a violation mark for every segment in the output that does not have a correspondent in the input.
MAX	All segments in the input have a correspondent in the output. Assign a violation mark for every segment in the input that does not have a correspondent in the output.

The tableau in (15) demonstrates how the stative form of a bare CVC root is derived when the root vowel is full. All of the candidates that select the preferred allomorph incur fatal violations. A candidate with a final vowel is eliminated under FINAL-C_{STEM} (candidate 15b) and one with vowel hiatus is eliminated under ONSET (candidate 15c). While vowel hiatus and stem-final vowels are avoided, deletion of the stative morpheme results in a fatal violation of MAX (candidate 15e) and epenthesis of a glottal stop results in a fatal violation of DEP (candidate 15a). Note that violations of the faithfulness constraints MAX and DEP are assessed between the input form of the stative allomorph that stands in correspondence to the output candidate.

The attested candidate (15d) selects the less preferred allomorph, violating PRIORITY, indicating that this constraint is ranked lower than the others. A preliminary ranking of the constraints is given in (16).

[12] The /st/ sequence in the causative transitivizer is an exception and may sometimes form a complex onset (Blake 2000).

[13] Note that the stative allomorph is considered to be present in the input, meaning that either *-i-* or *-it* can be chosen and DEP will not be violated because the output form of the stative morpheme is in correspondence with the underlying form of the selected allomorph in the input. It is, however, affected by MAX if elements of the chosen morpheme are present in the input but not the output. Thus, selecting the *-it* allomorph and realizing it as [i] would be a MAX violation.

(15) Stative Allomorphy with a strong (CVC) Root

ƛ̓um + {i_1 > it_2}	Dep	Max	Onset	*Complex	Final-C_{Stem}	Priority
a. ƛ̓u?**i**m$_1$	*!					
b. ƛ̓um**i**$_1$					*!	
c. ƛ̓u**i**m$_1$			*!			
d. ☞ ƛ̓um**it**$_2$						*
e. ƛ̓um$_1$		*!				

(16) Preliminary Constraint Ranking
Dep, Max, Onset, *Complex, Final-C_{Stem} » Priority

As shown in (17), the constraints and ranking given thus far do not predict the correct shape of the stative allomorph with weak roots, assuming that these roots have no vowel in the underlying form as in Blake 2000. In our approach, the /ə/ in the surface form must be taken as epenthetic, resulting in a violation of Dep. However, if the stative morpheme may be an infix and the /i/ variant is preferred, all else being equal, it is unclear why weak roots of the shape CVC do not surface as CiC, with the stative vowel surfacing instead of a schwa. In other words, the current constraints do not predict the attested form (candidate 17a) when the stative morpheme is combined with a weak root. The stative morpheme appears to provide an alternate vowel in (17b) that does not violate Dep.

(17) Stative Allomorphy with a Weak (CVC) Root

/k̓p + (i_1 > it_2)/	Dep	* Complex	Max	Onset	Final-C_{Stem}	Priority
a. ☹ k̓ə**it**$_2$	*!					*
b. ☞ k̓**i**p$_1$						

This suggests that there are further generalizations that must be captured. In the next section, we incorporate suprasegmental patterns to provide a unified analysis of stative allomorphy.

3.2 Analysis of Suprasegmental Phenomena

As discussed in Section 2, one of the realizations of stative aspect is exclusively raised pitch, without accompanying segmental content. In transitive predicates with strong (full vowel) roots, such as *ǰuθut*, stative morphology surfaces as raised pitch on both the transitivizer vowel, and the root vowel, without additional segmental content.

The initial syllable of any word in ʔayʔaǰuθəm receives high pitch, as stress is phonologically predictable and invariably falls on the initial syllable (Blake 2000:168). The result of this is that raised pitch occurs on adjacent syllables when a word is marked for stative aspect.[14]

[14] Watanabe (2003:25) discusses secondary stress as a marker of stative aspect, resulting in contrastive pitch and "stress clash" with the control transitive predicates. Stress and pitch are not necessarily in a one-to-one

In order to analyze this tonal pattern, first, we posit a %H boundary tone at the left edge of the prosodic word, which results in invariably raised pitch on the initial syllable in a word.[15] We further observe that raised pitch is associated with the second syllable in stative predicates, including the intransitive ones, even where segmental material is also present. The alignment constraint in (18) motivates the assignment of H tone toward the left edge of the word. This is consistent with the fact that the language has fixed initial stress, given that (based on impressionistic description) raised pitch is the most salient acoustic correlate of stress (Watanabe 2003).

The Align-L_H constraint can also be used to account for high tone in stative forms, given that the first two syllables bear raised pitch. Assuming that there are two H tones in the stative forms (the default one and one introduced by the stative morpheme), it appears that H tone falls on the leftmost available syllable. This yields a situation where the leftmost two syllables bear high tone, despite being adjacent, regardless of how many other syllables are in the word.

(18) High Tone Alignment Constraint: Align(σ_H, Left, PrWd, Left)

ALIGN-L_H	A high tone syllable must be aligned to the left edge of a word. Assign a violation mark for every syllable between the left edge of a syllable with high tone and the left edge of a word.

Together with (19), the constraints in (20) below account for the assignment of tone. The *NoFLOAT constraint penalizes candidates which have an unassociated (floating) tone, while MAX_H assigns violation marks for any H tone in the input that is not also in the output. The combination of these constraints, when high ranked, results in a preference for candidates that retain input H tone and associate it with some syllable in the output. The constraint * MULT-LINK is violated by candidates which have multiple tones associated with the same syllable. This prohibits situations where contour tones are created or where two tones both associate with the first syllable to satisfy ALIGN-L_H.

(19) Tone Constraints:

*FLOAT	A tone must be associated with a syllable (Meyers 1997)
MAX_H	All high tones in the input have a correspondent in the output. Assign a violation mark for every high tone in the input that does not have a correspondent in the output.
NO-MULTIPLE-LINK (* MULT-LINK)	Syllables may only be linked to one tone. Assign a violation mark for any syllable linked to more than one tone. (e.g. Rubach 2000)

relationship: Davis (1970:21) notes that raised pitch can be independent of stress. We have documented cases where raised pitch appears to be independent of other correlates of prominence. An example of this is the stative forms of weak CVC roots, which seem to be parsed as a single foot, in contrast to the stative in combination with strong CVC roots, which Blake (2000:111) represents with two bimoraic feet (each consisting of a single stressed syllable).

[15] Additional constraints could be posited to account for the assignment of fixed-initial stress, but we omit those at present.

Returning to the question of allomorph selection raised in Section 3.1 and the issue with weak bare roots, the suprasegmental generalizations regarding H tone provide a solution. The stative forms have minimally two H tones in the input: one boundary tone %H and one H tone that is associated with the stative morpheme. Though the initial constraint ranking in Section 3.1 predicted that a mono-syllabic form **kip* should be optimal, the suprasegmental constraints in (19) and (20) successfully rule it out.

The tableau in (20) shows the derivation of the weak CVC root *kəp* 'get cut' with stative morphology. The inclusion of the suprasegmental information (H tone) predicts the attested form. Candidates (20b), (20c), and (20e) all involve the infixation of the stative allomorph into the root. The relevant constraints eliminate these candidates for having an unassociated H tone in (20b), having a single syllable linked to two H tones in (20c), and for the outright deletion of a H tone in (20d). Candidate (20e) fares well on the constraints targeting tone, as it has two H tones associated with unique syllables, but it fatally violates the FINAL-C_{Stem} constraint. The result is that the attested candidate (21a), which epenthesizes /ə/ into the root and selects the less preferred allomorph (violating PRIORITY) is the optimal candidate. This solves the issue regarding schwa posed by a purely segmental analysis and indicates that the raised pitch found in stative predicates plays a key role in determining allomorph selection.

(20) Stative Allomorphy with a Weak (CVC) Root (Revised)

%H H H | | kp+(i_1>it_2)	*FLOAT	*MULT-LINK	MAX_H	FINAL-C_{Stem}	DEP	PRIORITY	MAX	ALIGN-L_H
H H | | a. ☞ kəp**it**$_2$					*	*		*
H H | b. k**i**p$_1$	*!							
H H | / c. k**i**p$_1$		*!						
H | d. k**i**p$_1$			*!					
H H | | e. kəp**i**$_1$				*!	*			*

(21) Revized Preliminary Constraint Ranking
* Float, * Mult-Link, Max_{H}, Final-C_{Stem} » Dep » Priority » Max » Align-L_{H}

The ranking in (21) can be applied to the control transitive stative forms with weak roots, such as *k'ʷənit* 'to look at', which also have a [HH] pitch pattern. The Priority constraint ends up being fundamental in selecting the attested form. This is demonstrated in (22). A candidate (22f) that selects the preferred allomorph and positions it as an infix, creating a single syllable, fatally violates * Float.[16] The candidate with a stem-final vowel (22e) fatally violates the Final-C_{Stem} constraint. The three candidates (22a,b,d) that select the less preferred allomorph (*-it*) incur violation marks under Priority, leaving the attested candidate (22c) as the most optimal candidate due to the selection of *-i-*.

(22) Stative Allomorphy with a Weak (CVC) Root and a Transitivizer

%H H H | | k'ʷn+(**i**$_1$>**it**$_2$)+t	*Float	* Mult-Link	Max_{H}	Final-C_{Stem}	Dep	Priority	Max	Align-L_{H}
a. H H | | k'ʷən**it**$_2$					*	*!	*	*
b. H H | | k'ʷən**it**t$_2$					*	*!		*
c. ☞ H H | | k'ʷən**i**t$_1$					*			*
d. H H | | k'ʷənt**it**$_2$					*	*!		*
e. H H | | k'ʷənt**i**$_1$				*!	*			*
f. H H | k'ʷ**i**nt$_1$	*!							

Our analysis thus far accounts for the choice of stative allomorph with bare roots and with control transitive statives formed from weak roots. The next step is to extend the analysis to capture the

[16] Other variations of this candidate are assume to be eliminated as well, including one that deletes the extra H tone (* under Max_{H}) or one that links both H tones to the single vowel (* under * Mult-Link).

patterns described for the transitive statives built on strong roots given in Section 2, such as *ǰuθut* 'to push s.t.'. In *ǰuθut*, there is no segmental material associated with the stative morpheme, though the raised pitch remains. The MAX$_H$ constraint indirectly ensures that a contrast is maintained between non-stative and stative control forms even when they lack segmental content. In addition, we propose the alignment constraint in (23) to account for why the vowel from the control transitivizer is retained instead of the stative *-i-*.[17] This constraint assigns a violation mark for every segment between the left edge of the stative morpheme and the right edge of the stem. This is assessed in a gradient manner. Importantly, the constraint in (23) will be vacuously satisfied by candidates where the stative aspect is reflected only by raised pitch, because there is no segmental content separating it from the right edge of the stem.[18]

(23) Stative Morpheme Alignment Constraint: ALIGN(Stative, Left, Stem, Right):

ALIGN-R$_{Stative}$	The left edge of a stative morpheme must be aligned to the right edge of the stem. Assign a violation mark for every segment between the left edge of the stative morpheme and the right edge of the stem.

All these constraints can be brought together to account for strong root control transitive statives, which represent the most complicated pattern of stative allomorphy.[19] The derivation of the strong root control stative *ǰuθut* 'to push s.t.' is shown in (24). The attested candidate (24a) has high tone associated with both the initial and the second syllable, which contrasts with a HL eventive form. The other candidates (24b–d), which retain segmental content for the stative morpheme, fatally violate the ALIGN-R$_{Stative}$ constraint.

[17] A possible alternative constraint is MAX$_{Tr}$. This would be defined as: "All segments associated with a transitivizer in the input have a correspondent in the output. Assign a violation mark for every high tone in the input that does not have a correspondent in the output."

[18] It is possible that (24), in combination with other constraints, might also be able to account for allomorph selection, since ranked allomorphs may not be needed for the examples considered so far, given that this alignment constraint penalizes the longer allomorph more harshly than the shorter one, which has a similar result to the ranking of listed allomorphs: /i/ is going to fare better under this constraint than /it/. Listed allomorphs are still necessary though and ranking them may prove crucial to derive the causative patterns.

[19] We omit some of the high ranked constraints covered in Section 3.1. The constraints * COMPLEX and ONSET are still in effect. In addition to this, we set aside the high ranked * FLOAT, * MULT-LINK, and MAX$_H$ constraints.

(24) Control Transitivizer with Stative Morphology

%H H H ǰuθ+(**i**$_1$>**it**$_2$)+ut	FINAL-C$_{Stem}$	ALIGN-R$_{Stative}$	DEP	PRIORITY	MAX	ALIGN-L$_H$
H H a. ☞ ǰuθut$_1$					*	*
H H b. ǰuθut**it**$_2$		*!*		*		**
H H c. ǰuθ**it**$_1$		*!*			*	*
H H d. ǰuθ**it**ut$_2$		*!***		*		**

The ALIGN-R$_{Stative}$ constraint has the effect of limiting the size of the stative morpheme because the left edge of the morpheme is aligned with the right edge of the stem. While this predicts the deletion of segmental content (where high tone is retained) in the strong transitive stative cases, as shown in (24), the Align-R$_{Stative}$ constraint must be ranked below FINAL-C$_{Stem}$. The derivation of a bare weak root with stative morphology is given again in (25). The correct allomorph is selected here (candidate 25a), despite violating Align-R$_{Stative}$ twice and PRIORITY once. This is because the other candidates fare worse on the tone-related constraints. The assignment and maintenance of high tone is thus crucial to our analysis of stative allomorphy.[20]

[20] For reasons of brevity, we do not provide tableaux for the non-control statives. However, the same raised pitch pattern is also found. Further discussion of the non-control stative can be found in Mellesmoen and Andreotti (2017). This analysis works for those cases as well.

(25) Bare Weak Root with Stative Morphology

%H H H | | kp+(i_1>it_2)	*Float	* Mult-Link	Max_H	Final-C_{Stem}	Align-$R_{Stative}$	Dep	Priority	Max	Align-L_H
a. ☞ H H | | kəp**it**$_2$					**	*	*		*
b. H H | k**i**p$_1$	*!				**				
c. H H | / k**i**p$_1$		*!			**				
d. H | k**i**p$_1$			*!		**				
e. H H | | kəp**i**$_1$				*!	*	*			*
f. H H | / kəp$_1$		*!				*		*	

The final ranking, including the * Complex and Onset constraints, is given in (26).

(26) Final Constraint Ranking
* Float, * Mult-Link, Max_H, Final-C_{Stem}, * Complex, Onset » Align-$R_{Stative}$ » Dep » Priority » Max » Align-L_H

3.3 Extending the Analysis

3.3.1 Stative with Other Morphology

In addition to the types of predicates detailed thus far (bare roots and transitive predicates), stative morphology also frequently co-occurs with the middle suffix (*-Vm*), as shown in (27) and with

the active intransitive suffix (*-ʔəm*), as shown in (28).[21]

(27) Stative Middle Forms (Watanabe 2003:425):

qək^{w}-əm	'stop'	qək^{w}-<i>m	'keep still, be still'
k^{w}ət-əm	'get sick'	k^{w}ət-<i>m	'be sickly'
x̌aɬ-əm	'salt'	x̌al-<i>m	'be salted'
naṯ^{θ}us-əm	'nod'	naṯ^{θ}us-<i>m	'be nodding'
pəx^{w}-əm	'steam up'	pəx^{w}-<i>m	'steaming up'

(28) Stative Active Intransitives (Watanabe 2003:418):

han-ʔəm	'applaud (s.o.)'	han-ʔ<i>m	'be applauding (s.o.)'
hiw-ʔəm	'burn (s.t.)'	hiw-ʔ<i>m	'be burning (s.t.)'
k^{w}ay-ʔəm	'hide (s.t.)'	k^{w}ayʔ<i>m	'be hiding (s.t.)'
k^{w}əy-ʔəm	'flash (at s.t.)'	k^{w}əy-ʔ<i>m	'be flashing (at s.t.)'
ɬəq̇^{w}-ʔəm	'bake (s.t.) in oven'	ɬəq̇^{w}-ʔ<i>m	'be baking (s.t.) in oven'

The vowel in the middle suffix is often realized as schwa (Watanabe 2003:190–191). When these forms are made stative, the allomorph of the stative is *-i-* in lieu of the schwa. Similarly, statives of active intransitives are formed by inserting *-i-* in the active intransitive suffix, resulting in /i/ in the suffix, rather than a schwa. These are similar to the weak CVC roots with a control transitivizer, where an /i/ surfaces between the roots and the transitivizer. The analysis can be extended straightforwardly to the middle and active intransitive cases. The generalization is that the *-i-* associated with the stative morpheme surfaces in suffixes instead of /ə/, whereas underlying full vowel quality is retained with other suffixes.[22]

Stative predicates can also be made plural (Watanabe 2003:376–384), resulting in forms that describe the state holding of multiple participants (*titqit* 'they are all closed') or holding mutliple times for a single participant (e.g. *kakpit* 'cut multiple times', which can describe a single object with multiple cuts). Stative weak roots form a plural with -C- infixation and ablaut (Mellesmoen to appear). The initial consonant of the root is copied inside the stem and the vowel in the root is either /i/ or /a/. Note that in previous literature this process is described as Ci- or Ca- reduplication (Blake 1992; Davis 1970; Watanabe 1994, 2000, 2003). As with the singular forms, both syllables bear high pitch.[23]

[21] There are stative forms of the lexical suffixes as well; we set these aside at present. See Watanabe (2003:307–370) for a list of relevant forms.

[22] Blake (2000) argues that the distribution of /ə/ is predictable. Given this, it is not unsurprising that /i/ would surface rather than /ə/ where it is associated with lexical content (marking stativity).

[23] Urbanczyk (2004) traces **a* and **i* ablaut marking plurality back to Proto-Salish. She proposes that **a* marked pluractionality and **i* marked collective plurals. However, she notes that these seem to be merged in ʔayʔaǰuθəm and both seem to be able to mark the same types of plurality. This accords with the fact that both vowels seem to be used to express the same type of plurality in plural statives of weak roots and the choice of vowel seems to be lexically specified.

(29) Weak Roots with Stative and Plural Morphology

χʷiχʷwit	[χʷɛχʷwɛt]	H H	‘all lit’
kʲʷikʲʷqit	[kʲʷɪkʲʷqɛt]	H H	‘a bunch of things are split’
titqit	[tɛtqɛt]	H H	‘more than one thing is closed’
kʲʷikʲʷp̓it	[kʲʷɛkʲʷp̓ɛt]	H H	‘more than one pulled out of the ground’
hahkʷit	[hahkʷɪt]	H H	‘more than one thing hung out’
c̓ɛc̓tit	[c̓ɛc̓tɪt]	H H	‘cut multiple times (with a knife)’
kʲakʲpit	[kʲɛkʲpɪt]	H H	‘cut multiple times (with scissors)’

Strong roots also form a stative plural with C infixation, but without ablaut. As with the singular forms, the second syllable bears comparatively high pitch.

(30) Strong Roots with Stative and Plural Morphology:

kʷakʷyit	[kʷakʷyɪt]	H H	‘more than one hidden’
χiχmit	[χɛχmɛt]	H H	‘scratched up’
t̓at̓pit	[t̓at̓pɛt]	H H	‘more than one beached’
mumƛ̓it	[momƛ̓ɛt]	H H	‘propped up/wedged all around’

The stative plural form of CəCC roots involves C infixation and ablaut, as in the weak CVC roots.

(31) CəCC + plural:

ƛaƛp<i>xʷ	[ƛaƛpɛxʷ]	H H	‘more than one broken’
p̓ap̓ƛ<i>š	[p̓ap̓ƛɪš]	H H	‘more than one floating’
papqʷ<i>s	[papqʷɪs]	H H	‘more than one fallen in’
mamt̓<i>kʲ	[mamt̓ɪkʲ]	H H	‘more than one squished’

Plural forms of stative control transitives with strong roots are similar to the plural stative forms of the strong roots in (30) and involve C infixation, as shown in (32).[24]

(32) CVC + control transitive + plural:

q̓ʷuq̓ʷp-ut	[q̓ʷoq̓ʷpot]	H H	‘hold onto multiple things’
ǰuyθ-ut	[ǰuyθot]	H H	‘push on s.t. repeatedly’[25]
ƛ̓iƛ̓t̓ᶿ-it	[ƛ̓ɛƛ̓t̓ᶿɛt]	H H	‘to push down on repeatedly’

3.3.2 Causative Stative Forms

Stative allomorphy found with causative predicates is exceptional and deserves further discussion. It has previously been described as “doubly marked” (Watanabe 2003:443), where two realizations

[24] At this point, we have no clear examples of plurals of weak root statives with the control transitivizer. This is likely an accidental gap and requires further investigation. We have recorded *šəšmitəm Gloria brushes* ‘Gloria is drying the brushes’, with what appears to be a plural stative with the control transitivizer *šəšmit*, but we don’t have a corresponding singular transitive stative form. We also found *kʲʷəkʲʷʔitas* ‘to be reading aloud’, which may be a plural stative form built on *kʲʷət* ‘to look at’.

[25] *ǰ* in onset position alternates with *y* in coda position (Blake 2000; Watanabe 2003:e.g.).

of stative aspect are present in a single word. The data in (33–35) show that roots of shape CVC occur with both the *-it* suffix and the *-i-* infix (positioned within the causative transitivizer), while roots of shape CVCC have the *-i-* infix in both the root and in the causative transitivizer.

(33) Stative Causatives with Weak CVC Roots

təǧitstixʷ	[taʔgɪtstɛxʷ]	H H H	‘have s.t. frozen’
səqitstixʷ	[səqɛtstɛxʷ]	H H H	‘have s.t. towing’

(34) Stative Causatives with Strong CVC Roots

huǰitstixʷ	[hoǰitstɛxʷ]	H H H	‘have it ready’
qʷupitstixʷ	[qʷo:pɛtstɛxʷ]	H H H	‘hang onto s.t.’
kʷayitstixʷ	[kʷayɪtstɛxʷ]	H H H	‘have s.t. hidden’
šihitstixʷ	[ši:hɪtstɛxʷ]	H H H	‘have s.t. displayed’

(35) Stative Causatives with CəCC Roots

qəm<i>s-st<i>xʷ	[qəmɛstɛxʷ]	H H H	‘have s.t. put away’
ƛ̓əp<i>xʷ-st<i>xʷ	(Watanabe 2003:445)		‘have s.t. broken’
ʔaɬt<i>xʷ-st<i>xʷ	(Watanabe 2003:445)		‘have s.t. inside’

In addition to what has been previously documented, we find that stative causatives are not always “doubly marked” and can also be realized with one stative marker, as in (36) and (37).

(36) (Single-Marked) Causative Statives with Weak CVC Roots

həkʷ	həkʷitsxʷ	[hakʷɛtsxʷ]	H H	‘have s.t. hung up’
təẇ	təǧitsxʷ	[taʔgitsxʷ]	H H	‘have s.t. frozen’

(37) (Single-Marked) Causative Statives with Strong CVC Roots[26]

ƛ̓um	ƛ̓umitsxʷ	[ƛ̓o(:)mɛtsxʷ]	H H	‘make/do enough’
q̓at̓ᶿ	q̓at̓ᶿitsxʷ	[q̓a:t̓ᶿɛtsxʷ]	H H	‘work hard at’
kʷay	kʷayitsxʷ	[kʷayɪtsxʷ]	H H	‘have s.t. hidden’

Setting aside the issue of stative marking within the causative suffix momentarily, the analysis in this paper can straightforwardly account for the choice between *-it* and *-i-* following or within the root. In Section 3, we showed how the choice of stative allomorphy with bare roots was determined by the shape of the root. With the CVCC roots, candidates with preferred allomorph (*-i-*) are optimal, while the candidates that violate Priority (selecting *-it*) win when attached to CVC roots to avoid phonologically marked outputs. This is the same alternation seen with the causatives in (33–34) and (35). We posit that the causative transitivizer is positioned such that it does not affect the selection of the correct allomorph stativizing the root. The constraint Final-C_{Stem}, repeated in (38), refers to the right edge of a morphological stem. In order to predict the attested causative stative forms, the morphological stem boundary needs to be drawn before the causativizer in these forms. This means that the choice of allomorph proceeds parallel to the bare roots.

[26] Vowel length differences, if they occur, appear to be more variable than in the non-causative stative forms. Further elicitation needs to be conducted on this.

(38) FinalC$_{Stem}$ Constraint: Align(Stem, Right, Consonant, Right)

*FinalC$_{Stem}$ The right edge of a stem must align with the right edge of a consonant. Assign a violation mark for every segment between the right edge of a stem and the right edge of a consonant.

The forms in (40) show where the stem boundaries can be drawn to predict the correct choice of allomorph.

(39) Stative Causatives that are not Double Marked

a. həkʷit]$_{stem}$sxʷ ‘have s.t. hung up’

b. təǧit]$_{stem}$sxʷ ‘have s.t. frozen’

(40) Stem Boundaries for Double Marked Stative Causatives

a. huǰit]$_{stem}$stixʷ ‘have it ready’

b. təǧit]$_{stem}$stixʷ ‘have it frozen’

c. qəmis]$_{stem}$stixʷ ‘have s.t. put away’

Returning to the question of “double-marking”, it is unclear if the stative infix *-i-* in the causative suffix is associated with a semantic difference. If this “exponent” of the stative marking is semantically vacuous, we can analyze the *-i-* in the causative transivizer as epenthetic.[27,28]

A preliminary look at the data suggests that this is a plausible analysis. There does not seem to be a difference in interpretation between the causative stative forms (36–37) and the stative causative stative forms (33–35)). This is clearest when comparing the minimal pairs *kʷayitsxʷ* with *kʷayitstixʷ* ‘to have s.t. hidden’ and *təǧitsxʷ* and *təǧitstixʷ* ‘to have s.t. frozen’.[29]

However, there are environments where the stative of the causative, marked with the *-i-* infix in the causative, makes a clear semantic contribution. With stative causatives built on unergative forms,[30] there is a difference in interpretation between the stative causative forms and the plain causative forms. The stative causatives are interpreted as involving a completed action with the corresponding result state already achieved, whereas the plain causatives are used when the action has not been completed. Unlike the simple causative of an unergative, the stative causatives cannot be made imperfective (**qʷəqʷəlstixʷ* vs. *qʷəqʷəlsxʷ* ‘bringing’).[31]

[27] Thank you to Suzanne Urbanczyk for helpful discussion regarding this possibility.

[28] A HHH pattern was documented on the “doubly marked” causatives, providing preliminary evidence that these may actually involve two exponents of the stative morpheme, rather than the second marker being a semantically-null epenthesized /i/.

[29] When asked, speakers told us the causative stative and stative causative statives were the same and we have been so far unable to find a context that would distinguish any difference in the meaning.

[30] Watanabe (2003) does not document stative causatives built on unergatives, but these were readily accepted and produced by our speakers.

[31] While our eldest speaker had strong judgments about imperfective marking on stative causatives, other speakers did not outright reject these forms. However, they never volunteered them, though they would volunteer imperfective forms of the plain causative.

(41) Unergative Causatives with Stative Morphology

qʷəl̓	‘to come’	qʷəlstixʷ	‘have brought s.t.’ (cf. qʷəlsxʷ ‘bring’)
ƛ̓əq	‘to go outside’	ƛ̓əqstixʷ	‘have brought s.t. outside’ (cf. ƛ̓əqsxʷ ‘bring outside’)

In these cases, it is the causative form that is stativized, rather than the stative form which is causativized. This contrasts with the forms in (36)–(37), but parallels the statives of other transitive forms discussed in previous sections. In these cases, the stem boundary may be placed as in (42).

(42) Stem Boundaries for Single Marked Causative Statives

a.	qʷəlstixʷ]$_{stem}$	‘have brought s.t.’
b.	ƛ̓əqstixʷ]$_{stem}$	‘have brought s.t. outside’

Given that stative forms can be causativized and causative forms can be stativized, it is possible that doubly-marked statives involve two stative markers: one stativizing the root and the other stativizing the causative. As remarked above, any difference in meaning between causatives of statives and doubly-marked causatives is elusive, but such a difference would likely be quite subtle. Phonologically, this would involve two stem boundaries corresponding to the two different positions the stative takes (and associated with two different semantic scopes). Clearly, this requires detailed semantic fieldwork that is beyond the scope of this paper.

(43) Stem Boundaries for Double Marked Stative Causatives

a.	huǰit]$_{stem}$stixʷ]$_{stem}$	‘have it ready’
b.	təġ̓it]$_{stem}$stixʷ]$_{stem}$	‘have it frozen’
c.	qəmis]$_{stem}$stixʷ]$_{stem}$	‘have s.t. put away’
d.	ƛ̓əpixʷ]$_{stem}$stixʷ]$_{stem}$	‘to have s.t. broken’

4 Further Consideration: Role of Pitch

In this paper, we have treated pitch as largely independent of stress. However, the two are not wholly unrelated. Blake (2000) analyzes the stative marker *-it* in ʔayʔaǰuθəm as involving a syllable that is pre-footed in the lexicon. When this is attached to a base, a second foot is built on the root (to the left of the stative suffix). The key acoustic correlate of stress in the language is raised pitch, according to Watanabe (2003), and thus high tone is present on the first two syllables of a stative predicate due to stress clash (arising when a pre-footed and bi-moraic stative suffix is added).

While various levels of prosodic constituency are fundamental to our understanding of ʔayʔaǰuθəm phonology, targeted elicitation of stative forms has revealed that raised pitch is a shared characteristic of the stative allomorphs that is more uniform than what is predicted by an account based on a single foot structure for the stative morpheme. While a bimoraic foot may be proposed for the stative *-it* suffix, it is unclear what the corresponding foot structure would be for the *-i-* infix and how these are related.[32] In addition, analyzing the stative morpheme as bimoraic means that

[32] One further question that arises is the relationship between stative morphology, pitch, and vowel length. It is likely the stative forms with longer vowels are associated with a different foot structure than those that are not.

some amount of prosodic information must be stipulated in lexical entries. However, Blake (2000) argues for a predictable system of syllabification and footing, which raises the question of why the lexical entry for the stative would be exceptional. In contrast, raised pitch and stress are argued to occur independently in ʔayʔaǰuθəm by Davis (1970), and Watanabe (2003:21) notes that certain morphemes are associated with raised pitch, sometimes without being otherwize prominent.[33]

Our analysis accounts for the "stress clash" pattern documented previously in the language, though we do not consider every case to involve adjacent stressed syllables. In this sense, ʔayʔaǰuθəm exhibits properties of both a stress and a tonal system, which is what Hyman (2006) argues that the label "pitch-accent" denotes. In this respect, ʔayʔaǰuθəm is a pitch-accent language.

5 Conclusion

In this paper, we have argued that the stative in ʔayʔaǰuθəm involves listed allomorphs and is associated with a H tone. We have provided an analysis that can account for the full range of stative allomorphy found with statives built on bare intransitive roots and stative control transitives, and discussed how the analysis can also account for statives built on stems with the middle, active intransitive, and noncontrol transitive suffixes. Given the importance of the H tone in our analysis, we propose that ʔayʔaǰuθəm is a pitch accent language in the sense of Hyman (2006), exhibiting properties of both a stress and a tonal system.

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[33] We have noted that there are many cases where the raised pitch is not particularly high. Instead, the raised pitch appears to be relative to the F0 of the initial syllable. Additionally, the position of "secondary" stress and the pitch associated with non-initial syllables, excluding the patterns found in the stative forms, is quite variable. Given that there is only evidence for high tone in the phonological grammar, the system may be best categorized as having a privative H $\sim \emptyset$ system, which is a charactertistic often associated with pitch-accent systems (Hyman 2006:237). As discussed in this paper, raised pitch is contrastive and thus part of the phonological grammar, while other syllables may be underspecified for pitch and filled in as L or M later, in the sense of Keating (1988). This may account for variation and instability in secondary stress in the language.

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Appendix A

Figures 1 and 2 illustrate the pitch found on the minimal pair consisting of eventive *ǰuθut* in the command *ǰuθut=ga* 'Push it' and stative *ǰu:θut* in the command *ǰu:θut=čx*^{w} 'Hold it in place'. Note that the second person clitic *čx*^{w} and the imperative clitic *ga* freely alternate in imperatives and can also co-occur. In the spectograms we include the second person clitic which coalesces with the final *t* of *ǰuθut* but do not include the imperative *ga* which could easily be segmented out.

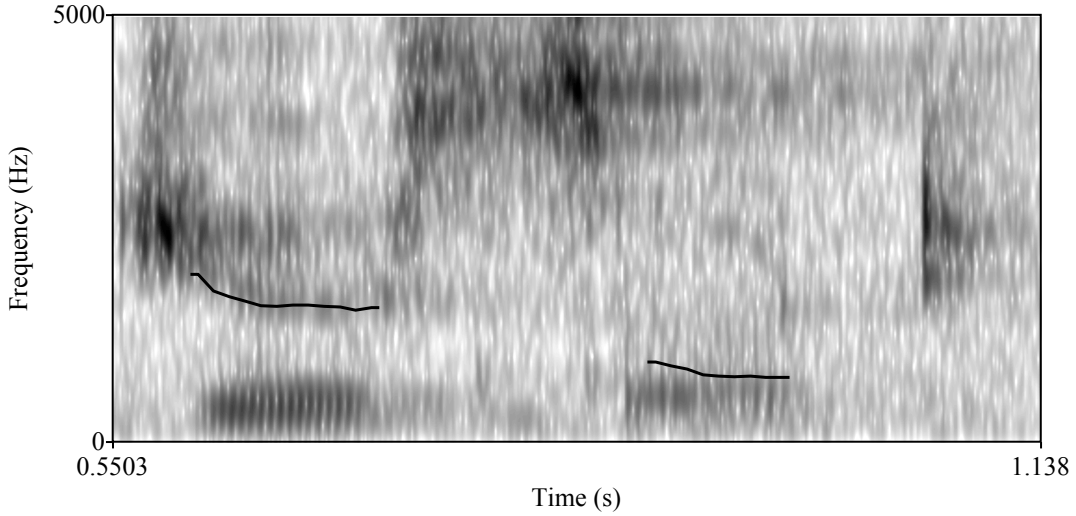

Figure 1: Pitch track for eventive *ǰuθut* 'push it'

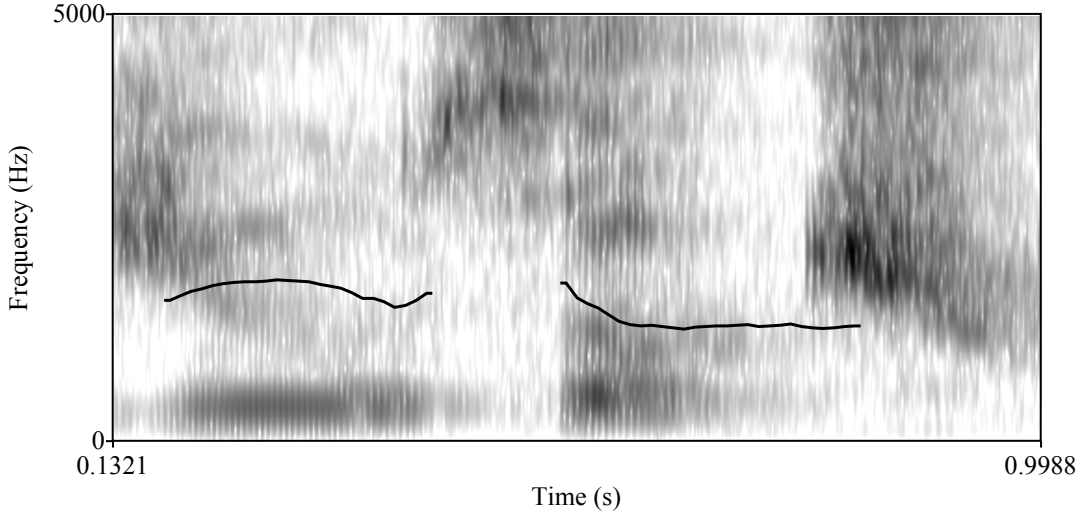

Figure 2: Pitch track for stative *ǰuθut* 'hold it in place (by pushing)'