

**Tsimshian iterative-aorist ablaut**

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Tsimshian lexica manifest quantitative ablaut of the pre-Indo-European type. Tsimshian ablaut is phonologically relatable to the pre-Indo-European ablaut that distinguishes present tense (*e*-grade) and aorist aspect (zero-grade): Tsimshian ablaut distinguishes iterative aspect and plural number (full-grade) from aorist aspect and singular number (zero-grade). Iterative aspect and plural number are intrinsically related, as are aorist aspect and singular number. These equivalences have morphological status in Tsimshian grammar. Iterative is thought to be the source of present in language in general; likewise aorist is thought to be the source of past. It is further thought that pre-Indo-European was at some point in the past a language with aspect but not tense. It is therefore a reasonable hypothesis that Tsimshian iterative-plural and aorist-singular are functionally and formally relatable to Indo-European present and aorist respectively.

1 **overview**

The Tsimshian (TS) languages employ ablaut, vowel gradation, as a means to distinguish iterative-plural from punctual-aorist-singular in both verbs and nouns. The iterative-plural forms have full-grade; the punctual-aorist-singular forms have zero-grade. The Tsimshian full-grade and zero-grade ablaut forms are phonologically concordant with those found in Gothic, Latin, Greek, Sanskrit, and other Indo-European languages, the Tsimshian forms showing the same range of sonant and laryngeal colourings in both full- and zero-grade. Since the source of Indo-European present tense is thought to be iterative aspect, and the source of undetermined past tense is thought to be static, i.e. [-iterative] aspect, and since the ancient Indo-European (pre-IE) ablaut system used *e*-vocalism in present tense in contrast to zero-grade in aorist and verbal adjectives, the Tsimshian ablaut is relatable both in form and function to the Indo-European.

pre-IE	present <i>e</i> -vocalism	aorist zero-grade
TS	full-grade iterative	zero-grade aorist

In a pre-Indo-European context Tsimshian ablaut is extremely conservative both in form and function.

## 2 the aspect sources of tense

There is an inherent semantic connection between iterative aspect and plural number. This relationship is especially salient in languages, such as the Tsimshian, which inflect verbs to show the number of the absolutive argument. Sm'algyax (Coast Tsimshian) reduplication and lengthened-grade ablaut both indicate plural number, plural agreement, and iterative action, thus giving morphological status to the semantic identity: iterative-plural. Simple, i.e., non-reduplicated, and reduced-grade stem variants indicate not only singular and singular agreement, but static, i.e. [-iterative] aspect and aorist, i.e., [-perfect] past. It is not clear that Sm'algyax has a future tense, but bilingual Sm'algyax-English speakers use the English future tense with a desiderative meaning. These facts support Kuryłowicz's theory (1964:10-36; 1973:63-92) as to the aspect origins of tense systems: iterative > present, static > aorist > past, desiderative > future. In terms of Kuryłowicz's developmental sequences, Tsimshian is consistently conservative.

Morphological internal reconstruction leads to the conclusion that at some stage Pre-Indo-European had an aspectual system without tense (Szemerényi 1980:301ff, Fox 1995:188f).

## 3 Tsimshian iterative-aorist ablaut

The Proto-Tsimshian default vowel is *\*a*, a genetic descendant or systematic correspondent of pre-IE *\*e* (Dunn 2002). Tsimshian long vowels are generally the result of *vowel + laryngeal*, i.e., < *\*a<sub>H</sub>* (Boas 1911:288f, 1912:68). Tsimshian short vowels are zero- or reduced-grade, taking their colouring from a sonant or laryngeal in the Indo-European manner:

ii	< <i>*a<sub>H</sub><sub>i</sub></i>	i	< <i>*<sub>H</sub><sub>i</sub></i>	<i>*<sub>H</sub><sub>i</sub></i>	= PIE * <i>ī</i>
ee	< <i>*a<sub>H</sub><sub>1</sub></i>	e	< <i>*<sub>H</sub><sub>1</sub></i>	<i>*<sub>H</sub><sub>1</sub></i>	= PIE * <i>E</i> or * <i>ē</i> <sub>1</sub>
aa	< <i>*a<sub>H</sub><sub>2</sub></i>	a	< <i>*<sub>H</sub><sub>2</sub></i>	<i>*<sub>H</sub><sub>2</sub></i>	= PIE * <i>A</i> or * <i>ē</i> <sub>2</sub>
oo	< <i>*a<sub>H</sub><sub>3</sub></i>	o	< <i>*<sub>H</sub><sub>3</sub></i>	<i>*<sub>H</sub><sub>3</sub></i>	= PIE * <i>ō</i> or * <i>ē</i> <sub>3</sub>
uu	< <i>*a<sub>H</sub><sub>u</sub></i>	u	< <i>*<sub>H</sub><sub>u</sub></i>	<i>*<sub>H</sub><sub>u</sub></i>	= PIE * <i>ū</i>

In addition to colouring the vowel, the Proto-Tsimshian *\*<sub>H</sub>* element usually survives 1) as a glottal catch (*ʔ* or *h*) or glide (*ɨ* or *ʉ*) which follows the vowel; 2), as a glottal catch (*ʔ* or *h*) or glide (*ɨ* or *ʉ*) which spreads to syllable onset in a process not unrelated to IE *Schwebeablaut*, 3) as falling tone, represented by [áá], etc. (Dunn 1978 [1995]:vi, 1979a [1995]:3f, 2002; see also Sasama 2001:13-26, Tarpent 1992), or, 4) as some combination of the these.

Tsimshian manifests quantitative ablaut in verbs/adjectives to

distinguish between *iterative aspect–plural agreement (with absolutive)* and *punctual aspect–aorist tense–singular agreement*. The *iterative–plural* forms have lengthened-grade, i.e., \*a<sub>H</sub>, vocalism. The *static–past–singular* forms have zero-grade, i.e., \*H vocalism. If the source of *present tense* in Indo-European is *iterative aspect*, and the source of *aorist/past* is *static aspect* as suggested by Kuryłowicz (*op. cit.*), the Tsimshian and Indo-European verbal/adjectival ablaut systems are parallel in function. They are parallel in form as well: primitive IE present stems have *e*-vocalism (full grade) while aorist (static past) and verbal adjectives have zero-grade (Beekes 1995:228,235, 250).

The Tsimshian quantitative ablaut is well-documented in Boas (1911, 1912); Dunn (1978 [1995], 1979a [1995], 1979b; Tarpent 1983, 1992; Sasama 1995a, 1995b, 1998, 2001; Thompson 1984 and in the recent, community-generated dictionaries of the Sm'algayax Authority (2001) and the Wilp Wilxo'oskwhl Nisga'a (2001). The Tsimshian iterative–static ablaut extends to nouns as well. This paper illustrates the ablaut system with citations from Nisga'a (Wilp Wilxo'oskwhl 2001) and Sm'algayax (Dunn 1978 [1995]), representing two different branches of the Tsimshian family.

Tsimshian ablaut occurs both with and without reduplication. There are three basic types of construction: 1) stem ablaut without reduplication, 2) reduplication with lengthened-grade in the first duplicate syllable, 3) reduplication with lengthened-grade in the second duplicate syllable. Table 1 summarises the attested syllable nuclei for each type.

pre-IE (present)	*eĩ	*eE	*eA	*eQ	*eũ
		*eə <sub>1</sub>	*eə <sub>2</sub>	*eə <sub>3</sub>	
TS (iterative)	*aH <sub>i</sub>	*aH <sub>1</sub>	*aH <sub>2</sub>	*aH <sub>3</sub>	*aH <sub>u</sub>
type 1	ii,uu	ee,éé,aa	aa	-	úù
type 2	ii,fi	ee	aa,a <sup>7</sup>	oo	uu,iũ
type 3	ii	eə	aa	o	-
pre-IE (aorist)	*ĩ	*E	*A	*Q	*ũ
		*ə <sub>1</sub>	*ə <sub>2</sub>	*ə <sub>3</sub>	
TS (aorist)	*H <sub>i</sub>	*H <sub>1</sub>	*H <sub>2</sub>	*H <sub>3</sub>	*H <sub>u</sub>
type 1	i,e,a	a	a	-	ə
type 2	i,e,e,a	ə	i,e,a,∅	a,o,e,∅	a,e,∅
type 3	a	ɛ	a	ɪ	-

Table 1. TS attested ablaut forms with pre-IE equivalents.

4 **iterative–aorist ablaut without reduplication**

The  $*a_{H_i} \sim *H_i$  ablaut without reduplication (Table 2) is most common in Nisga'a, where it may still be productive. It is, however, archaic and rare in Sm'algyax.

	<u>pre-IE</u>	=	<u>TS</u>	
present	e-vocalism $*e\bar{i}$	=	$*a_{H_i} > ii, uu$	iterative–plural
aorist	zero-grade $*\bar{i}$	=	$*H_i > i, \emptyset, a$	static–aorist–singular

Table 2.  $*a_{H_i} \sim *H_i$  ablaut in stems without reduplication.

bii'l <  $*pa_{H_i}l$ , bi'l <  $*p_{H_i}l$

bii'l-ist, bi'l-ist 'star' (Nisga'a, Wilp Wilxo'oskwhl 2001, p. 21).

bii'ts <  $*pa_{H_i}ts$ , bi'ts <  $*p_{H_i}ts$

(an)lax-bii'ts-iixw, (an)x-bi'ts-axw 'afraid' (Nisga'a, Wilp Wilxo'oskwhl 2001, pp. 11, 110).

gii <  $*ka_{H_i}$ , gi <  $*k_{H_i}$

jaga-gii-laa'l, jaga-gi-laa'l 'watch (someone/thing) cross (a road/river)' (Nisga'a, Wilp Wilxo'oskwhl 2001, p. 87)

gii'nam <  $*ka_{H_i}nam$ , gi'nam <  $*k_{H_i}nam$

gii'nam, gi'nam 'give' (Nisga'a, Wilp Wilxo'oskwhl 2001, p. 43)

guuu <  $*ka_{H_i}$ , gah <  $*k_{H_i}$

ii-guuu, ii-gah 'halibut hook' (Sm'algyax, Dunn 1978 [1995], entry 2240)

gwii... <  $*k^w a_{H_i}...$ , gwi... <  $*k^w_{H_i}...$

gwii-nee-x-kw, gwi-nee-x-kw 'be cold' (Nisga'a, Wilp Wilxo'oskwhl 2001, p. 63)

lax-g<sup>w</sup> ii-də-ks, g<sup>w</sup>ə-t-k 'to be cold, have a cold' (Sm'algyax, Dunn 1978 [1995], entry 1106)

gwiila <  $*k^w a_{H_i}la$ , gwila <  $*k^w_{H_i}la$

gwiila, gwila 'blankets' (Nisga'a, Wilp Wilxo'oskwhl 2001, p.63)

gwiila-t'in, gwila-t'in 'to cover' (Nisga'a, Wilp Wilxo'oskwhl 2001, p. 63)

gwii'na <  $*k^w a_{H_i}na$ , gwi'na <  $*k^w_{H_i}na$

gwiilks-gwii'na, gwiilks-gwi'na 'ask for (something) back' (Nisga'a, Wilp Wilxo'oskwhl 2001, p. 60)

gwiix < \*k<sup>w</sup>a<sub>H</sub>i,x, gwix < \*k<sup>w</sup>H<sub>i</sub>x  
 gwiix-wok, gwix-wok 'sleep a lot' (Nisga'a, Wilp Wilxo'oskwhl 2001,  
 p. 64)

kw'ii... < \*k<sup>w</sup>a<sub>H</sub>i..., kw'i... < \*k<sup>w</sup>H<sub>i</sub>...  
 kw'iiniiskw, kw'iniiskw 'to bend over' (Nisga'a, Wilp Wilxo'oskwhl  
 2001, p. 108)

'nii' < \*na<sub>H</sub>i, 'na < \*n<sub>H</sub>i  
 gan-'nii'-lu-gwi, ga-'na-gwi 'length' (Nisga'a, Wilp Wilxo'oskwhl  
 2001, p. 52)

There is only one attested example of \*a<sub>H</sub>1 ~ \*H<sub>1</sub> ablaut without  
 reduplication (Table 3).

	<u>pre-IE</u>		<u>TS</u>	
present	e-vocalism	*eθ <sub>1</sub>	=	*a <sub>H</sub> 1 > ee, eè, aa
aorist	zero-grade	*θ <sub>1</sub>	=	*H <sub>1</sub> > a
				iterative-plural
				static-aorist-singular

Table 3. \*a<sub>H</sub>1 ~ \*H<sub>1</sub> ablaut without reduplication.

héèd < \*ha<sub>H</sub>1t, had < \*h<sub>H</sub>1t  
 la-héèd-iks ~ la-heed-iks ~ la-haad-iks, had-iks 'to swim, lit. go in water'  
 (Sm'algyax, Dunn 1978 [1995], entry 666)

The \*a<sub>H</sub>2 ~ \*H<sub>2</sub> ablaut in stems without reduplication (Table 4) and the  
 \*a<sub>H</sub>u ~ \*H<sub>u</sub> ablaut in stems without reduplication (Table 5) are also rare, one  
 example of each. There are no attested examples of \*a<sub>H</sub>3 ~ \*H<sub>3</sub> ablaut in stems  
 without reduplication.

	<u>pre-IE</u>		<u>TS</u>	
present	e-vocalism	*eθ <sub>2</sub>	=	*a <sub>H</sub> 2 > aa
aorist	zero-grade	*θ <sub>2</sub>	=	*H <sub>2</sub> > a
				iterative-plural
				static-aorist-singular

Table 4. \*a<sub>H</sub>2 ~ \*H<sub>2</sub> ablaut without reduplication

haana'k < \*ha<sub>H</sub>2n<sub>H</sub>q, hana'k < \*h<sub>H</sub>2n<sub>H</sub>q  
 haana'k, hana'k 'woman' (Nisga'a, Wilp Wilxo'oskwhl 2001, p. 74)

	<u>pre-IE</u>		<u>TS</u>	
present	e-vocalism	*eũ	=	*a <sub>H</sub> u > úú
aorist		*ũ	=	*H <sub>u</sub> > ø
				iterative-plural
				static-aorist-singular

Table 5. \*a<sub>H</sub>u ~ \*H<sub>u</sub> ablaut without reduplication.

lúù < \*la<sub>H<sub>u</sub></sub>, ləʔ < \*l<sub>H<sub>u</sub></sub>  
 lúù-wal, ləʔ-weel 'to drip' (Sm'algyax, Dunn 1987 [1995], entry 1100)

5 **reduplication with full-grade in the first duplicate syllable**

Reduplicated forms with lengthened-grade in the first duplicate syllable are archaic; the current productive form for reduplication, at least in Sm'algyax, has a reduced vowel in the first duplicate syllable. More recent stress assignment has resulted in distortions in the punctual-aorist (simple) inflection; the reduplicated (complex) forms manifest the more archaic zero-grade ablaut in the second duplicate syllable. This section accordingly compares the first and second syllables in the reduplicated forms, taking the second syllable as an archaic, relic form of the punctual-aorist.

The \*a<sub>H<sub>i</sub></sub> ~ \*H<sub>i</sub> ablaut in reduplicated forms, where \*a<sub>H<sub>i</sub></sub> occurs in the first duplicate syllable and \*H<sub>i</sub> in the second (Table 6), though not common, do occur in both Nisga'a and Sm'algyax.

	<u>pre-IE</u>	<u>TS</u>	
present	e-vocalism *eĩ	= *a <sub>H<sub>i</sub></sub> > ii, ñ	iterative-plural
aorist	zero-grade *ĩ	= *H <sub>i</sub> > i, e, ə, a	static-aorist-singular

Table 6. \*a<sub>H<sub>i</sub></sub> in the first duplicate syllable

dii < \*ta<sub>H<sub>i</sub></sub>, di < \*t<sub>H<sub>i</sub></sub>  
 lu-xw-dii-di-x, xw-da-x 'to be hungry' (Nisga'a, Wilp Wilxo'oskwhl 2001, p. 189)  
 la-kw-dii-di, kw-dii 'to be hungry' (Sm'algyax, Dunn 1978 [1995], entry 1010)

hlii < \*ta<sub>H<sub>i</sub></sub>, hli < \*t<sub>H<sub>i</sub></sub>  
 galksi-kw-hlii-hli-k, galksi-kw-hla-k '(garment) to be inside out'  
 (Nisga'a, Wilp Wilxo'oskwhl 2001, p. 49)

hlii < \*ta<sub>H<sub>i</sub></sub>, hli < \*t<sub>H<sub>i</sub></sub>  
 †il < \*ta<sub>H<sub>i</sub></sub>, †e < \*t<sub>H<sub>i</sub></sub>-  
 hlii-hli-k, hla-k 'to bend' (Nisga'a, Wilp Wilxo'oskwhl 2001, p. 82)  
 †il-†e-k, †e-k 'to bend' (Sm'algyax, Dunn 1978 [1995] entry 1279)

nii < \*na<sub>H<sub>i</sub></sub>, ni < \*n<sub>H<sub>i</sub></sub>  
 ga-nii-ni-ks-kw, na-ks 'spouse' (Nisga'a, Wilp Wilxo'oskwhl 2001, p. 52)

phlii, plii < \*pla<sub>H<sub>i</sub></sub>, hli, pte < \*pl<sub>H<sub>i</sub></sub>  
 phlii-hli-k-sk, pla-k-sk 'to be tired' (Nisga'a, Wilp Wilxo'oskwhl 2001, p. 142)

plii-plø-k-sk, plø-k-sk ‘to be exhausted’ (Sm’algyax, Dunn 1978 [1995] entry 1601)

There is but one example of  $*aH_1 \sim *H_1$  ablaut with lengthened-grade in the first duplicate syllable ( Table 7).

	pre-IE	TS	
present	e-vocalism $*e\partial_1 =$	$*aH_1 > ee$	iterative-plural
aorist	zero-grade $*\partial_1 =$	$*H_1 > \emptyset$	static-aorist-singular

Table 7.  $*aH_1$  in the first duplicate syllable

see  $< *saH_1, s\partial < *sH_1$

see-sø-χ, sø-q ‘to be sharp’ (Sm’algyax, Dunn 1978 [1995], entry 1637)

Note also (below) søχ-saa-søχ ‘thornbush’ (Sm’algyax, Dunn 1978 [1995], entry 1637)

The  $*aH_2 \sim *H_2$  ablaut with lengthened grade in the first duplicate syllable (Table 8) is fairly common in Nisga’a but somewhat rare in Sm’algyax.

	pre-IE	TS	
present	e-vocalism $*e\partial_2 =$	$*aH_2 > aa, a^?$	iterative-plural
aorist	zero-grade $*\partial_2 =$	$*H_2 > i, e, a, \emptyset$	static-aorist-singular

Table 8.  $*aH_2$  in first duplicate syllable.

baa  $< *paH_2, ba < *pH_2$

ga-baa-ba-k<sub>skw</sub>, ga-ba-k<sub>skw</sub> ‘struggle wildly’ (Nisga’a, Wilp Wilxo’oskwhl 2001, p. 45)

daa  $< *taH_2, da < *tH_2$

axgam-daa-da-x-kw, axgam-da-x-kw ‘unclean’ (Nisga’a, Wilp Wilxo’oskwhl 2001, p. 15)

daa  $< *taH_2, da < *tH_2$

ksi-kws-daa-daks, ksi-kws-daks ‘to leave (a place)’ (Nisga’a, Wilp Wilxo’oskwhl 2001, p. 94)

kws-daa-daks, kws-daks ‘to leave, abandon’ (Nisga’a, Wilp Wilxo’oskwhl 2001, p. 106)

hlaa  $< *taH_2, *hla < *tH_2$

hi-hlaa-hla-k, hi-hla-k ‘break’ Nisga’a, Wilp Wilxo’oskwhl 2001, p. 74 (see also hlak, hillhlik ‘bend’)

- $k'aa < *qa_{H_2}$ ,  $'a < *t_{H_2}$   
 $k'aa-'a-x$ ,  $k'a-k$  'to open' (Nisga'a, Wilp Wilxo'oskwahl 2001, p. 103)
- $laa < *la_{H_2}$ ,  $la < *l_{H_2}$   
 $laa-la-k$ ,  $la-k$  'fish' (Nisga'a, Wilp Wilxo'oskwahl 2001, p. 111)
- $laa < *la_{H_2}$ ,  $la < *l_{H_2}$   
 $laa-la-ks$ ,  $la-ks$  'to bathe' (Nisga'a, Wilp Wilxo'oskwahl 2001, p. 112)  
 $galdim-laa-la-ks$ ,  $galdim-la-ks$  'bathtub' (Nisga'a, Wilp Wilxo'oskwahl 2001, p. 48)
- $laa < *la_{H_2}$ ,  $hla < *l_{H_2}$   
 $ks-laa-hla-ks$ ,  $ks-la-ks$  'kick' (Nisga'a, Wilp Wilxo'oskwahl 2001, p. 96)
- $'maa < *ma_{H_2}$ ,  $'ma < *m_{H_2}$   
 $'maa-'ma-ks$ ,  $'ma-ks$  pants (Nisga'a, Wilp Wilxo'oskwahl 2001, p. 131)
- $naa < *na_{H_2}$ ,  $na < *n_{H_2}$   
 $naa-na-x$ ,  $na-x$  'snowshoe' (Nisga'a, Wilp Wilxo'oskwahl 2001, p. 134)
- $naa < *na_{H_2}$ ,  $\eta < *n_{H_2}$   
 $ha-naa-\eta-q$ ,  $ha-na'a$  'woman' (Sm'algyax, Dunn 1978 [1995], entry 754)
- $naa < *na_{H_2}$ ,  $na' < *n_{H_2-q}$   
 $naa\eta < *na_{H_2}$ ,  $n\theta < *n_{H_2-q}$   
 $naa-na'-k$ ,  $na'-k$  'a dress' (Nisga'a, Wilp Wilxo'oskwahl 2001, p. 134)  
 $naa\eta-n\theta\chi \sim ga-naa\eta-n\theta\chi$ ,  $na\eta\chi$  'a dress' (Sm'algyax, Dunn 1978 [1995], entry 1467)
- $naa\eta$ ,  $na\eta\theta < *na_{H_2}$ ,  $n\theta < *n_{H_2}$   
 $kw\eta-naa\eta-n\theta-\chi-t$  'to break into pieces' (Sm'algyax, Dunn 1978 [1995], entry 1020)  
 $kw\eta-na\eta\theta-n\theta\chi$  'to be broken' (Sm'algyax, Dunn 1978 [1995], entry 1020)
- $paa < *pa_{H_2}$ ,  $pi < *p_{H_2}$   
 $\chi-paa-pi-k$ ,  $\chi-paa-k$  'to fold' (Sm'algyax, Dunn 1978 [1995], entry 2159)
- $saa < *sa_{H_1}$ ,  $s\theta < *s_{H_1}$   
 $s\theta\chi-saa-s\theta\chi$  'thornbush' (Sm'algyax, Dunn 1978 [1995], entry 1637)  
*Note also (above) see-s\theta-\chi*,  $s\theta-q$  'to be sharp' (Sm'algyax, Dunn 1978 [1995], entry 1637)



ts'aa < \*tsa<sub>H2</sub>, ts'a < \*ts<sub>H2</sub>  
 ga-ts'aa-ts'a-χ, ts'a-q 'nose' (Sm'algyax, Dunn 1978 [1995], entry 1912)

waʔ < \*üa<sub>H2</sub>, wə < \*ü<sub>H2</sub>  
 wáʔwəχ, wáʔa 'to bury, dig' (Sm'algyax, Dunn 1978 [1995], entry 2015)

The \*a<sub>H3</sub> ~ \*<sub>H3</sub> ablaut (Table 9) is fairly common in Nisga'a, but quite rare in Sm'algyax.

	pre-IE	TS	
present	e-vocalism *e <sub>3</sub> =	*a <sub>H3</sub> > oo	iterative-plural
aorist	zero-grade *ə <sub>3</sub> =	* <sub>H3</sub> > a, o, ə, Ø	static-aorist-singular

Table 9. \*a<sub>H3</sub> in first duplicate syllable.

k'oo < \*qa<sub>H3</sub>, 'o < \*q<sub>H3</sub>  
 ksa-k'oo-'o-x, ksa-k'o-k 'pull out' (Nisga'a, Wilp Wilxo'oskwahl 2001, p. 91)

loo < \*la<sub>H3</sub>, la, l < \*l<sub>H3</sub>  
 gil<sub>k</sub>'a-loo-la-k, gil<sub>k</sub>'a-l-lo-k 'rotten' (Nisga'a, Wilp Wilxo'oskwahl 2001, p. 37)  
 loo-la-k, lo-k 'to rot' (Nisga'a, Wilp Wilxo'oskwahl 2001, p. 117)  
 lóð-l-t, lo-q 'to be rotten' (Sm'algyax, Dunn 1978 [1995], entry 1183)

loo < \*la<sub>H3</sub>, l < \*l<sub>H3</sub>  
 loo-l-g-ask, lo-g-ask 'to be wet' (Sm'algyax, Dunn 1978 [1995], entry 1182)

moo < \*ma<sub>H3</sub>, ma' < \*m<sub>H3</sub>  
 di-moo-ma'-k, di-mo'k 'do (something) silently' (Nisga'a, Wilp Wilxo'oskwahl 2001, p. 28)

moo < \*ma<sub>H3</sub>, ma' < \*m<sub>H3</sub>  
 moo-ma'-k, mo'-k 'have in one's mouth' (Nisga'a, Wilp Wilxo'oskwahl 2001, p. 129)

moo < \*ma<sub>H3</sub>, ma < \*m<sub>H3</sub>  
 hm-moo-ma-χ 'smile' (Sm'algyax, Dunn 1978 [1995], entry 802)  
 Note also ga-m-moo'-ma-x, m-mo'-m-x 'smile' (Sm'algyax Authority 2001, p.145)

noo < \*na<sub>H3</sub>, na < \*n<sub>H3</sub>  
 noo-na-x-kw, no-x 'mother' (Nisga'a, Wilp Wilxo'oskwahl 2001, p. 135)

noo < \*na<sub>H3</sub>, na'a < \*n<sub>H3</sub>  
 galksi-noo-na'a, galksi-no'o 'hollow, have a hole' (Nisga'a, Wilp  
 Wilxo'oskwhl 2001, p. 49)  
 k'an-noo-na'a, k'an-no'o 'be open, unlocked' (Nisga'a, Wilp  
 Wilxo'oskwhl 2001, p. 102)

ts'oo < \*tsa<sub>H3</sub>, ts'ə < \*ts<sub>H3</sub>  
 ts'oo-ts'ə-χ-t, ts'oo 'to split open, pull out of a skin' (Sm'algyax, Dunn  
 1978 [1995], entry 1968)

woo < \*ūa<sub>H3</sub>, wa < \*ū<sub>H3</sub>  
 woo-wa-k, wo-k 'to sleep' (Nisga'a, Wilp Wilxo'oskwhl 2001, p. 185)

īoo < \*īa<sub>H3</sub>, īə < \*ī<sub>H3</sub>  
 yoo < \*īa<sub>H3</sub>, 'o < \*ī<sub>H3</sub>  
 īoo-īə-ks, īoo-ks 'to wash' (Sm'algyax, Dunn 1978 [1995], entry 2239)  
 yoo-'o-ks, yo-'o-ks 'to wash' (Nisga'a, Wilp Wilxo'oskwhl 2001,  
 p. 198)

The \*a<sub>H<sub>u</sub></sub> ~ \*H<sub>u</sub> ablaut (Table 10) is rare with only one attested form  
 each in Nisga'a and Sm'algyax.

	pre-IE		TS
present	e-vocalism	*eǔ =	*a <sub>H<sub>u</sub></sub> > uu, iǔ iterative-plural
aorist	zero-grade	*ǔ =	*H <sub>u</sub> > a, ə, ∅ static-aorist-singular

Table 10. \*a<sub>H<sub>u</sub></sub> in first duplicate syllable.

niū < \*na<sub>H<sub>u</sub></sub>, nə, n < \*n<sub>H<sub>u</sub></sub>  
 ga-niū-nə-ks ~ Ga-niū-n-skt, naks 'spouse' (Sm'algyax, Dunn 1978  
 [1995], entry 1496)

ts'uu < \*tsa<sub>H<sub>u</sub></sub>, ts'a < \*ts<sub>H<sub>u</sub></sub>  
 ts'uu-ts'a'waks, ts'a'waks 'a pair of shoes' (Nisga'a, Wilp Wilxo'oskwhl  
 2001, p. 177)

## 6 lengthened-grade in the second duplicate syllable

Ablaut with lengthened-grade in the second duplicate syllable is quite  
 rare. Later stress rules have reduced prominence in first duplicate syllables. As  
 a result analogical levelling has largely obscured the ancient, second duplicate  
 syllable lengthened-grade ablaut. The old ablaut here is only evident when the  
 second duplicate syllable is stronger than the simple, i.e., non-reduplicate,  
 stem. There are only four documented examples from Dunn 1978 [1995] and

Wilp Wilxo'oskwhl 2001, one each with \*H<sub>i</sub>, \*H<sub>1</sub>, \*H<sub>2</sub>, and \*H<sub>3</sub> grade.

'nii' < \*naH<sub>i</sub>, 'na < \*nH<sub>i</sub>  
ga-n-'nii'-lu-gw-i, ga-'na-gw-i 'length' (Nisga'a, Wilp Wilxo'oskwhl  
2001, p. 52)

g<sup>w</sup>εəl < \*k<sup>w</sup>aH<sub>1</sub>l, g<sup>w</sup>εl < \*k<sup>w</sup>H<sub>1</sub>l  
g<sup>w</sup>ɪlə-g<sup>w</sup>εəl-k, g<sup>w</sup>εl-k 'to make burn' (Sm'algyax, Dunn 1978 [1995], entry  
512)

g<sup>w</sup>aas < \*k<sup>w</sup>aH<sub>2</sub>s, g<sup>w</sup>as < \*k<sup>w</sup>H<sub>2</sub>s  
g<sup>w</sup>əs-g<sup>w</sup>aas-k, g<sup>w</sup>as-k 'borrow' (Sm'algyax, Dunn 1978 [1995], entry 510)

lob... < \*laH<sub>3</sub>p..., lɪb... < \*lH<sub>3</sub>p...  
lək-lobr-ts'au, lɪb-ts'au 'kidney' (Sm'algyax, Dunn 1978 [1995], entry  
1141)

## 7 summary

The Tsimshian languages exhibit archaic and relic ablaut forms that are phonologically similar to ablaut in several Indo-European languages. The Tsimshian lengthened–reduced grade contrast that marks iterative vs. punctual-past is congruent, both in form and function, with the pre-IE *e*-vocalism vs. zero-grade found in present (< \*iterative) and aorist (< \*static) respectively. Tsimshian ablaut, in the context of pre-IE morphology, is extremely conservative, manifesting as it does, not only the same vowel grades and sonant-laryngeal colourings, but also overt reflexes of the sonant coefficients, sonants and laryngeals, hypothesised by Saussure (1879) and Møller (1987).

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