Tsimshian syllable devolution[1]

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Abstract: A Tsimshian natural class of sounds, {[ʔ], [h], [r], [l], [j], [w]}, in syllable coda position, often significantly alters syllable structure by losing certain phonetic features while spreading/copying them to onset and peak. This spreading/losing (transference) of features (devolution) occurs in stages, often giving individual lexical items several surprising variants.

Keywords: phonology, feature spreading/copying, feature loss, devolution, variability

1 The spread of syllable coda features

There is a pervasive tendency in Tsimshian for syllable coda elements (features and whole segments) to spread/copy in stages to syllable onset, 'strengthening' the onset and coloring the syllable peak along the way. The coda subsequently 'weakens' also in stages. See Figure 1.

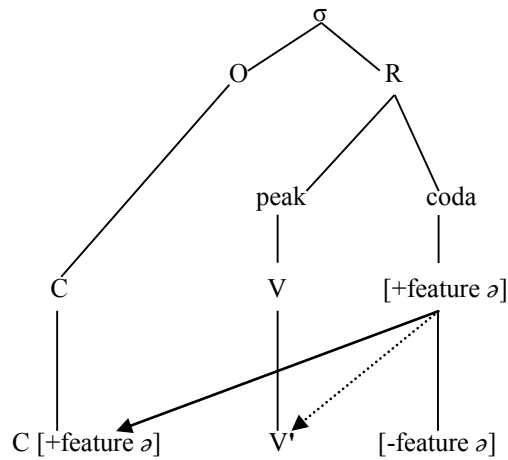

Figure 1 The spread/loss of coda features

This was both a synchronic and diachronic process (continuum) at least into the 1980s. Individual lexical items differed in the same speaker from time to

[1] Devolution: 1. A passing down or descent through successive stages of time or a process. 2. Transference, as of rights or qualities, to a successor. 4. A transfer of powers from a central government to local units. *The free dictionary by Farlex* (2003–2015), http://www.thefreedictionary.com/devolution.

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time, from speaker to speaker and from dialect to dialect as to where they were in this continuum or staging process. This resulted in an unusually rich variation in many single lexical roots or stems. This variability, documented in Dunn (1978), is confirmed by Dale Kinkade in a personal communication some years ago after he had taught a field methods course with a Gitxsen speaker. Matthews (2001) also records significant variability in Gitxsen.

2 Syllable diversity and staging

The lexical root/stem for the verb 'to tear, tear up, tear out' shows this diversity.

(1) *bāºχ, baχ-bāʔqal* 'to tear [out]' (Boas 1912:262, hence B262)[2]
beʔəχ, beHχ, beeχ 'to tear, tear up' (Dunn 1978, entry #151, hence D151)
pʔēºG-al 'to tear out and turn over' (B263)
pʔeeG-l, pʔeeG-n 'tear out and turn over' (D1595)

Figure 2 represents the spread of the laryngeal to the onset, changing [b] to [pʔ], and the spread of the feature [-low] to the vowel, [ā] becoming [ē].

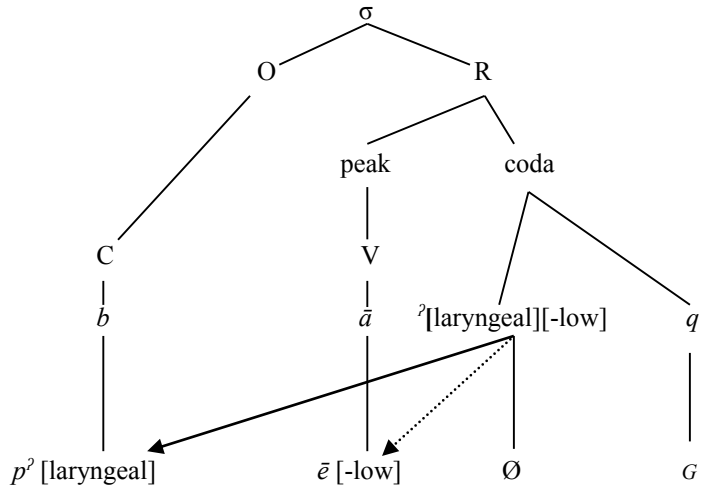

Figure 2 *baʔq > ... > pʔēG*

I interpret the staging, i.e., development in stages, devolution, of this lexical item as *baʔq > bāºχ > beʔəχ > beHχ > bēχ* and alternate *baʔq > pʔēºG > pʔēG*. The laryngeal feature of the coda [-ʔq] causes the vowel to lengthen, *baʔq > bāºx,* stage one. Then the laryngeal moves into the peak and the vowel

[2] Boas used the superscript symbol ᵒ to represent a weakened secondary vowel or a glottal stop (1911:68). The [H] in Dunn (1978) is the same as Boas' [ºʰ], but representing only the weakened secondary vowel, i.e., a reduced vowel, tending toward [ə] and with a falling tone. In CODA position, [q], [χ], and [G] are free variants.

assimilates the [-low] feature of the laryngeal, *bāᵒχ* > *beʔəχ,* stage two. The laryngeal feature is then lost, leaving the reduced, falling tone [H], *beʔəχ* > *beHχ*, stage three. Finally the [eH] becomes a simple long vowel, *beHχ* > *bēχ,* stage four. In the alternate staging, the laryngeal spreads to onset, raising and lengthening the vowel, *baʔq* > *pʔēᵒG*, alternate stage one. Then the laryngeal is lost in the coda, *pʔēᵒG* > *pʔēG*, alternate stage two.

This staging pattern is typical of a large number of lexical items.

(2) *hāᵒx* 'goose' (B261)
haaʔq, haʔq, haʔx, haʔax, haʔa 'goose' (D641)
staged *haʔq* > *haaʔq* > *hāᵒx* > *haʔax* > *haʔa*

3 Staging and semantic development

In some instances the different stages carry modifications in meaning:

(3) *dzēᵒs* 'grandmother' (B270)
na-Gan-dzēᵒs-k 'ancestress' (B270)
dziʔis 'grandmother' (D262)
na-Gan-dziʔis-k 'ancestresses' (D1483)
tsʔiʔi **'**grandmother' (D1931)
staged thus *dzēᵒs* > *dziʔis* > *tsʔiʔi*

(4) *Gāᵒb* 'scratch' (B278)
Gap-Gāᵒp!-El 'rake, scratch' (B278)[3]
kʸʔaap-n 'scrape; scraped' (D1039)
Gaap-k 'rake, scratch' (D291)
staged *Gāᵒpʔ* > *Gāᵒb* > *kʸʔāp* > *Gāp*

4 Dialect boundaries

4.1 Dialects and sources

The sources for Coast Tsimshian (*Sm'algyax*) in this paper are Boas (1911, 1912), Dunn (1978/1995), and the Ts'msyeen Sm'algyax Language Authority (2001). Much of this material is repeated with additional data in Anderson et al. (2013). The sources for Southern Tsimshian (*Sgüüχs*) are the field notes of Nislaus and Dunn (1976–1981). The source for *Gitxsen* is Matthews (2001). The sources for *NisGa'a* are Tarpent (1986) and Williams and Rai (2001).

4.2 Syllable devolution across dialect boundaries

The progressive staging of syllable coda features-spread (devolution) can cross dialect boundaries, and is therefore diachronic.

[3] Boas' [E] is "an obscure, weak vowel, as in *flower*" (Boas 1912:67).

(5) *bāᵒ* ‘to run’ (B262)
baah, baH ‘to run’ (D123)
baχ ‘to run’, Gitxsen (Mathews 2001:7, hence G7)
baχ ‘run’, NisGa'a (Williams & Rai 2001:18, hence N18; Tarpent 1986:413, hence T413)
bah-an ‘make run, e.g., start an engine’, Southern Tsimshian (Nealaus and Dunn 1976–1981, hence S9/76)
staged *baH* > *bāᵒ* > *bāh* > *baχ*

See Figure 3. The sounds [H], [ᵒ], and [h] are variants of the continuant laryngeal. The loss of the laryngeal and [-back] features in coda results in [h] becoming [χ]. This analysis makes the claim that laryngeal sounds are stronger than consonantal fricatives. Whereas [h] can be predicted as a source of [χ], the reverse is not true; [h] cannot lose the feature [-back] without all the other features of a consonant filling in, but for [χ] to become [-back] simply results in another fricative, not a laryngeal.

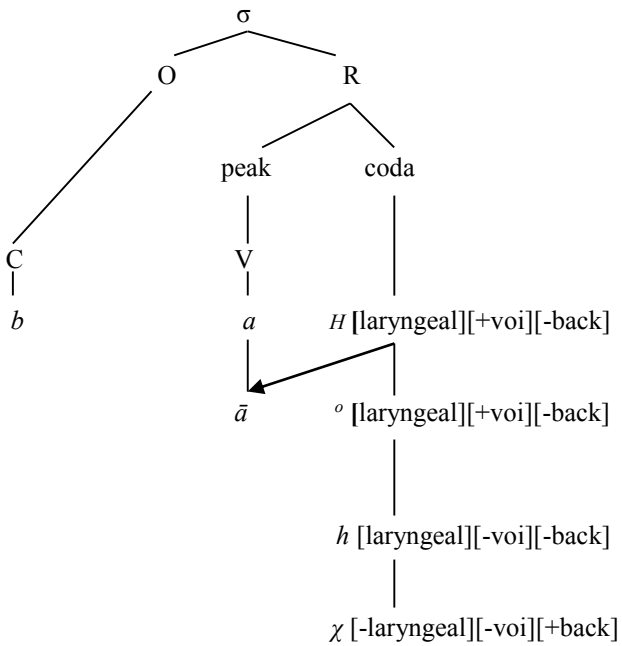

Figure 3 *baH* > *bāᵒ* > *bāh* > *baχ*

(6) *biāl-s* ‘star’ (B263)
biyaal-s, biyeel-s ‘star, i.e. it flashes forth, shines’ (D162)
biyaʔal-s ‘star’ (S9/79)
bil-'u-s-t ‘star’ (G11)
bil-'i-s-t ‘star’ (N21, T414)
staged *biāl-s* > *biyaal-s* > *biyaʔal-s* > *biyāl-s* > *biyēl-s* > *bil-ʔi-s-t* > *bil-ʔu-s-t*

(7) *mâºn* ‘the salt water, sea, salt’ (B264)
moHn ‘the sea’ (D1445)
ʔmoon ‘salt’ (Ts'msyeen Sm'algyax Language Authority 2000:146, hence L146)
moʔon ‘salt’ (S9/76)
moʔon ‘salt’ (G81)
moʔon ‘salt’ (N129, T447)
staged *mâºn* > *moHn* > *moʔon* > *ʔmōn*

5 Unusual consequences of syllable devolution

The spread and loss of features can account for [p] becoming [m], [l] becoming [ɬ], and [ɬ] becoming [s].

5.1 Devolution: [+voi][+son] > [-voi][-son]

The spread of features [+voi][+son] from coda to onset can derive [ʔm] from onset [pʔ]. The subsequent loss of the same features in coda can derive [ɬ] from [l]. See Figure 4.

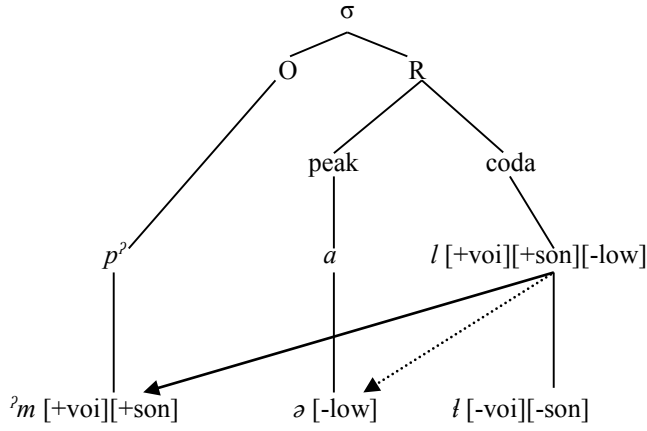

Figure 4 [*m*] derived from [*p*], and [*ɬ*] from [*l*]

The features [+voi][+son] copy from coda [l] to onset, changing [p**ʔ**] to [ʔm]. The feature [-low] copies to the vowel, changing [a] to [ə]. Coda [l] loses the features [+voi] [+son], changing [l] to [ɬ].

(8) *pʔal* ‘button’ (B263)
pʔaʔla in *ni-pʔaʔla* ‘abalone shell button, i.e. it glitters’ (D1539)
pʔəɬ in *pʔəɬ-muu* ‘earring (*muu* ‘ear’)’ (D1589)
ʔmal ‘to button (something)’ (N130)
staged *pʔaʔla* > *pʔal* > *pʔəɬ* and *ʔmal*

(9) *pʔūº, pʔūº-l* ‘scatter’ (B263)
pʔūº-tk ‘steam, scattered’ (B263)
pʔuH-tk ‘scattered, steam, i.e., it blows out’ (D1613)
pʔuH, pʔuH-l ‘scatter’ (D1613)
pʔui-ɬ-k ‘get out of the way’ (D1611)
ʔmi-txw ‘scattered all over the place’ (G118)
ʔmi-tkw ‘scattered’ (N132)
staged *pʔūº* > *pʔuH* > *ʔmi* and *pʔūº-l* > *pʔui-ɬ*

5.2 Devolution: [+lat] > [-lat]

Some lexical items show [s] derived from [ɬ]. See Figure 5.

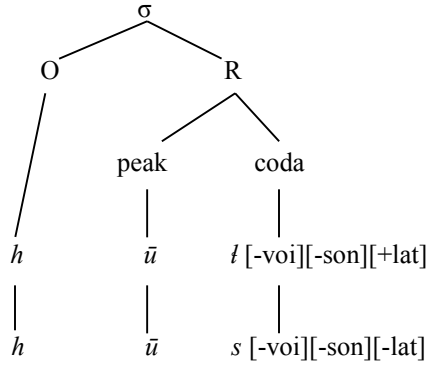

Figure 5 [+lat] > [-lat], [s] derived from[ɬ]

Coda [ɬ][-voi][-son][-low][+lat] gives up its feature [+lat], coda [ɬ] becoming [s] [-voi][-son][-low][-lat], *hūɬ-en-s, hūs* ‘hellebore root’.

(10) *hūºɬ-En-s* ‘hellebore’ (B262)
hūºs root’ (B262)
huHɬ-n-n ‘poisonous root, used for medicine’ (D823)
hūs, hūs-t ‘root’ (D43)
hūɬ-en-s ‘hellebore’ (L85)
staged *hūºɬ* > *hūºs* and *hūºɬ* > *huHɬ* > *hūɬ* > *hūs*

(11) *diHɬ in Ga-diHɬ-g-m-was* ‘fringed blanket’ (D310)
dīɬ in *Ga-dīɬ-gm-was* ‘fringed blanket’ (L50)
dīs in *Ga-dīs-k* ‘braid one’s hair in one braid on the side of the head’ (D311)
diHs in *qʔa-diHs-k* ‘a braid; esp. in one braid on the side of the head’ (D311)
dīɬ in *Ga-dīɬ -g-m-wəs* ‘fringed blanket’ (L50)
dīs in *k’a-dīs-k, k’a-dēs* ‘braid’ (L103)
staged *diHɬ > dīɬ > diHs > dīs*

(12) *dukʷɬ-Gn* ‘drown’ (D227)
*dakʷɬ-G*n ‘drown’ (L20)
dukʷɬ-inχ ‘suffocate, drown’ (G19)
dukʷs-gum-naaɬ-q ‘be out of breath’ (N30, T417)
dukʷs-kw ‘run out of supplies’ (N30, T417)
staged *dukʷɬ > dukʷs*

It is clear that the Tsimshian [s] is related to [ɬ] for it maintains the contact between the lateral edges of the tongue and the roof of the mouth, the difference being that air exits the mouth across the top of the tongue rather than along the sides of the tongue. The [ɬ] becomes [s] by holding all articulators the same except simply lowering the tip of the tongue from its contact with the roof of the mouth.[4] The Tsimshian [s] is variously heard as something between English [s] and [ʃ].

6 Devolution initiators, a natural class

The coda elements that most frequently copy to onset are [ʔ], [h], [r], [l], and post vocalic or glide [j] and [w]. These form a natural class of devolution initiators. They are approximant sonorants.[5]

The Tsimshian laryngeal [ʔ] is very soft in comparison to glottal stops in the neighboring languages, and often becomes a suprasegmental as something approximating very soft creaky voice.

6.1 Glottal approximant [ʔ]

(13) *Gāᵒ, qʔāᵒ* ‘cane’ (B278)
qʔāᵒ-d ‘shaft of a lance’ (B279)
qʔaʔa-t ‘a cane’ (D853)
staging *Gāᵒ > qʔāᵒ > qʔaʔa*

[4] Boas (1912:68) said the Tsimshian [s] is lateral.
[5] There is considerable disagreement as to whether the laryngeals [ʔ] and [h] are sonorant or approximant. In Tsimshian, the laryngeals behave like the other sonorant approximants, or rather, the sonorant approximants behave like the laryngeals.

(14) *Gats^{ʔ}a-ɬ* ‘to swallow’ (D427)
q^{ʔ}adza-ɬ ‘swallow’ (B279)
q^{ʔ}adzā, *q^{ʔ}adzā-ɬ* ‘to swallow’ (D860)
k^{ʔ}adza-ɬ ‘to swallow’ (S9/76)
staging *Gats^{ʔ}a* > *q^{ʔ}adza* > *k^{ʔ}adza*

(15) *gū$'^{o}$p!El* ‘two round objects’ (B274)
gu^{ʔ}pl, guu^{ʔ}pl ‘two (general number)’ (D498)
q^{ʔ}ōp-sχn ‘two (of long objects)’ (D939)
Gôp-sχan ‘two long ones’ (B280)
gulba ‘double’ (B274)
staging *gū^{ʔ}p-l* > *q^{ʔ}ōp*

(16) *daχ-iā°g^{w}a* ‘hold firmly’ (B265)
daχ-yaHg^{w}a ‘hold fast, hold tight’ (D206)
t^{ʔ}aχ-yak^{w} ‘hold’ (D1841)
staging *daχ-iā°g^{w}a* > *daχ-yaHg^{w}a* > *t^{ʔ}aχ-yak^{w}*

6.2 Glottal approximant [*h*]

Coda [*h*] spreads to onset its laryngeal property as [^{ʔ}].

(17) *Gan-dah, Gan-deh* ‘skate, ray (fish)’ (D388)
Gandah, Gandeh, q^{ʔ}andah ‘skate; ray’ (L58)
staging *Gandah* > *q^{ʔ}andah*

(18) *nah g^{y}ig^{y}aanx^{y}* ‘upstream’ (S9/76)
^{ʔ}nah-, *^{ʔ}na-* ‘direction toward’ (L154)
staging *nah* > *^{ʔ}nah-* > *^{ʔ}na-*

(19) *GaH*, *Ga*h ‘come’ (D277)
q^{ʔ}ah ‘come’ (D863)
staging *GaH* > *Gah* > *q^{ʔ}ah*

(20) *Gooy-pah, Goy-p* ‘bright, moon’ (D488)
Gôe-p^{ʔ}a ‘light’ (B280)
Goy-^{ʔ}pa ‘daylight’ (D488)
Goy-p^{ʔ}a ‘daylight, brightness’ (L67)
Gooy-^{ʔ}pa ‘light’ (S9/76)
Goy-^{ʔ}maχ, goy-p^{ʔ}maχ ‘bright’ (G35)
Goy-p^{ʔ}aχ ‘(light) be bright’ (N57, T424)
staging *Gooy-pah* > *Gooy-^{ʔ}pa* > *goy-p^{ʔ}maχ* > *Goy-^{ʔ}maχ*

6.3 Coda [*r*]

Boas used the symbol [r] in only a handful of words. He characterizes his [r] as “a very weak, strongly sonorant middle palatal trill” (Boas 1912:68). This is

equivalent to or became Dunn's [ɯ], a high, back, unround, continuant, sonorant glide.

In the word *dEr* 'to die', the [r] spreads its [+high][-rnd] features to the syllalble peak and lengthens it, [E] becoming [üü]. Then [r] disappears, *dEr* > *düü*. In some instances it weakens by losing its sonorant approximant, voicing and unround properties, becoming [x^{w}]. Then the [+rnd] feature spreads to the vowel, *dax^{w}* > *dō*.

(21) *dEr* 'dead, to die, plural' (B265)
düü 'dead, to die, plural agreement' (D244)
*do*o 'to put down, lay down' (D1686)
dax^{w} 'die, plural' (N24, T415)

The [r] in word *ksEr* 'to go out' behaves in much the same way.

(22) *ksEr* 'to go out' (B275)
ksâχ 'to go out' (B275)
ksüü 'to go out (singular)' (D989)
ksooχ 'to go out (plural)' (D989)

In *sger* 'to lie on, to set down, place', the [r] colors and lengthens the vowel as before.

(23) *sger* 'to lie (be lying on)' (B270)
sgii, sgüü 'be lying on, put down, place' (D1681, 1686)

In *łErdEr* 'keep, preserve' the [r] in the second syllalble colors and lengthens the vowel as above. But the [r] in the first syllable behaves like, becomes [ʔ]: *łEr* > *łuʔə* > *łuH* > *łū*.

(24) *łErdEr* 'keep, preserve' (B283)
łuʔədüü '*keep*, preserve, i.e., keep hidden' (D1347)
n-łuHt 'be under' (D1551)
łuudk, łut'ak 'keep, look after, treasure, prize' (L137)
łuut'uxw 'cherish, treasure, value' (N83, T432)

6.4 Coda [l]

Coda [l] behaves like or becomes [ʔ].

(25) *lEbElt-* 'against' (B281
lEbElt-wālks 'enemy' (B281)
lib-ilt-waltk 'enemy' (D1142)
līᵘp!El 'tear up' (B282)
liʔəʔp-l 'tear up' (D1139)
staging *lib-ilt* > *lEbElt* > *līᵘpʔEl* > *liʔəʔpl*

(26) *matχa-laal-t* ‘snake’ (D1407)
lal-t ‘worm, snake’ (N110, T439)
lal-t-kw ‘be slow’ (N110, T439)
lāᵒlt ‘snake’ (B282)
lāᵒlt-k ‘slow’ (B282)
laHl-t, laal-t ‘worm, slow’ (D1066)
staging *lalt* > *lāᵒlt* > *laHlt* > *lālt*

(27) *Gôli* ‘scalp’ (B280)
qʔōl-i ‘scalp’ (D932)
Gōl-i ‘scalp, hair’ (L67)
Gol-x ‘skull’ (N57, T424)
staging *Gol* > *Gōl, Gqʔōl*

(28) *Gol* ‘to run (plural agreement)’ (D474.1)
q!ôł, Gâł ‘run (plural)’ (B280)
qʔol ‘to run (plural agreement)’ (D916)
qʔoł ‘to run (plural)’ (L107)
staging *Gol* > *qʔol* > *qʔoł*

6.5 [j]-glide

The [j]-glide is not strictly speaking a coda element, but it follows the peak vowel and behaves in the same way as the coda sources of devolution. The [j]-glide behaves like or becomes [ʔ].

(29) *hëtk* ‘to stand’ (B261)[6]
hai-tk, haai-tk ‘stand up (intransitive)’ (D659)
hāi-tgi ‘stand up (intransitive)’ (S9/20/79)
haaʔi-ti-sk ‘house posts’ (D658)
haʔy-ti-sk ‘house posts’ (L82)
staging *haj* > *haʔj* > *hāʔj* > *hāj*

(30) *Gai-ak* ‘grey (colour)’ (D452)
Gay-ak, Gay-aak ‘grey (colour)’ (L65)
qʔai-a-dzen ‘grey snapper’ (D47)
qʼay-a-dzen ‘grey snapper’ (L106)
staging *Gaj* > *qʔaj*

[6] Boas’ [ë] is [aj] (Boas 1912:67).

(31) *nay* ‘mother (archaic address form)’ (L151)
nāy-a ‘mother (said by a girl)’ (B272)
nâ ‘mother’ (B273)
nâ^{o}-s ‘wife of father's brother’ (B273)
no^{ʔ}o, noo ‘mother (includes maternal aunt and uncle's wife)’ (D1554
no^{ʔ}oh ‘mother’ (S9/76)
^{ʔ}no ‘mother’ (S12/80)
noo-ts ‘male homosexual i.e. like a mother’ (D1558)
noo-ts ‘homosexual’ (L153)
staging *naj* > *nāj* > *nâ^{o}-s* > *no^{ʔ}oh* > *no^{ʔ}o* > *^{ʔ}no/nō*

(32) *Gay-k* ‘chest’ (D455)
Gāi, q^{ʔ}āi ‘wing, arm, fathom (measure of opened arms, trump in stick game)’ (B278)
Ga^{ʔ}ai, Ga-q^{ʔ}ai ‘wing, i.e., like a gill’ (D294)
q^{ʔ}a-q^{ʔ}ai ‘wing’ (D294)
Ga-q^{ʔ}aax^{y} ‘wing’ (S9/76)
Gāi-k ‘chest, front of body, half a fathom’ (B278)
Gāi-t, Gāy-t ‘billed (wing in front) hat’ (B278)
Gaay-t ‘hat’ (S12/10/80)
staging *Gaj* > *Ga^{ʔ}aj* > *q^{ʔ}aj* > *q^{ʔ}āx^{y}*

See Figure 6 for an illustration of the devoltion from the above examples.

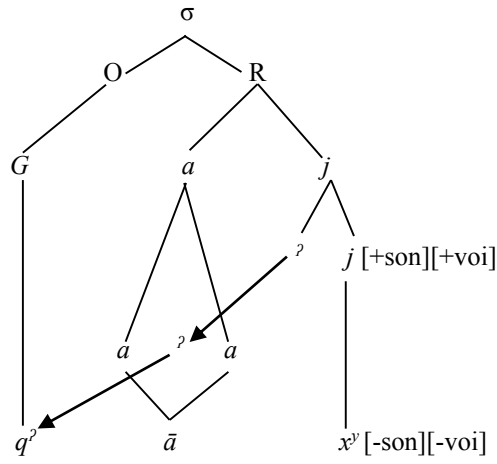

Figure 6 *Gaj* > *Ga^{ʔ}aj* > *q^{ʔ}aj* > *q^{ʔ}āx^{y}*

6.6 [w]-glide

(33) *hau^{ʔ}ts, ha^{ʔ}u^{ʔ}ts, hauts* ‘sea loon; cormorant; bottle-neck duck’ (D786)
ha^{ʔ}u^{ʔ}uts, ha^{ʔ}wts ‘black cormorant, bottle-neck duck’ (L81)
staging *hauts* > *hau^{ʔ}ts* > *ha^{ʔ}u^{ʔ}ts*

(34) *qʔałumʔq* ‘swallow (something) in one gulp’ (N100)
kʔał-ikpʔahmχs ‘choke’ (S9/76)
kʔał-haauɻ ‘choke’ (S9/76)
kʔał-au ‘choke’ (D875)
staging *au* > *haauɻ*

(35) *Gaus* ‘hair’ (B278)
Gaus ‘hair’ (D435)
Gaaus, Gauɻs ‘hair’ (S9/76)
t!Em-Gaus ‘head’ (B278)
tʔm-qʔaus ‘head’ (D1863)
qʔam-Gaus-(u) ‘head’ (S5/81)
Ga-Gaaus, Ga-Gaus ‘horn (of any animal), antlers, a buck with antlers’ (D320)
Ga-Gaaus ‘horn’ (S9/76)
staging *Gaus* > *qʔaus* and *Gaus* > *Gauɻs* and *Gaus* > *Gaaus*

(36) *gau* in *qʔa-gau-tk* ‘howl’ (D862)
qʔaw in *Ga-qʔaw-tk* ‘howl, bay (of dogs and wolves)’ (L52)
staging *gaw* > *qʔaw*

(37) *sqāɢ, sɢau* ‘to refuse’ (B270)
sɢaaɢ ‘to refuse’ (D1665)
sɢaauɻ, sɢaaw ‘to refuse’ (L172)
staging *sɢau* > *sɢāu* > *sɢāuɻ* > *sqā*

The sonorant approximants can readily become laryngealized by a simple merging rule, i.e., {[r],[l],[j],[w]} > {[ʔr],[ʔl],[ʔj],[ʔw]} > [ʔ], but deriving the various sonorant approximants from the laryngeal, e.g., [ʔ] > {[r].[l],[j],[w], is problematic, as there is no way to predict which sonorant approximant the laryngeal will become.

7 Summary and conclusions

Tsimshian syllable devolution is an elegant phenomenon, a simple paradigm, accounting for much if not all lexical root/stem variations. The coda/post-vocalic devolution initiators spread some of their phonetic properties to syllable onset and peak and lose or degrade those same and other properties in their original coda position. What counts for coda weakening or degradation is not clear when one tries to characterize it in terms of the traditional phonological/phonetic feature systems. The Tsimshian postvocalic sonorant approximants {[r], [l], [j], [w]} function as devolution initiators and behave like the laryngeal devolution initiators {[ʔ], [h]}. Indeed in the devolution process they become laryngeals. In a sense the laryngeals are the skeletal remains of the sonorant approximants after they have lost all or most of their other features, absolute devolution. The important question is this: at some systematic level are all the devolution initiators laryngeals?

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