

FEATURES AND PROCESSES IN HYDABURG HAIDA

Robert L. Welsch

University of Washington

- 0.0 Introduction
- 1.0 Inventory of Underlying Phonetic Segments
 - 1.1 Properties of the Segments
 - 1.2 Features
- 2.0 Nominal Suffix -gay
 - 2.1 Regular Derivation
 - 2.2 Alternate Derivations
 - 2.3 Generalization of g-Deletion
- 3.0 Phonological Processes in the Verbal Complex
 - 3.1 Past and Present Tense Suffixes
 - 3.2 Derivational Rules
 - 3.3 Generality of Rules in the Verbal Complex

0.0 In 1911 Swanton noted the overall similarity between Masset (MH) and Skidegate (SKH) dialects of Haida. He included the language spoken by the Alaskan Haida within Masset dialect. Though clearly related to Swanton's MH, contemporary Hydaburg Haida (HbgH) seems to be somewhat different, perhaps allowing full dialect status (cf. Eastman and Aoki 1976; Eastman, Welsch and Vaughan 1975; and Welsch 1975a). For Swanton the differences between MH and SKH included several lexical differences, differences in the pronoun series and several verbal affixes which were either represented by different forms in the two dialects or which were used only infrequently in one or the other dialect. But the major dialectal differences were phonological.

Compared with the Skidegate dialect, Masset appears to have undergone a shortening process throughout. I have already mentioned the change of g and x to ɛ and x; and this shortening is also conspicuously noticeable among vowel-sounds, a as A, hao as u, stA or sta as st', while u and a sounds generally, especially when terminal, are reduced to very light breathings (Swanton 1911:213).

Recent analysis of SkH by Levine (1975b and personal communication) suggests a general if not complete phonological continuity in SkH since Swanton's analysis. For the most part Swanton's description of MH bears a close similarity with contemporary HbgH, although there are differences. Several processes present in Swanton's SkH and MH, as well as in contemporary SkH and HbgH, seem to be most advanced or generalized in HbgH.

A preliminary discussion of HbgH phonology has been provided by Eastman and Aoki (1976). Their analysis, though incomplete, provides a basic inventory of the phonetic segments of HbgH and makes some comparisons with similar analyses of SkH by Swanton (1911) and Sapir (1923). Eastman and Aoki did not attempt to discuss the phonological processes but merely alluded to some of the most obvious morphophonemic changes. The same is true of my earlier analyses of pronouns (1975a) and the nominal particularizer (1975b). A more systematic account of the process associated with the SkH evidential marker ga has been provided by Levine (1975b). Swanton has similarly discussed several of these "euphonic changes". Nevertheless very few generalizations have been made regarding the generality of these phonological processes to date. The purpose of this paper is to suggest an analysis of the features of HbgH phonetic segments and several phonological rules which systematically describe the processes of HbgH in both nominal

and verbal complexes. This is only a brief preliminary account and does not attempt to be a final version.

1.0 The following is an inventory of the proposed underlying phonetic segments of HbgH. These are the only segments needed to account for the phonological processes discussed below.

CONSONANTS

	<u>Bilab.</u>	<u>Alveo.</u>	<u>Palat.</u>	<u>Lateral</u>	<u>Velar</u>	<u>Uvular</u>	<u>Pharang.</u>	<u>Laryngeal</u>
OBSTRUENTS								
Aspirated	p	t	c	ɬ	k	<u>k</u>	g	'
Unaspirated	b	d	j	ɭ	g	(<u>g</u>)		
Glottalized		t'	c'	ɬ'	k'	<u>k'</u>		
CONTINUANTS								
Fricatives								
strident		s		ɬ	x	(<u>x</u>)	<u>x</u>	
non-strid.				l				
Nasal								
	m	n			ŋ			
GLIDES								
	w		y		(w)			h

VOWELS

	Anterior	Central	Back
High	i I		u U
Low	e E	a A	

Table 1. Inventory of Underlying HbgH Segments.

1.1 This inventory makes several claims which will affect a feature analysis of the system. First, following Swanton and Eastman & Aoki it is not necessary to posit an anterior palatal or palatalized-k series, i.e. k^y, etc. These do occur phonetically but always when followed by a high anterior glide or vowel. They will thus be consid-

ered as velar segments predictably fronted in these environments. The same is true of both the labio-velar and labio-uvular series which can be considered as rounded predictably when followed by a rounded glide. Following Sapir (1923:145) I am considering the series of obstruents b, d, j, ɬ, g, and ʁ (but not g) as voiceless unaspirated segments which contrast with both the glottalized and aspirated series. These obstruents are on occasion voiced, but this voicing is a non-distinctive, redundant feature when it does occur. Furthermore voicing appears to be more frequent among younger speakers who learned both Haida and English as bi-linguals. It is possible that interference from English has influenced this greater tendency toward voicing. The only consistently voiced segments appear to be the nasal series and l. Unlike Sapir I record aspirated syllable final obstruents such as sgɬ 'red'.

The glottalized obstruents t', ɬ', ʔ', k', and q' constitute a distinct series of ejective stops. They do not seem to justify consideration as an aspirated obstruent followed by a glottal stop. Glottalization appears to be an inherent feature of the segment. On occasion they are difficult to distinguish from the unaspirated series particularly when followed by a vowel in rapid speech or when the glottalization is very weak. This might afford grounds for asserting a common feature shared by unaspirated and glottalized segments which is not shared by the aspirated series.

The Society for the preservation of Haida Language and Literature (SPHLL) of Ketchikan and the University of Alaska Haida Workshop in Sitka have adopted an orthography which posits distinctive phonemes

l, 'l, y, 'y, w, and 'w. Following Eastman and Aoki (1976:248) I do not feel it is necessary to posit two distinctive series when glottal stop is considered an underlying segment. In the majority of cases glottalization of continuant segments is best considered non-distinctive because of word initial positioning. Word internally, these same segments may be analysed as two segments, glottal stop plus continuant. It seems parsimonious to consider these as derived segments whether they are considered distinctive in any environment or not. In the case of vowels there is generally a contrast between 'V and hV in initial position. If there is a distinctive contrast it would have to be between h and '. Frequently, glottal stops are deleted in rapid speech whatever their environment. Initially we find another contraction which occurs in the 3rd person pronoun. həl often is realized as 'l or syllabic l̥. Sapir (1923:149) notes that glottalized nasals such as m̥ are somewhat similar to ' + m. But this latter combination "nearly always fails to satisfy the Indian's ear." Though this is primarily with reference to Nootka he feels it is applicable to Haida as well. But his example from SkH yū'An "big" in Swanton's orthography is interesting because without preglottalizing the word, it was unintelligible to Sapir's informant. The HbgH cognate for this is iwan. The only reasonable contrast would be a form such as *hiwan. Despite Sapir's objections I consider these segments as surface realizations of two underlying segments.

As noted by Eastman and Aoki (1976:244), "The alveolar affricate [ts] is sometimes used in free variation with [c^h], e.g. [c^hin] or [tsin] fish." The backed palatal allophone is more frequently heard than the fronted form though there are some words and some speakers for whom

[ts] is the preferred form. Other words such as [čIna] 'grandfather' never seem to use the alveolar [ts] as in [*tsIna]. The same is true of the glottalized palatal segment. Likewise, "[s] and [S], alveolar and palatal spirants respectively do not contrast in this dialect. Frequently in our data [S] varies with [s] in the use of the verb to say, i.e. [Sugən] versus [sugən] " (1976:243). [S] is a much less frequently used allophone than [s]. There is a parallelism between the affricated obstruents and the fricative since both include non-contrastive alveolar and palatal allophones. But the obstruents do not fully parallel the fricative since the obstruents, both glottalized and aspirated, have the palatal allophone as the primary surface realization while the fricative favors the alveolar.

The unaspirated uvular obstruent g and the uvular fricative x seem to be identical to Swanton's (g) and (x) respectively (Sapir's g and x; and Levine's G and x). However in HbgH these segments are found only in a few words, primarily in archiac words and names (Viola Burgess, personal communication). In these cases they do not appear to correspond to SkH forms of the same sound but may represent loans from Tlingit. The uvular g and x in Swanton's texts correspond to the pharyngeal (g) and (x) in HbgH though in some cases g appears as a glottal stop. Swanton's g and x may represent these pharyngeals in MH though this is difficult to determine from Swanton's work. Harrison's grammar of Masset (1895) is inconsistent in its orthography but frequently represents segments which should correspond to g or g as h. Thus Swanton may well have been recording pharyngeals as glottal stops.²

There is some question as to the status of lax high vowels, I and U, which at present I am not able to resolve. A morphophonemic relation exists between the two and their tense counterparts i and u. But I am not satisfied in considering them as allophones of the same phonemes. There are in HbgH some minimal pairs such as /sgIt/ 'red', and /sgit/ 'a particular chiton called "red gumboots" in English'. The latter is probably derived from the former but suggests that they may not be simple allophones in different environments. Near minimal pairs of the back segments include /kUk/ 'firewood', /k'uk/ 'heart'; /gUt/ 'box', /xut/ 'seal'; and /k'Uts/ 'bark of a tree', and /xuts/ 'wolf'. The initial segments of each of these is different for each member in a pair, but the final segment has been kept constant. It is possible that the tense and lax realizations represent a single underlying segment as Levine (personal communication) suggests for SkH. For HbgH, however, it appears to be more complex than whether the vowel occurs in an open or closed syllable.³

There are some restrictions placed on HbgH clusters of segments. If surface realizations of w, y and h are considered consonants HbgH never allows vocalic clusters. The only exception to this is at boundaries in rapid speech and when underlying vowels are juxtaposed through epenthesis. [ia] > [E] or [æ] or [ya]. This treats the low front vowels in /geAl/ 'to become' as /gel/ in its underlying form, schwa epenthesis is necessary because a low anterior segment is followed by a high consonant. At a boundary, a high anterior vowel followed by a uvular obstruent causes schwa epenthesis also in HbgH, i + k > iΛ + k.

Consonant clusters never exceed CCG. Obstruents never co-occur,

and there are also several restrictions on the environments of glides. w never follows anterior segments though it may precede them, and the same restriction is partly held by round vowels. The strings /*tw/ and /*tu/ do not naturally occur though /du/ appears in several words: /dun/ 'younger same sexed sibling'. The plural suffix /'u/ will always retain its initial glottal stop when following t, observing the restriction and preserving the underlying shape of the suffix. y never seems to follow uvular or pharyngeal segments although the anterior high vowels may.

1.2 Fourteen features conveniently distinguish all 39 segments in the inventory above. Generally these features follow Chomsky and Halle (1968) though special features are utilized to distinguish glottalized from aspirated and unaspirated obstruents. Two features, tense and glottalized, have been used,

The unaspirated series is [-tense, -glottalized]; the aspirated series is [+tense, -glot]. If glottalized and unaspirated segments are seen to share a common feature based on difficulty in distinguishing them phonetically in some cases, [-tense, +glot] might be suggested. Despite this possibility I have tentatively considered them as [+tense, +glot].

The glides w, y, and h have been classe as [-vocalic, -consonantal]. They are to be read as surface consonants, or at least non-vocalic. This will allow underlying strings to form glides according to a set of rules below. CVV CGV or CVG or CVGV, preserving a CVCV shape.

l has been distinguished as [+voc., +cons.]. This follows Chomsky and Halle as well as recognizes the voiced nature of the segment. This

	p	b	t'	t	d	č'	č	j	ɬ'	ɬ	λ	k'	k	g	ḱ'	ḱ	(ḡ)	ḡ	'	l	ɭ	s	x	(x̂)	x̂	m	n	ɳ	w	y	h	i	I	a	ʌ	u	U	e	E	
vocalic	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	
consonantal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
high	-	-	-	-	-	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	+	+	+	-	-	+	+	+	-	+	+	-	-	+	+	-	-	-
back	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+	+	-	-	-	-	+	+	+	-	-	+	+	-	-	-	-	-	-	+	+	-	-	-
low	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	+	-	-	-	-	-	-	+	-	-	+	+	-	-	+	+	
anterior	+	+	+	+	+	-	-	-	+	+	+	-	-	-	-	-	-	-	-	+	+	+	-	-	-	+	+	-	-	+	-	+	+	-	-	-	-	+	+	
coronal	-	-	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	+	+	+	-	-	-	-	+	-	-	-	-	-	-	-	-	+	+	-	-	
round	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	+	+	-	-	
tense	+	-	+	+	-	+	+	-	+	+	-	+	+	-	+	+	-	+	-	-	+	+	+	+	+	-	-	-	-	-	-	-	+	-	+	-	+	-	+	
glottalized	-	-	+	-	-	+	-	-	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
nasal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
strident	-	-	-	-	-	+	+	+	+	+	+	-	-	-	-	-	-	-	+	-	-	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
lateral	-	-	-	-	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
continuant	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	

Table 2. Features of Underlying Segments in Hydaburg Haida.

would provide grounds for considering nasals as $[+voc., +cons.]$ also. The segment l can be syllabic as in the contracted form of the 3rd person pronoun /'l/. The present and past tense markers in HbgH, /g^hŋ/ and /g^han/ respectively often take the shape $[g\underset{\cdot}{\eta}]$ and $[g\underset{\cdot}{n}]$. The bilabial nasal, however, never seems to form a syllabic segment. On this basis I have assigned the features $[-voc., +cons.]$ to the nasals.

I have used the feature $[+lateral]$ primarily to distinguish l from s. Another solution could be obtained by treating c as $[+high, -anterior, +coronal]$ as in the current solution, but considering s as $[+high, +ant. +cor.]$. This will dispense with the need for a feature $[+lateral]$ but this solution leaves t, s, and č in three natural classes rather than two. This alternative is in accordance with the preferred allophones of s and č. t is thus a full alveolar and č a full palatal, yet s is neither a palatal nor an alveolar. Since s varies with j this may be well motivated.

2.0 As I have discussed elsewhere (1975b) nouns are not marked for number in HbgH, except in the case of human nouns. They are marked for particularization with the suffix -gay; particularization is similar to a definite marker and in some ways to an old information marker. In SkH, Levine (1975b) has called this marker old information. Discussion of the use of the marked forms is beyond the scope of the present. My concern here is to consider the derivations of the marked nouns and to offer some limited comparisons with SkH. Swanton (1911:262) lists the nominal connective "the or that" as gai, but he was quite aware that the suffix frequently was realized in other shapes.

Within the Skidegate dialect itself the *g* and *g* of the connective particle *ga-i*, the possessive suffix *-gAn*, and the past-temporal suffixes before the quotative *wAnsuga*, are dropped in certain situations, generally having to do with the preceeding sound. It is not possible to make rules that will cover all the cases which occur, but it generally happens that *g* is retained after *a* and dropped after *u*. After the consonants and the remaining vowels it is more often dropped than retained; but exceptions are numerous, especially after *i*, *n* the *l*-sounds, and *s* contracted from *dji*. ... The final consonant of certain stems is *l*, sometimes *ɬ*. Of these, *l* usually appears before a vowel, *ɬ* before a consonant... *s* becomes *dj* before most vowels; for example *tas* sand, *ta'djai* the sand. (Swanton 1911:213).

There seems ample comparative evidence in Swanton's grammar that *-gay* is the underlying nominal marker which undergoes phonological derivation.

In loan words directly from English to Hbgh, the marker is suffixed directly to the stem and never is derived further. For example, consider the following:

- | | |
|-------------------|----------------|
| (1) "airplane"gay | 'the airplane' |
| (2) "beer"gay | 'the beer' |
| (3) "bird"gay | 'the bird' |

No phonological derivation occurs in the stem of these nouns even though they contain sounds and clusters which do not occur in Haida, e.g. *r*, *pl*.

A second class of nouns takes on the phonological characteristics of Haida but retain the underived suffix. This is generally a small class of nouns including many obvious loans such as */sAbli gay/* 'the bread' from */sAbli/*, */c'ikAp gay/* 'the jacobberry' from */c'ikAp/*. Other obvious loans allow full derivation. The only apparent difference is that Hbgh continues to recognize the loan-word status of */sAbli/* but treats */lam/* < *lAm* < *rAm* as a full Haida word, e.g. */lamay/* as the most common form but */lamgay/* as an acceptable alternative. This may vary greatly from speaker to speaker.

2.1 As far as I am able to determine, all ordinary HbgH nouns undergo derivation, which includes a process of deleting(g) of the suffix -gay. In a number of forms, derivation is either optional or alternatively partial. Ordinary derivation can be formalized by the following ordered rules:

Rule 1. Consonant De-tensing

$$\begin{array}{c} C \\ [+tns] \end{array} \longrightarrow \begin{array}{c} C \\ [-tns] \end{array} / \text{---} (G) + \begin{array}{c} C \\ [-tns] \\ [+high] \\ -str \\ -cont \end{array} / g/$$

Rule 2. J Formation

$$\begin{array}{c} C \\ [-tns] \\ -high \\ +ant \\ +str \\ -lat \\ -cont \end{array} \longrightarrow \begin{array}{c} C \\ [+high] \\ -ant \\ -cont \end{array} / \text{---} + \begin{array}{c} C \\ [-tns] \\ [+high] \\ -ant \\ -str \\ -cont \end{array} / s/ \rightarrow [-tns] \quad /j/ \quad /g/$$

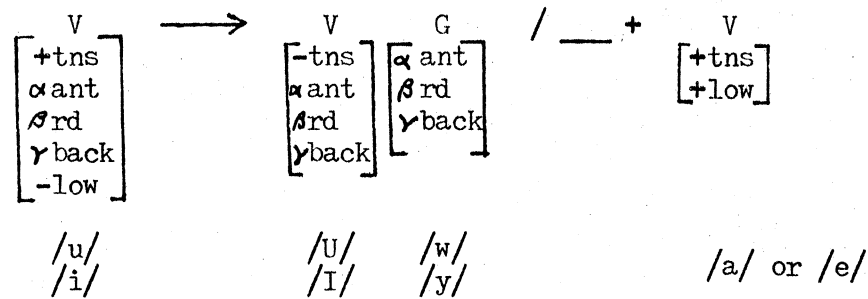
Rule 3. G-Deletion

$$\begin{array}{c} C \\ [-tns] \\ +high \\ -str \\ -cont \end{array} \longrightarrow \emptyset / + \text{---} \begin{array}{c} V \\ [+tns] \end{array} / g/$$

Rule 4. Vowel Assimilation

$$\begin{array}{c} V \\ [+low] \\ -ant \\ -back \end{array} \longrightarrow \emptyset / \text{---} (+) \begin{array}{c} V \\ [+tns] \\ -ant \\ +low \\ -back \end{array} / a/ \quad / \Lambda/$$

Rule 5. Glide Formation



The following offer examples of these regular derivations:

- (4) /yaɭ/ 'raven' /yalay/ 'the raven'

yaɭ + gay \longrightarrow yal + gay Rule 1
 yal + gay \longrightarrow yal + ay Rule 3

- (5) /dus/ 'cat' /dujay/ 'the cat'

dus + gay \longrightarrow du s + gay Rule 1
 [-tns]
 du s + gay \longrightarrow duj + gay Rule 2
 [-tns]
 duj + gay \longrightarrow duj + ay Rule 3

- (6) /xʌ/ 'dog' /xay/ 'the dog'

xʌ + gay \longrightarrow xʌ + ay Rule 3
 xʌ + ay \longrightarrow x + ay Rule 4

- (7) /kit/ 'tree' /kiday/ 'the tree'

kit + gay \longrightarrow kid + gay Rule 1
 kid + gay \longrightarrow kid + ay Rule 3

- (8) /ganʌ/ 'water' /ganlay/ 'the water'

ganʌ + gay \longrightarrow ganʌ + gay Rule 1
 ganʌ + gay \longrightarrow ganʌ + ay Rule 3

- (9) /ʌu/ 'canoe' /ʌUway/ 'the canoe'

ʌu + gay \longrightarrow ʌu + ay Rule 3
 ʌu + ay \longrightarrow ʌUw + ay Rule 5

- (10) /sisa/ 'ceremonial rattle' /sisay/ 'the rattle'

sisa + gay \longrightarrow sisa + ay Rule 3
 sisa + ay \longrightarrow sis + ay Rule 4

(11) /x_Λkw/ 'halibut' /x_Λgway/ 'the halibut'

$\frac{x\Lambda kw + \text{gay}}{x\Lambda gw + \text{gay}} \longrightarrow \frac{x\Lambda gw + \text{gay}}{x\Lambda gw + \text{ay}}$ Rule 1
Rule 3

(12) /k'wi/ 'soil' /k'wIyay/ 'the soil'

$\frac{k'wi + \text{gay}}{k'wi + \text{ay}} \longrightarrow \frac{k'wi + \text{ay}}{k'wIy + \text{ay}}$ Rule 3
Rule 5

In short the following stem changes occur in addition to g-deletion:

ɬ → l	ʌ → λ	a → ∅
s → j	k(w) → g(w)	Λ → ∅
c → j	u → Uw	
t → d	i → Iy	

Other segments remain unchanged.

In stems with more than one syllable stem-contraction often occurs. This may take one of two forms: apocope, which will be discussed in 2.2 below, and glottal stop deletion. If a glottal stop occur between low central vowels in a nominal stem, the glottal stop will delete and the vowels assimilate (Rule 4). This may be illustrated with the following:

(13) /y_Λ'ač'/ 'knife' /yač'ay/ 'the knife'

(14) /t'Λ'aw/ 'snow' /t'away/ 'the snow'

Rule 3A formalizes the process if it is ordered directly after Rule 3.

Rule 3A. Glottal Stop Deletion

$\begin{matrix} C \\ \left[\begin{array}{l} -\text{cont} \\ +\text{low} \\ -\text{back} \end{array} \right] \\ /' / \end{matrix} \longrightarrow \emptyset / \begin{matrix} V \\ \left[\begin{array}{l} +\text{low} \\ -\text{back} \\ -\text{ant} \end{array} \right] \\ /a/ \\ / \Lambda / \end{matrix} \begin{matrix} V \\ \left[\begin{array}{l} +\text{low} \\ -\text{back} \\ -\text{ant} \end{array} \right] \\ /a/ \\ / \Lambda / \end{matrix} (C) + /gay/$

The process is more general than the nominal marking, however. One sometimes hears the contracted but unmarked forms /yač'/ and /t'aw/. The future suffix /-san/ is in free variation with /-sa'an/. Levine

notes the SkH forms (1975b:15)

- (15) /ja'ad/ 'women' /ja'aday/ 'the (group of) women'

Cognate HbgH forms are

- (16) /jada/ 'women' /jaday/ 'the women'

If glottal stop was part of a proto-Haida form it is possible that the contraction process is being generalized in HbgH where it is not in SkH. Swanton lists the stem as djat (1911:271) but when used in a sentence he provides the form

- (17) nãñ djã'adas 'the woman' (1911:266)

It is possible that the contraction was present in SkH even in Swanton's day as suggested by the stem form, but that glottal stop deletion was not fully generalized. He also offers the stem form of

- (18) tc!ã'ano 'fire' (1911:272)

This is probably the intended transcription of /č'a'ano/ which contrasts with the cognate HbgH form /č'anu/. We may conclude tentatively that like nominal g-deletion, stem contraction through glottal stop deletion is more generalized in HbgH than in SkH.

2.2 A large number of nouns have acceptable alternative forms to the ordinarily derived marked forms. These alternative shapes usually retain /g/, though in some cases g-deletion occurs but a glottal stop takes its place. This latter process has only been recorded after 1. Each of the g-retaining forms seems less common and generally less preferred. My consultants were more tolerant of the g-retaining forms in longer stems whereas with a number of monosyllabic stems they clearly indicated only a marginal degree of acceptability or uncertainty. Some mono-syllabic stems do not allow g-retention, for example:

(19) /nu/ 'octopus' /nUway/ 'the octopus' */nugay/

(20) /kit/ 'tree' /kiday/ 'the tree' */kitgay/ */kidgay/

There is also some degree of variation in the use and acceptability of g-retaining forms among different speakers. Usually there is some emphasis being placed on the condition of the noun in question when /g/ is not dropped. But this would not justify calling it a true emphatic particle or focus marker.

These are a few examples of the variants I have recorded:

(21) /čin/ 'fish' /činay/ 'the fish' /čingay/ 'the fish'

(22) /k'^Λč/ 'cod' /k'^Λjay/ 'the cod' /k'^Λčgay/ 'the cod'

(23) /sgIw/ 'black seaweed' /sgIway/ 'the seaweed' /sgIwgay/

(24) /ya±/ 'raven' /yalay/ 'the raven' /ya±gay/ /ya±'ay/

One even finds examples of s-final stems retaining /g/.

(25) /^Λgus/ 'mat' /^Λgujay/ 'the mat' /^Λgusgay/

The marked forms in (21) - (25) may be derived from the rules above with certain conditions of optionality. Rule 1 (De-tensing) is fully optional. Rule 2 (J Formation) is obligatory. Rule 3 (g-Deletion) is blocked in the environment: $\begin{matrix} C \\ [+tns] \end{matrix} + \text{---}$ with the single exception when $C = \pm$.

In all other environments g-deletion is optional subject only to the preference of g-retention only in longer stems.

The form /ya±'ay/ is not generated by these rules and requires additional rule of glottal stop epenthesis which is obligatory and ordered as Rule 3B.

Rule 3B. Glottal Stop Epenthesis

$$\emptyset \longrightarrow \begin{array}{c} \text{C} \\ [+low] \\ [-back] \\ [-cont] \end{array} / \begin{array}{c} \text{C} \\ [+tns] \\ [+lat] \\ [+cont] \end{array} + \text{--- V}$$

/ɨ/ /ɬ/

(24) alternate forms above may be derived as follows:

$$\begin{array}{llll} yaɬ + gay & \longrightarrow & yaɬ + ay & \text{Rule 3} \\ yaɬ + ay & \longrightarrow & yaɬ + 'ay & \text{Rule 3B} \longrightarrow /yaɬ'ay/ \\ \\ yaɬ + gay & \text{no rules apply} & & \longrightarrow /yaɬgay/ \end{array}$$

Multi-syllabic stems of the shape CVCV tend to delete final vowels optionally according to the following ordered rule:

Rule 2A. Apocope (optional)

$$V \longrightarrow \emptyset / \text{CVC} \text{---} +$$

Thus we have the following forms as examples of ordinary derivations and alternate forms:

$$(26) /č'ač'a/ \text{ 'small bird' } /č'ač'ay/ \text{ 'the bird' } /č'ač'gay/$$

$$(27) /lana/ \text{ 'town' } /lanay/ \text{ 'the town' } /langay/ \text{ } /lanagay/$$

This process may be the complete generalization of a more systematic apocope rule from proto-Haida which had the following effect.

$$(C)C \begin{array}{c} V \\ [-tns] \end{array} CV \longrightarrow (C)CVC$$

SkH stems of the shape CVCV are cognate with HbgH stems of the shape CV_iCV when V_i is tense but CV_iC(w) when V_i is lax. Where g-deletion occurs and the nominal stem is a, it is impossible to determine whether apocope applied or not because of vowel assimilation. As (26) and (27) suggest, apocope does not occur in the unmarked forms.

2.3 We have now briefly discussed three processes which seem to be more generalized in HbgH than in SkH, with regard to nominal stems and the suffix -gay. In SkH nominal stems with final low central vowels retain /g/ while in HbgH these environments allow regular g-deletion. For example Levine (1975b:4) gives the marked form /xagay/ 'the dog' which contrasts with the HbgH /xay/. Generalization, however, is not complete in HbgH either, as we find alternative g-retaining forms for many nouns and loan words which are underived as well. The fact that all ordinary HbgH nouns undergo regular derivation suggests that this is the direction of generalization rather than toward forms marked with a g-bearing suffix.

Stem shortening due to glottal stop deletion and subsequent assimilation of vowels also seems to be more advanced in HbgH than in SkH. This may be a general Haida feature which will require more comparative evidence to determine.

Apocope on the other hand is systematically demonstrated in the HbgH forms. The stem /sk'ak/ produces an example of a velar obstruent in final position. Swanton (1911:212-13) clearly asserts that this never occurs in SkH. The SkH form /skā'gi/ (Swanton 1911:273) illustrates how this is avoided with a final vowel. There are numerous cases like this one which demonstrate apocope in HbgH. We must postulate the longer form (C)CVCV for the shape of the proto-Haida stem; by doing so we must infer that contraction through apocope is the direction of generalization.

3.0 It has been my contention above that in HbgH, nominal phonological processes are more generalized than in SkH though they are present to a noticable extent in both Swanton's and Levine's analyses. One indication that generalization may be occurring is the fact that several processes which affect nominal suffixation are found in the verbal complex as well. It is not my intention here to fully document any of these verbal processes or the rules which formalize them. Rather, I hope to illustrate that several regularities exist despite the differences which occur from one morphological environment to the next. The similarity between the verbal and nominal processes will be apparent.

Six major processes seem to be involved in the HbgH verbal complex: vowel strengthening in the suffix, consonant de-tensing in the stem, vowel epenthesis in the stem, g-deletion in the suffix, contraction, and glide formation. Of these I noted all but vowel strengthening and epenthesis in the nominal case.

3.1 It had previously been suggested in Eastman et al. (1976:105) that the HbgH present tense suffix was most generally /gɛŋ/ with various realizations ranging from /gɛŋ/ to /aŋ/. Following Eastman and Aoki, we suggested that intervocalic voicing at morpheme boundaries was predictable. Similar claims were made regarding the past tense marker noting that the major difference between the present and past tense suffixes was the final nasal (1975:107). Above I have reinterpreted intervocalic voicing as de-tensing (Rule 1) and wish to note further that the process is clearly more complex than intervocalic voicing would suggest. For example

(28) / 'l xyalgʌn/ 'he is dancing' /xyaɬ/ = stem 'to dance'

(29) / nay sgɪdan/ 'the house is red' /sgɪt/ = stem 'red'

In (28) where voicing occurs there is not an intervocalic environment present because /g/ has not deleted. (29) however has deleted /g/ but has a voiceless unaspirated stem-final consonant.

Swanton was also aware of the variation in surface forms in the tense suffixes in SkH and MH. But he usually noted the presense of alternate forms without explaining why one form was present and not another. Regarding the past tense first hand information suffix he listed the following (1911: 247):

-gʌn, sometimes -ʌn, indicates past events which the speaker has himself experienced.

For past tense second hand information he offers the following forms

-agʌn (Masset -an or gan) past events known to the speaker only by report. (1911:248).

And regarding the continuative:

-gañ, añ, or ñ. The common continuative or perhaps rather habitual suffix, similar to the English form of the verb ending in -ing. (1911:250).

In light of these forms noted by Swanton which are essentially present in HbgH, /gʌn/ and /gan/ may be postulated as the underlying forms of these two tense suffixes, though their surface representations are highly variable. Ultimately the derived forms seem to be determined by the shape of the preceding stem or the suffix which immediately precedes it which can alter both the consonant and the vowel of the marker. By the same token it can be inferred that the lax obstruent /g/ is instrumental in the process as well by altering the stem consonant or by inducing vowel epenthesis.⁴ The conditions under which the various processes apply

differ from suffix to suffix and this may serve to differentiate suffixes of similar shape which have different semantic or syntactic contents.

3.2 The rules which describe the processes are ordered as follows.

The effects of the rules which apply are essentially the same for each suffix, not every process is triggered by the same environment. For each suffix then it will be necessary to specify certain environments or conditions indicated by the variable X_j .

Rule I. Vowel Strengthening

$$\begin{array}{c} V \\ [-\text{tns}] \end{array} \longrightarrow \begin{array}{c} V \\ [+tns] \end{array} / X_i + g \text{ --- } \begin{array}{c} C \\ [+nas] \end{array}$$

Rule II. Consonant De-tensing

$$\begin{array}{c} C \\ [+tns] \\ [-glot] \end{array} \longrightarrow \begin{array}{c} C \\ [-tns] \end{array} / \text{ --- } + g$$

Rule IIa. J Formation (see Rule 2 above)

Rule III. Vowel Epenthesis

$$\emptyset \longrightarrow \begin{array}{c} V \\ [+tns] \\ [+low] \\ [-high] \\ [-rd] \end{array} / \text{ --- } X_{iii} + \left\{ \begin{array}{l} ga + \\ 'u + \end{array} \right\}$$

/a/

Rule IV. G-Deletion

$$\begin{array}{c} C \\ [-tns] \\ [+high] \\ [+back] \\ [-cont] \end{array} \longrightarrow \emptyset / X_{iv} + \text{ --- } \begin{array}{c} V \\ [+tns] \\ [+low] \end{array}$$

/g/ /a/

Rule IVa. G-Sonorization

$$\begin{array}{c} \text{C} \\ \left[\begin{array}{c} -\text{tns} \\ +\text{high} \\ +\text{back} \end{array} \right] \end{array} \longrightarrow \begin{array}{c} \text{G} \\ \left[\begin{array}{c} -\text{back} \\ +\text{cont} \end{array} \right] / \begin{array}{c} \text{V} \\ \left[\begin{array}{c} +\text{tns} \\ +\text{low} \\ -\text{ant} \end{array} \right] + \text{---} \begin{array}{c} \text{V} \\ \left[\begin{array}{c} +\text{tns} \\ +\text{low} \\ -\text{ant} \end{array} \right] + \end{array} \\ \text{/g/} \quad \text{/y/} \quad \text{/a/} \quad \text{/a/}$$

Rule V. Glottal Stop Deletion

$$\begin{array}{c} \text{C} \\ \left[\begin{array}{c} -\text{tns} \\ +\text{low} \\ -\text{back} \end{array} \right] \end{array} \longrightarrow \emptyset / \text{X}_V \text{---} \text{V} \\ \text{/ʔ/}$$

Rule Va. Schwa Deletion

$$\begin{array}{c} \text{V} \\ \left[\begin{array}{c} -\text{tns} \\ +\text{low} \\ -\text{ant} \end{array} \right] \end{array} \longrightarrow \emptyset / + \text{gi} + \text{---} \\ \text{/ʌ/}$$

Rule Vb. Vowel Assimilation

$$\text{V}_i \text{V}_j \longrightarrow \text{V}_i \quad \text{condition: } \text{V}_i = \text{V}_j$$

Rule VI. Glide Formation

$$\emptyset \longrightarrow \begin{array}{c} \text{G} \\ \left[\begin{array}{c} \alpha \text{rd} \\ \beta \text{high} \\ \gamma \text{back} \end{array} \right] / \begin{array}{c} \text{V} \\ \left[\begin{array}{c} \alpha \text{rd} \\ \beta \text{high} \\ \gamma \text{back} \\ -\text{low} \end{array} \right] \text{---} \text{V}$$

Rule VIa. Glide Formation

$$\emptyset \longrightarrow \begin{array}{c} \text{'G} \\ \left[\begin{array}{c} \alpha \text{rd} \\ \beta \text{high} \\ \gamma \text{back} \end{array} \right] / \text{V} \text{---} \begin{array}{c} \text{V} \\ \left[\begin{array}{c} \alpha \text{rd} \\ \beta \text{high} \\ \gamma \text{back} \\ -\text{low} \end{array} \right]$$

Rule VIb. Glide Strengthening (optional)

$$\begin{array}{c} \text{V} \\ \left[\begin{array}{c} \alpha \text{rd} \\ \beta \text{high} \\ \gamma \text{back} \\ -\text{low} \end{array} \right] \end{array} \longrightarrow \emptyset / \text{---} \begin{array}{c} \text{G} \\ \left[\begin{array}{c} \alpha \text{rd} \\ \beta \text{high} \\ \gamma \text{back} \end{array} \right] \text{---}$$

Rule VIc. Glide Assimilation

$$G_i G_j \longrightarrow G_i \quad \text{condition: } G_i = G_j$$

3.3 In order to suggest the generality of these rules and provide an outline for future research, I will compare several suffixes with regard to what processes are applicable to them when immediately suffixed to a stem. I will consider the present and past tense markers, the suffix ga which is cognate with what Levine has called the evidential or second hand information marker, another suffix ga of the same shape which acts as a stativizer (see Eastman et al. 1975:105), the perfect marker /gi/, the habitual marker /gi/, and the plural suffix /'u/.

There are a number of locative suffixes which I will not consider here except to note that they neither trigger any of the processes nor do they undergo alteration themselves. I am uncertain about the extent to which a number of other suffixes are affected and they will not be considered here. Table 3 compares these suffixes in the environment:

stem + _____

If a process applies in all environments it will be indicated by (+); if never applicable by (-); other conditions will be mentioned if the rules apply in some environments but not others. Glide formation and vowel assimilation occur in all environments in HbgH and are not included in the table.

3.4 Since suffixes do not always occur immediately to the right of stems⁵ but may be separated by any number of suffixes, it is necessary to consider how the processes are affected in these environments as well as stems. Table 4 compares the processes which are applicable in the

	nominal <u>gay</u>	stative <u>ga</u>	negative <u>'an</u>	perfect <u>gi</u>	plural <u>'u</u>	habitual <u>gi</u>	evidential <u>ga</u>	past tense present tense <u>-gan</u> ; <u>-gan</u>
V Strength.	-	-	-	-	-	-	-	/V'a+ / C + __; C ≠/s/ [+tns]
C De-tns.	+	?	-	-	-	-	+	+
V Epenth.	-	+	-	-	/Xu + __	-	+	-
g-delet.	+	-	-	-	-	-	(except in CC + __)	+
							(except (C)Ca+ __)	if V Streng. has applied
g-sonor.	-	-	-	-	-	-	/CVCa + __	-
'-delet.	+	-	/V'V+ __	-	/V'V+ __ 'u → u (opt)	-	+	+

Table 3. Phonological Processes Applicable for Various Suffixes when Affixed Directly to Stems.

	causitive da	negative 'aŋ	perfect gi	plural 'u	habitual gi	evidential ga
Present -gaŋ	V-Strengthening g-Deletion	none	n/a	V-Strengthening g-Deletion	n/a	n/a
Past -ga n	V-Strengthening g-Sonorization	none	none	none	g-Deletion Λ-Deletion	V-Strengthening g-Deletion

Table 4. Processes Which Operate with Present and Past Tense and Various Suffixes in the
Environment / ____ + TENSE.

- (32) /cin 'l tagig_{AN}ni/ 'He already ate fish'

/cin/ 'fish'; /'l/ 'he/
/ta/ stem 'to eat'; /gi/ perfective; /g_{AN}/ past tense; /i/ weak
perfect which often accompanies -gi-

ta + gi + g_{AN} + i → tagig_{AN}ni No derivation

- (33) /cin 'l tagini/ 'He used to eat fish.' or 'He always ate fish'

/ta/ stem; /gi/ habitual suffix; /g_{AN}/ past; /i/ weak perfect

ta + gi + g_{AN} + i → tagi + g_{AN} + i No derivation
tagi + _{AN} + i Rule IV
tagi + n + i Rule Va
= tagini

- (34) /nay g_Utisλg_Ujawani/ 'The house burned down (second hand information)'

/nay/ 'house (marked form)

/g_U/ prefix referring to fire (cf. Swanton 1911:224, §14.18)

/ti/ shape classifier for houses

/sλ/ permeative suffix which suggests a complete change of state of
the noun

/g_Uju/ stem 'thoroughly', may be considered the principal stem in
conjunction with -sλ-, (cf. Swanton 1911:240, §20.3)

/ga/ evidential (2nd hand information)

/g_{AN}/ past tense; /i/ weak perfect

g_U + ti + sλ + g_Uju + ga + g_{AN} + i → g_Utisλg_Uju + ga + g_{AN} + i
(stem derivation)

→ g_Utisλg_Ujau + ga + g_{AN} + i Rule III
g_Utisλg_Ujau + a + g_{AN} + i Rule IV
g_Utisλg_Ujauwa + g_{AN} + i Rule VI
g_Utisλg_Ujauwa + g_{AN} + i Rule VIa
g_Utisλg_Ujawwa + g_{AN} + i Rule VIb
g_Utisλg_Ujawwa + g_{AN} + i Rule VIc
g_Utisλg_Ujava + g_{AN} + i Rule I
g_Utisλg_Ujava + g_{AN} + i Rule I
g_Utisλg_Ujava + an + i Rule III
g_Utisλg_Ujawan + i Rule Vb
= g_Utisλg_Ujawani

These few examples do not illustrate how each of the rules operate in each of its possible environments, but are intended to suggest what their effects upon sample strings might be.⁶ In HbgH several rules appear to operate differently from SkH. For example g-sonorization occurs in the

the past tense when it follows the causative and probably the evidential in some contexts. There is more to be said here but my knowledge of SkH is limited.

The rules are not without difficulties, as there are some suffixes which do not follow the rules, for example:

(35) /nay gUgan/ 'The house burned'

It is likely that the shape of the stem (CV) has some effect upon the past tense marker which is not reflected in the present tense.

(36) /nay gUgaŋ/ 'The house is burning'

At this time it is not possible to determine whether (35) contained the underlying evidential -gan or whether it is a stem conditioned process of vowel strengthening and g-retention.⁷

To date comparative Haida morphology and phonology have not been studied carefully. In the future they will undoubtedly provide some interesting differences as well as offer suggestions regarding the direction of various generalizations in the contemporary dialects. It may be possible to isolate Proto-Haida stems and suffixes. Despite the fact that over 90% of the marked nominal stems in HbgH are realized in forms which have undergone g-deletion, we can safely conclude that -gay is the underlying form in HbgH, MH and SkH. Though there is much more work to be done on HbgH processes the foregoing offers some preliminary observations and analysis of the system.

FOOTNOTES

¹ This paper is based on research which was conducted in 1975 and 1976 in Seattle, Washington and Hydaburg, Alaska. I wish to gratefully acknowledge the support of the Melville and Elizabeth Jacobs Research Fund (Whatcom Museum, Bellingham, Washington). I would also like to thank my colleagues on the "Sea-Alaska" Haida Project of the University of Washington, Lillian Pettviel, Carol M. Eastman, J. Daniel Vaughan and Elizabeth Edwards for their continued encouragement, criticism and assistance. To Lillian Pettviel I owe a special debt of gratitude for her help as my primary consultant as well as for her patience. I would also like to acknowledge the assistance of many residents of Hydaburg who gave both their time and hospitality so freely. Though the feature analysis is my own and any inadequacies it may contain are my own as well, it owes much to the earlier work of Eastman and Aoki (1976) which was written in 1972. The analysis has benefited greatly from many hours of discussion with Carol Eastman scattered over the past year. And finally I would like to thank Ellen Welsch for her comments and criticisms of an earlier draft of this paper.

² This was suggested to me originally by M. Dale Kinkade.

³ The Haida Noun Dictionary compiled by Lawrence (1975) for SPHLL shows differences in stress in these words which correlate with what I have called tenseness. In each of these pairs the lax vowel shows no stress while the tense vowel does. The precise significance of these stress markings is not explained in any of the SPHLL materials which I have seen and as a result I am uncertain as to what they indicate.

⁴ Levine (1975b:2,15) has noted the phonological processes associated with the evidential or second hand information marker, ga in SkH. He suggests that ga induces vowel epenthesis in the preceding stem and either deletion of the obstruent or a transformation g — y. This process "fails to apply only in the case of midvowel final monosyllabic stems" such as ta 'to eat'. He also suggests that the process is not specific to the evidential.

⁵ Levine's segmentation of the verbal complexes into: derivational prefixes + base + derivational suffixes + inflectional suffixes (1975a, 1976) is a useful way of considering HbgH verbs as well. There are some verbal complexes in which there seem to be more than one base element. (35) — 34? below offers one example of this. In such cases the derivational affixes and the base elements may be considered as a derived stem. Though the majority of position classes Levine posits for SkH are well motivated for HbgH there is some flexibility in certain suffixal positioning. I hope to discuss this at length in another paper. The processes discussed in this paper related to stems, the causative da and inflectional suffixes. The causative is the only of Levine's derivational suffixes which I am currently discussing.

⁶ I hope to expand the discussion of these and other examples in the future. Other examples which include the plural suffix /'u/ have been discussed in Eastman (1976) in this volume.

⁷ If it were the case that -gan is the evidential, the derivation of (35) would appear quite different. At this time however I am not convinced of it and feel that additional examples may reveal another process conditioning which I have not considered here.

REFERENCES CITED

- Chomsky, Noam and Morris Halle. 1968. THE SOUND PATTERN OF ENGLISH. New York: Harper and Row.
- Eastman, Carol M. and Paul Aoki. 1976. "Phonetic Segments of Haida (Hydaburg Dialect)."
- Eastman, Carol M., Robert L. Welsch and J. Daniel Vaughan. 1975. "On Tense and Aspects of Aspect in Haida: Hydaburg Dialect." LEKTOS, Special Issue, Papers from the 10th International Conference on Salishan Languages, Ellensburg, Washington, 96-117.
- Eastman, Carol M. 1976. "NP Number Marking in the VP in Haida: Hydaburg Dialect." Papers for the XIth International Conference on Salishan Languages, Seattle, Washington.
- Harrison, Rev. C. 1895. "Haida Grammar." Proceedings and Transactions of the Royal Society of Canada, Vol 1, part 2, section 2.123-226.
- Lawrence, Erma (comp.) 1975. HAIDA NOUN DICTIONARY. Ketchikan: Society for the Preservation of Haida Language and Literature. 2nd. Edition.
- Levine, Robert. 1975a. "Haida Verbal Morphology." Colloquium presentation at University of Washington for the Dept. of Anthropology, January 29, 1975. (unpublished).
- _____. 1975b. "Evidentials and Old Information in Skidegate Haida." Paper read at the 10th International Conference on Salishan Languages, Ellensburg, Washington.
- _____. 1976. "Haida." Paper read at Conference on Northwest Coast Studies, Session on Linguistics: Areal Features of Northwest Languages. May 12, 1976.
- Sapir, Edward. 1923. "The Phonetics of Haida," IJAL 2:143-58.
- Swanton, John. 1911. "Haida." BAE, 40:pt. 1:205-282.
- Welsch, Robert L. 1975a. "Haida Pronouns-Hydaburg Dialect." LEKTOS, Special Issue, Papers from the 10th International Conference on Salishan Languages, Ellensburg, Washington, 118-134.
- _____. 1975b. "Particularization vs. Old Information in Hydaburg Haida." WORKING PAPERS IN LINGUISTICS. 1:82-89. Dept. of Linguistics, University of Washington, Seattle.